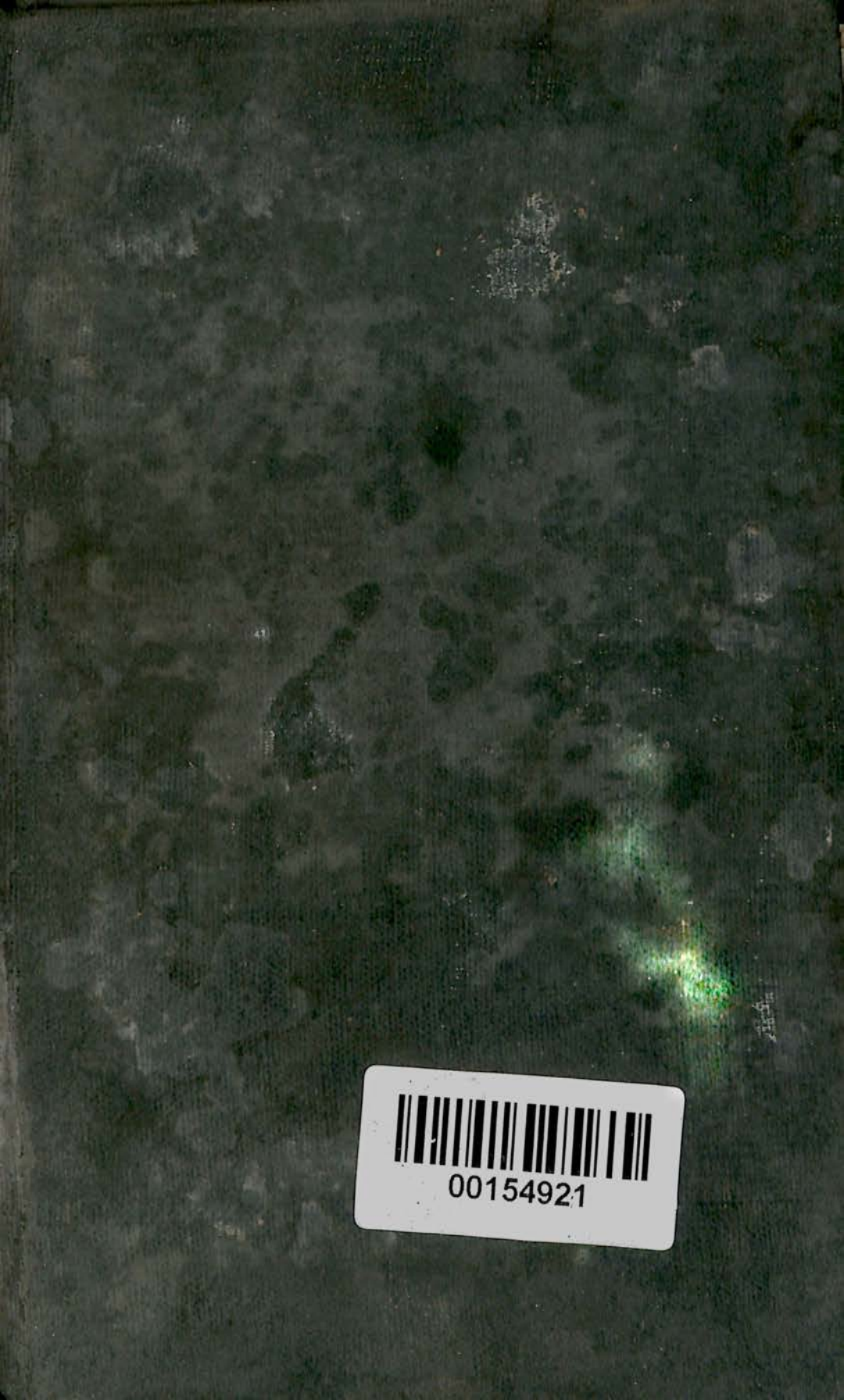

THE NATIONAL CYCLOPÆDIA OF USEFUL KNOWLEDGE.

VOL. II.

ARCH——BAUTZEN.

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THE

NATIONAL CYCLOPÆDIA

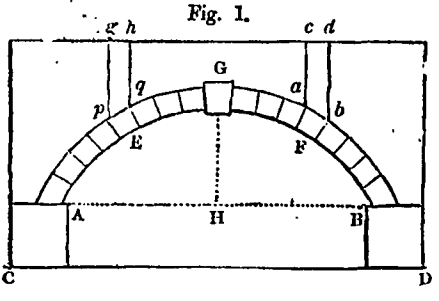
OF

USEFUL KNOWLEDGE.

ARCH, the same word as *arc* in its etymological derivation, and an older English form (having been always used in the sense of arc until that continental form superseded it), is now applied to any solid work, whether of masonry or otherwise, of which the lower part is formed into an arc of a curve supported at the two extremities. We proceed to give some idea of the question of theoretical mechanics connected with this word, referring for history and general information to ARCH, *Origin of the*, and BRIDGE.

In practice we have not only the arch itself to consider, but the loose matter with which the space above it is filled, and the roadway or building thereon constructed. The two extreme effects of this load may be thus stated. If it were fluid, the common law of hydrostatics would direct us to consider every small portion *a b* (*fig.* 1) of the arch as sustaining a pressure perpendicular to itself, equivalent to the weight of a column of fluid having the *horizontal* base *a b*, and the mean of *a c* and *b d* for its altitude. On the other hand,

Fig. 1.

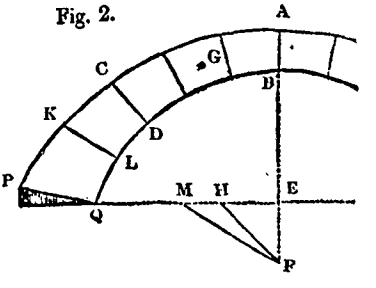


if the whole superincumbent load could be considered as perfectly solid and wholly unsustained by lateral pressure, the portion *p q h g* might be considered as a part of the arch-stone underneath. In the absence of all trustworthy experiments to determine how far the real superincumbent pressure where resulting from loose materials, partakes of one or the other supposition, we shall adopt the latter as probably nearer the truth than the former: which is equivalent to treating of the arch only after its superincumbent weight has been added to each arch stone.

A C and B D are called the piers of the arch; the arch is said to *spring* from A and B; A E and B F are the flanks, and G the *crown*. The lower line of the arch stones is called the *intrados* or *soffit*, the upper, the *extrados* or *back;* the arch-stones are called *voussoirs*, and the highest stone, G, the *key-stone*. A B is the *span* of the arch, and G H its *height*. The voussoirs are cemented together, and if the cement were sufficiently strong, any form might be given to the arch, or at least any form which would stand if cut out of the solid material. If we suppose the stones uncemented, their friction upon one another would tend to prevent the disturbance of equilibrium, and allow considerable variety of form in arches constructed with stones of the same weight. But if we suppose the stones perfectly smooth, so that each of them is kept from slipping only by the pressure of the adjoining two, then each intrados has one particular form of extrados and one only, so long as the manner in which the stones are cut follows one given law.

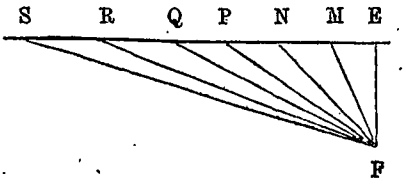
Let P Q (*fig.* 2) be one of the piers, which we suppose firmly fixed, and let there be no key-stone, or suppose the key-stone divided in the middle at A B. Let the portion A C D B be

Fig. 2.



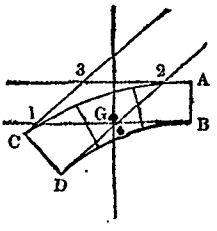
taken, composed of several arch-stones, and let its centre of gravity be G. Then the weight of A B C D, collected at G, is sustained by pressures at the surfaces A B and C D, perpendicular to those surfaces. Take E F in the continuation of A B, of any length, and draw F H parallel to C D. It is a known theorem, that any three forces which balance each other, are proportional to the three sides of a triangle, the directions of

the sides of which are perpendicular to the direction of the forces. In the present case, H E F is such a triangle; for H E being horizontal, is perpendicular to the direction of all weights; F E is the continuation of A B, and therefore perpendicular to the pressure at A B, while F H, being parallel to C D, is perpendicular to the pressure at C D. Hence H E bears to E F the same proportion as the weight of A C D B to the pressure at A. In the same manner it may be shown that, F M being parallel to K L, the weight of the portion A B K L is to the pressure at A B as M E to E F, from which it follows that the weight of A K L B bears to that of A C D B the proportion of M E to H E. Hence the following theorem :—



Let E F be vertical, E S horizontal, and F M, F N, &c., parallel to the divisions between the voussoirs of an arch which is divided at its highest point: then, no friction being supposed, there can be no equilibrium, unless the weights of the successive voussoirs, reckoned from the highest point, are to one another as E M, M N, N P, &c.

It is also necessary to the equilibrium that the vertical drawn through the centre of gravity G of the part A C D B should cut the parallelogram 1 3 2 4, made by perpendiculars to A B and C D drawn from their extremities: for otherwise there would be no point in the vertical through G (at some part of which the weight must be supposed to act), at which the directions of the perpendicular pressures could meet, and no three forces can maintain equilibrium unless their directions pass through one point.



This theory of the arch is perfect as far as it goes, and absolutely essential. But when the friction of the arch-stones and the tenacity of the cements is added, a great departure from it is allowable. Much has been done of late years to perfect this theory: but we do not enter into it here, both because the subject is too extensive for our space, and because it is hardly finished.

ARCH, *Origin of the.* The origin of the arch in actual constructions is still unknown; it cannot be stated with any degree of certainty, either in what country or at what epoch it was first used. There is reason to think that it was unknown to the Greeks at the time when they produced their most beautiful temples, in the fifth, fourth, and third centuries before the Christian æra. The want of the arch would lead them to contract the intercolumniations, or spaces between the columns, and to the general and frequent adoption of columns as the only mode of supporting a superstructure.

It is maintained that there are brick arches at Thebes in Egypt, which belong to a very remote epoch, and one long prior to the occupation of that country by Alexander the Great. Minutoli ('Reise zum Tempel des Jupiter Ammon') has given two specimens of Egyptian arches, one of which is a false and the other a true arch. The first specimen is from the remains at Abydos in Egypt (p. 245), where the roof has the appearance of an arch, but is formed by three horizontal stones, of which that which occupies the centre and lies over the other two is the largest; the three stones are cut under in such a way as to form a semicircle. The true specimens are at Thebes, on the west side of the river (p. 260), near and behind the building which contains the fragments of the enormous statue. They are circular arches, and formed of four courses of bricks (see pl. 29), and on the walls there are Egyptian paintings and hieroglyphics. (See also Belzoni's 'Plates,' No. 44, and his remarks *on* the brick arches of Thebes.) Etruria seems to have been the first European country in which the arch was used. The great sewer of Rome, commonly called the Cloaca Maxima, is an arched construction, which probably belongs to the age of the Tarquins.

The application of the arched structure is one of the most useful mechanical contrivances. By means of it small masses of burnt clay, and conveniently sized pieces of soft and friable sandstone, are made more extensively useful for the economic purposes of building, than the most costly and promising materials were in the hands of the Greeks and Egyptians. By means of it cellars are vaulted; subways, or sewers, are made to pass under heavy structures and along streets with certainty and safety; and secure and permanent roadways for every purpose of communication are formed across wide, deep, and rapid rivers.

The Romans did not deviate much from the semicircular form. Arches of smaller segments were certainly used by them, as well as elliptical arches, but in these cases they were fortified with enormous abutments, which proves that the architects knew very well the weak points of such a construction. The architects of the twelfth, thirteenth, and fourteenth centuries, showed what could be done by varying the form and construction of the arch.

The pointed arch, upon its invention or first introduction into Europe, seems to have exercised the ingenuity of architects in varying its form and application. This we observe in the numerous ecclesiastical structures in this country, in our beautiful pointed styles, and most particularly in some of the greater churches and cathedrals.

The origin of the pointed arch has been almost as much disputed as the discovery of the principle of the arch itself. It became general in most parts of Europe at nearly the same time, and about the period of the return of the warrior-priests and pilgrim-soldiers of the first crusade. This, and other circumstances which might be adduced, added to the fact of the pointed arch being used in Asia before that period, and that an

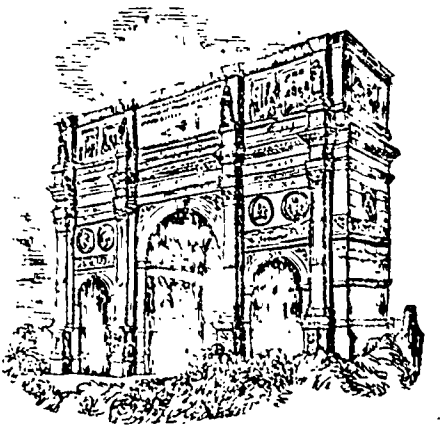
arch of the pointed form cannot be satisfactorily shown to have been used in the northern and western parts of Europe anterior to it, give a reasonable degree of certainty to the supposition that the notion was brought from the east by the crusaders.

ARCH, TRIUMPHAL, a structure which the Romans used to erect across their roads, or bridges, or at the entrance of their cities, in honour of victorious generals or emperors. They were of two kinds. Temporary arches were made of wood, on the occasion of a triumph. The others were permanent structures, built first of brick, afterwards of hewn stone, and lastly made of, or at least cased with, marble. Their general form is that of a parallelopipedon, which has an opening in the longer side, and sometimes a smaller opening on each side of the large one. These openings are arched over with semicircular arches, and the fronts are decorated with columns and their accessories on lofty pedestals: the whole is surmounted by a heavy attic, on the faces of which inscriptions were generally placed.

Triumphal arches were erected under the republic. An arch of P. Cornelius Scipio Africanus (Liv. xxxvii. 3) is mentioned as having been built on the Clivus Capitolinus. It is uncertain whether these arches precisely resembled the later arches as to their columns, rilievi, and other accessory parts. As far as we can judge from medals, these early triumphal arches consisted of a single arch with a column on each side, without a stylobate; the arch was surmounted by a simple border as a kind of architrave.

Under the emperors these monuments became very numerous, and were overcharged with ornaments. Augustus himself had several triumphal arches erected to him, of which the one at Rimini, where the Flaminian Way terminated, still remains, and serves as a gate to the town on the side towards Rome. Of the triumphal arches remaining at Rome, that of Titus is the oldest. This arch is ornamented with sculptures representing the triumph of Titus, and the ornaments of the temple of Jerusalem which he brought as spoils to Rome. But arches were also raised in honour of emperors for benefits conferred on their country on some particular occasions: such is the fine arch of Trajan on the old mole of Ancona. It is of white marble, and chaste in its style; the inscription states (among other things) that it was raised to Trajan for having at his own expense constructed the mole, and thus rendered the access to Italy on this side safer to navigators.

Another fine arch in memory of Trajan exists at Benevento; it is ornamented with fine rilievi, and is in very good preservation. All these are single arches; but others have two smaller archways, one on each side of the great central one. These are consequently oblong in their shape, and have a heavier appearance than the single arch. Two of these triple arches still exist at Rome, that of Septimius Severus, and that called the arch of Constantine, which we have chosen for our illustration. The view here given is from an original drawing. The arch of Constantine is near the Colosseum; and it is the most complete of all the triumphal arches at Rome. The style of Constantine's arch is, for the most



Arch of Constantine.

part, superior to that of the age in which it was executed, as it consists, in great measure, of the materials of a similar monument which had been erected to Trajan.

There are other arches in various parts of Italy, at Aquino, Aosta, and Pola in Istria, and several in the south of France, of which those of Nismes and Orange are the best preserved. There are several arches in Syria and in Barbary, particularly one at Tripoli, and another at Constantina. In modern times triumphal arches have been raised in imitation of the Roman arches. Those of the gate St. Denis and the gate St. Martin, at Paris, were raised in honour of Louis XIV. Bonaparte also had one constructed on the Place du Carousel, after the model of the triumphal arch of Septimius Severus at Rome. The much larger arch, the 'Arc de l'Etoile,' at the Barrière de Neuilly, was commenced in 1806, after the battle of Austerlitz, and has only recently been finished (1847). Another arch, which was begun by Bonaparte's order at Milan, on the opening of the famous road across the Simplon, has since been completed by the Austrian government. In London there is a single arch at Hyde Park Corner, and a triple one in front of Buckingham palace.

The arch of Augustus, at Rimini, is 60 feet in height and 27 in depth or thickness; the gateway is 31 feet, being the widest opening among all the ancient arches in Italy. The front is decorated with two Corinthian columns 32 feet high. It is made of Istrian marble.

ARCHÆO'LOGY, literally 'the study of antiquity or ancient things,' from ἀρχαῖος, 'ancient,' and λόγος, 'a discourse.' Though the term is often used, its meaning has not always been very exactly fixed. In general the term archæology is confined to the study of Greek and Roman art, but it is sometimes used to express generally the study of all that concerns the early history of any nation or country.

ARCHANGEL, or properly ARKHANGELSKOE. The province of Archangel is now one

of the nineteen provinces, or governments, which constitute that portion of the Russian dominions called 'Great Russia,' and is not only the most northern but the most extensive province of Russia in Europe. It comprehends part of ancient Biarmia, Russian Lapland, the range of country inhabited by the Wainotan branch of the European Samoiedes, Nowaia-Zemlya, or Nova-Zembla, and other islands in the Icy Ocean. Its most eastern limit is about 66° E. long., and its most western 29° 54′; its southernmost point is in 61° 10′ N. lat., and its most northern limit extends to lat. 76°, the extreme point of Nova Zembla. Its population does not exceed 280,000 souls at the utmost, or about one to a square mile. The northern part of the main land in this province is situated within the Frigid Zone, and presents as desolate and sterile an aspect as the eye can dwell upon: this is particularly the case towards the east, where an immense tract of black soil, covered with moss and crusted with ice for nine months in the year, is better known among the natives by the name of the 'Tundri.' South of the Tundri lie forests of pines, birches, alders, and willows. The province is in general a continuous flat, particularly that part of it which lies to the west, between the frontiers of Finland and the river Mezen: the only exception arises from the course of the Scandinavian range of mountains through the circle of Kem and Lapland.

The great river of the province is the Dwina, or 'the double river,' which empties itself into the White Sea, near Archangel. The Onega, whose whole length is nearly 400 miles, is likewise a navigable stream of some consequence; it enters the province from the adjoining government of Olonetz, and flows into a bay of the White Sea, studded with islands. Other rivers of the province are the Panoi, the Mezen, and the Petshora. There are also numerous lakes.

The climate of this province, particularly the northern districts, partakes of the extremes of heat and cold. The heat of the summer season is often oppressive; and the transition from heat to cold, on a change of wind, is frequently so instantaneous, that a man who has been working in his shirt is forced to have immediate recourse to his fur-cloak. But the climate becomes more intensely severe in proportion as we advance eastward.

The northern districts of Archangel are wholly uncultivable, and its soil, even in the south, does not yield grain enough even for the support of its scanty population. The bread in use is a compound of meal, moss, scrapings of the bark of the pine, and grated roots; yet this food, coarse as it is, is unknown to more northern palates, which must be content with dried fish. The southern districts grow hemp and flax, and a few kinds of vegetables. The forests produce very fine timber, and are the resort of bears, wolves, and a large variety of other wild animals. Marine animals are extensively captured in Nova Zembla; and the lakes and rivers yield abundance of fish. The country is well stocked with game; but domestic or farming animals are very limited in number. Salt and bog-iron form the chief mineral wealth.

The manufacturing and mechanical industry of the people is principally confined to ship-building, the preparation of pitch and tar, and the weaving of linen, which latter occupation fills up the leisure hours of the peasant's wife in the circles of Kholmogory and Archangel, and constitutes a lucrative branch of their commerce with St. Petersburg, Moscow, and other Russian marts. Pitch, tar, timber, tallow, train-oil, hemp, flax, mats, canvas, skins, and furs, are the chief exported produce.

The population of Archangel is of Russian extraction in the proportion of about ninety-five out of every hundred; the remaining portion consists of about 7000 Samoiedes, 6000 Syriaenese or Siriáni, and 1700 Laplanders, besides a few Fins, who are domesticated in the circles of Kem and Kola. The tenets of the Greek faith are professed by all but a few thousand pagans. The Samoiedes, whose name implies 'eaters of one another,' though there is no trace whatever of their having deserved to be branded as cannibals, originally migrated from Siberia; but they are not the primitive inhabitants of the soil; for the ruins of whole lines of ancient dwellings, which are found on the banks of lakes and rivers, show that the Samoiede was by no means the first occupant of this country. The Samoiede is of middling stature, has a broad, flat, round face, brownish-yellow complexion, small black eye, black hair and eyebrows, and but a slender beard. The dialect of the European Samoiede is poor and imperfect, and spoken by no strangers but a few Cossack dealers; the use of written characters is unknown among them. They seldom attain to a greater age than sixty or seventy, lead a wandering life, and, with the assistance of their rein-deer, shift their encampment as inclination or necessity prompts them.

Archangel consists of eight circles, namely, the city and dependencies of Archangel, Kholmogory, Shenkursk, Pinega, Onega, Kem, and Mezen. Independently of Archangel itself, the circle of that name contains Nowa-Dwinskaia-Krepost, a fortress, about 10 miles distant from the capital, and the island of Solowezkoi, in the White Sea. The chief town in the circle of Kholmogory bears the same name, and is situated on an island in the Dwina, 35 miles S. of Archangel. Shenkursk is the capital of the circle so called, and lies on the Waga, about 170 miles S.E. of Archangel. In the circle of Pinega is the inconsiderable town of the same name, on the banks of the Pinega, which flows into the Dwina. The chief town in the circle of Onega bears the same appellation, and is situated at the mouth of the Onega, which runs into the bay of that name, in the White Sea. Kem, the capital of the circle of that name, which once formed part of the province of Olonetz, and has latterly been incorporated with that of Archangel, is a small town with a harbour, not far from the afflux of the Kem into the White Sea. Kola, or Kolkoi-Ostrog, the principal place in Russian Lapland, in 32° 30′ E. long., 68° 20′ N. lat., is the northernmost town of Russia in Europe. The capital of the circle of Mezen, as well as the chief town in

the territory of the European Samoiedes, bears the same name as the circle, and lies on the river Mezen, 28 miles from the Icy Ocean, where it forms a harbour: it is inhabited by Russians, who make commercial excursions to Spitzbergen. The other towns are all unmportant.

ARCHANGEL (known amongst the Russians by the name of *Gorod Arkhangelskoi*, or town of the convent of St. Michael the archangel) is the capital of the province of Archangel, and the most northern emporium of trade in the Russian dominions. It stands on a low flat in 64° 32′ N. lat., 40° 33′ E. long., 400 miles N.E. of St. Petersburg. The city extends about 2 miles along the right bank of the Dwina, and is 40 miles from the mouth of that river. It is not accessible to vessels of heavy burden, owing to the shallowness of the stream and a bar which runs across it, with only 12 feet of water, about 5 miles below the town. Archangel is the oldest port in the Russian dominions. It was founded in the year 1584, upon a spot previously selected as a homestead by the members of a religious establishment. Russia at this time possessed no port but Archangel in its whole dominions. It is now become the chief mart of the Russian northern trade, as it was formerly of all the traffic between Muscovy and foreign parts. The prosperity of the port received a shock from the establishment of St. Petersburg, from which it did not recover till the Empress Elizabeth placed its immunities on a level with those of the metropolis in the year 1762. It has since been increasing gradually in importance. During the hundred years which preceded 1827, the exportations of Archangel did not amount to more than 23,350,000*l.*, or, on an average, 233,500*l.* a year.

The export trade of Archangel stood thus in the years 1841, 1842, and 1846:—

Vessels cleared in	Value of cargoes
1841 . . 326	£575,780
1842 . . 296	427,789
1846 . . 634	1,063,700

The shipping of 1846 includes 368 British ships, 266 foreign ships, and 132 coasters. this great increase seems to be partly owing to the activity in the corn trade. The shipping of 1841-1842 does not include coasters. The exports consist of linseed, rye, oats, wheat, barley, flax, tow, tallow, train-oil, mats, deals, battens and ends, pitch and tar. The imports, which are generally confined to the town and neighbourhood, are sugar, coffee, spices, salt, woollens, hardware, &c.

The port of Archangel is connected by canals with the Volga and the Neva. The navigation is open generally from May to the end of September, and during this period the river is covered with vessels and boats of all sizes; the quays and shores are peopled with multitudes, variously and actively employed; and the great road from Siberia is covered with travellers and loaded carts and waggons. The houses in Archangel are chiefly built of wood; the population is 24,000. There are a sugar refinery, royal dock-yard, ship-yards for building merchant and coasting vessels, ropewalks, &c., in and near the town. The most striking of the stone edifices is the Gostinnoi-Dwor, or 'court of the trading guests,' an extensive mart for the exhibition and sale of goods, which is surrounded by high walls, with six large towers, and ditch. The churches are 11 in number, 10 Greek and 1 Protestant. The marine hospital is a building of some extent, and open to foreign as well as native seamen. There are in the town a seminary for ecclesiastics, a gymnasium, and academies for navigation and engineering. Archangel is an ill-built place; the two main streets run in a zigzag direction parallel with the Dwina, and are connected by narrow lanes. Its supplies of provisions are brought from a distance, as the soil in the neighbourhood grows no grain or vegetables, and breeds no cattle. An association called the 'White Sea Company,' was formed at Archangel in 1803; it despatches a fleet of vessels every year on fishery expeditions to the coasts of Nova Zembla, Kalguiew, and Spitzbergen, at the last of which the crews frequently winter. Archangel is the seat of an archbishop, and the residence both of a civil and military governor. The neighbouring island of Sqlombalsk, which is formed by the Kushenida, contains an admiralty and marine-barracks.

(M'Gregor's *Statistics;* Private Communication.)

ARCHBISHOP. [Bishop.]

ARCHDEACON. Deacon appears to come from the Greek term *diáconos* (διάκονος), the name of that officer in the church of whose appointment we have an account in Acts vi. To one of these deacons precedence was given, and no doubt some species of superintendence or control, and to him the title of *archdeacon* was assigned.

In the name there is no indication of any peculiar employment. What now belongs to the archdeacon was anciently performed by the officer in the bishop's court called the chorepiscopus. The chorepiscopus (χωρεπίσκοπος) was the bishop's deputy or vicar in small towns and country places, in which he discharged the minor episcopal functions. He might be of episcopal rank or not. (Ducange, 'Glossarium.') The chorepiscopus is mentioned in a constitution of Justinian. ('Cod.' i. tit. 3, s. 41 (42).)

In England, according to the 'Valor Ecclesiasticus' of King Henry VIII., there are fifty-four archdeaconries, or districts through which the visitatorial and corrective power of an archdeacon extends: there are now above sixty in England and Wales. Seven new archdeaconries were erected by 6 & 7 Will. IV. c. 97.

The distribution of the dioceses into archdeaconries cannot be assigned to any certain time. It is said that Stephen Langton, archbishop of Canterbury, was the first English bishop who established an archdeacon in his diocese, about A.D. 1075. The bishops had baronies, and were tied by the constitutions of Clarendon to a strict attendance upon the king in his great council, and they were consequently obliged to delegate their episcopal powers. Each archidiaconal district was assigned to its own archdeacon, with the same precision as other and larger districts are assigned to the bishops and archbishops; and the archdeacons were entitled to certain annual payments, under the name of procurations, from the benefices within their archdeaconries. The act already cited (6 & 7 Will. IV.

c. 97) directed a new arrangement of all existing deaneries and archdeaconries, so that every parish and extra-parochial place shall be within a rural deanery, and every deanery within an archdeaconry, and that no archdeaconry extend out of the diocese.

Archdeacons must have been six full years in priests' orders (s. 27, 3 & 4 Vict. c. 27), and they are appointed by the respective bishops. The duty of archdeacons is to visit their archdeaconries from time to time: to see that the churches, and especially the chancel, are kept in repair, and that every thing is done conformably to the canons and consistently with the decent performance of public worship, and to receive presentations from the churchwardens of matter of public scandal. The visitation of the archdeacon may be held yearly, but he must of necessity have his triennial visitation. Archdeacons may hold courts within their archdeaconries, in which they may hear ecclesiastical causes and grant probates of wills and letters of administration; but an appeal lies to the superior court of the bishop. (24 Hen. VIII. c. 12.) By s. 3 of 3 & 4 Vict. c. 86, the archdeacon may be appointed one of the assessors of the bishops' court in hearing proceedings against a clergyman. The judge of the archdeacons' court, when he does not preside himself, is called the official.

The emoluments of an archdeacon are small, and the office is generally held by persons who have also benefices or other preferment in the church. The 1 & 2 Vict. c. 106, s. 124, specially exempts archdeacons from the general operation of the act, by permitting two benefices to be held with an archdeaconry. Among the recent acts which affect archdeacons the most important are 1 & 2 Vict. c. 106; 3 & 4 Vict. c. 113; and 4 & 5 Vict. c. 39.

ARCHELA'US, a Greek name composed of two words, signifying 'rule' and 'people.'

ARCHELAUS, king of Sparta, was one of the reigning kings when Lycurgus remodelled the constitution.

ARCHELAUS the Milesian, an eminent philosopher of the Ionic school, and the last who was at the head of it in direct succession from Thales. He succeeded Diógenes Apolloniátes as the recognised leader of that school; and was the pupil of Anaxágoras, the predecessor of Diógenes. He removed to Athens, where he became popular, and had Socrates and others among his hearers. He taught, like his master Anaxágoras, that every thing was made up of small parts similar to itself, as wood of atoms of wood, metal of atoms of metal, bone of atoms of bone. Speech he defined to be motion of the air; but this correct view is also attributed to Anaxágoras. He maintained that just and unjust are produced entirely by law; and that, anterior to law, nothing is either one or the other. It appears probable that by law he meant solely human institutions.

Archelaus seems to have commenced teaching at Athens about B.C. 450, in the interval between the first and second visit of Anaxágoras to that city.

(Diógenes Laertius; Brucker, *Hist. Philos.* vol. i. p. 518; Fabricius, *Bibl. Gr.*)

ARCHELAUS, son of Perdiccas, king of Macedon, succeeded his father B.C. 413. What is known of him is contained in a sentence of Thucydides, who says that 'Archelaus, son of Perdiccas, having become king, built the fortifications now in the land, and cut straight roads, and set the military affairs of the nation on a better footing, as to the provision of arms, horses, and other equipments, than all the eight kings who had preceded him.' (lib. ii. 100.) Towards the close of the Peloponnesian war he besieged Pydna, a sea-port of Macedonia, which had revolted, and he took it B.C. 410. The few other notices of his reign refer either to his private character or to his patronage of arts and literature. Euripides resided for some time at his court, and died there. Zeuxis visited him, and executed many pictures for his palace, which in consequence became a place of great resort for strangers.

The character of this prince, however, has been drawn in darker colours by Plato, who says, that Archelaus was of illegitimate birth, the son of Perdiccas by a slave, and that he gained the kingdom by a series of murders. Plato and Aristotle say that his excesses led to his death by conspiracy. Diodorus (xiv. 37) says that he was killed accidentally when hunting. Archelaus died B.C. 399, after a reign of fourteen years.

(Mitford, *Hist. of Greece*, chap. xxxiv. sect. 1.)

ARCHELAUS, an eminent general in the service of Mithridates, king of Pontus, and the opponent of Sulla when the Mithridatic war was carried on in Greece. During the siege of Athens, when that city was taken by Sulla, he threw himself into the Peiræus, and defended it obstinately. Compelled at last to evacuate his stronghold, he retired northwards. He was twice defeated by Sulla, after which he received instructions from his master to make peace on the best terms which could be obtained. Afterwards, being apprehensive of danger from the jealous temper of Mithridates, he went over to the Romans, by whom he was well received.

(Appian, *Mithridatica*; Plutarch, *Life of Sulla.*)

ARCHELAUS, son of the preceding, obtained the dignity of high-priest of the temple of Comána, in Pontus, to which a considerable tract of land and numerous slaves were annexed. He served in the expedition to Egypt of Gabinius, to reinstate Ptolemæus Aulétes on the throne; but having gained the affections and the hand of Berenice, the daughter of Ptolemæus, under the pretence that he was the son of Mithridates, he went over to her party, and after a six months' reign was slain in battle against the Romans.

ARCHELAUS, son of the above, succeeded him as high-priest of Comána, and was expelled by C. Julius Cæsar, B.C. 47, to make room for Nicomédes the Bithynian. His wife's name was Glaphyra.

ARCHELAUS, son of Archelaus and Glaphyra, received the kingdom of Cappadocia B.C. 36. He fought on the side of Antonius at the battle of Actium, and yet he retained his kingdom under Augustus. Incurring the displeasure of Tiberius, as it is said, because he neglected the future emperor during his exile at Rhodes, he was summoned to Rome, where he died A.D. 16, apparently by a natural death brought on by age and infirmity. (Tacitus, *Ann.* ii. 42; Dion, lvii.)

ARCHELAUS, the second son of the fifth wife of Herod the Great: his mother, Malthaka, was a Samaritan. His father's last will declared him heir to the throne. Immediately after the death of Herod, A.D. 3, he exercised the regal power, but did not assume the title till his nomination was confirmed by the Roman emperor. The Jews, having long groaned under the yoke of Herod, received with joy the fair promises which the uncertainty of Roman favour extorted, at the commencement of his reign, from the policy of Archelaus. But before he received the imperial sanction, he showed his cruel temper by massacring a great number of the Jews in a riot.

Archelaus presented himself in person before Augustus at Rome, and solicited the ratification of his power; but his claim was opposed by several members of his family, and by the Jewish nation. The emperor gave a patient hearing to all parties. He decided the matter by placing only the districts of Judæa Proper, Idumæa, and Samaria, forming about half the dominions of Herod, under the government of Archelaus. The rest, with some small exceptions, was divided between Herod Antipas and Philip. Archelaus married Glaphyra, widow of his brother Alexander, by whom she had children, which was a direct violation of the Jewish law. Weary of his tyrannical administration, in the tenth year of the reign of Archelaus the Jews again appealed to Augustus. The emperor dispossessed Archelaus of his authority, banished him to Vienne in Gaul, and confiscated his property. It is supposed that he ended his days in the place of his exile.

(Josephus, *Wars of the Jews*, from book i. chapter 28, to book ii. chapter 8; and the *Antiquities of the Jews*, book xvii.)

ARCHELAUS, bishop of Carrhæ in Mesopotamia, had a controversy with the heretic, Manes, about A.D. 278. He published the controversy in two books, entitled 'Acta Disputationis,' &c., in Syriac, which were translated into Greek by Hegemónius. A fragment of this work is extant, edited by Valesius, in the notes to his Socrates (pp. 197, 203, lib. i. c. 22); and again in a more complete form by Zaccagnius, in his 'Collectanea Monumentorum veterum Ecclesiæ Græcæ,' Rom. 1698. (Fabricius, *Bibl. Gr.*)

ARCHENHOLTZ, JOHANN WILHELM VON, was born at Danzig in 1745. He entered the Prussian army, in which he served during the whole of the Seven Years' War, and was made a captain. He afterwards retired from the service, and travelled over a considerable part of Europe, and at last settled at Hamburg, where he published several works, which became very popular in Germany. The first work that established his literary reputation was his 'England und Italien,' published in 1785. The part concerning England is the most elaborate, and may be considered upon the whole as one of the most detailed accounts of this country given by a foreigner. He also wrote a 'History of the Seven Years' War,' composed from many private memoirs and professional works; and a 'Life of Gustavus Vasa,' preceded by a summary of the history of Sweden from the oldest records to the end of the 16th century, which is much valued for its accuracy. He died in 1812.

ARCHER (*Tóxotes*, Cuv.), a genus of acanthopterygious fishes, belonging to the family squamipennæ, or those which are distinguished by having, not only the soft parts, but often the very spines of the dorsal and anal fins, covered with scales like the rest of the body, and not always to be easily distinguished from them. Though the single species upon which this genus is founded had been long known to naturalists, and described under the various names of *Scarus Schlosseri*, *Sciæna jaculatrix*, *Labrus sagittarius*, and *Coïus chatareus*, by the different writers on ichthyology, yet it was left for Baron Cuvier to point out its appropriate generic characters, and to distinguish it definitely from the different groups with which it had been previously confounded. (Cuvier 'Règne Anim.,' vol. ii. p. 195.)

The *Tóxotes jaculator* of Cuvier, which is found in Java and Sumatra, has been long celebrated for the singular instinct which it displays in catching flies and other insects which are its prey. The tubular form of the mouth in these animals permits them to squirt or project small quantities of water to some distance, and with considerable force; when, therefore, the archer perceives a fly or other insect resting on the leaves of the aquatic plants which overhang or swim on the surface of the stream, it shoots a single drop, not directly towards the insect, but obliquely upwards, in such a manner as to strike it in falling, thus preventing it from perceiving its danger and escaping in time. With such accuracy is the aim taken, that though frequently projected to the height of four or five feet, the drop seldom fails to hit the mark and precipitate the insect into the water, where it is, of course, within reach of the archer. The fish itself is of a yellowish colour, marked on the back with five brown spots.

ARCHERY, the art of shooting with bow and arrow. The use of the bow may be traced to the remotest antiquity; but some people, the ancient Britons for instance, did not use the bow. The first notice which we find of it is in Genesis (xxi. 20), where it is said that Ishmael became an archer. In the Greek mythology we find Apollo and Hercules armed with the bow and arrow. In the war of Troy, the main force of the Greeks appears to have consisted of soldiers who had heavy defensive armour; but the soldiers of Philoctétes were archers. The Cretans maintained their reputation as skilful bowmen to a late period in their history; and we find Meriones, the companion of the Cretan king Idomeneus, carrying off the prize from Teucer himself. ('Iliad,' xxiii. 882.) Teucer, the brother of Ajax, who came from the island of Salamis, excelled in the use of the bow and arrow, which appear, however, to have been considered less honourable weapons than the spear and sword. Ulysses in the 'Iliad' fights with the spear and sword, but in the 'Odyssey' we find the strength of the suitors tested by the bow which Ulysses had left at home, and which he afterwards uses against his domestic enemies.

In the later times of Greece, archers formed a

part of the light-armed troops, in the same manner as the Sagittarii among the Romans afterwards formed a part of the Vélites. Procopius records it as a great improvement when the Roman auxiliaries were instructed to draw the right hand to the ear. But the practice itself is of much greater antiquity, as we see in the representations of the sea-fight on the walls of Medinet-Abou, at Thebes in Egypt. ('Egypte, Antiq.,' vol. ii.) It was also, as we learn from Procopius, the fashion with the ancient Persians.

The time when the use of the long bow commenced in England, as a military weapon, is unknown. That which the Normans used at the battle of Hastings was the *arbalest* or *cross-bow*, and in the reign of Henry III. we find cross-bowmen forming the vanguard of the army. As a military weapon of England, the arbalest, in all probability, was last used at the battle of Bosworth in 1485, though it was used on the Continent in the wars of the sixteenth century.

From the reign of Edward II. the mention of the *long-bow* becomes frequent in our history. At Crécy, at Poictiers, and at Agincourt, as well as in several battles which were gained over the Scotch, the victory is ascribed to the English bowmen; and it is particularly noticed that at Crécy the rain, which had slackened the strings of the Genoese cross-bows, had not weakened the effect of the long-bows which our countrymen used. From this period down to the reign of Henry VIII., many acts of parliament were passed to encourage the practice of archery, among which was one in the time of Edward IV., ordaining that every Englishman should have a bow of his own height; ordering butts to be constructed in every township for the inhabitants to shoot at on feast days; and imposing the penalty of a halfpenny upon every one who neglected to use his bow. A statute passed in 33 Henry VIII., ordained that every man under sixty, except spiritual men, justices, &c., should use shooting with the long-bow, and have a bow and arrows continually in his house; that he should provide bows and arrows for his servants and children; that every servant, above seventeen and under sixty years of age, should pay 6*s.* 8*d.* if he was without a bow and arrows for one month. Latimer, in one of his sermons before King Edward VI., published in 1549, enforced the practice of archery from the pulpit. 'In my time,' he observes, 'my poor father was as diligent to teach me to shoot, as to learn me any other thing, and so I think other men did their children. He taught me how to draw, how to lay my body in my bow, and not to draw with strength of arms as other nations do, but with strength of the body. I had my bows bought me according to my age and strength; as I increased in them, so my bows were made bigger and bigger: for men shall never shoot well except they be brought up in it. It is a godly art, a wholesome kind of exercise, and much commended in physic.'

The encouragement thus given to shooting with the long-bow caused archery to become a fashionable amusement after the bow had ceased to be used as an instrument of war. Edward VI. was fond of this exercise; and there seems every reason to believe that it was practised by Charles I., who issued a proclamation in the eighth year of his reign, to prevent the fields near London from being so inclosed as 'to interrupt the necessary and profitable exercise of shooting.' Public exhibitions of shooting with the bow were continued in the reigns of Charles II. and James II.; and an archer's division, at least till within these few years, formed a branch of the Artillery Company.

The most important society of this kind now existing is 'The Royal Company of Archers, the King's body-guard of Scotland.' The exact time of its institution is unknown, but it is referred by the Scottish antiquaries to the reign of their James I. The rank of the King's body-guard for Scotland was understood from tradition to be vested in the Royal Company, and they accordingly claimed the honour of acting in this capacity to his majesty King George IV. on the occasion of his visit to Scotland in 1822. The captain-general has since been appointed gold-stick for Scotland, and the Royal Company now forms a part of the household.

The distance to which an arrow could be shot from the long-bow depended much upon the strength and art of the bowman; but, in general, the distance was reckoned from eleven to twelve score yards. In 1794, the Turkish ambassador's secretary, in a field near London, with a Turkish bow and arrow, shot 415 yards partly against the wind, and 482 yards with the wind. He said that the then grand sultan shot 500 yards, which was the greatest performance of the modern Turks; but that pillars stood on a plain near Constantinople, commemorating ancient distances about 800 yards.

Ascham has enumerated fifteen sorts of wood, of which arrows were made in England in his time; of these asp and ash were preferred to the rest, the one for target-shooting, the other for war. Whistling arrows have been found on fields of battle of the time of Edward IV. They were chiefly used, it is believed, for giving signals in the night. The Chinese have used them from time immemorial. The arrows shot from cross-bows were usually headed with a large square pyramid of iron, and were called *bolts* and *quarrels*, the latter designation being derived from the French *carreaux*, and indicating their squareness.

ARCHES, COURT OF, is the supreme court of appeal in the archbishopric of Canterbury. It derives its name from having formerly been held in the church of St. Mary-le-Bow (*de Arcubus*), from which place it was removed about 1567 to the Common Hall of Doctor's Commons, near St. Paul's Church, where it is now held. The acting judge of the court is termed Official Principal of the Court of Arches, or more commonly Dean of the Arches. This court has ordinary jurisdiction in all spiritual causes arising within the parish of St. Mary-le-Bow and twelve other parishes, which are called a deanery, and are exempt from the authority of the Bishop of London. The Court of Arches has also a general appellate jurisdiction in ecclesiastical causes arising within the province of Canterbury, and it has original jurisdiction on subtraction of legacy given by wills which have been proved in the prerogative court of that province.

The Dean of the Arches for the time being is president of the College of Doctors of Law, who practise in the Ecclesiastical and Admiralty Courts, incorporated by royal charter in 1768, and the advocates and proctors who practise in these courts receive their admission in the Arches Court. The judge is the deputy of the archbishop, who is the judge of the court. The Dean of Arches has always been selected from the College of Advocates. There are four terms in each year, and four sessions in each term. An appeal lay from this court to the Court of Delegates, or more strictly to the king in chancery (25 Henry VIII. c. 19), by whom delegates were appointed to hear each cause, the appeal being to him as head of the church, in place of the pope. By 2 & 3 Will. IV. c. 92, appeals are transferred from the Court of Delegates to the king in council. By 3 & 4 Vict. c. 65, the Dean of Arches is empowered to sit as assistant to or in place of the judge of the Court of Admiralty.

A'RCHIAS, A. LICI'NIUS, a Greek poet of Antioch in Syria, whose name might never have reached us but for the oration of Cicero pronounced in his defence. He was the intimate friend of many illustrious Romans, and gave lessons to Cicero in philosophy and rhetoric. ('Arch.' c. i.) He had undertaken to celebrate in verse the grand event in the orator's history—the conspiracy of Catiline—and that was enough to gain Cicero's favour. Archias came to Rome in the consulship of Marius and Lutatius Catulus, B.C. 102, and recommended himself to them by a poem in celebration of their victories over the Cimbri. It was chiefly through the influence of Q. Lucullus that he was admitted to the freedom of Heraclea, a Greek city in the south of Italy. The citizens of Heraclea were entitled to the Roman citizenship by the Lex Julia (B.C. 90), and it was thus that Archias became a citizen of Rome. But it was urged against him that he was not fairly entitled to the privilege, and the oration of Cicero ('Pro Archia') is in defence of the poet's rights. Some epigrams under his name are in the Greek Anthology: they are in general below mediocrity, but as there were several of the same name as this poet, we cannot decide to whom they really belong. These epigrams have been published separately by Ilgen, 'Animadvers. Histor. et Critic. in Cic. Orat. pro Archia,' Erfurdt, 1797; and by Hülsemann, in his edition of Cicero's 'Oration for Archias,' Lemgo, 1800, 8vo.

ARCHIDA'MUS. There were five kings of Sparta of this name. They were of the royal line of the Proclidæ. The first is only mentioned by Herodotus (viii. 131).

ARCHIDA'MUS II., son of Zeuxidámus, became king when his grandfather, Leotýchides, was banished from Sparta. Archidamus reigned from B.C. 469 to 427. Prudence and foresight, steadiness of purpose, and gravity of deportment, were his prominent qualities. In the fourth year of his reign Sparta was nearly annihilated by an earthquake, an opportunity of which the Messenians took advantage to attempt the recovery of their independence. Archidamus, by his presence of mind, saved what remained of the city from the hands of an exasperated foe; but it was not till the end of ten years that this Third Messenian War was brought to a close, when the Messenians evacuated their citadel, Ithóme. (Diod. Sic. xi. 64; Thucyd. i. 103.) Archidamus is not mentioned again till we find him, speaking on the peace side, in the council held by the Lacedæmonians before they resolved on the Peloponnesian war. Though a declaration of war was the result of their deliberation (B.C. 431), the Lacedæmonians gave him the command of the troops against the Athenians. He was their general also in their second expedition (B.C. 430) and third expedition (B.C. 428). He was succeeded by his son, Agis II., probably in B.C. 427. (Thucydides, i. 79, ii. 10-20, 71, iii. 1.)

ARCHIDA'MUS III., the son of Agesilaus, succeeded his father B.C. 361, and died B.C. 338. He commanded the Spartan troops during his father's lifetime, B.C. 367, and gained the 'tearless battle' against the Arcadians and Argeians: not one of the Spartans fell, but a great many of the enemy were slaughtered. He was sent (B.C. 338) to Italy to assist the inhabitants of Tarentum, who were at war with the Lucanians. He fell bravely at the head of his troops; and a statue was erected to his honour, at Olympia, by his countrymen. He was succeeded by his son Agis III. (Diodorus, Sic. xvi. 24, 63; Pausanias, iii. 10.)

ARCHIDA'MUS IV., the son of Eudámidas, is only mentioned by Plutarch, who states that he was defeated (B.C. 296) by Demetrius Poliorcétes; and Archidamus V., son of another Eudamidas, was put to death by his royal colleague, Cleomenes III., somewhere between B.C. 236-220. In him ended the line of the Proclidæ, for though he left five sons, they were passed over, and Lycurgus, not of the royal family, was raised to the throne. (Polybius, iv. 2, v. 37.)

ARCHI'GENES of Apaméa, a medical author and practitioner at Rome, during the reign of the Emperor Trajan. He is several times mentioned by Juvenal ('Satires,' vi. 236, xiii. 98, xiv. 259). Archigenes followed the principles of the pneumatic sect, founded by Athenæus of Attalia, and wrote many treatises on pathology, and the practice of medicine and surgery. The fragments of Archigenes are in the works of Galen, Ætius, and Oribasius.

ARCHIL, *orchil, litmus,* or *tournsole,* is a blue dye procured from the *rocella tinctoria* and *ceanora tartarea,* which are lichens growing abundantly in the Canary and Cape Verde Islands. The colouring matter of these plants appears to be a peculiar vegetable principle which has been called *erythrine:* it may be extracted either by means of alcohol or ammonia, but the latter is employed by those who manufacture the colour, which is generally sold in small flat pieces, and known by the name of litmus.

Archil is employed by chemists to ascertain the presence of acids in solution, because it has the property of changing from blue to red by contact with acids; and it also detects alkalies, by restoring the blue which had been changed by acids. Archil is never used alone as a dye, on account of its want of permanence. It is, however, employed for the purpose of deepening and improving the tints of other dyes, and it imparts

a bloom which it is difficult to obtain from other substances.

ARCHI'LOCHUS, a poet and native of Paros. Herodotus (i. 12) makes him contemporary with Gyges, and therefore he was living between B.C. 716 and 678. He is said to have emigrated to Thasos, and to have thrown away his shield in a battle against some barbarians on the mainland. His poetry, from the concurrent testimony of the ancients, was full of energy, terse in its language, and vivid in its images. The story of Lycambes is at least indicative of the opinion of his satiric powers. Lycambes of Paros had promised his daughter, Neobúle, to Archilochus, but he changed his mind; on which the poet directed such a fearful satire against him that he hanged himself. All the rest that is told of his life is very vague. It was in Iambic verse that the poet chiefly excelled, of which he is said to have been the inventor. Some specimens of Archilochus are translated with much spirit in Merivale's 'Anthology,' London, 1832. The fragments of Archilochus are in Jacobs' 'Anthologia Græca,' and in Bergk's 'Poetæ Lyrici Græci.'

ARCHIMANDRITE, the title of a dignitary in the monastic orders of the Greek church, answering to that of Father Provincial among the monks and friars of the Roman Catholic church.

ARCHIME'DES, the most celebrated of the Greek geometers, and one of the few men whose writings form a standard epoch in the history of the progress of knowledge, was born in Sicily, in the Corinthian colony of Syracuse, in the year 287 B.C.: he was killed when that town was taken by the Romans under Marcellus, B.C. 212, aged seventy-five years.

Archimedes, as Plutarch says (but Cicero gives him a low origin), was related to Hieron, the second prince of that name. The reign of this prince, including the time that his son Gelon also bore the royal title, lasted about fifty-five years, during the greater part of which Archimedes remained at Syracuse under their patronage. All that we know of his life during this period, independently of the results of his studies, of which we shall presently speak, is contained in the following incidents. The well-known story of Hieron's crown (or Gelon's crown, according to some) is as follows:—Hieron, or Gelon, had delivered a certain weight of gold to a workman, to be made into a votive crown. The latter brought back a crown of the proper weight, which was afterwards suspected to have been alloyed with silver. The king asked Archimedes how he might detect the cheat; the difficulty being to measure the bulk of the crown without melting it into a regular figure. For silver being, weight for weight, of greater bulk than gold, any alloy of the former, in place of an equal weight of the latter, would necessarily increase the bulk of the crown. While thinking on this matter, Archimedes went to bathe, and on stepping into the bath, which was full, observed the very simple fact, that a quantity of water, *of the same bulk as his body*, must flow over before he could immerse himself. It immediately struck him that by immersing a weight of real gold, equal to that which the crown ought to have contained, in a vessel full of water, and observing how much water was left when the weight was taken out again, and by afterwards doing the same thing with the crown itself, he could ascertain whether the latter exceeded the former in bulk. In the words of Vitruvius, 'As soon as he had hit upon this method of detection, he did not wait a moment, but jumped joyfully out of the bath, and running naked towards his own house, called out with a loud voice that he had found what he sought. For as he ran he called out in Greek, '*εὕρηκα, εὕρηκα*' (I have found it, I have found it). According to Proclus, Hieron declared that from that moment he could never refuse to believe anything that Archimedes told him. This anecdote is often wrongly told, as if the discovery were that of weighing the crown in and out of water.

The apophthegm attributed to him, that if he had a point to stand upon, he could move the world, arose from his knowledge of the possible effects of machinery, and, however it might astonish a Greek of his day, would now be readily admitted to be as theoretically possible as it is practically impossible. He is reported to have astonished the court of Hiero by moving a large ship, more than usually loaded, with a pulley, or collection of pulleys, and it is said that on this occasion the king pressed him to exert himself in contriving machines for the defence of the city.

He is said to have travelled into Egypt, and while there, observing the necessity of raising the water of the Nile to points which the river did not reach, to have invented the screw which bears his name. [SCREW OF ARCHIMEDES.] Athenæus, in mentioning this screw, says it was employed to drain the holds of ships. Diodorus (i. 34) expressly asserts that this machine, which he calls *κοχλίας*, was his invention.

After the death of Hieron, the misconduct of his successor Hierónymus, the son of Gelon, provoked a rebellion, in which he was killed. The successful party sided with the Carthaginians, and the Romans accordingly despatched a land and naval armament against Syracuse under Appius and Marcellus. Among all the extraordinary stories which have been told of the siege, so much seems clear:—that it lasted three years in spite of the utmost efforts of the besiegers—that this successful resistance was principally owing to the machines constructed by Archimedes—and that the city, after the siege had been some time converted into a blockade, was finally taken by surprise, owing to the carelessness of the besieged during the festival of Diana. Polybius states that catapults and balistæ of various sizes were successfully used against the enemy; that in their nearer approach they were galled by arrows shot not only from the top of the walls, but through port-holes constructed in numerous places; that machines, which threw masses of stone or lead of a weight not less than ten talents, discharged their contents upon the Roman engines, which had been previously caught by ropes; that iron *hands* (or hooks) attached to chains, were thrown so as to catch the prows of the vessels, which were then overturned by the besieged; and that the same machines were used to catch the

assailants on the land side, and throw them to the ground. Livy and Plutarch give much the same account; but the curious story of setting the Roman ships on fire by mirrors is first mentioned by John Tzetzes and Zonaras, writers of the twelfth century, who cite Diodorus and others for the fact. But Galen, in the second century, though he mentions that Archimedes set the enemy's ships on fire, says it was done with *πύρεια*, which may refer to any machine or contrivance throwing lighted materials. Lucian also, who lived in the second century, mentions the burning of the ships, but without saying how it was effected. Montucla is of opinion that this report arose from the joining together of two others, namely, that Archimedes wrote a treatise on burning mirrors, and that he did burn the Roman ships; both very credible stories. But their junction must, in our opinion, rank with the many curious things said of Archimedes in later ages.

After the storming of Syracuse, Archimedes was killed by a Roman soldier, who did not know who he was; Marcellus, it is said, had given strict orders to preserve him alive. According to Valerius Maximus, when the soldier asked who he was, Archimedes, being intent upon a problem, begged that his diagram might not be disturbed; upon which the soldier put him to death. According to another account, he was in the act of carrying his instruments to Marcellus, when he was killed by some soldiers who suspected he was concealing treasure. At his own request, expressed during his life, a sphere inscribed in a cylinder was engraved on his tomb, in memory of his discovery that the solid content of a sphere is exactly two-thirds of that of the circumscribing cylinder. By this mark it was afterwards found, covered with weeds, by Cicero, when he was residing in Sicily as quæstor.

The fame of Archimedes rests upon the extraordinary advances which he made, considering the time in which he lived, in pure geometry, in the theory of equilibrium, and in numerical approximation. In the first, by an axiom already mentioned [ARC], and a similar one with respect to curved surfaces, and by the method of exhaustions [GEOMETRY], he made as near an approach to the fluxional or differential calculus as can possibly be done without the aid of algebraic transformations. In the theory of mechanics, he was not only the first but the last of the ancients who reduced anything to demonstration from evident first principles; indeed, up to the time of Stevinus and Galileo, no further advance was made. The works which have come down to us, of which the first seven are in Greek, are,—

1, Two books 'On the Sphere and Cylinder;' 2, 'On the Measurement of the Circle;' 3, 'On Conoids and Spheroids;' 4, 'On Spirals;' 5, two books 'On the Equilibrium and Centre of Gravity of Plane Surfaces;' 6, 'Psammites,' better known by its Latin name 'Arenarius;' 7, 'On the Quadrature of the Parabola;' 8, two books 'On Bodies floating in a Fluid.' There is also a book of Lemmas attributed to Archimedes. The works of Archimedes are written in Doric Greek, the prevailing dialect in Sicily. The text is for the most part in tolerably good preservation; the style is clear, and has been considered better than that of any of the other Greek geometers.

We can only briefly touch upon several remaining points. It is known from Ptolemæus that Archimedes observed or calculated several solstices, for the determination of the length of the year. He is said to have been the first who constructed a machine for representing the motions of the sun, moon, stars, and perhaps of the planets. A large number of works which have not come down to us is attributed to him, a list of which may be found in Fabricius; particularly a treatise 'On Burning Mirrors,' and a treatise on the 'Parabola.' There is no great evidence in favour of the genuineness of either. The ancients attributed to him more than forty mechanical inventions; among which are the endless screw; the combination of pulleys; an hydraulic organ, according to Tertullian; a machine called the *helix*, or screw, for launching ships, according to Athenæus; and a machine called *loculus*, which appears to have consisted of forty pieces, by the putting together of which various objects could be framed, and which was used by boys as a sort of artificial memory. This constant tendency to attribute inventions to Archimedes sufficiently shows the impression which his name left on posterity.

The best edition of the works of Archimedes is that of Joseph Torelli, published by the University of Oxford in 1792. There is a French translation by Peyrard (1809), and a German one, with notes, by E. Nizze (1824).

ARCHIPE'LAGO is the common term given to many clusters of islands. The group generally known by this name, when not qualified by some word prefixed, contains those islands which lie between the shores of Greece and Asia Minor.

ARCHIPELAGO, ALEUTIAN. [ALEUTIAN ISLANDS.]

ARCHIPELAGO, CHAGOS, in the Indian Ocean, extends from 7° 29′ to 4° 40′ S. lat., and from 71° to 77° E. long. It is composed entirely of coral islets, of which Diego Garcia is the largest: they have all very deep water close to them, and are covered with tall cocoa-nut trees. A current generally sets through the group to the N.W.

ARCHIPELAGO, COREAN, an extensive cluster of islands on the western coast of Corea, discovered by the Alceste in 1816. They are all high, rising like mountains from the sea, and are well wooded to the summits. None of them appear to exceed three or four miles in length, but all are in some degree cultivated; the fields are divided by stone walls. From the tops of one of the highest 135 islands were counted, forming a chain of excellent harbours communicating with each other. They appeared to be all inhabited, and the natives resembled those of the mainland of Corea. [COREA.]

ARCHIPELAGO, DANGEROUS, a group of half-formed islets in the South Pacific Ocean, lying eastward of the Society Islands, and between the parallels of 14° and 26° S. They are exceedingly numerous; they are nearly all of coral formation, and consist of narrow ribands of

coral rock generally describing a circular figure, and inclosing a lagoon, in many instances of great depth. Many are inhabited, though evidently not by the same race. Canoes driven off the Society Islands have been the means of peopling some.

ARCHIPELAGO, GREAT CYCLADES. [NEW HEBRIDES.]

ARCHIPELAGO, GRECIAN, includes all the islands situated in the north-eastern quarter of the Mediterranean Sea; they are bounded by the shores of Roumelia on the N., Asia Minor on the E., and the Negropont and Greece on the W., comprising a portion of sea having a length of 380 miles from Candia to the coast of Roumelia, and a breadth, from the Negropont to the Asiatic shore, of 100 miles.

This sea was called by the Greeks and Romans the Ægean Sea, and the islands were distributed into two chief groups, the Cyclades and the Spórades. Of the Cyclades the principal are—Santorin, Anaphi, Stanpalia, Policandro, Sikino, Nio, Amorgo, Milo, Argentiera, Siphno, Paros, Antiparos, Naxia, Serpho, Syra, Rhenea, Miconi, Tino, Thermia, Zea, Jura, and Andros. Of the Sporades the principal are—Piscopi, Nisari, Cos, Calymna, Patmo, Nicaria. There are also on the Asiatic coast the large islands of Samos, Scio, and Psara. Farther to the northward are Lemnos, Imbros, Samothraki, Tenedos, Mitilin, Skyro, and the Skiathos group off the Trikiri Channel. Many of these islands are of volcanic formation; others are composed almost entirely of a pure white marble, of which the Parian, from Paros, where it was formerly most worked, is often mentioned by ancient writers. The productions of the islands are wine, oil, gum-mastic, raisins, figs, silk, honey, wax, olives, and various fruits, especially the lemon and orange: cotton is grown in small quantities on Milo and other islands, and might be cultivated to a great extent; it is remarkable for its brilliant white hue. Some of the larger islands contain sulphur, alum, iron, and other minerals. An extensive sponge fishery has also long been established among the Sporades, which are noted for their fine sponges. The commerce is very limited.

All the islands are thinly peopled, and some indeed may scarcely be considered inhabited. The men are a fine hardy and athletic race, and as their insular position renders them necessarily habituated to the sea, they are generally good sailors. Their religion, like that of their countrymen on the mainland, is of the established Greek church; and as they are very superstitious, almost every point of their islands has its little chapel dedicated to some saint, where the boatmen can offer up their prayers or thanksgivings.

All the islands are high: the mountains have an average elevation of 1500 to 1800 feet, but Mount Elias of Milo rises to the height of 2036 feet above the sea. The climate is more equal and temperate than that of the surrounding continents, the heats of summer being tempered by cool refreshing sea-breezes and prevailing northerly winds; even in the more northern islands the winter is never felt with such severity as on the neighbouring mainland. In winter the navigation of these seas is an anxious task, on account of the numerous islands and rocks, which occasion sudden flaws and eddies of winds, and a short, high, confused sea. A remarkable feature is the very great depth of water: at the distance of less than a mile from the shore there is generally no bottom with 150 to 200 fathoms of line. Throughout the Cyclades more especially, the Dardanelles current is felt, and sets strong through the narrow channels between them; but to the north, along the coast of Roumelia, a kind of back current sets to the eastward.

The rivers that empty themselves into the Archipelago are more deserving of notice from their classical associations than from their magnitude or commercial importance; indeed the south-western shores offer no river navigable even for small boats. The Peneus, Axius, Strymon, Hebrus, Hermus, and Mæander, are the principal rivers. The coasts around the Ægean are deeply indented with gulfs of considerable length, the chief of which are Nauplia, Egina, Egripos, Trikiri Channel (leading to Zeitouni and Tallanda), Salonica, Cassandra, Monte Santo, Contessa, Saros, Adramytti, Smyrna, Scala Nova, Hassan Kalessi, and Boodroon (or Cos). Among the chief mountains in or near the Ægean may be noticed Delphi in Eubœa, the mountains bordering on the coast of Thessaly, Athos, and Elias in the island of Milo.

On the division of the Roman empire the islands formed a portion of the eastern dominion, and continued so till the year 1185, when the Venetians captured Andros, Lesbos, Samos, and Scio. In 1207 most of the islands fell into the hands of a Venetian noble, Marco Sanuto, who designated himself Duke of the Archipelago. The sovereign power remained in his family till the sixteenth century, when the islands fell into the hands of the Turks. After this, the islands were made the scene of many contests between the Turks, the Venetians, and the Knights of Malta.

In 1770, the Russians became masters of some of the Cyclades, which they evacuated by treaty four years afterwards. They remained tributary to the Porte till the breaking out of the revolution in 1821, shortly after which most of them eagerly embraced the cause of liberty, and contributed as much as lay in their power, both by men and ships, to the squadrons fitted out at Hydra and Spezzia. Their intrepid behaviour in their small vessels against the Turkish fleet became the admiration of Europe, and contributed greatly towards the establishment of their national independence.

All the Cyclades are now a portion of the Greek kingdom, but most of the other islands still remain under the Turks. In many of the islands they build vessels; but the construction is slight and not durable.

ARCHIPELAGO, LACCADIVE, a group of low islands, opposite the Malabar coast, and separated from it by a channel 135 miles wide. They are surrounded by and interspersed with coral reefs, which are steep, with no soundings between them. [LACCADIVES.]

ARCHIPELAGO, LOUISIADE. [LOUISIADE ISLANDS.]

ARCHIPELAGO, MALDIVE, in the Indian Ocean, to the S.W. of Ceylon, a chain of innumerable low islands and rocks, extending about 470 miles nearly on a meridian line. The large islands abound in cocoa-nut trees, and are generally inhabited by a race of Hindoos, but most of the other islands are mere barren rocks and sand-banks. The greatest breadth of the range is about twenty leagues; it is formed of large groups or clusters, called by the natives Atolls. The geographical position is from 7° 6′ N. lat. to 0° 40′ S., lat., and from 72° 48′ to 73° 48′ E. long.

ARCHIPELAGO, QUEEN ADELAIDE'S, on the S.W. coast of Patagonia, lies between Lord Nelson's Strait and the northern entrance to the Strait of Magalhaens on the western side. These islands are separated from the main land by an intricate channel, varying from two to five miles in breadth, called Smyth's Channel. They consist of numerous elevated islands with sharp rugged peaks and serrated ridges, separated by narrow and deep passages.

ARCHIPELAGO, RECHERCHE DE L', a very scattered and intricate labyrinth of reefs and islands on the S. coast of New Holland. The largest island does not exceed four miles in length: they are all barren and arid, producing little vegetation, and nothing esculent. The whole are included between 33° 45′ and 34° 0′ S. lat., and 121° 35′ and 124° 4′ E. long.

ARCHIPELAGO, SOLOMON'S, a chain of large islands, E. of New Guinea, between 5° and 11′ S. lat., and 154° and 162′ E. long. Some of them are 60 miles in length; they are very high, and thickly wooded from the summit to the beach; they appear to be but thinly inhabited by different races, some very black and others copper-coloured.

ARCHIPELAGO, SOOLOO, a group of islands, about sixty in number, lying between the S.W. point of Mindanao, and the N.E. point of Borneo, and consisting of some large islands, especially Sooloo, Beca, and Basseelan, with many smaller ones, and coral reefs so numerous as to render the navigation of the group very dangerous. All the islands are subject to a raja, who resides at Sooloo town in the island of Sooloo, which is 30 miles long, 12 broad, and contains about 60,000 inhabitants. The group is comprised between 4°30′ and 7° 0′ N. lat. and 118° 30′ and 122° 30′ E. long.

ARCHITECTURE. The Greek term for architect is ἀρχιτέκτων (*architectōn*), which we find employed by Herodotus (iii. 60) in the same sense as the word *architect* now is: he informs us, that Rhoecus, a Samian, was the *architectōn* or architect of the great temple of Samos. We thus learn from positive testimony, that before the great buildings of Athens were erected, the term architect, and the profession of an architect, were distinctly recognised among the Greeks. But Herodotus also uses the word *architectōn* in the passage just referred to in another sense: he applies it to a person who made a tunnel by which the city of Samos was supplied with water; and this is an instance in which *building*, or *construction*, properly speaking, can hardly be said to have been employed. The great increase in works of this class in modern times has led to new designations, such as that of civil engineer, which we apply to those who construct artificial ports, roads, railways, tunnels, &c.; and though the engineer may often have occasion to *build*, and may also with propriety *decorate*, common usage has placed a determinate boundary between civil engineering and architecture.

Architecture is one of the fine arts, and it is also a constructive art. As one of the fine arts it has its principles, which have been developed in various ways in different countries: as a constructive art its character is determined by the various purposes for which buildings are erected, and by the nature of the materials which are employed.

The subject is treated of under CIVIL ARCHITECTURE, EGYPTIAN ARCHITECTURE, GOTHIC ARCHITECTURE, ITALIAN ARCHITECTURE, MOORISH ARCHITECTURE, NORMAN ARCHITECTURE, and other heads, in this work.

ARCHITRAVE, from a Greek word and a Latin one, meaning, when put together, *the principal beam*, is the lower part of any structure supported by pillars, or the lower beam which rests upon the columns and joins them together, on which the whole entablature (or ornamental part which comes immediately above the columns) rests. When pillars support an arch, the voussoirs supply the place of an architrave, by which name they are sometimes called. In the same way the flat-beam, or row of stones coming immediately above a door or window, is called the architrave.

ARCHIVE, or ARCHIVES, a chamber or apartment where the public papers or records of a state or community are deposited: sometimes, by a common figure, applied to the papers themselves.

The word archive is ultimately derived from the Greek Ἀρχεῖον (*Archeion*). The Greek word *archeion* seems, in its primary signification, to mean 'a council-house or state-house,' or 'a body of public functionaries,' as the Ephori at Sparta. (Aristotle, 'Politic.' ii. 9; and Pausanias, iii. 11.) Others derive the word archive from *arca* 'a chest,' such being in early times a usual depository for records; but this is erroneous.

The Greek word archeion was introduced into the Latin language, to signify a place in which public instruments were deposited. ('Dig.' 48, tit. 19, s. 9.) The word archiva, from which the French and English archives is derived, is used by Tertullian (Facciol. 'Lexic.' Archium et Archivum); thus he speaks of the 'Romana Archiva.' The Latin word for Archeium is Tabularium.

In England the word archives is not used to indicate public documents. Such documents are called charters, muniments, records, and state-papers. [RECORDS.]

ARCHIVOLT, or ARCHIVAULT, means, literally, the *principal turning*, or *arch*, and is applied to any ornamented band or moulding which runs round the lower part of all the voussoirs of an arch.

ARCH-LUTE, a large lute, or double-stringed theorbo, formerly used by the Italians for the

base parts, and for accompanying the voice. This instrument had fourteen notes, the highest whereof was A, the fifth line in the base, the lowest the double G below. It possessed considerable power. It was about five feet in extreme length, and proportionally large in the body. At the commencement of the last century this instrument was much in use. Handel employed it in many of his early operas.

A'RCHON, a Greek word, which signified one who had rule or command, either civil or military. Archon was also the title of certain magistrates of the Athenians.

On the abolition of regal government at Athens, the chief power was intrusted to a single magistrate, or archon. Tradition told of thirteen archons in succession, after whom the chief magistrate was appointed to his office for ten years. Another revolution limited the duration of the office to a single year, at the same time dividing the charge of administration between the chief magistrate and eight others, thus forming a council of state, which consisted of nine magistrates or archons. Hence they are sometimes mentioned by the Greek writers under the general designation of The Nine. Their names and number, and the particular civil duties assigned to them, remained unaltered whilst Athens continued to possess its old constitution; but from the time that the ecclesia, or popular assembly, interfered habitually and directly with the government of the republic, the actual minister of state was the person who enjoyed the confidence of the people, which neither the office of archon nor any other office could procure. The inevitable consequence was, that the archons sunk from ministers of state into municipal officers of high rank. Pericles, without the office of archon, to which it was not his chance ever to attain, enjoyed a degree of power which was not possessed during the freedom of the republic by any other citizen.

The annual archons, to the time of Solon, were taken from the eupátridæ, or nobles. The establishment by Solon of a government in which political power was distributed with reference to property, put an end to the claims of noble blood; but since the archons were by this regulation taken from the wealthiest class of citizens, the noblest families probably still continued chiefly to supply the archons for each year, till the celebrated law of Aristeides, enacted about B.C. 479, threw open the offices of state to the whole body of the people. (Plutarch, 'Aristides,' c. 1—22.)

All that we know of the mode of appointment of the archons is that they were at one time elected, and at some subsequent period appointed by lot. It seems that the poorest citizens declined the hazard of the lot, which might throw upon them a burdensome honour. (Xen. 'Rep. Athen.' 1, 3.)

Of the nine archons, one, usually termed *the* archon, was chief, and had the title of *epónymus* (ἐπώνυμος), or name-giver, because the year in which he served the office was called by his name. Of the remaining eight, one was called the king (βασιλεύς), another the *polemarch*, and the last six had the general title of *thesmóthetæ*. There is reason to believe that the archons were members of the council of Areopagus by virtue of their office. [AREOPAGUS.] It is certain that they passed from their annual magistracy to a permanent seat in that council.

Their public duties had reference for the most part to the administration of justice. In some courts, and in certain causes, they were the presiding judges. On some occasions they had the execution only of the sentence pronounced by other judges; but it seems to have formed a large if not the most considerable part of their legal duties to bring causes into court, to be tried before the proper tribunal. To each of the first three archons, and collectively to the six thesmothetæ, a distinct province and peculiar duties were assigned. The chief archon was the guardian of orphans and minors. He was also charged with a more general superintendence in matters which concerned the safety and good order of the state than was committed to his colleagues.

The king archon was more especially concerned with religious matters. The office of the polemarch was doubtless in its first institution that which the name implies, to command in war; and even as late as the battle of Marathon, B.C. 490, we find the polemarch Callimachus acting an important part in the council of war which preceded it, and commanding in virtue of his office the right wing of the Athenians in the engagement: but, in later times, the polemarch was confined to the cognizance of matters which concerned the strangers and *metics* (resident aliens) at Athens.

The thesmothetæ should, according to the meaning of their title, have been legislators, or propounders of laws. It was not, however, their office to introduce laws, but rather to watch over the conduct of those who put themselves forward as legislators, and also annually to examine the existing laws for the purpose of removing contradictory and superfluous enactments.

ARCHY'TAS, a native of Tarentum, was a contemporary of Plato; but nothing is known of his life, except that he is called a Pythagorean, and that he commanded the troops of his native city for several years. He wrote on mathematics, music, geometry, politics, and ethics. The titles of many of his works are preserved, of which Fabricius ('Bibliotheca Græca,' i. 831), has given a list. Fragments of a work attributed to him, 'On the Good and Happy Man,' and 'On Wisdom,' are extant. A complete collection of the fragments of Archytas was published by I. Gn. Orelli, Leipzig, 1821, 8vo. 'The Political Fragments of Archytas,' &c., translated from the Greek by Thomas Taylor, was published at London, 1822, 8vo.

ARCIS-SUR-AUBE. [AUBE.]

ARCKENHOLZ, JOHN, a Swedish historian, was born in Finland, in 1695; he died in 1777. His works are written in French, and his principal performance is 'Mémoires de Christine, Reine de Suède,' 4 vols. 1751.

ARCOGRAPH. [CYCLOGRAPH.]

AR'COLE, a village in the Venetian States, about fifteen miles S.S.E. of Verona, lies in the midst of a low marshy country, through which the

Alpone flows, a torrent which comes from the mountains near Vicenza, and empties itself into the Adige about three miles below Arcole. The village is only remarkable for being the scene of one of the hardest-fought battles in all the Italian campaigns of Bonaparte. [BONAPARTE, NAPOLEON.]

ARÇON, JEAN CLAUDE D', born at Pontarlier in Franche Comté, in 1733, showed an early inclination for the military profession. He became an expert engineer, and wrote several treatises, among which may be enumerated, 'Correspondance sur l'Art de la Guerre,' and 'Réflexions d'un Ingénieur en Réponse à un Tacticien,' 12mo., Amsterdam, 1773. In 1780, the war of France and Spain against England gave him an opportunity of displaying his talents on a larger scale. The Spaniards were besieging Gibraltar without success, when D'Arçon devised a plan of attack, by means of floating batteries, which were to be incombustible and not liable to sink. This scheme was acted upon, and great expectations were formed, many persons of rank attending to witness the astounding effects of which they were said to be capable. It was however found, to the dismay of the besiegers, that these batteries were not incombustible. The attack was defeated with their utter ruin and great loss. D'Arçon afterwards served in the French army at the time of the revolution, and assisted in the conquest of Holland. In 1795 he published 'Considérations Militaires et Politiques sur les Fortifications,' in which he condensed all that he had previously written on the subject. He was made a senator in 1799, and died the following year at his estate near Auteuil. (Coxe's *Memoirs of the Kings of Spain of the House of Bourbon*; and Drinkwater's *Siege of Gibraltar*, &c., Lond. 1785.)

ARCOT, a considerable district of Hindostan, forming part of the CARNATIC, lies between 11° and 14° N. lat. 78° and 80° E. long. The territory thus named is subdivided into the two districts of northern and southern Arcot; both of which are collectorates in the Madras presidency. Northern Arcot includes Sativaid, Pulicat, Congoondy in the Barramahal, part of the Balaghaut, and part of the western pollams or zemindaries. Southern Arcot includes Cuddalore and Pondicherry. Both districts were ceded to the E. I. Company in 1801 by Azim-ul-Omrah, nabob of the Carnatic. The agriculture of Arcot depends for its prosperity upon irrigation, for which purpose the water is collected in numerous tanks.

The lands throughout the districts are for the most part held by small proprietary cultivators, either in severalty, or in joint village communities. These cultivators pay their proportions of the revenue on the land direct into the treasury of the state, without the intervention of any zemindars or great proprietors, as is the case in a large proportion of Hindostan. The chief rivers of the district are the Panaur or Punnair, and the Palaur or Milk River. The principal trading ports are Cuddalore, Pondicherry, and Portonovo The population in 1831 was, North Arcot 772,968, South Arcot, 553,388; total 1,326,356.

(Hamilton's *East India Gazetteer*; *Parliamentary Report*.)

ARCOT, formerly the Mohammedan capital of the Carnatic is built on the south side of the Palaur, in 12° 54′ N. lat., and 79° 23′ E. long. It is a place of very great antiquity. Since the cession of the district of Arcot to the East India Company the principal defences of the place have been destroyed, and the only use now made of the ramparts is to constitute a defence against the inundations of the Palaur, for which purpose alone they are kept in repair on that side of the city. The town, which is inclosed by walls, is almost entirely of modern erection. It contains the palace of the former nabobs of Arcot; the principal gateway of the palace is entire, but the rest of the building is a heap of ruins. The principal inhabitants are Mohammedans, who speak the Hindostanee dialect. The bed of the Palaur, which is here half a mile wide, is sometimes nearly dry, and at other times so swollen by the rains that its waters would inundate the streets but for the embankments already described. Arcot is 73 miles from Madras, 722 miles from Bombay, 1070 from Calcutta, and 1160 from Agra.

ARCTIC CIRCLE. The term *arctic* is derived from the Greek, and signifies literally *of* or *belonging to the bear*, meaning the constellation of that name. *Arctic circle* had formerly a different signification from that which it now has. Among the Greeks it meant the parallel to the equator which just touches the horizon, being entirely above it, and which therefore separates those parallels which are always above the horizon from those which are partly above and partly below the horizon. Similarly the antarctic circle (if the phrase were used) would be a parallel to the equator which touches the horizon, being entirely below it, and which therefore separates those parallels which never rise above the horizon from those which are partly below and partly above the horizon. Thus every different latitude had a different arctic circle; and in the latitude in which astronomy was first cultivated, the great bear just swept the sea, and did not set, whence the boundary circle obtained its name. In the modern sense of the term it is one fixed circle.

ARCTIC FOX, a small species of fox (*Canis lagopus*), celebrated for the beauty and fineness of its fur, which has long been considered a valuable article of commerce. The colour of the fur, as is the case with all animals which inhabit very high latitudes, varies according to the season, being slaty blue in summer, and pure white in winter. It is in the latter state that the fur is most esteemed, not only on account of its colour, but likewise because it is of a closer and finer quality than at any other time. The soles of the feet also are at all seasons covered with a thick coat of fur, like those of the common hare, which defends them from the severity of the snow, and is a character likewise common to most other northern animals. [FOX.]

A'RCTOMYS. [MURIDÆ.]

ARCTOSTA'PHYLOS, or Bear-Berry, is a genus of plants till lately considered the same as arbutus, from which it is essentially distinguished by its berries containing only from one to five, in-

stead of a great many seeds. The common bearberry, *A. uva ursi*, is found wild in the mountainous parts of England and Scotland, and generally over the whole of the north of Europe. The whole plant is so astringent that it has been employed by the tanner with success, and also in dyeing a greyish black colour; it is no doubt the same property which has made it celebrated for its efficacy in gravelly complaints, and in diseases of the urinary organs.

ARCTU'RUS, or α Bootis, a star of the first magnitude in the constellation Bootes. It derives its name from two Greek words, signifying the tail of the bear, and, though not in the latter constellation, it is very nearly in a right line drawn through the two hinder stars of the tail (ζ and η).

ARCY, GROTTO OF, a singular cavity in a hill in the department of the Yonne in France, about three miles south of the little town of Vermanton. A narrow path over a hill covered with wood conducts to the entrance of the grotto, which contains a number of large apartments, one of which is 1200 feet long, 40 wide, and 85 high; but they rarely rise to the height of 20 feet. In the first two apartments are found large blocks of stone lying on the ground; and in the second there is also a pool about 120 feet in diameter, the waters of which are clear and fit for drinking. The apartments farther in are distinguished by the number and variety of concretions which either hang from the roof (*stalactites*), or rise like columns from the ground (*stalagmites*); they are formed by the water which filters through the over-arching rock, and forms a deposit about the orifice from which it issues, as well as on that part of the ground on which it drops. As the concretions rising from below are exactly under those hanging from the roof, they tend to unite, and many of them have met, and form pillars which appear to support the roof. From the constant increase of these concretions the dimensions of the grotto are daily diminishing, and it has been calculated that in 200 years the whole cavern will be filled with solid alabaster. Some writers describe the grotto as an abandoned stone-quarry, while others ascribe its formation to the action of subterraneous waters. It is acknowledged however that the stone with which the cathedral of Auxerre is built was taken from this place.

ARD, LOCH. [PERTHSHIRE.]

ARDAGH. [LONGFORD.]

ARDEA, the *Heron*, a genus of wading birds, according to Linnæus including not only the true herons, but also the cranes, &c. By modern ornithologists the cranes are formed into a family group termed *Gruidæ*, and the herons into another termed *Ardeidæ*. (Selby's 'Ornithology.') Under this latter family range the genera *Ardea* (Heron), *Botaurus* (Bittern), *Nycticorax* (Night-Heron), *Ciconia* (Stork), *Platalea* (Spoonbill), *Ibis* (Glossy Ibis), and a few others.

For the characters of the genus *Ardea*, see Selby's 'Ornithology,' vol. ii. p. 9. The typical example of this genus is the Common Heron (*Ardea cinerea*, Latham).

ARDEBIL. [PERSIA.]

ARDE'CHE, a department of France, which consists of the former province of Vivarais. It is bounded E. by the Rhone, which separates it from the departments of Isère, Drôme, and Vaucluse, S. by the department of Gard, W. by that of Lozère, and N. W. by those of Haute Loire and Loire. The department extends between 44° 16′ and 45° 21′ N. lat., and between 3° 50′ and 4° 50′ E. long.: its length is 74 miles, and its breadth 44 miles. The area of the department is 2081 square miles: the population in 1841 was 364,416, which gives 175.15 to the square mile, being 7.14 above the average per square mile for all France.

Except a narrow strip along the right bank of the Rhone, the department is almost entirely covered by the Cevennes mountains, the principal chain of which forms the boundary of the department on the N. W. as far as Mont Mézenc, the highest point of the range, the summit of which is 5970 feet above the level of the sea. From Mont Mézenc, a branch called Coyron runs S.E. and ends at the Rhone opposite Montelimart, while the principal chain, which S. of Mont Mézenc is called Tanargue, takes a southerly course, and crosses the western portion of the department; in both of these ranges there are several conical summits and craters of extinct volcanoes. The most elevated portion of the department is north of the Erieux. The range which spreads over this part is called Boutières. It is remarkable for the regularity of its geological structure, and consists of three parallel regions. In the most western of these, including the main ridge of the Cevennes, granite, gneiss, and other primitive rocks prevail: the middle region consists of alternate layers of micaceous freestone, clay-slate, and coal. In the eastern region limestone and chalk prevail. This disposition of the strata has been disturbed S. of the Erieux by the volcanic zone of central France, which, passing through Mont Mézenc, crosses them at right angles, and comprises within it the two ranges of Coyron and Tanargue. The continuation of this zone westward passes through the volcanic region of Haute Loire, Cantal, and Puy-de-Dôme, but towards the S.E. it reaches the chalk, and terminates at the Rhone in the basaltic columns of Rochemaure.

The climate of the department varies with the situation: in the west it is extremely cold; oats and barley ripen with difficulty, and the winter generally lasts eight months. The temperature of the valleys in the north is milder, and in the valley of the Rhone the climate is very hot. The soil, which is generally sandy and light, affords a great variety of productions according to its greater or less elevation. In the sheltered valley of the Rhone the olive is cultivated as far north as the Erieux. Throughout the whole valley of the Rhone, as well as in the higher district, which commences some miles W. of the Rhone and extends as far W. as a line running N. and S. through Joyeuse, the vine and the mulberry flourish. Further W., and at an elevation higher still, there is a district in which beech, oak, and fruit-trees, especially sweet chestnuts, abound. The chestnut forms the ordinary food of the peasantry;

it is grown in immense quantities in the great forests W. of the Ardèche, and is exported under the name of *marrons de Lyon:* in the next higher region the resinous trees, fir, larch, &c. prevail, and on the high table-lands of the main ridge of the Cevennes, where the snow lies for six or eight months, no vegetables but the subalpine plants are found to live.

The high lands of the department contain much pasturage, to which the flocks and herds of the neighbouring departments are sent to graze. Butter and cheese are made in great quantity. Sheep and swine are numerous, as also horned cattle, but these are of inferior breed; mules, ponies, and goats are reared. The inhabitants are laborious and persevering, and in many places make even the mountain sides productive by building terraces to support the soil; this is particularly seen in the neighbourhood of L'Argentière. A considerable part of the grain, however, which is necessary for their consumption, is brought from other departments. The manufacturing industry of the department is important. There are numerous tanneries for shoe and glove leather, paper-mills, cotton, woollen cloth, and silk factories. Great attention is paid to the rearing of silkworms, for the production of raw silk, of which about 700,000 lbs. are brought to market annually. The department contains mines of lead, copper, iron, manganese, antimony, alum, and coal: marble of different colours, gun-flints, porcelain clay, and pumice-stone abound. Particles of gold are found in the Rhone, the Ardèche, the Erieux, and also mixed with antimony in the mines of the commune of Malbosc. There are several mineral springs: those of Vals, near Aubenas, and St. Laurent-les-Bains in the west of the department, are the most frequented. There is an intermittent fountain near Boulègne, which remains without flowing for periods of ten, fifteen, twenty, and sometimes twenty-five years, and then flows for one month, sometimes for three or six months. There are a great number of natural curiosities in the department, such as grottoes, prismatic rocks, basaltic columns, and craters of extinct volcanoes.

The rivers of the department run from W. to E., with the exception of the Loire and the Allier, which rise in the south-western slopes of the Cevennes and flow to the N.W. They are the Ardèche, with its affluents the Baume and the Chassezac, the Erieux, the Doux, and the Cance. The Ardèche rises in the range of Tanargue, and falls into the Rhone near Pont-Saint-Esprit, after a course of about 65 miles, the lower part of which separates the departments of Ardèche and Gard, and is navigable. The upper course of the Ardèche is diversified by several fine cascades; below Vallon the river has cut its way through the marble rock, leaving a natural bridge (Pont-de-l'Arc) 196 feet wide between the abutments, and 98 feet high. The arch, which crosses the river obliquely, consists of a mass of grey marble about 50 feet thick; it was formerly fortified, and formed the usual passage between the Cevennes and Vivarais, till the time of Louis XIII., who demolished the fortifications, and made the bridge almost impassable. The Erieux rises north of Mont Mézenc, and falls into the Rhone after a course of 36 miles: it divides the department into two districts, which are still called Haut Vivarais and Bas Vivarais, the former north, the latter south of the Erieux. The Doux and the Cance are north of the Erieux; they also rise in the Cevennes, and fall into the Rhone.

The department is divided into three arrondissements, which, with the number of cantons, communes, and population in each are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Privas	10	107	116,159
L'Argentière . .	10	104	108,838
Tournon . . .	11	124	139,419
Total. . .	31	335	364,416

In the arrondissement of Privas the chief town is Privas, which is also the capital of the department. It stands on a hill between the Ouvèze and the Mezayon, two small streams which unite below the town, in 44° 42′ N. lat., 4° 35′ E. long., 382 miles S.S.E. of Paris by the road through Lyon and Valence: population 4797. There are in the town a tribunal of first instance, several government offices, an old castle, a reformed church, a public library, and an agricultural society. The convent of the Recollet monks is now used partly as a court of justice and partly as a barrack. Privas is the centre of a district in which much silk is grown, and it contains several silk mills and tanneries: there are coal mines in the neighbourhood. The other towns are—Aubenas, on the right bank of the Ardèche; population 4889; it is the centre of a considerable trade in raw and manufactured silk, sweet chestnuts, and wine; woollen cloth, handkerchiefs, and white leather are manufactured, and there are above sixty silk mills in the neighbourhood: Bourg St. Andéol on the right bank of the Rhone; population 4535, which has some silk factories, and a brisk trade in corn, wine, oil and silk; a suspension bridge of three curves is thrown across the Rhone at this place: Chomérac, which stands in a valley entirely planted with mulberry trees, and contains several mills for reeling and throwing silk; population 2595: Entraigues or Antraigues, 11 miles W. of Privas, built on a platform of gneiss; there is a paper factory in the town, and in the vicinity is the volcanic cone and crater 'la Coupe d'Ayzac:' Rochemaure, which is built at the base of a basaltic hill on the right bank of the Rhone; there are two remarkable craters near this town: Teil, on the right bank of the Rhone; population 2394; a suspension bridge joins this place to Montelimart: Villeneuve-de-Berg, 14 miles S.S.E. of Privas, in the neighbourhood of which a large quantity of silk is produced; there is an obelisk in the town to the memory of Olivier de Serres, a native of the place, who first introduced the mulberry into France: Viviers, an episcopal town on the right bank of the Rhone, population 2708; it was formerly the

chief town of the province of Vivarais, and stands in a district covered with vineyards and plantations of the olive and mulberry; the cathedral and the ecclesiastical seminary are the chief public buildings; there is an observatory in the town, which has also woollen cloth and silk factories, and a good trade in corn, silk, and wine: and La Voulte, E.N.E. of Privas, the old castle of which, formerly the possession of the house of Ventadour and residence of Louis XIII., is now occupied by an iron company, which has four large furnaces here and two steam engines; the iron mines in the neighbourhood abound in very rich ore; there is a reformed church in the town; population 2459.

In the arrondissement of L'Argentière the chief town is L'Argentiere; population 3088: there is a tribunal of first instance, and some silk factories, tanneries, and rope walks in the town; the lead mines of the neighbourhood, which formerly produced a considerable quantity of silver also, are now abandoned; the environs of this town present a great number of natural curiosities, the result of volcanic action. The other towns are — Burzet, Montpezat, two small places W. of Aubenas, which are surrounded by splendid volcanic scenery: Thueyts, on the left bank of the Ardèche, which is lined for a mile below this town with colonnades of basalt; population 2841: Joyeuse on the right bank of the Baume, at the foot of the Tanargue chain; it has some trade in silk, cattle, wax, and woollen cloth: Vallon on the Ardèche, and near the Pont de l'Arc; population 2637; there are coal mines, and several grottoes containing stalactites near the town: Les Vans, near the Chassezac, which has some manufactures of coarse silk: Vals, on the little river Volane, which here flows between rows of basaltic columns; the town contains tanneries, and silk and paper mills; there are mineral waters in the neighbourhood, which are much frequented: St. Etienne-de-Lucdarès, N.W. of L'Argentière; population 1892: and Mayres on the Ardèche, in which serges and woollen stuffs are manufactured; there is a steam saw-mill in the town; population 2481.

In the arrondissement of Tournon the chief town is Tournon, on the right bank of the Rhone, 25 miles N.N.E. of Privas; population 4740. An iron-wire suspension bridge, the first erected on a large scale in France, joins the town to Tain on the left bank of the Rhone. Tournon has manufactures of leather and silk, and a considerable trade in broad-cloth, wine, timber, and sweet chestnuts. There is a tribunal of first instance, a college, and several government offices in the town. The college is the most remarkable building in the town; it was formerly a military school of high repute. On a rock close to the town stands an old castle of the dukes of Soubise, which is now used as a prison. The other towns are— St. Agrève, W. of Tournon; population 2485: Annonay, the largest town in the department; population 10,400; it is built in the rocky gorges of the Cance and the Déome, which unite in the centre of the town; there are numerous establishments for the manufacture of kid and lamb skins for glove leather, the annual value of which amounts to 6,000,000 francs; there are also several silk mills, and paper factories which produce the best paper in France; the value of the paper made here is stated to be 3,000,000 francs a year; the production of white silk for the manufacture of blondes and tulles has rapidly increased of late years; in the Grande Place an obelisk has been erected to the memory of the brothers Montgolfier, inventors of the air balloon, who were natives of the town: La Mastre, on the right bank of the Doux, which has a reformed church; population 2423: St. Péray, seven miles S. of Tournon, population 1040; it stands in a narrow valley, the sloping hills on each side of which are entirely covered with vineyards, famous for the growth of some of the best white and red wines of France: Serrières, N.E. of Annonay, on the Rhone, over which there is here a wire suspension bridge: and Vernoux, midway between Privas and Tournon; there is a reformed church in this town, which is the centre of a large woollen cloth manufacture.

The department is in the diocese of Viviers, and within the jurisdiction of the Cour Royale, and of the University Academy of Nîmes; it returns three members to the Chamber of Deputies, and is included in the 9th military division, of which Montpellier is head-quarters.

(*Géographie Universelle;* Balbi; *Dictionnaire de la France.*)

ARDEE. [Louth.]

ARDEN, the name of one of the most extensive of the ancient British forests, is said to have reached from the banks of the Avon to the Trent on the N., and to the Severn on the W.; and to have been bounded on the E. by an imaginary line from Burton-upon-Trent to High Cross, the point of intersection of Watling Street and the Foss-way on the border of Warwickshire and Leicestershire. On the division of England into shires, this great tract of forest was divided among different counties, and only that part which was included in Warwickshire retained the name of Arden. Though there is no longer a continuous forest in this district, it is still the best wooded part of Warwickshire, affording plenty of timber of almost all kinds, especially oak. Several places preserve the name, as Henley-in-Arden, Hampton-in-Arden, &c.

ARDENNES, the name of a great forest and hilly region, which commences in the French province of Hainaut, now included in the department of Nord, and extends across Picardy, Champagne, and Luxembourg, as far as the Moselle. In the time of Julius Cæsar, who calls it *Arduenna Sylva* ('Bell. Gall.' v. 6), it extended to the Rhine. The region of the Ardennes is intersected by a great number of valleys and deep narrow gorges. The prevailing rocks are clay-slate, grauwacke, conglomerate, quartz, and sandstone. There are rich iron mines towards the western part of the region. The surface is in general barren, and in many places there are extensive marshes, locally called *fagnes*. The forest timber is chiefly oak and beech; alder, ash, birch, are more rare; pines and firs occur but seldom. (*Dictionnaire Géographique de la France.*)

ARDENNES, a department of France which consists of the northern part of the former province of Champagne, is bounded N. by the kingdom of Belgium, E. by the department of Meuse, S. by that of Marne, and W. by that of Aisne. The department lies between 49° 13′ and 50° 10′ N. lat., and between 4° 5′ and 5° 21′ E. long. Its length is 63 miles, and its breadth 60 miles. Its area is 1997.7 square miles. The population, in 1841, was 319,167, which gives an average of 159.76 to the square mile, being 8.23 below the average per square mile for all France.

The department takes its name from the forest region above described, which crosses its northern part. Another chain of hills, extending from the Vosges Mountains, crosses it from S.E. to N.W. This ridge fills the space between the Aisne and the Meuse, and takes the name of Argonne as it approaches Mézières, below which it joins the table-land of Rocroi. That portion of the department N. of Fumay which projects into Belgium is calcareous, and contains grey marble and some veins of lead and iron ore. To the S. of this a district, which includes Fumay and Rocroy, crosses the department from E. to W., and consists chiefly of slate, in which flint, quartz, granite, and pudding-stone occur, but no metals. The south-western portion of the department belongs to the great chalk formation of Aisne and Marne. Between the chalk and the clay-slate districts extends the region of fossiliferous rocks, which is generally coincident with the range sent out from the Vosges Mountains: in this part good building stone, plaster of Paris, and abundant deposits of iron ore are found. South of the Aisne the surface consists of high plains, which are bare of trees; the more northern parts are hilly and generally well wooded, but there are extensive barren heaths in some parts.

The forests of the department, which are extensive, are a source of considerable wealth: the most common trees are oak, beech, elm, maple, ash, and birch. There are extensive downs which yield excellent pasture, especially in the chalk district. The best arable land is in the valleys of the centre of the department, and in the valley of the Aisne, which is one of the best corn-growing districts in France, and also produces excellent wine. Great numbers of horses are bred, which are serviceable for the army as well as for the farm. Sheep are numerous, and noted for the sweetness of their flesh and the fineness of their wool. The principal manufactures of the department are ironmongery of all kinds, broad cloth, cashmere shawls and other woollen stuffs, shoe and white leather, hosiery, coarse linen, and hats; there are also several glass-works, iron-furnaces, and brass-foundries. Coal, iron, slate, porcelain clay, and sand used in the manufacture of plate-glass, are found. The navigation of the Meuse, which is much facilitated by the Sedan Canal that runs along its banks, contributes greatly to the activity of the trade of the department, which consists of its mineral and manufactured products, together with corn, sheep, and wool.

The chief rivers are—the Meuse, which drains the N.E. of the department and is navigable for steamers from Sedan [MEUSE]; it receives on the right the Chiers and the Sémoy, on the left the Bar, the Vence, and the Sermonne. The Aisne, which, crossing the S.W. of the department, receives on the right the Aire and the Vaux, on the left the Retourne: the Ton and the Serre, which fall into the Oise on its left bank, take their rise in the N.W. of the department. The canal of Ardennes establishes a communication between the Meuse and the Aisne; it commences at Chêne-le-Populeux, on the Bar, which is navigable from this place to the Meuse, and joins the Aisne near Château-Porcien; its whole length being about 25 miles.

The department is divided into five arrondissements, which, with the cantons, communes, and population in each, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Mézières . . .	7	110	73,376
Rocroy	5	68	68,487
Rethel	6	124	49,338
Sedan	5	93	66,027
Vouziers . . .	8	142	61,439
Total . .	31	537	319,167

In the arrondissement of Mézières the chief town is Mézières, which is also the capital of the department. It stands on the Meuse, which here makes a considerable bend, and washes the city on the N. and S., in 49° 45′ N. lat., 4° 43′ E. long., 144 miles N.E. of Paris, by the road through Soissons and Rheims. The town has a population of 4905, and is strongly fortified; it contains three churches, an hospital, an arsenal, and a theatre, and has manufactures of leather and edge-tools. This place was successfully defended by Bayard, against an Austrian army of 40,000 men, in 1520. The other towns are—Charleville, also on the Meuse, at a distance of only 1 mile from Mézières, with which it is connected by an avenue and a suspension bridge; population 9875; the town is well built, and contains a tribunal of first instance, a college, and a public library of 22,000 volumes; the chief manufactures are fire-arms, hard-ware, and nails; there are also soaperies and brass-foundries in the town, which has a good dock on the Meuse, and is the principal mart for the agricultural produce of the department: Monthermé, 6 miles N. of Charleville, on the left bank of the Meuse; population 1976; glass, bricks, and pottery are manufactured here, and in the environs there are extensive slate-quarries: Omont, 10 miles S. of Mézières, near which there are iron mines: Renwetz, N.W. of Charleville, which has considerable manufactures of hosiery: and Signy-l'-Abbaye or Signy-le-Grand, on the Vaux; population 3141; there are iron-foundries and cloth factories in this place, and slate-quarries and extensive nursery grounds near it: the town has its distinctive names from the large Cistercian abbey which it formerly contained.

In the arrondissement of Rocroy the chief town is Rocroy, a fortress 15 miles N.N.W. of Mézières and 5 miles W. of the Meuse; population 3780.

The town stands in a large plain, in which the great Condé gained the famous victory of Rocroy over the Spaniards, May 19, 1643; there is a tribunal of first instance and an hospital in the town, which has manufactures of tin and mechanical tools. The other towns are—Fumay, prettily situated on a holm on the left bank of the Meuse, and overhung by rocks 130 feet high, which are called 'Les Dames de la Meuse;' the district about the town abounds with slates of the best quality, many millions of which are annually exported by the Meuse to Belgium and Holland; population 2903: Givet, a fortress of the first class, on the Meuse, which consists of Givet-St-Hilaire and Charlemont on the left bank of the river, and Givet-Notre-Dame on the right; these are joined by a bridge and all lie within the line of the fortifications; the town, the entire population of which is 5689, is well situated for trade, and is famous for its manufacture of leather; glue and earthenware are also made here, and there are several breweries and a brass-foundry: Rumigny, a small place S.W. of Rocroy, which was the birthplace of the astronomer La Caille: and Signy-le-Petit, 12 miles W. of Rocroy, at which there are iron works, iron mines, and slate quarries; population 2286.

In the arrondissement of Rethel the chief town is Rethel, which stands on the slope of a steep hill on the right bank of the Aisne, 29 miles S.S.W. of Mézières; population 7413. The town, which was the capital of the former district of Rethelais, is an ancient place, and is entered by three old gates, it has several suburbs, one of which, Les Minimes, is on the left bank of the Aisne, and is joined to the town by a wooden bridge. The streets are wide, but steep; there is a tribunal of first instance, a college, an hospital, a theatre, four churches, two prisons, and two squares, in one of which stands the Halle or corn-market. This busy place is largely engaged in the woollen manufactures; it contains also several tanneries, breweries, and iron-foundries. The environs are fertile, yielding good pasturage and timber, and contain stone quarries and iron mines. The other towns are—Asfeld-la-Ville, 12 miles W.S.W. of Rethel, on the Aisne; population 1221: Château-Porcien, on the right bank of the Aisne, which here forms an island on which part of the town is built; population 2463; it has some tanneries and woollen manufactures: Chaumont-Porcien, N.W. of Rethel, which has manufactures of linen and serge; population 1100: and Juniville, on the Retourne, in which large horse and cattle fairs are annually held; population 1460.

In the arrondissement of Sedan the chief town is Sedan, a fortress on the right bank of the Meuse, which commands the entrance into France from Luxembourg; it is also a thriving manufacturing town, and has a population of 14,750. Sedan is 160 miles N.E. of Paris, by the road through Soissons and Rheims, 49° 42′ N. lat., 4° 57′ E. long.; it contains tribunals of first instance and of commerce, a college, an arsenal, five churches, one of which is Calvinistic, a foundling hospital, and a public library. It has been long famous for its fine broad cloths, and especially for its fine blacks. The total yearly value of this manufacture is set down at 16,000,000 francs. The environs are studded with factories and workshops, engaged in the woollen trade; there are also several iron-works, tanyards, and dyehouses. A canal has been cut from the Meuse above the town, and carried through the outer ditch of the fortifications into the same river below the town; it has a small dock for boats and sluices at each end. The other towns are—Carignan, a small place, 12 miles E. of Sedan; population 1792: Donchery, 3 miles W. of Sedan, on the right bank of the Meuse, and near its junction with the Bar; the town, which is in shape a square and is fortified, contains an hospital and large cavalry barracks, and has manufactures of ironmongery, serge, linen, and lace; population 2032: Mouzon, on the right bank of the Meuse, population 2641; the town is ancient, and the parish church is one of the largest and finest ecclesiastical buildings in the department; it has manufactures of woollen cloth and sole-leather, and some trade in honey, corn, hay, and wine: Raucourt or Rocourt, 5 miles S. of Sedan, which has manufactures of hardware and ironmongery; population 1505.

In the arrondissement of Vouziers the chief town is Vouziers, 33 miles S. of Mézières; it stands in a fertile district, on the Aisne, and has some trade in corn and wine; population 2410. There are also iron-foundries here, and hurdle and basket-making gives employment to many people in the district. The other towns are—Attigny, on the left bank of the Aisne, which was one of the summer-residences of the ancient kings of France: Buzancy or Barles, a small place E. of Vouziers: Grandpré, on the right bank of the Aire, and near its junction with the Aisne; population 1456; the town stands in a very fertile district, and has extensive tileworks; a vein of silver ore has been discovered in the neighbourhood: Machault and Monthois are small places W. of Grandpré.

The department belongs to the diocese of Rheims, and is under the jurisdiction of the Cour Royale and University Academy of Rheims; it returns three members to the Chamber of Deputies, and is classed with the 2nd military division, of which Metz is the head quarters.

(*Géographie Universelle;* Balbi, *Géographie; Dictionnaire de la France.*)

ARDFERT. [Kerry.]

ARDGLASS. [Down.]

ARDOCH, the name of a quoad-sacra parish in Perthshire, Scotland, in which are the remains of a Roman station and three Roman camps, perhaps more perfect than any others in Great Britain. The whole space fortified by the Romans at Ardoch consists of four encampments—the station, the procestrium, the great camp, and the less camp.

The station was a permanent camp, situated on an eminence 50 feet higher than the little river Knaik, which flows past it on the west, and close to the military road from Stirling to Crieff, which passes between the station and the river. The station was defended by two ditches on the west, by a deep morass and two ditches on the

south, and by five ditches and six ramparts on the east and north. The form was, as usual, a parallelogram, and, within the intrenchments, was 420 feet by 375 feet, having the four sides facing the four cardinal points of the compass. The prætorium, or general's quarters, is a square, each side of which is 60 feet; it is not far from the centre of the camp, but not in the centre, and its sides are not parallel to the sides of the camp. It is somewhat above the general level of the ground, and appears to have been surrounded by a stone wall. Three of the four gates of the camp are still plainly distinguishable, but the fourth is hardly traceable. The prætorian gate crosses the northern lines of entrenchment in an oblique direction. This camp would accommodate about 1200 men. Sir William Stirling, a former proprietor, enclosed the whole of this camp with a stone wall, in order to protect it from injury by ploughing or other means, and this wall still remains.

Adjacent to the station, on the north side, is the procestrium, or procastrum, which was an encampment in addition to the station, and seems to have been strongly fortified. The intrenchments have been mostly levelled by the plough, but the south gate, which connected it with the station, is still to be seen, as well as fragments of the north gate, and other portions. This encampment was 1600 feet by 900 feet, and capable of accommodating about 4000 men.

North-west of the procestrium is the great camp, a parallelogram 2800 feet by 1950 feet, and capable of accommodating 26,000 men. General Roy is of opinion that in this camp Agricola assembled his great army previous to dividing it into three bodies in order to attack the Caledonians under Galgacus.

On the west side of the great camp is the less camp, 1910 feet by 1340 feet, and capable of accommodating 12,000 men. One-half of this camp extends into the area of the great camp, and was obviously a later work. It is on higher ground. The north side and parts of the east and west sides yet remain.

In this part of Scotland are the remains of two other Roman stations, but neither of them are so perfect as that at Ardoch. One of them is at Strageath, on the river Earn, about 6½ miles N.N.E. of Ardoch; and between this and Ardoch, about 2½ miles from the latter, is a small post called Kaim's Castle, supposed to have been a look-out for both stations, the remains of which are very perfect.

The other station, of which only slight vestiges remain, is in the neighbourhood of West Dealgin Ross, near the junction of the rivers Ruagh Huil and Earn, about 8¼ miles N.N.W. from Ardoch, and 8⅛ W.N.W. from Strageath. Near it are the remains of a small temporary camp, of which great part of the intrenchments and the four gates (which are covered in a manner exceedingly curious) remain entire. This station General Roy supposes to be the Victoria of Richard of Cirencester, and the camp that of the ninth legion, which was attacked by the Caledonians in the sixth campaign of Agricola.

(Roy's *Military Antiquities of the Romans in North Britain;* Sir John Sinclair's *Statistical Account of Scotland; New Statistical Account of Scotland.*)

ARDROSSAN. [AYRSHIRE.]

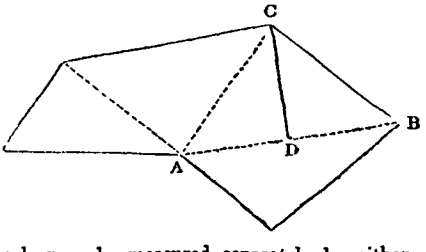
ARDWICK LIMESTONE, a calcareous bed or series of beds containing shells and fish remains, in the upper part of the coal formations of Manchester and Lebetwood. There is a coal-bed above it at Manchester.

ARE, the modern French measure of surface, forming part of the new decimal system adopted in that country after the revolution. It is obtained as follows:—the metre or measure of length, being the forty-millionth part of the whole meridian, as determined by the survey, is 3·2809167 English feet; and the *are* is a square, the side of which is 10 metres long. The hectare is generally used in describing a quantity of land. It is 2·4711695 English acres, or 404⅞ hectares make 1000 acres.

A'REA. This term is a Latin word, and means the same thing as *superficies* or *quantity of surface*, but is applied exclusively to plane figures. The word is also applied to signify any large open space.

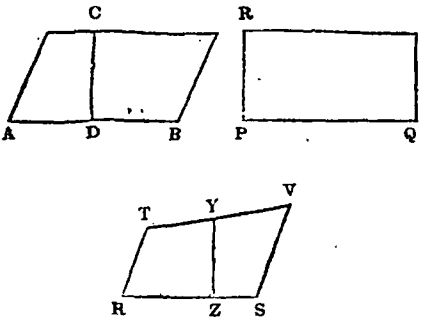
The measuring unit of every area is the square described upon the measuring unit of length: thus, we talk of the square inches, square feet, square yards, or square miles, which an area contains.

Any figure which is entirely bounded by straight lines may be divided into triangles, as in the adjoining diagram. The area of every tri-

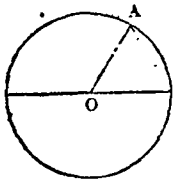


angle may be measured separately by either of the following rules; in which the word in italics may mean inches, yards, miles, or any other unit, provided only that it stands for the same throughout. 1, Measure a side, A B, of the triangle A B C, and the perpendicular C D which is let fall upon it from the opposite vertex, both in *units*. Half the product of A B and C D is the number of square *units* in the triangle A B C. Thus, if A B be 30 yards, and C D 16 yards, the triangle contains 240 *square* yards. 2, Measure the three sides, A C, C B, B A, in *units*; take the half sum of the three, from it subtract each of the sides, multiply the four results together, and extract the square root of the product; this gives the number of square *units* in the triangle. For instance, let the three sides be 5, 6, and 7 inches; the half sum is 9; which, diminished by the three sides respectively, gives 4, 3, and 2: 9, 4, 3, 2, multiplied together, give 216, the square root of which is 14·7, 14⅞ very nearly. The triangle, therefore, contains about 14⅞ *square* inches.

The following rules may be applied in B, lowing cases:—For a parallelogram, multiply A



a side, by C D, its perpendicular distance from the opposite side;—for a rectangle, multiply together adjoining sides, P Q and P R;—for a four-sided figure, in which R T and S V are parallel, but T V and R S converge, multiply R S, one of the converging sides, by Y Z, its perpendicular distance from the middle point of the other. When R T and S V are perpendicular to R S, then Y Z is half the sum of R T and S V.



To find the area of a circle, multiply the radius O A by itself and the result by 355; then divide by 113. In all these cases, the result is in the *square* units corresponding to the *linear* units in which the measurements were made.

The area of a curvilinear figure can only be strictly found by mathematical processes too difficult to be here described.

The investigation of the area of a curve was formerly called the *quadrature* of the curve (*quadratum*, a square), because, before the application of arithmetic to geometry, the most convenient method of representing an area was by giving the square to which it is equal.

ARE'CA, a genus of palms containing two remarkable species:—

Areca catechu is described by Dr. Roxburgh as being the most beautiful palm in India, with a remarkably straight, high, smooth trunk. It is cultivated all over India for the sake of its nuts, which, under the name of pinang or betel nut, are so universally chewed in the East Indies. It has an austere and astringent flavour, and is not eatable alone; but mixed with lime, and with the leaf of the betel pepper, it becomes milder and pleasant.

Areca oleracea, or the *cabbage palm*, is found in great abundance in the mountainous parts of Jamaica and other West India Islands, growing to the height of from one to two hundred feet, with a trunk not more than six or seven inches in diameter. The leaves at the top, which form what is called the cabbage, are considered a great delicacy, either raw or boiled. The nuts, which are about the size of a filbert and covered with a yellowish skin, are white and sweet. The trunk when felled and exposed to the air quickly rots in the centre, and becomes a natural hollow cylinder, which, on account of the hardness of its outside, forms a very durable water-pipe, often as much as a hundred feet long, and is said to become, when buried, almost as hard as iron.

AREMBERG is a considerable duchy close upon the Dutch frontier: it consists of the sovereignty of Meppen, in the Hanoverian dominions; and of Recklinghausen, another sovereign domain in the circle of Münster, within the Prussian province of Westphalia. The extent of this duchy is 1019 square miles; the amount of its population is 82,413, and its yearly revenue is estimated at 64,000*l*. Meppen, which fell to the house of Aremberg in 1803, and became part of the French empire in 1810, being afterwards made over to Prussia, was relinquished by that power in favour of the King of Hanover in 1815, when it was erected into a duchy, with a seat in the Upper Chamber of the Hanoverian states. It is a most cheerless, sterile tract, and consists of an extensive plain, in which heath alternates with morass; the area contains 722 square miles, and the population is 39,244. This inhospitable region is traversed by the Ems in the west, and the Hase, which flows into the former, in the south; it is also watered by the North and South Ratte, the first running into the Ems, and the second into the Hase. The climate is temperate, but moist, gloomy, and variable. The districts where rye and buckwheat are grown do not produce half enough for the wants of the inhabitants; the growth of flax also is much less than adequate to their consumption. The principal source of profit is the breeding of horned cattle, sheep, and bees. The chief town, Aremberg, lies at the confluence of the Hase and Ems, about 10 miles N. of Lingen; it has a grammar-school, soap and succory manufactories, two churches, an hospital, bleaching grounds, and some external trade. The population is 2500. Haselüne, on the Hase, is the seat of the ducal court of justice, and manufactures agricultural implements; it has a convent, and about 1780 inhabitants.

The circle of Recklinghausen is situated in the government-circle of Münster, in the Prussian province of Westphalia, and is bounded S. by the circle of Arnsberg and Düsseldorf, and W. by Cleves. Its superficial extent is 297 square miles, and the population is 43,169. The face of the country is a plain intersected with gentle eminences; the Lippe traverses it, and its western districts are watered by the Emster. The soil is strong and fertile; the people depend chiefly upon agriculture and the breeding of cattle, though they are also employed very generally in making yarn and linen. It produces iron, freestone, turf, and coals. Recklinghausen, on the Lippe, is the chief town; it lies at the foot of the Hard, the highest spot in the circle, and is about 50 miles N.E. of Cologne. It has a ducal residence, two churches, an asylum for females of noble birth, some linen manufactories, and a steel-work; population 2450. The other towns of note in this circle are—Dorsten, population 2800: and Buer, which, with

its dependencies, contains above 4000 inhabitants. The latter includes the iron-works of St. Antonie, which are among the most considerable in Westphalia, producing about 600 tons a year.

ARENG is the botanical name of one of the palms that produce sago, and from which palm-wine is obtained. The only species, *Areng saccharifera*, is described as a plant of an ugly appearance, having a trunk twenty or thirty feet high, covered almost entirely with coarse black fibres, resembling horse-hair. This palm is found in all the islands of the Indian Archipelago, in moist and shady ravines through which rivulets find a course; it is much used for the sake of its sap, which flows in great abundance from the wounded branches of the inflorescence about the time when the fruit is forming. A bamboo bottle is tied to the extremity of an amputated branch, and removed twice a day, morning and evening. A single tree will yield a large quantity of this fluid, which, when first drawn from the tree, is transparent, with the taste and colour of new wine: after a short time it becomes turbid and milky, and acquires a slight degree of acidity. When fit for drinking it is of a yellowish colour, with a powerful odour and a good deal of astringency. The taste is disagreeable to those who are not accustomed to it. It is exceedingly intoxicating; but, if drunk in moderation, is said to be stomachic and wholesome. The coarse fibres of the stem and leaf-stalks are manufactured into powerful cables, and the trunk contains a great quantity of a nutritious meal like sago.

ARENSBURG, the capital of a circle in the island of Oesel, at the entrance of the Gulf of Riga, and within the limits of the Russian government of Livonia. It lies on the Peddus, a small river on the S.E. side of the island, and has a harbour, but this is so shallow that loaded vessels, unless very small, are compelled to anchor about 5 miles below the town. The town contains a Russian and a Lutheran church, a town-hall, public school, and hospital, and 1500 inhabitants.

AREO'PAGUS, COUNCIL OF, a council at Athens, so called from the hill of that name, on which its sessions were held; it was also called the Council Above, to distinguish it from the Council of Five Hundred, whose place of meeting was in a lower part of Athens, called the Ceramicus. Its authentic history commences with the age of Solon, who so completely reformed its constitution, that he received, as Plutarch says, from most authors, the title of its founder. The Council was composed of the archons of the year and of those who had borne the office of archon. The latter became members for life: but before their admission they were subjected to a rigid scrutiny into their conduct in office and their morals. It is probable that the accounts which limit the number of the members are applicable only to an earlier period of its existence. Modern histories of this council do not commonly give the actual archons a seat in it. They are, however, placed there by Lysias the orator. ('Areop.' p. 110, 16–20.) As a court of justice, the Areopagus had direct cognizance of the more serious crimes, such as murder. It exercised a certain control over the ordinary courts, and was the guardian generally of the laws and religion. It interfered, on some occasions, with the immediate administration of the government, and at all times inspected the conduct of the public functionaries. But in the exercise of its duties as public censor for the preservation of order and decency, it had very great powers.

By the regulations of Solon, the archons were chosen from the highest of the four classes into which he had divided the citizens, and of the archons the council of Areopagus was formed. This permanent body, which possessed a general control over the state, was composed of men of the highest rank, and doubtless in considerable proportion of Eupátridæ, or nobles by blood. The strength of the democracy lay in the *ecclésia*, or popular assembly, and in the ordinary courts of justice, of which the *dikasts*, or jurors, were taken indiscriminately from the citizens; and the council of Areopagus exercised authority directly or indirectly over both. The tendency of this institution to be a check on the popular part of that mixed government of Solon, is noticed by Aristotle. ('Polit.' ii. 9, and v. 3, ed. Schneid.)

The council, from its restoration by Solon to the time of Pericles, seems to have remained untouched by any direct interference with its constitution. But during that interval the election of the chief magistrates by suffrage was exchanged for appointment by lot, and the highest offices of state were thrown open to all the people. About B.C. 459, Pericles abridged the authority of the council, and broke its power. (Aristotle, 'Polit.' ii. 9; Diodorus, xi. 77.) Plutarch, who has told us more than others ('Cim.' c. 15; 'Pericl.' c. 7), says only that he removed from its cognizance the greater part of those causes which had previously come before it in its judicial character, and that, by transferring the control over the ordinary courts of law immediately to the people, he subjected the state to an unmixed democracy. Among the causes withdrawn from its cognizance those of murder were not included.

Pericles was struggling for power by the favour of the people, and it was his policy to increase the business of the popular courts, by which he conciliated his friends and strengthened their hands. The council possessed originally some authority in matters of finance, and the appropriation of the revenue. In later times the popular assembly had the full control of the revenue, and the administration of it was in the hands of the popular council, the senate of Five Hundred. It seems that, at first, the Areopagites were invested with an irresponsible authority. Afterwards they were obliged, with other public functionaries, to render an account of their administration to the people. (Æschines, 'Contr. Ctes.' p. 56, 30.) Both these changes may with some probability be attributed to Pericles. After all, the council retained a large portion of its former dignity and very extensive powers. The change operated by Pericles seems to have consisted principally in this: from having exercised independent and paramount authority, it was made subordinate to the *ecclesia*.

The Areopagites exercised some power similar

to the Roman Censorship. It is said that they paid domiciliary visits, for the purpose of checking extravagant housekeeping; that they called on any citizen at their discretion to account for the employment of his time (Plutarch, 'Sol.' c. 23), and the like. Athens, in the prosperity which she enjoyed during the last fifty years before the Peloponnesian war, might have tolerated the existence but certainly not the general activity of such an inquisition.

In the time of Isocrates, when the scrutiny had ceased or become a dead letter, and profligacy was no bar to admission into the council, the moral influence of the Areopagus was still an effectual restraint on the conduct of its own members. (Isocrates, 'Areop.' p. 147.) Under the Romans it retained some formal authority, and Cicero applied for and obtained a decree of the council, requesting Cratippus, the philosopher, to sojourn at Athens and instruct the youth. (Plutarch, 'Cic.' c. 24.)

Some commentators on the New Testament have placed St. Paul as a defendant at the bar of the Areopagus, on the strength of a passage in the Acts of the Apostles (xvii. 19). The apostle was indeed taken by the inquisitive Athenians to the hill, and there required to expound and defend his new doctrines for the entertainment of his auditors; but in the narrative of Luke there is no hint of an arraignment and trial.

AREQUIPA, Province. [PERU.]

AREQUIPA, one of the largest and finest cities of Peru, is situated in a high and very fertile plain, about 35 miles from the coast. The town has a population of 35,000; it is a bishop's see, and contains a cathedral, two convents, four colleges, and a hospital. A handsome bridge is thrown over the Chile, which runs through the city, and, being let off in sluices, irrigates the country; it is also conducted through the streets by canals. A bronze fountain adorns the great square. The climate is delightful; in winter a slight frost is perceptible, and the summer heats are not excessive. Gold and silver cloths, woollens, and cottons, are manufactured at Arequipa, which carries on a great trade with Buenos Ayres, exporting brandys, wine, flour, cotton, and sugar; and importing cattle, dried flesh, tallow, cocoa, &c. The great commercial road from Lima to the southern provinces passes through the city. The town is often visited by earthquakes. The great volcano of Guaga-Putina is near Arequipa: smoke and small quantities of ashes constantly issue from it, but it has not been in a state of eruption since the arrival of the Spaniards in America. By an eruption of the volcano of Urinas, now extinct, this town was almost entirely buried in ashes during the 16th century.

Mollendo, the port of Arequipa, consists of about fifty huts built of reed-mats, and covered with flat cane roofs, without windows or chimneys. The anchorage is open, but, like other ports on this coast, is safe, from the general absence of storms. The site of this village was chosen for the convenience its sandy beach afforded to the *balsa* in landing or embarking. (Hall's *Voyages*.)

ARES, the God of War among the Greeks, generally considered as corresponding to the Roman Mars. In the later genealogy of the gods Ares was considered the son of Jupiter and Juno.

The Greeks, though constantly engaged in war, paid little attention to the worship of Ares. There were few temples erected to his honour in Greece. The element of the word Ares is an integral part of the Greek language, and the word which denoted best and bravest, *aristos* (ἄριστος), is the superlative of *ares*.

The following is the general character under which Ares is represented in works of art. The expression is stern and thoughtful; firm nervous muscles, a strong fleshy neck, and short bristly hair; the mouth is small, the lips full, and the eyes deep-set. It is only in later times that he appears with a strong beard as the Roman Marspiter. When not naked, his dress is a chlamys (*sagum*).

ARETÆUS, surnamed CA'PPADOX, or the CAPPADOCIAN, one of the most valuable medical writers of antiquity, is supposed to have lived in the latter part of the first and the beginning of the second century after Christ; but this supposition is little more than conjecture. It seems to be a peculiar merit of this physician to have remained free from the predominant influence of any one of the prevailing theoretical schools, and to have preserved a praiseworthy independence in the observation and treatment of diseases. Aretæus was an original observer; his writings bear no traces of compilation; and if a part of the information which he gives belongs to the age in which he lived, there is another very considerable part for which we seem to be indebted to his own personal experience.

Aretæus regarded a knowledge of the structure and functions of the body as a necessary step towards the study of disease; his anatomical remarks, however, betray sufficiently the imperfect state of this science in his time. He gave a full account of the distribution of the *vena portarum*, and regarded all veins as having their origin in the liver; he also was aware of the numerous communications which exist in various parts of the venous system, which led him to refute the notion that particular veins in the arm are connected with particular internal organs, and the consequences which were drawn from this notion as to blood-letting. Aretæus looked upon the liver as the organ destined to prepare the blood, and the spleen as fitted to purify that fluid. He regarded both the stomach and colon as organs of digestion, and bestowed much attention on the morbid affections of the latter organ. He knew that the kidneys had a glandular structure. He stated the nerves to be the organs of sensation and motion. The fact that injuries of the head are apt to produce paralytic affections on the opposite side did not escape his observation. Notwithstanding these remarks on the functions of the nervous system, Aretæus evidently did not make any clear distinction between the nervous and tendinous parts; the latter are undoubtedly alluded to, when he says that, besides the nerves proceeding from the brain, there

are others which pass from one bone to another, and are the principal sources of motion.

The descriptions which Aretæus has given of the diseases to which the human economy is subject are accurate delineations, evidently taken from nature, and distinguished by a peculiar liveliness, elegance, and conciseness of diction. He is thought to have excelled all ancient authors, not even excepting Hippocrates, in the art of describing diseases, and may still be regarded as a model in this species of literature. His account of epilepsy, tetanus, acute and chronic headaches, hæmoptysis and *causus*, or burning fever, are peculiarly happy specimens of his manner of writing.

In the treatment of diseases, Aretæus regarded experience as the best guide, and he repeatedly refers to the necessity of following the hints which nature gives to the physician. His methods of treatment seem to have been energetic where it appeared necessary, but always simple; and he was averse to that farrago of medicines to the use of which some of his contemporaries were addicted.

He frequently employed emetics, purgatives, and clysters; and he was aware that emetics not only evacuate the contents of the stomach and intestines, but derive a great part of their efficacy from the shock which the act of vomiting produces in those parts. He was fond of blood-letting in chronic as well as acute diseases, but cautious with regard to the quantity of blood which he took away: he advises the blood to be stopped before fainting supervenes, and recommends in apoplexy not to take away too much blood at one bleeding. He also mentions the practice of opening a vein on the back of the hand, and he practised the operation of arteriotomy. He employed cupping-glasses and leeches, and he is the first author who mentions blistering with cantharides: as he recommends this practice as preferable to other rubefacients, without mentioning it as having been formerly in use, it appears probable that we are indebted to him for this most important remedy; nor had the tendency which it sometimes has to injure the functions of the urinary organs escaped his observation; he enjoins, therefore, milk to be drank in large quantities before the blister is applied.

Scarcely any internal medicines were employed by Aretæus in the treatment of acute diseases; but he paid strict attention to diet and regimen: among his dietetical prescriptions, those on the use of the different kinds of milk deserve to be mentioned. In treating chronic diseases he more frequently had recourse to the aid of medicines; he prescribed diuretics, sudorifics, and several of the compound stimulating preparations which were in vogue in his time.

Of the writings of Aretæus, only four books on the causes and symptoms, and as many on the treatment, of acute and chronic diseases are extant; nor have they been preserved in a perfect form: chap. i.—iv. and part of chap. v. of the first book on the causes, and several passages in the books on the treatment, of diseases are lost. In this work the author alludes to his treatises on surgery, on pharmacy, on fevers, and on the diseases of women; of all which works not a single fragment now remains. Had they been handed down to our times, they would have formed most important additions to medical literature. Aretæus wrote in the Ionic dialect of the Greek language.

The eight books of Aretæus were first edited from the Parisian MSS. by J. Goupyl, and published at Paris, 1554, 8vo. The standard edition is that of Mr. John Wigan, student of Christ Church, Oxford, 1723, folio. Wigan gave a very good Latin translation, notes, and a valuable dissertation on Aretæus. Aretæus also forms the 24th volume of Kühn's edition of the Greek medical authors. An English translation of Aretæus, by John Moffat, was published at London, 1785, 8vo.

ARETHU'SA, a celebrated fountain in the island Ortygia, one of the five divisions of ancient and the site of modern Syracuse. For the story of the nymph Arethusa, the manner of her change into a fountain, and the pursuit of her by the river-god Alpheius from Elcia below the sea to Sicily, see Qvid, 'Metamorphoses, v. 572.

It was an ancient fable, that things thrown into the Alpheius would reappear in this fountain. A strong spring bubbles up under water near the place where the stream from the fountain runs into the sea. The fountain of Arethusa is now a considerable spring of brackish water, in which the poor women of Syracuse wash their linen.

ARETI'NO, SPINELLO, one of the most distinguished of the early Italian painters, was born at Arezzo, in 1316. He was the pupil of Jacopo del Casentino, whom, however, he surpassed even as a boy. He obtained a reputation very early by some frescoes, illustrating the life of San Niccolo, which he executed in a new church of that saint at Arezzo. He afterwards painted the principal chapel of Santa Maria Maggiore, at Florence, with subjects from the life of the Virgin, and of Sant' Antonio Abate. He executed some frescoes in the monastery of San Miniato, near Florence, which still remain; others in the monastery of San Bernardo, at Arezzo; and others in distemper, in the monastery of Monte Oliveto, near Florence. He executed also six of the series of frescoes, illustrating the life of San Ranieri, in the Campo Santo, at Pisa, which Vasari reckons among his best works.

The principal works of Spinello are not mentioned by Vasari; they are in the town-hall of Siena, and are from the life of Pope Alexander III. Aretino was still painting them in 1408, which probably was the year of his death.

(Vasari, *Vite de' Pittori*, &c., and the Notes to Schorn's German translation; Rumohr, *Italienische Forschungen*.)

ARETI'NO, PIETRO, was born at Arezzo, in 1492. He left his native place very young, and went to Perugia, where he found employment as a bookbinder. After some years he set off from Perugia on foot, and went to Rome, in quest of better fortune. He met with wealthy and powerful patrons; but a circumstance which strongly shows the profligacy of those times drove him away from Rome, about 1524. The celebrated painter, Giulio Romano, sketched a series of most obscene drawings, and Aretino illustrated

them by sonnets. The court of Rome, being informed of this scandal, ordered the arrest of the offenders, who, however, escaped; and Aretino afterwards found a friend in Giovanni de' Medici, the famous captain of the Florentine republic, and in Francis I. of France. After the death of Giovanni de' Medici he went to live at Venice, where he depended on his writings for subsistence. He wrote both prose and verse, obscene dialogues, satirical *capitoli* in *terza rima*, heroic cantos, sonnets, and comedies.

Aretino still cast a longing eye towards Rome, in expectation of dignities and emoluments. For this purpose he wrote several compositions on sacred subjects, such as—Lives of Christ, the Virgin Mary, St. Catherine, Thomas Aquinas, 'A Commentary on the Book of Genesis,' and 'A Paraphrase of the Seven Penitential Psalms.' He wrote with great facility, but at the same time with carelessness, and his taste was coarse and trivial. The Duke of Urbino applied in his favour to Pope Paul III., and even proposed that Aretino should be made a cardinal. Luckily, for the credit of the Roman hierarchy, the pope would not listen to such a suggestion. After Paul's death, Julius III., who was a native of Arezzo, was addressed by Aretino in a letter of congratulation, accompanied by a sonnet characterized by the most fulsome praise of the new pontiff. Julius made the poet a present of 1000 scudi, and sent him the bull or diploma of Knight of St. Peter, an inferior order, to which a small income was attached. Aretino still expecting more, went to Rome with the Duke of Urbino, in 1553; was kindly received by the pope; but meeting with no further encouragement, he again left that city in disappointment a few months after, and returned to Venice, where he remained till his death in 1557. His 'Capitoli' are the best specimens of his poetry; they are partly satirical and partly laudatory of several conspicuous characters of his age—Charles V., Catherine of Medici, Pope Julius, and the Duke of Urbino. He wrote 'L'Orazia,' an historical tragedy in blank verse, one of the earliest Italian tragedies. His five comedies in prose—'Il Filosofo,' 'La Cortigiana,' 'Il Mariscalco,' 'L'Ipocrito,' and 'La Talanta,'—are not without some merit in the invention, but, like most of the old Italian comedies, they are deficient in dramatic plot, and objectionable in their language. Aretino is one of those instances of successful shamelessness which occasionally appear to astonish the world, and make us wonder that such nuisances are so long endured.

(Count Mazzuchelli's *Vita di Pietro Aretino.*)

AREZZO, a very ancient town of Tuscany, capital of the Compartimento of Arezzo, 34 miles S.E. of Florence, in 43° 27′ N. lat., 11° 52′ E. long.; population 10,000. Arretium was one of the wealthiest and most populous among the twelve cities of ancient Etruria, was repeatedly at war with Rome, and afterwards became its ally, and supplied money and arms towards Scipio's expedition to Africa near the end of the second Punic war. The government was then similar to that of Rome, having its senate, and its patricians, and plebeians. Arretium, having joined the Marsi and other Italian nations in the Social War against Rome, was devastated by Sulla, the inhabitants were dispersed, and a Roman colony was sent into the country. The pottery of Arretium was in great repute. After the fall of Rome, Arretium was ravaged by the Goths under Totila, but was restored under Justinian. It then passed under the dominion of the Longobards, and afterwards of Charlemagne and his successors. The bishops of Arezzo were made feudal counts, and ruled in the name of the Emperor and King of Italy. In the eleventh century, however, Arezzo, like most Italian cities, threw off its allegiance to the empire, and adopted a republican form of government. It was subsequently distracted by the factions of Guelphs and Ghibelines. In 1384 the city was taken and plundered by Ingelram de Coucy, a famous Condottiere of the times, who sold Arezzo to the Florentines for 40,000 gold florins. After more than a century Arezzo revolted against Florence in 1502, was again taken, and treated with great severity. In 1529 it opened its gates to the army of Charles V., which was then besieging Florence. Arezzo was obliged, in 1531, to submit to the Medici, and has ever since made part of the duchy of Tuscany. The town was stormed by the French in 1800.

Arezzo lies on the high road from Florence to Rome, 3 miles from the left bank of the Arno: it is situated on two hills, and in the middle of a fine plain, watered by the Arno and the Chiana, and surrounded by an amphitheatre of mountains. The citadel is on the summit of one of the hills. The walls of Arezzo are about 3 miles in circuit, and have four gates: the streets are tolerably wide and well paved. The only remains of antiquity are the ruins of an amphitheatre. The cathedral is a large Gothic building, besides which there are several other remarkable churches with fine paintings, and various handsome palaces belonging to the nobility. But the handsomest structure in Arezzo is that called Le Logge, by the side of the town-house on the principal square, which has a fine portico nearly 400 feet long: it contains a theatre and the custom-house. The territory of the compartimento of Arezzo, which includes the Val di Chiana, and the towns Cortona, Monte-Pulciano, Chiusi, and others, is fertile in corn, oil, wine, and fruits. The celebrated wine called *Alleatico*, the finest in Tuscany, is made here. There are also manufactories of woollens and of pins. Arezzo is a bishop's see, which has an income of 3000 scudi, or crowns, a year.

ARFE, the name of two very distinguished Spanish silversmiths, and the designers and constructors of several of the most costly tabernacles which do or did adorn the cathedrals of Spain.

Henrique de Arfe, the elder, and the grandfather of the other, Juan de Arfe, made, between 1506 and 1524, the silver tabernacles of the cathedrals of Leon, Cordova, and Toledo. He also made the tabernacle of the Benedictine monastery of Sahagun, besides a great many crucifixes and other articles used in Roman worship.

Juan de Arfe y Villafane, the grandson, was

born at Leon in 1535. He is the artist of three of the finest tabernacles in Spain—those of Avila, Seville, and Osmas. He made also tabernacles for the cathedrals of Burgos and Valladolid, and one for the church of St. Martin at Madrid. Arfe was much employed by Philip II. and Philip III.; the former appointed him assayer of the mint of Segovia. He was both engraver and writer. He wrote two works connected with the theory of his profession—'Quilatador de Oro, Plata, y Piedras,' Valladolid, 1572; and 'Varia Commensuracion para la Escultura y Arquitectura,' Seville, 1585.

(Ponz, *Viage de España*, &c.; Cean Bermudez, *Diccionario Historico*, &c.)

ARFWEDSONITE occurs amorphous. Colour black. Hardness 6.0. Specific gravity 3.4 to 3.5. Found in Norway and Greenland. Analysis, by Dr. Thomson: Silica, 50.508; peroxide of iron, 35.144; sesquioxide of manganese, 8.920; alumina, 2.488; lime, 1.560; water, 0.960.

ARGALI, the name of a species of wild sheep, found in the elevated steppes of Siberia, and the mountain chains of central Asia. It is the *Ovis Ammon* of Pallas. There are many allied species in central Asia, and one in North America, to all of which the term Argali is applied by zoologists as a common name. [SHEEP.]

ARGAND LAMP, a kind of lamp in which the wick, and consequently the flame also, is in the form of a hollow cylinder, through the interior of which a current of air is made to ascend, in order to afford a free supply of oxygen to the interior as well as to the exterior of the flame; and thereby to ensure more perfect combustion, and greater brilliancy of light, than could be obtained either by the use of a single large wick, or by a series of small wicks arranged in a straight line. These objects are more perfectly attained by the addition of a glass chimney, which confines the air immediately surrounding the flame, and produces an upward current which causes it to rise high above the wick. It was invented about 1782, by Aimé Argand, a native of Geneva, under whose name a history of the invention is given in the 'Biographical Dictionary' of the Useful Knowledge Society; and it is made in many different forms, one of which, with a chimney of copper instead of glass, is used in chemical operations for the emission of heat. The principle is also extensively applied to gas-burners.

ARGEII, a name sometimes applied by Homer to the whole body of Greeks assembled at Troy. Homer employs the word Argos not only to designate the name of a town, but also the whole Peloponnesus: Agamemnon is styled the sovereign of all Argos and the islands. (Strabo, p. 369, ed. Casaub.) The capital of Agamemnon's *kingdom* of Argos, which certainly did not comprise all the Peloponnesus, was Mycenæ. Homer often qualifies it with some epithet, as Achaïcum ('Iliad,' ix. 141), when Argos of the Peloponnesus is meant, and Pelasgicum when the Thessalian city or district of that name is intended. The early inhabitants of the Peloponnesian Argos and of the district around it were probably Pelasgi. (Strabo, viii. 371; Euripides, 'Orest.,' 931; Æschylus, 'Suppl.,' 268.) The arrival of Danaüs from Egypt, according to tradition, caused their name to be changed to Danaï, a term that occurs in the 'Iliad.' Eighty years after the Trojan war, or B.C. 1104, the invasion of the Peloponnesus by the Heraclidæ took place, and Argos submitted to the Dorian invaders. Still this was only a change of dynasty, and all the older Achæan inhabitants were not compelled to leave their country. From this time the names Argos and Argeii lost their more extensive signification; but the city Argos itself continued an important place. [ARGOLIS; ARGOS; ACHÆI.]

ARGEMO'NE, the name of a small genus of the poppy tribe, of which three species are cultivated in this country as ornamental plants. They are all natives of Mexico, with prickly leaves, and will thrive in almost any soil or situation. Their seeds should be sown in a hot-bed, and the young plants treated as half-tender annuals.

ARGENS, MARQUIS D', JEAN BAPTISTE BOYER, a prolific writer of the last century, but whose celebrity at present chiefly depends on his intimate connection with Frederic the Great of Prussia, whose attention had been attracted by his 'Lettres Juives,' the best known perhaps of any of his numerous works. D'Argens was born at Aix in Provence, on the 24th of June, 1704, and, after leading a versatile and far from irreproachable life, he settled at Berlin as the king's friend in 1741, but at length returned to France in 1769, and died there in 1771. His principal works are—'Mémoires de Monsieur le Marquis d'Argens, avec quelques Lettres sur divers Sujets' (fourteen not in the collections of his works), Londres, 1736, 12mo; 1737, Londres, 12mo; 1807, Paris, 8vo: 'Nouveaux Mémoires du Comte de Bonneval, publiés sous le nom de Mirone,' 1737, 4 vols. 12mo; the 'Mémoires de Bonneval' is an inferior work by another writer: 'Lettres Juives,' 1742, 6 vols. 8vo; 1754, 8 vols. 12mo: 'Mémoires Secrets de la République des Lettres,' 1744, 7 vols. 12mo; these Mémoires contain notices of the lives, acts, and peculiarities of numerous writers that can only be found elsewhere by consulting a great variety of authors; the 'Lettres Juives' and 'Lettres Chinoises' contain similar notices: 'Réflexions Critiques sur les différentes Ecoles de Peinture,' 1750, 12mo: 'Lettres Chinoises,' 1755, 6 vols. 12mo: Letters printed in the Works of Frederick the Great: also several works of fiction, some translations from the Greek, and various productions connected with the then current opinions on religion, morals, and government.

ARGE'NSOLA, LUPERCIO LEONARDO DE, brother of Bartolomé, was born in 1565, and began his studies at the University of Huesca. He afterwards went to Zaragoza, where he studied Greek, history, and rhetoric. Before he had attained his twenty-fifth year he went to Madrid, where his patroness, the Princess Maria of Austria, had fixed her residence, and he was made her secretary. The Count of Lemos, having been appointed viceroy of Naples, took Argensola with him, and made him his secretary of state, and also secretary for war. In 1613 he died at Naples. He left behind him three tra-

gedies, some poems, and other works which are still unpublished.

ARGE'NSOLA, BARTOLOME' LEONARDO DE, a native of Barbastro in Aragon, was born in 1566. He studied at the university of Huesca, and entered the ecclesiastical profession. Through the influence of his brother he was made a chaplain to the Princess Maria of Austria, and rector of Villahermosa. He followed his brother to Naples, and remained in Italy three years after his death. In 1616 he returned to Spain; and was made a canon of Zaragoza, in which town he died, according to some authorities in 1633, and according to others in 1631.

Argensola left behind him a continuation of the Annals of Aragon by Zurita, a History of the Conquest of the Molucca Islands, some letters, satires, and other poetical effusions. As poets, both the brothers are, if not in point of originality, at least for their correctness and purity, among the first that Spain has produced. Their poetry is vigorous, abounds in wit and classic dignity of style, and, above all, is marked by singular correctness of taste, on which account they have been styled the Horaces of Spain.

(Nicolao Antonio, *Bibliotheca Nova;* Bouterwek, *History of Spanish Literature.*)

ARGENTAN. [ORNE.]

ARGENTEUIL. [SEINE-ET-OISE.]

ARGE'NTEUS CODEX, or 'Silver Book,' the name given to a manuscript, or rather fragment of a manuscript, containing the greater part of the Four Gospels in the Mæso-Gothic language, preserved in the library at Upsala, in Sweden. It is believed to be a relic of the Gothic Bible, all or the greater part of which was translated by Ulphilas, bishop of those Goths who were settled in Mæsia and Thrace, and who lived under the Emperor Valens about A.D. 360. This curious fragment was discovered in the library of the abbey of Werden in Westphalia. The leaves are of vellum, some purple, but the greater part of a violet colour; all the letters are of silver, except the initials, which are of gold. These letters, which are all capitals, appear to have been stamped or imprinted on the vellum with hot metal types, in the same manner as bookbinders at present letter the backs of books. This copy is judged to be nearly as ancient as the time of Ulphilas, or at least not later than a century or two after.

The Gothic Gospels of the 'Silver Book' were first printed in types approaching to a fac-simile, by Junius, in 1665; again in common type at Stockholm, in 1671; by Mr. Lye at Oxford, in 4to, 1750, with a Gothic Grammar prefixed; and lastly, by Zahn, 4to, Weissenfels, 1805.

ARGENTIE'RA, an island of the Grecian Archipelago, 5 miles long and 3½ broad, with a population of about 800. It lies to the N.E. of Melos or Milo, from which it is separated by a narrow strait, half a mile in breadth, which may be passed through by ships of large size, the connecting ridge of the two islands having 5 fathoms water over it. The island has no port, and only one miserable village, standing on an eminence at the S.E. side of the island, in 36° 48′ N. lat., 24° 35′ E. long. There are some hot springs, and the soil, which is of a volcanic nature, dry and barren, produces in the valleys, but not without much care, a little cotton, corn, figs, and grapes. The ancient name of the island was Kimolos, which is still used by its present Greek inhabitants. This island was noted in ancient times for an earth used in dyeing and bleaching cloths. (Strabo, p. 484; Plin. xxxv. 17, on the *Creta Cimolia.*)

ARGENTIE'RE, L'. [ARDECHE.]

ARGENTINE REPUBLIC. [PLATA, LA.]

ARGENTON-SUR-CREUZE. [INDRE.]

ARGES (Goldfuss), a fossil trilobite, the *Paradoxides bimucronatus* of Murchison.

ARGIL. [ALUMINA.]

ARGO, the Ship, a southern constellation, the greater part of which, containing all the more important stars, is not visible in this country. It has one star of the first magnitude, Canopus. The part of it which is visible in our latitude may be found in and above a line drawn through Orion's belt, and continued beyond Sirius. The star Cor Hydræ is just above the end of the mast, and the direction of the mast is that of a line passing through Regulus and Cor Hydræ. For the mythological story connected with Argo, see ARGONAUTS.

Owing to the extent of this constellation, it is sometimes subdivided into four parts. They are named as follows: Argo, Argo in Carina (in the keel), Argo in Puppi (in the stern), Argo in Velis (in the sails).

ARGOL is an acidulous concrete salt which is deposited by wine, and forms a crust on the sides of vessels in which that liquid is kept. This crust becomes hard, brilliant, and brittle; it is easily reduced to powder. The argol brought from Germany, and produced from white wine, is the best. This substance is used by dyers as a mordant, and to neutralize various acid agents; a tartrate of tin is also prepared from it. Argol, also called *Tartar*, is a bitartrate of potash. When purified and crystallized it is called *Cream of Tartar*, and is much used medicinally.

More than 1000 tons of argol are annually imported into this kingdom. It comes to us from almost all wine-producing countries. The best, comes from Bologna and Leghorn; Rhenish fetches a lower price.

A'RGOLIS, one of the ancient divisions in the north-eastern part of the Peloponnesus: it is bounded on the S. and N.E. respectively by the Argolic and Saronic gulfs. On the W. it was separated from Arcadia by a range of mountains. The territory of Corinth bounded it on the N. Argolis lay between 37° 12′ and 37° 46′ N. lat., and extended from 22° 32′ to 23° 33′ E. long. Its greatest length, measured in a straight line along its western frontier from Laconia to Corinthia, was nearly 38 miles. Mr. Clinton ('Fasti Hell.' i. 385) calculates its area to be 1059 English square miles.

Argolis is traversed by a ridge of mountains which run nearly in a continued line through the peninsula, from Cyllene on its western frontier eastward to Cape Scyllæum, now Skyllo; these mountains are intersected by deep valleys, through

which flow rivulets, generally dry during summer. The plain of Argos and Mycénæ is the most extensive open tract in Argolis. The coast is irregularly shaped, with numerous indentations, and it is generally low. The only good harbour is Nauplia, now Nápoli di Romania, at the head of the Gulf of Napoli. Besides the city of Argos, there were the independent states of Epidaurus, Trœzen, and Hermoine. Tiryns is noted for its Cyclopean walls.

ARGONAUTA. [NAUTILUS.]

ARGONAUTS, a term signifying the crew of the Argo, or members of the Argonautic expedition. This is one of the most remarkable of the mythological tales of Greece, but as it is mythological it is useless to attempt to fix its period.

Jason, the son of Æson, king of Iolcos in Thessaly, having been defrauded of his father's kingdom by his father's brother Pélias, in hope of recovering his paternal inheritance undertook to bring from Colchis the golden fleece of the ram which carried Phrixus thither. Argus, the son of Phrixus, by the help of Athene (Minerva), built the ship Argo, of fifty oars, at Págasæ, and it was manned by the most celebrated heroes of Greece, in number fifty. The lists differ, for every state in later times wished to include its own national hero among them; but by general consent the most distinguished warriors, as Heracles (Hercules), the Æacidæ, the Dioscúri, Orpheus, Theseus, &c., were on board the vessel, which was steered by Tiphys, the son of Agnius. Embarking from Iolcos (or, some say, Aphetæ, 'departure'), they steered first to Lemnos; and after many adventures they reached the Phasis, which flows through the Colchis into the Black Sea. Æétes, king of Colchis, hearing from the strangers the cause of their arrival, promised to give Jason the golden fleece, which was suspended on a tree in the sacred grove of Ares, on condition of his yoking two bulls with brazen feet, which breathed flames, ploughing a piece of land with them, and sowing part of the teeth of the serpent slain by Cadmus, which had the peculiar property of producing a crop of armed men. These difficult tasks he performed by the help of the celebrated sorceress Medea, daughter of Æetes, who fell in love with him, placed the fleece, which Æetes ultimately refused to surrender, in his possession, and became his partner in flight.

How the Argo got back to Greece it is not easy to say; but somehow or other she found her way from Colchis, at the eastern end of the Euxine, to the western extremity of the Mediterranean, and thence to Iolcos, where Jason delivered up the fleece to Pélias; after which he sailed to the Isthmus, and dedicated the Argo to Poseidon, or Neptune.

For a full account of the adventures of the Argonauts, see, besides the passages referred to, Pindar, 'Pythiæ,' IV.; Apollonius Rhodius; the Orphic 'Argonautica'; Diodorus, book iv. c. 40; Hesiod. 'Theog.' 992; Ovid; and the Latin poem of Valerius Flaccus, entitled 'Argonautica.' The story of the Argonauts, with its geographical and other impossibilities, neither requires nor admits explanation. It is enough to tell the story.

ARGONNE, a forest and hilly district in France, on the frontier of the ancient provinces of Lorraine and Champagne, and extending into each of them. It is now included in the departments of MEUSE, MARNE, and ARDENNES. It is about 60 miles in length, but of very unequal breadth. St. Menehould was the capital of this country, and among the other towns which are situated in it, are Clermont, Varennes, Beaumont, and Grandpré.

ARGOS, called also Argi by Latin writers, the chief city of A'rgolis, is situated on a level plain at the foot of a hill called Larissa, on which was its citadel and a temple of Jupiter, and on the banks of the rivulet I'nachus, now Banitza. Its earliest known inhabitants were Pelasgi. In the remains of the Acropolis on the hill Larissa, are traces of walls approaching to the massive Tirynthian style [TIRYNS], and others of the later polygonal kind, which is characterised by the absence of regular horizontal courses, and by the accurate fitting together of the stones. In the mythic age it was governed by kings, of whom I'nachus was the first.

In the historical age, Argos appears under a republican form of government, and becomes first known to us when engaged in war with the Spartans respecting the territory of Thýrea. This war was contemporaneous with the capture of Sardes by Cyrus. (Herod. i. 82.) Before this epoch, the possessions of Argos had extended to Cape Malea, and included Cythéra and other islands. At a later period, B.C. 493, there was another contest between Argos and Sparta, in which Argos was unsuccessful. The Argeians took no part in the Persian war, B.C. 480. In B.C. 468, they were at war with the inhabitants of Mycenæ, who had refused to acknowledge the supremacy of Argos, and had been supported for many years in their independence by the Spartans. Mycenæ fell, and it never again rose from its ruins. (Diodorus, xi. 65.) [MYCENÆ.]

Though Argos remained neutral during the earlier part of the Peloponnesian war, she was in feeling always opposed to the Spartans, and she at last took an active part with the Athenians. The defeat, however, of the Argeians at Mantinea, B.C. 418, dissolved the confederacy, of which she was the head, and Argos was compelled to accept an aristocratical constitution. (Thucydides, v. 65-81.) She subsequently shook off the yoke, and assisted the Thebans at the battle of Mantinea, B.C. 362. Argos joined the Achæan league, and formed a part of this confederacy till its final dissolution. The great deity of Argos was Hera (Juno), and it seems probable that a catalogue of the priestesses had been preserved, which may have served as the basis of the work ascribed to Hellanicus on the succession of the priestesses. (Herodotus, i. 31; Thucydides, ii. 2.)

Argos is still known by its ancient name. Part of the plain around is cultivated, and where the moisture is sufficient, cotton and vines are grown: in the marshy parts towards the sea, some rice. The plain of Argos does not abound in water, for which Pausanias assigns a mythological reason (ii. 15; but compare Strabo, p. 371). A ruined castle, of lower Greek construction, which now occupies the summit of Larissa, still preserves some remains. For an account of the remains of Argos see Leake's *Travels in the Morea*, London, 1830;

and for its ancient history, Pausanias, ii. 19, &c.; Strabo, 368, &c.; Müller's *Dorians*.

ARGOS, in Amphilochia, was a town near the S.E. angle of the Gulf of Arta. The ruins at the bottom of the Gulf of Karavasara are supposed to be those of Argos.

ARGOSIE, a ship of great burthen, whether for merchandise or war. In Rycaut's 'Maxims of Turkish Polity,' chap. xiv. it is said, 'Those vast carracks called *Argosies*, which are so famed for the vastness of their burthen and bulk, were corruptly so denominated from Ragosies,' *i. e.* ships of Ragusa, a city and territory on the Gulf of Venice, then tributary to the Porte. We have no proof, however, that the Ragusan vessels were particularly large; and it seems more likely that the Argosie derived its name from the classical ship Argo.

ARGO'STOLI. [CEPHALONIA.]

ARGUIN, one of a cluster of small islands in the Bay of Arguin, about 50 miles S.E. of Cape Blanco, on the western coast of Africa, in 20° 24′ N. lat., 16° 14′ W. long. It is only about 2 miles long, but a fort having been erected upon it by the Portuguese in 1461 for the protection of commerce, then consisting of gold and negroes, but afterwards of gum arabic and feathers, it became successively an object of contention and bloodshed to the Portuguese, Dutch, French, and English. Arguin has been supposed by Major Rennell to be the Cerne of Hanno. An extensive and dangerous shoal, called the Arguin Bank, stretches 30 leagues along the land in a S.S.E. direction, from off Cape Blanco to Cape Mirik. A strong current sets along its edge to the southward.

ARGUMENT, in astronomical tables, is the angle on which the tabulated quantity depends, and with which, therefore, in technical language, the table must be *entered*. If, for example, a table of the sun's declination were formed, corresponding to every degree, &c. of longitude, so that, the longitude being known, the declination might be found opposite to it in the table, then the longitude would be made the *argument* of the declination.

ARGYLE, a shire in the W. of Scotland, comprehending an extensive district on the mainland, and several of the Hebrides, or Western Isles. It is bounded N. by Inverness-shire, E. by Perth, Dumbarton, and Renfrew shires; from the last two it is separated by Loch Long and the Firth of Clyde. On other sides it is washed by the sea; but the islands of Bute and Arran, which form the shire of Bute, lie close to it to the S.E. The line of the coast is very irregular. Deep indentations of the sea penetrate far inland. The principal of these, beginning from the N., are Loch Moidart and Loch Shiel (communicating with Loch Moidart by a narrow passage), which separate Argyleshire from Inverness-shire; Loch Sunart, which runs into the land in an eastern direction; Linnhe Loch, which runs nearly N.E., and the extremities of which are Loch Eil (which runs first N.E., and then W. by N. till it approaches Loch Sheil), and Loch Levin; Loch Creran and Loch Etive are inlets of Linnhe Loch, on the right as you enter. From Linnhe Loch, the coast runs in a direction about S. by W. for a distance of between 80 and 90 miles (broken successively by the Lochs Feochan, Melfort, Craignish, Crinan, Swin, Killisport, and West Tarbet), to the Moyle or Mull of Cantire. From this headland, the coast, after running eastward a short distance, returns N. by E. for about 35 miles to Skipnish Point, forming the long narrow peninsula of Cantire. From Skipnish, Loch Fine runs inland first N. by W., then N.E., and has a subordinate inlet; Loch Gilp, Lochs Riden and Straven also run N. by W., or N.; and the Firth of Clyde, with its terminating lochs, Long and Goyle, completes the circuit of the Argyleshire coast, the extent of which is estimated at more than 600 miles.

The greatest length of the county is about 115 miles, and the greatest breadth about 66. The area is about 3200 square miles, or rather more than two million acres, of which about one-seventh only is under cultivation.

The islands belonging to Argyleshire are the following:—Canna, Rum, Muck, Coll, Tirree, or Tyree, Mull, Lismore, Lorn, Kerrera, Seil, Easdale, Luing, Shuna, Lunga, Scarba, Jura, Colonsa, Oronsa, Islay, Gigha, Sanda, Gometray, Ulva, Staffa, Iona, &c. Mull, Jura, and Islay, are each nearly 30 miles in length; but all the other islands are very small.

The entire population of the county in 1841 was 97,371, of whom 63,974 were in the mainland and 33,397 on the islands.

Argyle is mountainous, and presents an appearance more pleasing to the lover of the picturesque than to the agriculturist. The barrenness of the soil and the want of cultivation are shown by the scanty population, which amounts only to about 32 for every square mile of land in the shire, or 1 for every 2½ acres under cultivation.

The northern and eastern parts, where it borders on the Grampians, are the most rugged: along the coast the ground is in general lower and more level, yet particular mountains near the sea rise to a great height, and are indeed among the loftiest in the shire. The following are the mountains above 2000 feet in height:—

	Feet.
Cruachan Ben, between Loch Etive and Loch Awe	3669
Benmore, in the Isle of Mull	3168
Cruach Lussa, to the E. of Loch Swin	3000
Beden na bean, or Bedan ambran, N. of the termination of Lake Etive	2720
Paps of Jura, on the Isle of Jura	2580
Buchael Etive, or Buachaille, N.E. of the extremity of Loch Etive	2537
Ben na hua, on the N. side of Linnhe Loch	2515
Ben Ima, Ben Arthur, or the Cobbler, at the extremity of Loch Long	2389
Ben More, in Rum	2310
Ben ea Tan, S. of Loch Sunart	2306
Slia Gaoil, between Loch Killisport and Loch Fyne	2228
Crock Moy, in Cantire	2036

The chief rivers in the county are—the Urchay,

which rises in the Grampians and flows into Loch Awe, an inland lake lying in a direction nearly parallel to Loch Fine, and the Awe, which serves to connect Loch Awe with Loch Etive, and through it with the sea. The basin of these streams is estimated at 250 square miles. Streams of smaller importance are numerous, as the nature of the country would lead us to expect. There are no large inland lakes except Loch Awe just mentioned, which is about 24 miles long from N.E. to S.W., and from half a mile to 2½ miles broad. It is thickly studded with small green islets, and surrounded with picturesque scenery of woods and mountains.

Argyleshire is divided into six districts:—1, Mull, including the island of that name, and its dependent isles, with Canna, Rum, Muck, Coll, Tiree, and Airdnamurchan, Sunart, Ardgower and Morven, N.W of the Linnhe Loch, which separates these divisions from the rest of Argyleshire. 2, Lorn, a large division, comprehending the subordinate districts of Appin, Benederaloch, and Muchairn; with Glen Urchay or Glenorchy, Glen Etive, and Glen Co; the island of Lismore and those grouped together, as the islands of Lorn. 3, Argyle proper, or Inverary; separated from Lorn by Loch Melfort, Loch Avich (which is united by a channel with Loch Awe), and Loch Awe, and by a line drawn S.E. from the last mentioned lake to the eastern frontier of the county. 4, Cowal, including the district S.E. of Loch Fine. 5, Cantire or Kintyre (including Killislate), a long peninsula, formed by Loch Killisport, the ocean, the Sound of Kilbrannan (which is the strait between the Isle of Arran and the main-land), and Loch Fine; the Island of Gigha is joined to and forms part of Cantire. 6, Isla, or Ilay, including the islands of Isla, Jura, Colonsa, and Oronsa, with a small part of the continent between Argyle and Cantire. Knapdale is divided between districts 5 and 6.

The geological formations of Argyleshire comprise principally granite, mica-slate, floetz-trap, columnar basalt (especially at STAFFA), and a few coal beds. There are lead mines in several parts of the county, copper in Islay, and coal in Mull and Campbeltown. The slate-quarries of Easdale island have been among the most considerable in Britain; and there are quarries at Balaclulish in Lorn. Eight million slates have been procured from the county in one year. The marble and limestone of the county are of fine quality. The granite quarried near Inverary takes as fine a polish as marble; and the *lapis ollaris* (a kind of micaceous slate), with which the Duke of Argyle's castle at that place is built, is one of the handsomest of the building-stones found within the borders. Strontian, cobalt, and coral, occur in or near the county.

Argyleshire has a very variable and moist climate, but from its situation on the coast, and from the numerous inlets of the sea by which it is so deeply indented, the temperature is mild. Frost seldom continues long on the sea-coast, and snow rarely lies more than two or three days at a time. Mildew, blight, and hoar-frost seldom do much injury to the husbandman. The north-eastern parts, bordering on the Grampians, have a colder climate; though even there the valleys, sheltered by the surrounding heights, are neither so cold nor so uncomfortable as might be expected.

The farmers of this county direct their attention chiefly to the breeding of stock and the feeding of sheep, for which the rough and mountainous character of the surface is better adapted than for tillage. There is, indeed, a considerable quantity of arable and improveable ground in the vales interspersed among the mountains, and along the margin of the streams which wind through them, but the chief proportion of arable land is on the coast. The soil varies materially: light loam near the rivers and sea; light gravelly soil on the sides of hills; clay soils, mosses, and marshes, in the low ground; heath on many of the hills and flats; and barrens on the highest hills. About 40,000 acres are woodland.

The farmers (with the exception of the tacksmen, a kind of intermediate class between the land-owners and the great body of the farmers), owing to the small size of their farms, the short terms of their leases, and their want of capital, are in a dependent and even depressed state. They excel in rearing live stock, and in the knowledge of the diseases of their cattle; but are regarded as deficient in general industry and skill, wedded to old customs, and unwilling and unable to promote improvements. Oats, bear or big, and potatoes, are the chief cultivated plants; wheat, rye, peas, beans, turnips, cabbages, and kail, are but little attended to. Although there is a considerable extent of meadow-land, the quantity of hay made is not great. It is usually cut in August; the artificial grasses in July. The inhabitants, even the poorest, have usually gardens attached to their houses, but they are neither well cultivated, nor is their produce much varied. The general food of the people is oatmeal and potatoes. Of oatmeal a considerable quantity is imported.

The cattle of this district constitute one of the chief articles of export; they are of the west Highland breed, and are reared for the southern market, where they are preferred to almost any others. The sheep occupy, in many places, the high grounds, where they have been substituted with great advantage for black cattle; they are chiefly of the Linton or black-faced kind. Horses, swine, goats, and poultry, are reared, but not to any great extent. A few wild animals are found.

The manufactures of this county are unimportant. The woollen manufacture was established at Inverary, and carried on for many years under the patronage of the Duke of Argyle, but it does not seem to have flourished, and has been given up for some time. The cotton manufacture has gained but little ground; whatever is carried on is about Campbeltown. A more important branch of industry is the herring, cod, and ling fishery; the fish are both good and abundant, and the fisheries employ a great number of men.

The roads running through the county, and the two canals (the Caledonian and the Crinan) have cost large sums of money; but they have been of far less value than the extension of steam-navigation of late years. By means of it, the most distant parts of the county are brought into communication with one another, and with Glasgow, to which they can now send their stock and produce, with the certainty of finding a good market.

Argyleshire contains few towns. The chief town is Campbeltown near the extremity of Cantire, in 50° 26′ N. lat., 5° 36′ W. long. The town is built in the form of a crescent at the head of Kilkerran Loch, which is about 2 miles long and 1 broad, and forms an excellent harbour with from 6 to 13 fathoms water. At the entrance of the loch is the conical island of Devar, by which the harbour is well sheltered. The population of the burgh in 1841 was 6782. There are two churches and several chapels in the town; its chief trade is in whiskey, of which 747,502 gallons were distilled in the 25 distilleries of the parish in 1842. In the same year 646 vessels entered the harbour, and 365 cleared outwards: the chief imports are barley, coals, timber, iron; the principal exports are whiskey, black cattle, sheep, and farm produce. Two steamers ply regularly between this place and Glasgow. A market is held every Thursday. Inverary, at the mouth of the Arag, which falls into Loch Fine, is the capital of Argyleshire; it is a sea-port, but the harbour can be entered only by vessels of light draught. The population of the burgh in 1841 was 1092; they are chiefly employed in the herring fishery. There are two churches, a chapel, a prison, and a savings'-bank, in the town. Near the town stands Inverary Castle, the seat of the Duke of Argyle. Oban is on the sea coast in the N.W. of the shire; the population in 1841 was 1398. It is a thriving little place, and has a branch bank, a savings'-bank, and a good inn. About 13 vessels of small tonnage belong to the town.

The county returns one member to the House of Commons; and the burghs of Inverary, Oban, and Campbeltown, unite with Ayr and Irvine (Ayrshire) to return another. The Duke of Argyle, and the Marquesses of Tweeddale and Breadalbane, are the chief landed proprietors, especially the first named. Argyle gives name to a synod, which has jurisdiction over all the parishes of the county, except one, and over the shire of Bute.

Argyleshire contains many antiquities; such as the ecclesiastical ruins of Iona and Oronsa; Druidical circles and cairns; and castles at Dunstaffnage, Ardtornish, Inverary, Skipnish, and Kilchurn.

After undergoing a variety of political changes, we find, in the middle ages, the territory of Argyle subject to thanes, powerful, and in fact independent. The lordship of Argyle, with Mull and the islands N. of it, were subject to the M'Dougals of Lorn; Isla, Cantire, and the southern islands, to the M'Donalds, known by the style of 'Lords of the Isles,' or 'Earls of Ross.' The nominal allegiance of these last to the kings of Scotland was unsteady; but their power was broken in the reign of James III., towards the latter part of the fifteenth century. The acquisition of Lorn by the Stuart family, by marriage, and the erection of the earldom of Argyle in favour of the Campbells of Loch Awe, weakened their sway still further, and produced the diminution, and at last the annihilation of it. In 1614 the M'Donalds rose in insurrection to oppose the grant of Cantire to the Earl of Argyle and his relations, but the power of the Campbells prevailed. In 1748 all heritable jurisdictions were abolished by act of parliament, and civilization has subsequently made great advances.

The Gaelic language still predominates in Argyle; but in Inverary, though in the Highlands, English is as much spoken as Gaelic.

(Smith's *General View of the Agriculture of Argyle*, 1798; *General Report of Scotland*, drawn up under the direction of Sir John Sinclair, 1814; *Parliamentary Papers*; Pennant's *Tour in Scotland*, 1774; and *Voyage to the Hebrides*.)

ARGYLE, DUKES AND EARLS OF. [CAMPBELLS.]

A'RGYRO CASTRO, a town of Albania, about 50 miles N.W. from Joannina, in 40° 7′ N. lat., 20° 13′ E. long. The town is situated in the valley of Deropul, on the S.W. side, not far from the little river Deropul, which is a branch of the Bojiessa, or Vouissa. Several deep ravines are separated from each other by steep and narrow ridges. Upon three of these ridges the greatest part of the town is placed. The central ridge is surmounted by a castle built by Ali Pasha, which is of great extent. Ali erected a seraglio, or palace, within this castle, and there are also a mosque, barracks for 5000 troops, and subterranean magazines of ammunition and provisions. Water is brought to the town generally, and also to the castle, from a distance of 6 miles, by an aqueduct. The population was estimated by Dr. Holland and Sir John Hobhouse at 20,000, by Mr. Hughes at 15,000, and is vaguely stated by Balbi to be from 4000 to 9000.

Argyro Castro appears to have enjoyed a considerable degree of independence previous to 1811–12, when it was taken by Ali Pasha. When he was attacked by the forces of the Grand Seignior, the castle and town were surrendered to the Turks, in whose possession they still remain.

(Hobhouse's, Holland's, and Hughes's *Travels in Albania*.)

A'RIA, a province of the ancient Persian empire. It formed part of Ariana, or Iran, and bordered in the N. upon the Tápuri, Margiana, and Bactriana, in the E. upon the Paropamisadæ, and in the S. and W. upon Drangiana, Karmania, and Parthia. Its situation corresponds to that of the modern Seistan and the southern part of Khorasan. Strabo (xi. c. 10) calls Aria and Margiana the best provinces of this part of the earth. They are, he says, watered by the rivers Arios and Margos.

The former of these, called also Arius, Areios, or Arrianos, is described by Arrian (iv. c. 6) as a river not less than the Peneios of Thessalia, yet losing itself in the ground. This account answers to the present Heri-Rud. The Margos is supposed to be the modern Murgh-ab.

Herodotus enumerates the Arii (Ἄριοι) as constituting with the Parthi, the Chorasmii, and the Sogdi, the sixteenth of the twenty satrapies into which Darius divided the Persian empire. (Herodotus, iii. 93.) The ancient name of the Medi was Arii. (Herod. vii. 62.) Lassen ('Indische Bibliothek,' vol. iii. p. 71) supposes the name of the Arii to be etymologically identical with the word *Arya*, by which the followers of the Brahmanic religion are designated in Sanscrit.

Alexander the Great founded a town in Aria, which he named Alexandria Ariôn (Alexandria of the Arii). The site of this town is doubtful, but it is by some geographers supposed to be the present town of Herat.

ARIA, in Music. [Air.]

ARIA'NA is the name given by ancient authors, after the age of Alexander the Great, to the eastern portion of those countries which form the highland of Persia. According to Eratosthenes (Strabo, p. 723, Casaub.), Ariana was bounded on the N. by the Paropamisus mountains and their western continuation as far as the Caspiæ Pylæ; on the S. by the Great Sea (the Indian Ocean); on the E. by the river Indus, and on the W. by the hills which separate Parthyéne from Media, and Karmania from Paraitakéne and Persis.

The countries properly belonging to Ariana are, according to Strabo, in the E., the Paropamisadæ, the Arachoti, and Gedroseni along the Indus, proceeding from N. to S.; the Drangæ towards the W. of the Arachoti and Gedroseni; the Arii towards the W. of the Paropamisadæ, but extending considerably to the W. and S., so as nearly to encompass the Drangæ; the Parthyæi W. of the Arii, towards the Caspiæ Pylæ; and Karmania to the S. of the Parthyæi.

The original form of the name Ariana in the Zend or ancient Persian language is *Airyáne*. From this seems to be derived the modern Persian name Iran, by which oriental writers designate the country between the Tigris, the Persian Gulf, the Oxus or Gihon, and the Indus.

ARIA'NO, an episcopal town in the province of Principato Ultra in the kingdom of Naples; population 11,718. It is situated on a very steep hill on the main road from Naples to Puglia, and in the highest point of the pass leading over the Apennine ridge into the plains of the latter country. Ariano is 44 miles E.N.E. of Naples, 32 S.W. of the town of Foggia, and stands in 41° 8′ N. lat., 15° 1′ E. long.

ARIANS, a name applied in common to all who entertain opinions concerning the relation between Jesus Christ and the Father similar to those entertained by Arius, although they have not always derived their notions from him. According to the second oration of Athanasius against the Arians (§ 24), Eusebius of Nicomedia, Asterius, and Arius, agreed in the following opinion: God being willing to create the universe, and seeing that it could not be subject to the working of his almighty hand, made first a single being whom he called Son, or Logos, to be a link between God and the world, by whom the whole universe was created. (Compare Athanas. 'Orat. c. Arian.' i. § 5.) The Arians did not deny that Christ, in the New Testament, was called God, and they ascribed to him a sort of divine dignity; but asserted that he had this dignity, not by his own essence, but merely by the grace of God the Father. (Athanas. 'Orat. c. Arian,' i. § 6.) The Arians fully admitted the incomprehensibility of God, and that Christians ought to pay divine worship to Jesus Christ. This they proved from Christ's saying, 'That all men should honour the Son, even as they honour the Father. He that honoureth not the Son, honoureth not the Father who hath sent him.' (St. John, v. 23.) [Arius.]

ARIARA'THES. [Cappadocia.]

A'RIAS MONTA'NUS, BENEDICTUS, was born in 1527, of noble but poor parents, near the Andalusian border, in a mountainous district; and hence his surname Montano. His early studies were carried on at Seville, and subsequently at Alcala de Henares. He specially devoted himself to the study of Scripture in the original languages, and he acquired a knowledge of the Arabic, the Syriac, and the Chaldaic. In his travels through France, England, Italy, Germany, and the Netherlands, he acquired several modern tongues. On account of his great scholarship, the Bishop of Segovia, Martin Perez Ayala, took him to the Council of Trent, where he had his share in some of the most important transactions. He was invited by Philip II. to superintend the splendid and expensive edition of the 'Polyglott Bible,' which, at the suggestion of the printer, Christopher Plantin, was to be executed at Antwerp. Arias went to Antwerp in 1568, and devoted four years to this undertaking, and he had the pleasure of presenting the finished work to Pope Gregory XIII. in 1572. Unfortunately most of the copies of the work were lost in their passage from the Netherlands to Spain. The king remunerated Arias's labours with a pension of two thousand ducats, besides some lucrative offices. Arias was an upright orthodox Roman Catholic, and a truly learned man. His 'Antwerp Polyglott' received the approbation and praise of the pope, and that of the most eminent Roman Catholic universities; yet he was accused of a leaning towards Judaism, and in fact of heresy in general, and he narrowly escaped persecution. He died at Seville in 1598.

Arias was the author of various works, most of which are on religious subjects.

(Nicolao Antonio, *Bibliothéca Hispána*; Niceron, *Mémoires*, &c., *à l'Histoire des Hommes Illustres*.)

ARI'CA, a town and district in the department of Arequipa and the republic of Peru. The valley, which extends about 18 miles from the coast into the lower chain of the Andes, is irrigated by a small stream of good clear water, about half a mile on each side of which the soil is fertile and the aspect verdant, but beyond this, as far as the eye can reach, there is a complete desert of sand to the foot of the mountains, except a small space around the town.

The valley is famous for Cayenne pepper. Cotton, olives, and castor-oil are produced; fruit and vegetables are plentiful. Rock-salt is dug out of the adjacent mountains. The town stands in a small bay formed by a projecting bluff, in 18° 28′ S. lat., 70° 13′ W. long. It was sacked by Sir Francis Drake in 1579, and, in common with other places in Peru, has suffered much from earthquakes. The Buccaneers twice attempted to reduce it without success. During the war of independence it was entirely desolated. It now consists only of huts. There is a custom-house, 2 convents, and a parish church dedicated to St. Mark. The population does not exceed 400, the greater part of whom are Indians. The town is defended by two small forts of 6 guns each, and garrisoned by about 50 soldiers; it belongs to the see of Arequipa. The bay is small and safe, but the surf rolls so heavily on the beach that ships' boats cannot land, and the only means of shipping or landing cargoes is on a *balsa*, a float formed of two inflated seals' skins fastened together, and in this manner bars of silver, bags of gold and silver, and all goods, are conveyed to vessels in the bay. Arica is the seaport of Tacna, distant 30 miles to the N.N.E.; most of the silver from the mines of Potosi was formerly shipped off hence to Lima, and much bullion is still exported.

ARIE'GE, a department of France, which is formed out of the ancient county of Foix, of Couserans which belonged to Gascoigne, and of a small part of Languedoc. It is bounded N. and W. by the department of Haute Garonne, E. by that of Aude, S.E. by that of Pyrénées Orientales, and S. by Andorra and the Pyrenees which separate it from Spain. The department lies between 42° 33′ and 43° 19′ N. lat., and between 0° 50′ and 2° 8′ E. long. Its length from E. to W. is 66 miles, and its breadth from N. to S. 49 miles. The area of the department is 1756 square miles: the population in 1841 was 265,607, which gives an average of 151.25 to the square mile, being 16.75 below the average per square mile for all France.

Two-thirds of the department, coinciding generally with the arrondissements of Foix and St. Girons, are covered with mountains, which rise gradually from N. to S., and reach their highest elevation in the chain of the Pyrenees: the rest of the department, comprehending the arrondissement of Pamiers, is mostly level. The principal *pics* or summits of the Pyrenees in this department, with their height above the level of the sea in feet, are—Fontargente 9164; Serrère 9592; Montcalm 10,513; Estats 10,611; Montvalier 9120; and Montouléon 9424. A spur from the main chain of the Pyrenees projects into the centre of the department and forms the mountain of Plat de la Serre. The different branches sent out from this divide the waters of the department into two basins, that of the Ariège on the E. and that of the Salat on the W. Several of the valleys of this department are almost completely shut in, and communicate with each other and with the rest of the department only by the cols or depressions in the mountains, which are here called *ports*. The temperature is in general mild, notwithstanding the elevation of the surface, but it is more equable in the north than in the south, where near the highest mountains the heat in summer is suffocating, and the cold in winter is intense. There are large ponds and unhealthy marshes in some places.

The soil in most of the valleys is a deep black loam; in the plains about Pamiers and Saverdun it is light and gravelly, and in some valleys it is sandy, consisting chiefly of the detritus of the granite rocks. The mountains are in many places rocky and bare. The south of the department consists of transition rocks mixed with some layers of granite and limestone: to the north of Foix first the Alpine limestone, then the tertiary rocks prevail. Marble, freestone, alabaster, plaster of Paris, slate, coal, peat, amianthus, lead, copper, turquoise, jet, jasper, and alum are found. Gold is found in several of the streams of the department. Iron is abundant, especially in the mines of La Rancié in the valley of the Vic-Dessos, the ores of which yield 60 per cent. of that metal, and contain also a portion of silver. There are two salt springs in the department, and several hot springs, the most frequented of which are those of Ax and Ussat.

The high lands of the department contain much pasturage, and in many places are covered with forests: in these the trees most commonly met with are firs, pines, and oak; elm, beech and linden also flourish. Of fruit-trees, the apple, peach, and sweet chestnut are extensively cultivated. The low lands produce wheat, Indian corn, millet, buckwheat, hemp, and flax, the seed of which mixed with that of the turnip furnishes the oil for burning chiefly used in the department. In the south the potato is extensively cultivated to supply the deficiency of corn, which does not ripen on the mountains. The wine of the department is of inferior quality, and is all consumed by the inhabitants. Sheep of good breed, horned cattle and mules, are very numerous; game is abundant. Of wild animals, bears, wild boars, wolves, foxes, badgers, roebucks, chamois, otters, polecats, hares and rabbits are found. Eagles, hawks, owls, wild geese and ducks, partridges, &c. are numerous. Fish, especially trout, abound in the rivers: the marshes are infested with great numbers of reptiles, among which the viper is common.

The inhabitants of the department, besides the usual agricultural pursuits, are engaged in the manufacture of coarse woollens, linen, soap, hats, combs, porcelain, and pottery. There are also many tan-yards, paper-mills, saw-mills, glass-works, and numerous establishments for smelting iron and copper ores. The principal article of export from the department is iron, which is carried on the backs of mules to Auterive in Haute Garonne, whence it is conveyed down the Ariège to the canal of Languedoc and the Garonne. Wool is largely imported from Spain, which receives in return woollen fabrics, linen, cattle, and wax. Other articles of commerce are rosin, pitch, turpentine, cork, marble, medicinal herbs, &c.

The chief rivers are the Ariège and the Salat. The Ariège rises in the Pyrenees near Mont-Louis, and falls into the Garonne 10 miles above

Toulouse, having run a course of about 90 miles, of which the last 20 are navigable. Between Foix and Saverdun particles of gold are found in the sands of this river and its affluents; this circumstance has given origin to the name Ariège, which is a corruption of *Aurigera*. The feeders of the Ariège on the left are the Vic-Dessos and the Lèze, and on the right the Criew, the Lers, and the Hize. The Salat rises in the col of Salau, and falls into the Garonne after a course of about 55 miles, a little below St. Martory: its chief feeders are the Arac, the Garbet, and the Lez. The other rivers are the Volp and the Arize, which are affluents of the Garonne. Most of these streams flow with a rapid descent, and many of them are used for purposes of irrigation, and as moving power for machinery.

Of the roads by which the department is traversed, the most important is the one that leads from Toulouse to Puycerda in Spain: it follows the valley of the Ariège all the way, and crosses the Pyrenees by the *port* of Puymaurin, having sent off a branch from Tarascon up the valley of the Vic-Dessos. On the port of Puymaurin, which is 6295 feet above the sea-level, the French custom-house is planted. The valley of the Salat communicates with Spain by the port of Salau, and with the valley of the Ariège by the port of Lirs. The other passes of Pyrenees are much frequented by smugglers. The department is also crossed by the great roads leading from Carcassone to St. Girons, from Perpignan to Bayonne, and from Albi into Spain. The departmental roads are in number 14; but few of these are practicable for carriages.

The department is divided into three arrondissements, which, with the cantons, communes, and population in each, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Foix. . . .	8	140	92,300
Pamiers . .	6	115	78,756
St. Girons . .	6	82	94,551
Total . .	20	337	265,607

In the arrondissement of Foix the chief town is Foix, which is also the capital of the department, as it was of the former county of Foix. The town is ancient: it stands on the left bank of the Ariège, in the gorge of a narrow valley, which is bounded by precipitous hills, at a distance of 404 miles S. from Paris, 42° 58′ N. lat., 1° 36′ E. long.; population 4980. The streets are narrow, but the houses are well built. There is a tribunal of first instance, a college, and a public library of 8000 volumes in the town, which has manufactures of ironmongery, leather, coarse woollens, serge, hats, and hosiery. The most remarkable public buildings are the castle of the ancient counts of Foix, the court-house, the church of St. Volusien, and the stone bridge over the Ariège. The castle is now used as a gaol; it stands on an isolated rock, which rises from amidst the houses of the town, and is in good preservation. The other towns are—Ax or Aqs, famous for its hot sulphureous springs, of which there are above 30 in the town; it stands among granitic mountains at the junction of three valleys, from which three mountain torrents issue, and, uniting near the town, form the Ariège; population 1991: La-Bastide-de-Serou, on the Arize, 10 miles N.W. of Foix, at which hats, tiles, bricks, and fine pottery are made; grains of gold are found in the streams near this place; population 2865: Les Cabanes, 9 miles down the river from Ax, at which there are silver and iron mines, crystal also is found here; the fine old castles of Gudannes and Lordat are near this place: Lavelanet, 16 miles E. of Foix; population 2898; there are factories for broad-cloth and woollen yarn, and saw-mills which are worked by water power; jet is found in the neighbourhood: Querigut, 40 miles S. E. of Foix; it is built on a pass over the Pyrenees, which is commanded by a fort in the town: Tarascon, on the right bank of the Ariège, near where that river is joined by the Vic-Dessos; population 1560; it is a small place, but important for its extensive iron-works; there are large fairs for cattle and farm produce, which are much frequented by the Spaniards: and Vic-Dessos, on a small river and in a valley of the same name, 7 miles S.W. of Tarascon; population 1142; the village is surrounded with smelting-furnaces, and the whole valley is studded with iron-works, with the neat residences of the iron masters and their workmen, and with many fine old feudal castles; the iron mines of Vic-Dessos have been worked from time immemorial.

In the arrondissement of Pamiers the chief town is Pamiers, an episcopal town on the right bank of the Ariège, 11 miles N. of Foix; population 6389. The town is pretty, and stands in a very beautiful district, rich in corn, fruit, and pasturage. The most important building is the cathedral, which is surmounted by an ancient Gothic brick tower. There is a tribunal of first instance, a college, a seminary for the education of the clergy, some manufactures of hardware and woollens, and a thriving trade in corn in this place. There is a chalybeate spring in the neighbourhood. The other towns are—Daumazan, a small place on the left bank of the Arize, and 17 miles W. of Pamiers: Le-Fossat, a small place on the left bank of the Lèze; population 1007: Le-Mas-d'-Azil, 13 miles W.S.W. of Pamiers, on the Arize; population 3002; this town stands in a lovely valley surrounded by fertile hills; it has manufactures of alum, copperas, and horn-combs; several large cattle fairs are held: Mazères-en-Foix, 10 miles N. of Pamiers, on the left bank of the Lers; population 3390; the counts of Foix had a castle and resided here; the Huguenots held the town during the 16th century till the final extinction of their party under Louis XIII.: Mirepoix, 14 miles E. of Pamiers, on the Lers; population 4160; coarse woollens, box-wood combs, soap, and woollen yarn are manufactured; there are jet, iron, and coal mines in the environs: Saverdun, 8 miles N. of Pamiers, on the left bank of the Ariège, the birthplace of Benedict XII.; population 4012; the town has some trade in timber, tiles, cattle, and fruits: and Varilhes, on

the great road between Pamiers and Foix; population 1700.

In the arrondissement of St. Girons the chief town is St. Girons, on the right bank of the Salat, 26 miles W. of Foix, and at the foot of the Pyrenees; it is a pretty little town, and has a population o 4030. The chief fabrics are linen, coarse woollens, and paper: the town has also a good trade with Spain in iron, wool, mules, and swine; it has ten great yearly fairs, at which there are extensive sales of cloth, linen, corn, and beasts. There is a tribunal of first instance and a college in the town. The other towns are—Castillon, a small place on the Lez, 7 miles W. of St. Girons; population 1215: Sainte-Croix-de-Volvestre, on the Volp, which has six yearly fairs, some manufactures of woollens, drugget, glass, and pottery; population 1886; Erce, 13 miles W.S.W. of Foix; population 3855; there are quarries of white marble, tin and iron mines here, and also iron-works, in which the water-power of the little river Erce, on which the town stands, is made available: St. Lizier, on the right bank of the Salat, a little below St. Girons; paper, cottons, and woollens are the chief fabrics; white, black, and grey marble, as also copper and lead, are found in the neighbourhood of the town; population 1272; this town, which was formerly the seat of a bishop, is very ancient, and was first known by the name of *Austria Consorannorum*, from its being the chief town of the Consoranni or Consuarani, a tribe mentioned by Pliny, who held the district since called from them Couserans; the town took its present name from St. Lizier, one of its bishops, who died in 742; its prelates, however, were styled bishops of Austria till the 12th century; the episcopal palace, now converted into an hospital, is a remarkably fine building: Massat, 14 miles E. of St. Girons, which has several furnaces for smelting iron, hydraulic saw-mills, and oil and flour mills; there are iron and lead mines, and also marble and slate quarries near the town: and Oust, on the right bank of the Salat; population 1700, in which there are iron-works; a vein of lead ore containing silver has been discovered in the neighbourhood of this town.

The department forms the bishopric of Pamiers, and returns three members to the Chamber of Deputies; it is within the jurisdiction of the Cour Royale and the University Academy of Toulouse, and belongs to the 10th military division, of which Perpignan is the head-quarters.

(*Géographie Universelle*; Balbi, *Géographie*; *Dictionnaire de la France.*)

A'RIES (constellation), the Ram, is the first constellation of the ancient zodiac. The sign of the zodiac, so called, including the first thirty degrees of the ecliptic, reckoning from the vernal equinox, owing to the precession of the equinoxes, now begins in the constellation Pisces.

The Greek mythology makes Aries to be the commemoration of the golden fleece, in quest of which the Argonautic expedition was undertaken. [ARGONAUTS.]

This constellation is surrounded by Cetus, Taurus, Perseus, Andrómeda, and Pisces, the first of which is directly below it. In the horns are two stars, α and β, the only two of any note, which are near together, and may be found by continuing the line drawn from Procyon through Aldebaran; or, by continuing the line drawn through the pole star, and ϵ Cassiopeiæ, the nearest to the Great Bear of the five.

ARIETTA, in music (the diminutive of the Italian word *aria*), a short air.

ARI'LLUS, in botany, is a fleshy expansion either of the umbilical cord by which seeds are attached to the placenta, or of the placenta itself. It is never formed till after the fertilization of the seed, and is only met with in a few plants; its use is entirely unknown. The most remarkable instance of the arillus among species of common occurrence is in the spindle tree, *Eubnymus Europæus*, in which it is the fleshy red covering of the seed that renders that plant so ornamental in the autumn and beginning of winter. Another familiar case is the *mace* of the nutmeg; this substance is, when fresh, a crimson lacerated covering of the nut, which acquires its pale brown colour in consequence of the preparation it undergoes in being dried and prepared for market.

ARIMA'NES and AREIMA'NIOS are Greek corruptions of the Persian name Ahriman or Aheriman, which, according to the doctrine of Zoroaster, is the name of the author of evil, and the opponent of Ormuzd, who is the author of good. Ormuzd and Ahriman were, according to the 'Zend-Avesta,' the offspring of Zeruane-Akerene, the indefinite and impersonal divine substance and cause of all existence. Both were primarily equal in intellect and power; but Ormuzd was, from the beginning, pure, good, and luminous; Ahriman was dark and wicked, and bent on destruction and mischief. Ormuzd is represented as the creator of the world: Ahriman constantly counteracts the designs of his goodness. The struggle of the two deities will, according to Zoroaster, continue 12,000 years, after which Ormuzd will defeat Ahriman, who will become a convert to truth and goodness, and a new world, happier and better than the present, will be created.

The Persian doctrine of the two opposite principles was known to Aristotle, who, according to Diogenes Laertius ('De Vit. Philos. Procem.' 2), distinguished them as the Good and the Bad Dæmon.

ARIOBARZA'NES. [CAPPADOCIA.]

ARI'ON, a native of Lesbos, the inventor of the dithyrambus, and a great musician, was contemporary with Periander of Corinth, and with Alyattes, king of Lydia (B.C. 628—571). He travelled as far as Taras (Taranto) in Southern Italy, and acquired considerable wealth by his professional skill. His adventure with the dolphin is well told by Herodotus, i. 23, &c.

ARIO'SO, in music, 'in the manner of an air,' as contradistinguished from recitative. When applied to instrumental music, it denotes a sustained, a vocal style.

ARIO'STO, LODOVICO, was born at Reggio, near Modena, September 8, 1474. He was the son of Nicolò Ariosto of Ferrara, a military officer in the service of Duke Hercules I. d'Este. Lodovico was the eldest born of a family of five brothers

and five sisters. He early showed a disposition for poetry, and wrote in his boyhood a drama on the subject of Pyramus and Thisbe. Being designed for the profession of the law, he was sent to Padua, where he spent five years, much against his will, in the study of that science; and his father, at last convinced of his distaste for this pursuit, recalled him home and allowed him to follow his own inclination. His father died about 1500, and Lodovico was left in charge of the family with a small patrimony. Having written several lyric compositions, both in Italian and in Latin, he attracted the notice of Cardinal Ippolito d'Este, who in 1503 appointed him one of the gentlemen of his retinue, and employed him in important affairs and missions both for himself and for his brother Alfonso, after the latter became Duke of Ferrara. Ariosto however had little taste for diplomacy, and still less for court intrigue. He returned to Ferrara about 1514, and resumed his studies. He had long before this begun a poem, in *ottava rima*, on the fabulous adventures of the knights and paladins, Moors and Christians, of Charlemagne's age.

Pulci, Bojardo, and Bello had each written a poem on the wars between Charlemagne and the Saracens, in which Orlando, or Roland, appeared as a prominent character, and the champion of the Christians. Bojardo took Orlando for the hero of his poem, and made him fall in love with Angelica, an infidel princess. Bojardo broke off the story of Angelica in the 50th canto of his 'Orlando Innamorato,' and never resumed it, although he had carried his poem to the 69th canto at the time of his death. Ariosto took up the thread of Angelica's story where Bojardo had left it, and making her fall in love with Medoro, an obscure youthful squire, he represents Orlando as driven mad by jealousy and indignation: he continues in this state during the greater part of the poem, until he is restored to reason by Astolfo. But the madness of Orlando is not the principal subject of the poem, although it has furnished the name for it; the war between Charlemagne and the Saracens is continued throughout the narrative, of which it forms a most important and consecutive action, ending with the expulsion of the Moors from France, and the subsequent death of their king Agramante and their other chiefs. Intermixed with these subjects or tales are numerous and some long episodes of knights and damsels, of their fights and loves, of their strange adventures, some heroic, some ludicrous, and others pathetic; there are magicians and giants, enchanted palaces and gardens, flying horses and harpies, and other monsters; and the reader finds himself in the midst of a new world, created as it were by the wand of an enchanter.

Ariosto, after spending ten years in writing his poem, published it in one volume quarto, at Ferrara, in April, 1516, in 40 cantos. After the death of Cardinal d'Este in 1520, Ariosto was called by the Duke Alfonso to his own service. In 1521, he published a second edition of his poems with many corrections, but still in 40 cantos only; this edition is now extremely rare, even more so than the first.

In 1522, having applied to the duke for some more active and lucrative employment, he was sent as governor to the mountain district of Garfagnana, a dependency of Modena, situated on the western slope of the Apennines, and bordering upon Lucca. Ariosto humorously describes the troubles of his government in his fifth Satire. He remained nearly three years at Castelnuovo, the chief town of the district, during which he seems to have conciliated the minds of that rude population, and to have restored order among them. In 1524 he returned from his government to Ferrara, where it appears he remained ever after, nominally in the duke's service, but enjoying leisure for his studies. He now wrote his comedies, which were performed with great splendour before the court, in a theatre which the duke built for the purpose. In October, 1532, Ariosto, after correcting and revising his poem for sixteen years, published the third edition in 46 cantos, which, in spite of some misprints of which Ariosto bitterly complains, remains the legitimate text of the 'Orlando Furioso.' Scarcely had Ariosto completed his third edition, when he found himself ill with a painful internal complaint, which brought on a decline. After lingering several months, Ariosto died June 6, 1533, in his 59th year. He was buried in the old church of San Benedetto, attended by the monks, who volunteered to do honour to his remains.

Besides the three Ferrara editions above-mentioned, printed under Ariosto's superintendence, several reprints of his poem were published in various parts of Italy in his lifetime. Numerous editions followed after his death. The 'Orlando Furioso' has been translated into most European languages, though seldom successfully. Of the English translations, that by Harrington is spirited and much superior to Hoole's, but Rose's is considered the best, and is generally faithful.

Ariosto is considered one of the best Italian satirists. The tone of his satires resembles that of Horace rather than that of Juvenal. He introduces several of the principal occurrences of his life, and exhibits the manners and vices of his time and country. His Satires, seven in number, and addressed to his brothers and other friends, were first published in 1534, after his death, and have been often reprinted, both separately and with the rest of his works. He wrote five comedies in blank verse, 'La Cassaria,' 'I Suppositi,' 'La Lena,' 'Il Negromante,' and 'La Scolastica;' and several minor works, consisting of 'canzoni,' 'capitoli,' and 'sonetti.' Ariosto was never married, but he left two natural sons, one of whom became a canon in the cathedral of Ferrara, and the other a captain in the duke's service.

(Baruffaldi, the younger, *La Vita di M. Lodovico Ariosto.*)

ARISH, or EL ARISH, a small town on a slight eminence about half a mile from the shore of the Mediterranean, and on the usual road from Egypt to Syria, 31° 5′ N. lat., 33° 48′ E. long. There are some wells near it, and some clumps of palm-trees between the town and the sea. There are still some Roman ruins, and several marble columns at Arish. Arish is the site of the ancient Rhinocolura, which was considered a kind of

frontier town between Egypt and Syria; and, in connection with Petra in the interior, was an entrepôt of some importance. The French took possession of it in February, 1799, in their expedition to Egypt, and kept it for some time. It was at Arish that Sir Sydney Smith concluded a convention with the French army, allowing them to return to France with their baggage and arms, which was subsequently disavowed by the British government.

ARISTÆ'NETUS, a Greek writer, a native of Nicæa. It has been conjectured that the Aristænetus to whom are attributed the Erotic or Love Letters is the person to whom several of the letters of Libanius are addressed, and who lost his life in the earthquake at Nicomedia, A.D. 358.

These letters, of which there are two books, are a species of rhetorical exercise, and not real letters; they are of some value as presenting a picture of the manners, or at least of the literature, of the age. The latest and best edition is by Boissonade, Paris, 1822, 8vo. There is a German translation of Aristænetus by Herel, Altenburg, 1778, 8vo.: there are also several French translations.

ARISTEAS. [SEPTUAGINT.]

ARISTA'RCHUS of Samos, an astronomer, lived about B.C. 279. We know nothing of his life or death.

Archimedes (in the 'Arenarius') attributes to Aristarchus the opinion that the earth moves round the sun, which is supposed to have been previously held by Pythagoras and Philolaus. A passage from Plutarch states that Aristarchus supposed the heavens to be fixed, and that the earth moved in an oblique circle, at the same time revolving round her own axis. We learn also from Archimedes, that Aristarchus supposed the apparent diameter of the sun to be the 720th part of the zodiac, that is, half a degree. This is about 2′ too little.

One small work of Aristarchus has come down to us, 'On the Magnitudes and Distances of the Sun and Moon,' which makes no mention of the preceding hypothesis with regard to the earth's motion. It contains the celebrated method of finding the relative distances of the sun and moon: the earliest which was founded upon sound principles. When the moon is exactly halved, it is known that the line joining the sun and moon is at right angles to that joining the earth and moon. By observing the elongation of the two bodies, a second angle of the right-angled triangle is obtained; and when two angles of a triangle are known, the proportions of the sides can be found. But Aristarchus had not the means of making an accurate use of his principle, good as it is.

There is a commentary of Pappus upon the work of Aristarchus, which has been given (in part at least) by Wallis in his edition.

From an obscure passage in Plutarch ('Platonic Quaestions,' 8), in which the report of Archimedes is corroborated, Delambre infers that Aristarchus attributed day and night to the rotation of the earth. It is hard to see how he could do otherwise, if he supposed the sun fixed.

There is another work, published by Roberval at Paris, in 1543, on the 'System of the World,' under the name of Aristarchus. But this, there is no doubt, was by Roberval himself.

Vitruvius speaks highly of Aristarchus, as the inventor of many useful machines, and, in particular, of a dial which he terms *scaphe*. This dial is described by Martianus Capella (cited by Weidler), from which, and partly from the name, we should infer that it was a part of a concave hemisphere, with a style ending in the centre, so that by drawing the equator, &c. inside the hemisphere, the sun's position might be found by marking the extremity of the shadow. Montucla describes one, dug out at Tusculum in 1741, which, since Cicero describes such an instrument, is conjectured to have belonged to him. (Mont. 'Hist. Math.' i. 721; a drawing is given.)

A new edition of the Greek text of Aristarchus, with a Latin translation, appeared at Paris in 1810, 8vo. There is also a French translation by M. de Fortia d'Urban, Paris, Didot, 1823.

ARISTARCHUS was born in the island of Samothrace; but he settled in Alexandria. Ptolemæus Philométor, king of Egypt, reigned from B.C. 181 to 145, and Aristarchus was the preceptor of his son, who was killed by his uncle Ptolemæus Euérgetes II., at the accession of the latter in 145 B.C. Aristarchus was the disciple of Aristophanes of Byzantium, the first Grecian who inquired with precision into the genuineness of the early Greek writings; he likewise introduced the use of the Greek accents, as they may now be seen in manuscripts and printed books. (Wolf, 'Proleg. ad Homer.,' s. 44.) Aristarchus succeeded his master Aristophanes as head of the grammatical and critical school of Alexandria; and obtained, by his eminence as a teacher and by his various writings, a reputation greater than any other critic of antiquity. Horace and Cicero use the term Aristarchus as a general name for a great critic.

The numerous critical works of Aristarchus are now all lost, and they are only known from extracts and citations preserved in other writers. His chief work was his edition of the 'Iliad' and 'Odyssey;' in which he revised the text, partly by means of the comparison of MSS., and partly by conjecture; he divided the two poems into twenty-four parts or books, each distinguished by a letter of the Greek alphabet, and he placed certain critical marks before certain lines, some denoting that the verses so marked contained something worthy of notice, and others that they were spurious. Of his Homeric criticisms, a large part is extant in the 'Scholia' to Homer, from which a tolerably complete notion of his mode of treating ancient Greek poets may be formed. One of the most remarkable features of his criticism is the boldness with which he condemned numerous verses as unworthy of Homer, and as manifest interpolations of a later age. Various opinions have been formed on these judgments of Aristarchus; some moderns having thought that his method was in the highest degree arbitrary and uncritical, while others have thought that he exercised a sound discretion. There can be no doubt that Aristarchus, in rejecting verses of Homer, for the

most part did not rely on the faith of ancient copies, but trusted merely to his own sagacity in discovering the traces of interpolation.

The division of Homer into books was doubtless made by Aristarchus for the purpose of reference; and it has been retained on that account ever since his time. The earlier Greek writers, as Herodotus, Plato, and Aristotle, in citing Homer, refer by description to the part of the poem which they mean, as the exploits of Diomedes, the descent into hell, the battle of the gods, and so on.

Aristarchus did not confine his criticism to grammatical and metrical questions, but he also gave historical and geographical illustrations of the author's text. He published two editions of his recension of Homer, as appears from numerous passages in the 'Scholia' to Homer, where the differences between the readings of the first and second editions are noticed. His recension became the established text of the 'Iliad' and 'Odyssey,' not only among the grammarians of Alexandria and their disciples, but among the copyists from whose transcripts the present texts of Homer have been derived.

Late in his life he appears to have retired from Alexandria to Cyprus, where, being afflicted with a dropsy, he died of voluntary starvation at the age of 72; leaving as his successor in the Alexandrine school his disciple Ammonius.

ARISTI'DES, son of Lysímachus, a great Athenian statesman and general. Of his early life nothing very precise is recorded. It appears that he was early opposed to Themístocles, whose ambitious and unscrupulous temper led him to promote both his own and his country's benefit by measures quite at variance with the integrity of Aristides. Plutarch states that he was one of the ten commanders who directed the Athenian army, B.C. 490, upon the occasion of the Persian invasion under Datis and Artaphernes. According to Plutarch, when the Athenians marched back to their capital in haste, to prevent the flying Persians from making any attempt on it by sea, Aristides was left with the men of his own tribe to guard the valuable spoil of the Persian camp; being selected for that duty on account of his incorruptible honesty. But Herodotus, in his account of the battle (vi. 109), never even mentions Aristides' name. This proceeded from no unfriendly feeling; for the historian (viii. 79) bears testimony to him as the 'justest and best man in Athens.' That he distinguished himself is however rendered probable by his having been elected archon *epónymos* in the following year. (Plut. 'Arist.' c. 5.) In the sixth year after, B.C. 483, he was banished by the process called ostracism. [OSTRACISM.] In the third year afterwards, B.C. 480, the Persian invasion under Xerxes took place. At the battle of Artemisium, Aristides was still in exile. But in the night preceding the battle of Sálamis he passed from the island of Ægina through the Persian fleet, bearing intelligence to his countrymen that they were surrounded, and that flight, which they were then meditating, was no longer possible. (Herod. viii. 79.) [SALAMIS.] Aristides, at the head of a body of Athenians, landed on the small island of Psyttaleia, near Salamis, and put to the sword the Persian troops stationed on that island. (Herod. viii. 95.)

Before the battle of Platæa, fought in September, B.C. 479, he was reinstated in his former favour with his countrymen. At this battle, contrary to the general usage, he was appointed sole general of the Athenian troops, and he signalized his moderation in a dispute with the Tegeátæ concerning the right of occupying the left wing of the allied army, the second post in point of honour, the right wing being always held by the Lacedæmonians.

Not long after the restoration of Athens, which had been destroyed by Xerxes and Mardonius, an important change took place in the constitution. Aristides proposed a law, by which all persons were rendered eligible to the archonship, without regard either to birth or wealth. [ARCHON.]

Aristides was the colleague of Themistocles in an embassy to Sparta, when the Spartan government interfered to prevent the rebuilding of the walls of Athens, destroyed by the Persians. (Thucyd. i. 91.)

In B.C. 477, the unpopularity of the Lacedæmonians, especially of the commander-in-chief Pausanias, induced the Ionian Greeks to offer the command of the confederacy to Athens, whose ships at that time were under the command of Aristides; and to his moderation and probity, and to the favourable opinion consequently entertained of the Athenian character, that transfer of the command is chiefly to be ascribed, and the establishment of what may be called the Athenian rule in Greece, which was overthrown seventy-two years afterwards, at the end of the Peloponnesian war. Under this new arrangement, the Greeks of the west coast of Asia Minor, the islands, and Thrace, in conjunction with the Athenians, engaged to maintain a fleet to prosecute the war with Persia. Each state was assessed to furnish a certain sum of money, amounting in the aggregate to 460 talents; and the difficult task of making the assessment was executed by Aristides with such fairness, that, according to Diodorus (xi. 47), he obtained the highest praise for justice.

This is the last public office in which we know Aristides to have been engaged. The precise time of his death is not mentioned by the early Greek historians, or by Plutarch. Nepos says that it occurred in the fourth year after the ostracism of Themistocles, which fixes it to 467. He left a son, Lysimachus, and two daughters; all of whom were provided for by the state. Lysimachus had a pension and a grant of lands at Estiæa in Eubœa. (Demos. 'Leptin.' cap. 24.) Aristides lived and died in poverty, after having borne the highest offices of Athens, and possessed the most tempting opportunities for peculation of any man in Greece; a voluntary poverty, for he is said to have refused large sums offered to him by private liberality, saying that 'he could better boast of his poverty than others of their riches, which many did use ill, and few well: and that it was a hard thing to find one man of a noble mind that could away with poverty, and that such only might be ashamed of poverty

as were poor against their wills.' (North's 'Plutarch.')

In the Elgin collection of the British Museum, there is a sepulchral stéle, which bears the name of 'Aristides, the son of Lysimachus, of Estiæa.' It is conjectured that this Aristides was the grandson of Aristides the Just.

(*Library of Entertaining Knowledge—Elgin Marbles*, vol. ii. 149; Plutarch, Cornelius Nepos, *Lives of Aristides*.)

ARISTI'DES, a native of Thebes, and one of the great Greek painters, is said by Pliny (xxxv. 10) to have been the contemporary of Apelles. His excellence consisted in giving character and expression to his figures, and in the strong delineation of the passions: his colouring was hard. One of his great pictures represented the capture of a city. Among the most striking figures was that of a mother just expiring from a wound; her infant still clings to her breast, and the dying mother seems only anxious that her child should not suck the blood that is streaming frrm her body. Alexander the Great had this picture removed to Pella in Macedonia. The works of Aristides were numerous, and many of them were transferred to Rome with the rest of the plunder of Greece. At the capture of Corinth by L. Mummius, Polybius, the Greek historian, who was present on the occasion, saw the Roman soldiers playing at games of chance on the most costly pictures, which they had spread on the ground. (Strabo, p. 381.) A Dionysus (Bacchus) by Aristides, and a Hercules struggling with the poisoned shirt of Deianira, by the same artist, were treated in this shameful way. Strabo himself saw the Bacchus, which, by chance, had been safely transferred to Rome, in the temple of Ceres, and he pronounces it a most beautiful work of art.

See a passage in Athenæus (xiii. 567) on other subjects painted by Aristides.

ARISTI'DES Æ'LIUS, was born at Hadriani in Bithynia, probably about A.D. 117; but, according to other opinions, A.D. 129. He studied at Smyrna under Pólemo, and at Athens under Heródes Atticus, after which he travelled extensively in Asia and in Egypt; finally, he settled at Smyrna, where he obtained the priesthood of Æsculapius. He also opened a lecture-room and gained great reputation by his rhetorical prelections. In A.D. 178, Smyrna was destroyed by an earthquake, and Aristides, by addressing a letter on the subject, which is still extant, to M. Aurelius, induced the emperor to restore the city. Statues were erected in honour of Aristides; one, now in the Vatican (Winkelmann, ii. 475, French ed.), bears his name, and it is by no means improbable that the statue supposed by some to represent Aristides of Athens, really belongs to this Aristides, who affected to rival Isocrates and Demosthenes.

Of his fifty-five declamations, one entitled 'Against Leptines,' is an imitation of the great oration of Demosthenes, which bears the same name; and another, the 'Panathenaikos,' was intended to show that he could write in the style of Isocrates, and rival one of the most famous specimens of that master. Aristides wrote also panegyrics on many distinguished cities, such as Smyrna, Rome, &c.

The latest edition of the Declamations of Aristides, together with his two books on Rhetoric, is by W. Dindorf, Leipzig, 1829, 3 vols. 8vo.

ARISTI'DES QUINTILIA'NUS, a Greek writer on music, whose age is uncertain. His work on Music (περὶ Μουσικῆς), in three books, is printed in the Collection of Meibomius.

ARISTI'PPUS, the son of Aristades, was born at Cyréne, and came to Athens when a young man, in order to profit by the lessons of Socrates. Aristippus was a hearer of Socrates for some time; and as he could not have been very young when he was attracted to Athens by the philosopher's fame, we may suppose that he was at least twenty-five years old at the death of Socrates, B.C. 399, which would make his birth as early as B.C. 424 or 425. Lais, the courtezan, with whom he was in habits of intimacy, was born B.C. 421. We know that he was still living in B.C. 366, but the time of his death is not stated.

Aristippus appears to have prided himself on his knowledge of the world, on the popularity and versatility of his manners, and the ease with which he could adapt himself to the company of all persons, and to all varieties of fortune. His principles and conduct made him obnoxious to Xenophon, with whom he is stated to have been on bad terms, and to Antisthenes, the head of the Cynic school, whom he is reported to have constantly ridiculed for the austerity of his manners. Plato likewise aims a blow at him in the 'Phædo,' for passing his time in luxurious enjoyment at Ægina, while his master, Socrates, was under sentence of death at Athens, at a distance of a few hours' sail. He seems to have remained true to the principle expressed by him in a conversation with Socrates (Xenophon, 'Memorabilia,' ii. 1), of keeping from his native country, in order to avoid taking any share in public affairs, and to have travelled to various Greek states. He passed much time at the court of Dionysius of Syracuse. He probably retired late in his life to Cyrene, where we find his family and his school after his death.

Aristippus differed from Socrates, and the Socratic philosophers, in taking money for his instruction.

It is doubtful whether Aristippus inculcated his opinions in writing, or whether, like Socrates, he only imparted them orally to his disciples. However this may be, it is certain that his doctrines were perpetuated by his daughter, A'rete, and by Antipater of Cyrene. Arete was the teacher of her son, Aristippus, who, to distinguish him from his grandfather, was called *metrodidactos* (taught by his mother); and Theodórus, the atheist, a philosopher of some note, is stated to have been a disciple of this Aristippus. Antipater, the other immediate successor of the elder Aristippus, is stated to have had disciples; but Hegesias and Anniceris, who were about contemporary with Theodorus, are the only philosophers in his branch of the Cyrenaic school of whose opinions anything is known.

Aristippus is stated to have considered ethics

as the only subject which deserved the attention of a philosopher. (Aristot. 'Metaph.' ii. 2.) He held that the happiness of man consists in pleasure, and his misery in pain: happiness being merely an aggregate of pleasures, and misery an aggregate of pains. That pleasure is the greatest good he conceived to be proved by the fact, that the youngest children, and even brute animals, seek it, and avoid pain. He did not, like Epicurus, consider the absence of pain to be pleasure, or the absence of pleasure to be pain; for he thought that pleasure and pain are accompanied with motion, whereas the absence of pain and pleasure is not accompanied with motion: the former of these two states being like sleep. He did not recommend an unrestrained pursuit of pleasure: true wisdom (he thought) consisted, not in abstaining from pleasure, but in the proper enjoyment of it. He condemned all care for the past or the future, all regret and all forethought, and said that a person ought to think only of the passing day. He recommended calmness of mind and moderation of desires; and he particularly cautioned his daughter Arete against covetousness. He thought that the wise man should be free from envy and love, from superstition, and from the fear of death.

(*Life of Aristippus*, by Diogenes Laertius, ii. 65–104, with Menage's notes; Ritter's *Geschichte der Philosophie*, vol. ii. pp. 87–103.)

ARISTOBU'LUS accompanied Alexander the Great in his campaigns, of which he wrote an account after the king's death. This work, now lost, is one of the chief authorities for Arrian's 'History of Alexander.' (Arrian's *Preface to his Anabasis*.)

ARISTOBU'LUS. [ASMONÆANS.]

ARISTO'CRACY, from the Greek *aristocrátia* (ἀριστοκρατία), according to its etymology, means a government of the *best* or *most excellent* (ἄριστοι). This name, which, like *optimátes* in Latin, was applied to the wealthy class in the state, soon lost its moral and obtained a purely political sense; so that aristocracy came to mean merely a government of a *few*, the rich being always the minority of a nation. When the sovereign power does not belong to one person, it is shared by a number of persons either greater or less than half the community: if this number is less than half, the government is called or may be called an *aristocracy*; if it is greater than half, the government is called a *democracy*. Since, however, women and children have in all ages and countries (except in cases of hereditary succession) been excluded from the sovereign power, the number of persons enumerated in estimating the form of the government is confined to the adult males, and does not comprehend every individual of the society. Where there is a class of subjects or slaves who are excluded from all political rights and all share in the sovereignty, the numbers of the dominant community are alone taken into the account in determining the name of the form of the government. Thus, Athens at the time of the Peloponnesian war had conquered many independent communities, which were reduced to different degrees of subjection. Nevertheless, as every adult male Athenian citizen had a share in the sovereign power, the government of Athens was called, not an aristocracy, but a democracy. Again, the Athenians had a class of slaves four or five times more numerous than the whole body of citizens; yet, as a majority of the citizens possessed the sovereign power, the government was called a democracy.

An Aristocracy, therefore, may be defined to be a form of government in which the sovereign power is divided among a number of persons less than half the adult males of the *entire* community where there is not a class of subjects or slaves, or the *dominant* community where there is a class of subjects or slaves.

Sometimes the word aristocracy is used to signify not a form of government, but a class of persons in a state. In this sense it is applied not merely to the persons composing the sovereign body in a state of which the government is aristocratical, but to a class or political party in any state, whatever be the form of its government. When there is a privileged order of persons in a community having a title or civil dignity, and when no person, not belonging to this body, is admitted to share in the sovereign power, this class is often called the aristocracy, and the aristocratic party or class; and all persons not belonging to it are called the popular party, or, for shortness, the people. Under these circumstances many rich persons would not belong to the aristocratic class; but if the disabilities of the popular order are removed, and the rich obtain a large share of the sovereign power, then the rich become the aristocratic class, as opposed to the middle ranks and the poor. In England, at the present time, aristocracy, as the name of a class, is generally applied to the *rich*, as opposed to the rest of the community: sometimes, however, it is used in a narrower sense, and is restricted to the *nobility*, or members of the peerage.

The word *aristocracy*, when used in this last sense, may be applied to an order of persons in states of any form of government; and it would be an error if any person were to infer from the existence of an aristocracy (that is, an aristocratical class) in a state, that the form of government is therefore aristocratical, though that might happen to be the case.

The use of the word *aristocracy* to signify a *class of persons* never occurs in the Greek writers, with whom it originated, nor (as far as we are aware) is it ever employed by Machiavelli and the revivers of political science since the middle ages: among modern writers of all parts of Europe this acceptation has, however, now become established.

There is scarcely any political term which has a more vague sense than *aristocracy*; and the historical or political student should be careful to watch with attention the variations in its meaning. If this is not done, there is danger, in political or historical discussions, of confounding things essentially different, and of drawing parallels between governments, parties, and states of society, which resemble each other only in being called by the same name.

ARISTOGI'TON, an Athenian who plotted with another Athenian named Harmodius the death of the brothers Hipparchus and Hippias, who held the tyranny of Athens. They succeeded in effecting the murder of Hipparchus at the Panathenaic festival, B.C. 514. Harmodius was slain on the spot; Aristogiton fled, but was subsequently taken, and put to death by Hippias. After the expulsion of Hippias, when the constitution of Athens was brought nearer to a democracy, the memory of Harmodius and Aristogiton was honoured as that of martyrs in the cause of liberty. Bronze statues were erected to them in different parts of Athens, among others by Praxiteles; and they were commemorated in songs. We have, however, the testimony of Thucydides, that the act of Harmodius and Aristogiton arose entirely out of a private quarrel; and that, far from effecting the immediate delivery of Athens, it made the sway of Hippias more severe; and Herodotus speaks to the same effect (vi. 123).

ARISTOLO'CHIÆ, or the Birthwort tribe of plants, consists of a small number of genera which principally inhabit the hotter parts of the world. They are in many cases used medicinally on account of their tonic and stimulating properties; and some of them are reputed remedies for the bite of venomous serpents.

The most common plants of this singular order are the different species of Asarum, little stemless plants with dingy-brown flowers hidden among the leaves.

Medical Properties. — The most valuable of the species is the *Aristolochia Serpentaria*, which grows in North America, chiefly in Virginia, and hence is called Virginian Snake-Root. Though the whole root is used, the rootlets are more powerful than the solid root. Its odour and taste resemble valerian, angelica, and camphor. In its action on the human system it most nearly approaches to camphor, but its effects are more permanent. In protracted fevers, whether of a continued or intermittent kind, it is often eminently serviceable. In low nervous fever, and in smallpox, measles and scarlet fever, it is often a valuable medicine, but should never be administered until after the use of proper purgatives. In some diseases, not attended with fever, but causing torpor and exhaustion, produced by long continued or intense mental exertion, serpentaria, either alone or in combination with quinine, is frequently very beneficial. This species, and several others, both in America and the East and West Indies, are much employed as antidotes against the bite of serpents; and hence the name Snake-Root.

ARISTO'MENES. Not very long after the legislation of Lycurgus, disputes arose between the borderers of Messenia and Laconia, which gave rise to a confirmed hatred. The men of Sparta secretly resolved on attacking Messenia, and they bound themselves by oath never to return home until Messenia was subdued. They commenced the contest by a midnight attack on Ampheia, a frontier town, which they took, and put the inhabitants to the sword. This was the commencement of the first Messenian war. The Messenians continued the war for twenty years; but in the end they were overpowered, and treated with great rigour. They bore the yoke for twenty-five years at least, at the end of which a new generation had grown up, who found a leader in Aristomenes, a young man of the royal blood. The Messenians, with the promise of support from Argos and Arcadia, revolted. The revolt is dated by Pausanias (iv. 15) thirty-nine years after the end of the first war, B.C. 685 (Newton places it in 607), and the first battle was fought at a place called Deræ. It was obstinately contested, and each party claimed the victory. Aristomenes was now appointed to the sole direction of military affairs. He showed his adventurous spirit by alone entering Sparta (an unwalled town, and therefore of easy access) by night, and he suspended a shield upon the temple of Athéna of the Brazen House, inscribed, 'Aristomenes to the goddess, from the spoil of the Spartans.'

The year after the battle of Deræ a second engagement was fought at the Boar's Tomb. The Messenians had aid from Elis, Argos, Sicyon, and Arcadia; the Lacedæmonians from Corinth. Aristomenes gained so complete a victory, that the Lacedæmonians 'fled without shame, no longer waiting for one another.' But in a third great battle, owing to the treachery of Aristocrates of Orchómenus, the Messenians were completely defeated. Aristomenes withdrew with his followers to the stronghold of Eira near the sea, from which he kept up a war of constant incursion along the Laconian border, carrying off agricultural produce and prisoners both from Laconia and from Messenia, now occupied by the Lacedæmonians.

In one of his predatory expeditions Aristomenes was taken prisoner, and cast, with several of his companions, into a pit called Céadas. All but Aristomenes were killed by the fall. For three days he lay waiting the approach of death; but at last he discovered a fox preying on the dead bodies, and by following it made his escape through a small hole. The Lacedæmonians could not believe that Aristomenes had escaped, until the rout of a body of Corinthians, with great slaughter, on their march to join in the siege of Eira, convinced them that 'Aristomenes, and no other, had done this.'

In the eleventh year of the siege of Eira, the fulfilment of an oracle warned Aristomenes that the contest could not be much longer protracted. One stormy night, when the vigilance of the Messenian sentinels was lulled by the violence of the tempest, the Spartans took possession of the walls. After a desperate conflict, Aristomenes collected the survivors, and placing the women and children in the midst, demanded, by signs, a free passage. The Spartans opened their ranks and let him pass.

The remnant of the Messenians took shelter with the Arcadians. Bent on avenging his country, Aristomenes selected five hundred men of approved courage, and formed the plan of assaulting Sparta by night, while the army was absent. Three hundred Arcadians volunteered to join them; but the enterprize was frustrated by Aris-

tocrates, who sent intelligence of it to Sparta. This time his perfidy was detected, and he was stoned by his indignant countrymen.

The remnant that escaped from Eira, joined by the Messenians of Pylos and Methóne, emigrated to Italy at the invitation of Anáxilas. They invited Aristomenes to go with them, but he determined to stay and to prosecute the war against Sparta. However, Damagétus, prince of Iálysus in Rhodes, being advised by an oracle to marry the daughter of the bravest man in Greece, selected Aristomenes. Aristomenes went with his daughter to Rhodes, and there he died. The exploits of Aristomenes formed the subject of a poem by Rhianus, in which the hero made as conspicuous a figure as Achilles in the poem of Homer.

(Pausan. book iv. 6, &c.; Mitford, iv. 4; *Historical Parallels.*)

ARISTO'PHANES, a comic poet, probably a native of Athens, and son of Philippus, or Philippides. The few facts of his life which have been transmitted are unimportant. He is the only writer of the old Attic comedy of whom we have any considerable remains, and it is chiefly through his works that we are able to form an opinion of this species of dramatic composition.

Aristophanes was the author of fifty-four comedies, eleven of which have been preserved. In the fourth year of the Peloponnesian war, B.C. 427, the poet brought out his first play (entitled Δαιταλῆς), in which he held up to contempt the character of the spendthrift; and next year he produced the 'Babylonians,' in which he attacked the demagogue Cleon, and the authorities of Athens: of these plays we possess only a few fragments.

In 425, during the sixth year of the Peloponnesian war, he gained the first prize in a contest with Eúpolis and Cratínus: his play was entitled the 'Acharnians,' in which he recommended to the Athenians the cause of peace, as strongly as the nature of the people whom he addressed would permit. This play is extant. The object he had in view was pointed out by introducing on the stage the rustic Dicæópolis, who, disapproving of the obstinacy of his fellow-citizens, had concluded with the Spartans a separate peace, and is exhibited in the enjoyment of its fruits. This play contains an attack on Pericles for his attachment to Aspasia, and at the same time a strong testimony to his political vigour and eloquence. ('Acharn.' 524-534.)

In B.C. 424 he produced the 'Knights,' or, as Wieland more aptly designates it, the 'Demagogues,' the most valuable of all his extant plays. He held up before the Athenian people a faithful picture of their own character. Athens is represented as a house, and its master is a stupid old gentleman, Demos (*people*); Nícias and Demósthenes are his slaves, and Cleon his confidential servant. Agorácritus, a sausage-seller, is the person whose destiny it is to subvert the demagogue. It consists of humiliating pictures of Cleon, and a succession of proofs to Demos that this favourite servant is unworthy of the confidence reposed in him. It is said that no one

was bold enough to act the part of Cleon, or to make a mask to represent him, and that Aristophanes was himself obliged to appear on the stage in that character with his face merely painted. The 'Knights' was the first play that Aristophanes brought on the stage in his own name. There are many touches in Arbuthnot's 'John Bull,' as Mitford remarks, strongly resembling the most striking traits in the character of Demos, the personification of the Athenians. It will be observed that Cleon and others were introduced on the stage in their own names, a licence which the writers of the old comedy used and abused.

In B.C. 423 he produced the 'Clouds,' which only gained the third prize, though in later times it has acquired a notoriety which it does not seem to have enjoyed at first. It is an attack on the schools of the sophists, a race of philosophers who, as Aristophanes says, 'could make the worse appear the better reason.' The principal object of the attack is Socrates under his real name. This play was caricatured by Eupolis, but it did not prevent the poet from labouring to improve his first idea, and it is probably the amended copy which we now possess. (This point is discussed by Wieland, 'Att. Mus.' ii. 2; and by Hermann, Præf. xix.; see also the 'Clouds' of Aristophanes, by F. G. Welcker.)

In B.C. 422, appeared the 'Wasps,' which was levelled chiefly at that numerous class of citizens who gained a livelihood by executing the office of *dicast* —or jurymen in the courts. To understand this play requires a minute acquaintance with the manners of the Athenians, and also with their judicial system. This play furnished Racine with the idea of his 'Plaideurs.'

The play of the 'Birds' was exhibited, B.C. 414, in the seventeenth year of the Peloponnesian war, and during the absence of the Salaminia, an official ship which was dispatched to bring back Alcibiades from Sicily. [ALCIBIADES.] Nearly every writer on this play has found it difficult to say what is the plot. In the Transactions of the Royal Academy of Sciences of Berlin (1827) there is an essay by Süvern on the 'Birds' of Aristophanes, which has been translated by Mr. Hamilton. The object of the essay is to show that the key to the true interpretation of the play is only to be found by referring to the date of the exhibition and the mission of the Salaminia.

In B.C. 406 appeared the 'Frogs,' in which Aristophanes attacks the poet Euripides, who had lately died.

The best of his other extant works is the 'Plutus,' which appeared first in B.C. 408, and again twenty years afterwards, B.C. 388.

Aristophanes is distinguished by the exuberance of his wit, his inexhaustible fund of humour, and the Attic purity and great simplicity of his language. But his wit is frequently of a kind which cannot be relished by the present age, partly because his allusions are sometimes necessarily obscure, and partly also because of their gross obscenity. The rank which he ought to hold among ancient comic writers it is difficult to assign, as none of their entire works have been preserved.

The plays of Aristophanes, especially in the

choral parts, often contain passages of great poetical beauty, but his subject did not allow such efforts to be either frequent or of any great length, and there is a mock solemnity in most of the poetical parts; he could not long refrain from a joke, or some oblique stroke of satire. Where Aristophanes appears to be speaking in his own person, he is the advocate of morality, and the unsparing censurer of the habits of his countrymen. He was a friend to peace, and, to his credit, the enemy of Cleon. The real test of his character must be the 'Clouds.' It is not possible to esteem the character of Socrates, and at the same time to believe that Aristophanes was an honest man. All the explanations and apologies with respect to this exhibition of Socrates are unsatisfactory. Probably, like many wits of his own and subsequent ages, Aristophanes had neither the ability nor the turn of mind which would qualify him to investigate the principles of moral science, and he may have turned the philosopher into ridicule without knowing or caring what his doctrines were.

One of the most complete editions of Aristophanes, containing a Latin version, an index, and a large collection of notes, is that of Bekker, in 5 vols. 8vo, Lond. 1829. It contains also the Scholia. The valuable Scholia on Aristophanes have been published by Dindorf, 3 vols. Lips. 1826. The 'Knights,' 'Acharnes,' and the 'Wasps,' have been translated into English verse by Mitchell (London, 1822), and the 'Clouds' by Cumberland (1797). There are several prose translations of single plays. The latest English translation of all the plays is by Wheelwright, into blank verse, 2 vols. 8vo, 1837. There is a German translation of Aristophanes by Voss, 1821.

ARISTO'PHANES of Byzantium, the pupil of Callimachus and Zenódotus, and the founder of the Alexandrine school of criticism, was perhaps born about B.C. 240. It is not known when he removed to Alexandria. The invention of the Greek accents is attributed to Aristophanes, and the introduction of a system of punctuation. He was the first who attempted to arrange the Greek writers into classes, according to the branches on which they wrote, and he separated those of the highest authority from writers of inferior merit. This canon of classical writers was afterwards corrected and confirmed by his pupil Aristarchus. [ARISTARCHUS.]

Nothing of Aristophanes remains except what may form a part of the large commentary of Eustathius, the Venice Scholia, &c.

(Villoison's *Scholia*, Il. i. 298, 424, &c., where Aristophanes' edition of the 'Iliad' is referred to.)

ARISTOTLE (Aristóteles) was born in Chalcidice, at Stagira, a Greek colony from Andros, in B.C. 384, in the same year as the Athenian orator Demosthenes: they died in the same year, B.C. 322. Nicómachus, the father of Aristotle, was the physician of Amyntas II., king of Macedonia, the father of Philip, who was the father of Alexander the Great. In his seventeenth year, his father being then dead, Aristotle went to Athens (B.C. 367), where he became a hearer of Plato, though it seems that his attendance on Plato's lectures could not have lasted long at that time, as Plato is said to have gone to Sicily in that year. Though Aristotle's philosophical opinions differed from those of his master, which he opposed, he makes no personal attack on Plato's character.

Aristotle remained at Athens twenty years, during which time he became a teacher of rhetoric, and he made a violent attack on Isocrates, the great model of the art. In B.C. 348, the year in which Plato died, Aristotle went to Atarneus in Mysia, on the invitation of the eunuch Hermias, the ruler of Atarneus. He stayed there three years, till the death of Hermias, who lost his life through the treachery of Mentor, a Greek in the service of Artaxerxes Ochus, king of Persia, who wished to bring all Asia Minor again under his yoke. Aristotle fled to Mytilene in Lesbos in B.C. 345, with Pythias, the only sister of Hermias, whom he made his wife. In the only poetical effort of Aristotle which is extant (Diogenes Laertius, v. 7; Athenæus, xv. 16) he has celebrated the virtues of his friend Hermias.

Philip, king of Macedonia, in B.C. 343, invited Aristotle to undertake the education of his son Alexander, who was then thirteen years of age; and as a proof of his favour, Philip restored, at the request of Aristotle, his native city Stagira, one of the thirty-two cities which Philip had destroyed when he captured Chalcidice. The mind of the pupil, who had a good capacity, was thus formed under the direction of one of the greatest thinkers that has ever lived. He acquired a taste for natural history, and the principles of philosophical, ethical, and political science, the influence of which operated on his future career. Aristotle never mentions his pupil in any of his extant writings. Their friendly relation existed, however, after Alexander set out on his Asiatic expedition, though it seems probable that it was interrupted before Alexander's death, who is said to have conceived some suspicion of his old master.

Alexander was four years under the care of Aristotle, but he did not return to Athens till B.C. 335, and he remained there about thirteen years. Plato had been succeeded by Xenocrates, who was now the head of the academy. Aristotle delivered his lectures in the gymnasium of the Lyceum, and founded the school of the Peripatetics, so called, it is said, because he walked backwards and forwards in a shady place while he was delivering his instruction. After the death of Alexander, the enmity of the Athenians to the Macedonians broke out, the Lamian war followed, and Aristotle, who was a Macedonian, and was also accused of irreligion, the usual charge of all ages against men who seek the truth, withdrew to Chalcis in Eubœa, where he died, B.C. 322, in the sixty-third year of his age. He had a daughter, Pythias, by the sister of Hermias, and a son, Nicomachus, by Herpyllis. The events of his life were few: his sphere was philosophy, which however was based on practical knowledge, in which he has had few superiors. His character was above reproach, though calumny did circulate slanders against him, from the attacks of which no virtue is exempt.

The influence of Plato and Aristotle on the development of science continues to the present day. But their systems were constructed from a different point of view. Plato's system was the ideal; Aristotle's was the real. The ideas of Plato are spiritual forms, according to which God fashions all things. Aristotle attempted to discover the notions which are the foundations of all sensuous impressions, and these notions are only objects of thought. His method was not empirical. The understanding has a creative activity; it conceives principles, and apprehends them in phænomena. Phænomena determine the notion of the thing, and the notion in its turn determines the phænomena. Aristotle's philosophy viewed things from two points of view, in the particular and in the universal. The particular is infinite, and those who look only to it are overwhelmed by the inexhaustible mass of the material. The universal is all-comprehensive; it brings the infinite in subordination to that power which pervades all and produces order out of confusion.

If Aristotle did not create the sciences, he gave to them a form. In his logical treatises he developed the laws which govern our mental conclusions. In his physical treatises he investigated the ultimate principles of motion, space, and time. He laid the foundations of the sciences which have for their object the investigation of organized forms, the essential character of which is production of things like themselves. The nature of the mind was examined in his psychological works; and the nature of the will and of responsibility in his ethical treatises. His political treatises were not ideal constructions: they were the analysis, the resolution into their elements, of the existing forms of society. He treated of language as a means of persuasion in his 'Rhetoric,' and of the theory of art in his 'Poetic.' He gave to metaphysic its proper direction, by the investigation of ultimate principles in his 'First Philosophy.' The value of Aristotle's philosophy is tested by its universality: it is not a Greek philosophy, not a philosophy of a particular age. It has been read and studied in all ages and countries, in the language of almost every civilized people. It has been perverted, misapplied, and misunderstood: it has been described as something which it is not; appealed to as authority which simply as such should silence disputation and stop inquiry; and it has been depreciated in later times as purely dogmatic, unfertile in results, as if it were that which the schoolmen made of it, and nothing more. Even at present, it is usual to cite opinions as if they were Aristotle's, which are directly opposed to his doctrines; to select from his works something which may be controverted, as if the exposure of an error were the exposition of a system; and to congratulate ourselves on the lights by which the new philosophy has dispersed the darkness in which the Stagyrite had enveloped the world. And yet Aristotle still survives: some few devote themselves to understand and to expound him, to show that the value of the great master consists not in what he taught, but in his method; and that his mode of investigation, so far from being irreconcileable with modern science, is the sure path to discovery.

The editions of Aristotle and of his several treatises are very numerous. The Editio Princeps is that printed at Venice by Aldus Manutius, 1495-1498, 5 vols. fol. The best edition of the text is that of I. Bekker, or of the Berlin Academy, Berlin, 4 vols. 4to. Many of the separate treatises have been published from Bekker's text in octavo. There is a complete English translation of Aristotle by Thomas Taylor, London, 1812, 9 vols. 4to, with extracts from the ancient commentators on Aristotle, and a dissertation on Aristotle's philosophy. The translation of the 'Ethic' and 'Politic' of Aristotle, by John Gillies, is very inexact: he often omits something that is essential to the meaning, and he often introduces something which is not in Aristotle. No translation could less faithfully represent the precision of the original. Two sketches of the life and writings of Aristotle have lately appeared in English, which are calculated to give a careful reader a more exact notion of Aristotle's philosophy; and both these sketches are by Germans. One is by Professor F. A. Trendelenburg, of the university of Berlin, and is printed in the 'Biographical Dictionary' of the Society for the Diffusion of Useful Knowledge: it has been used for this article. The other is by Adolf Stahr, Professor in the Gymnasium of Oldenburg, and is printed in the 'Dictionary of Greek and Roman Biography and Mythology,' edited by W. Smith, LL.D.

ARISTO'XENUS of Tarentum, the earliest of the extant Greek writers on music. He was a disciple, first of his father Mnesias, who was acquainted with music, and subsequently of Aristotle, but, according to Suidas (Ἀριστόξενος), never spoke well of his great master after the latter had appointed Theophrastus as his successor. On the same authority it is stated that he wrote 453 treatises on music, philosophy, history, &c. This is all we know of his life, except that he is the author of a work on the Elements of Harmony, and the founder of a musical sect, usually called Aristoxenean, in opposition to the Pythagorean. The disciples of the former were also called μουσικοί, which should here be translated 'musicians by ear,' in opposition to κανονικοί, as the latter were termed, that is, 'musicians by rule.' This controversy not only excited much attention, but various writings on both sides have descended to us. The matter is of no great general interest, since, of all the fine arts, music is the only one in which Greece has not erected a lasting memorial of herself. Aristoxenus, indeed, is cited by Vitruvius as the representative of music in the same sentence with Apelles as that of painting, yet there are but few musicians who even know his name.

The musical theory of Aristoxenus may be described in few words to a musician. What is now called 'equal temperament,' he asserted to be the true law of the musical scale.

The system of Aristoxenus had its followers till the time of Ptolemy, who wrote against it in his 'Harmonics.'

There is an opinion attributed to Aristoxenus, that the soul bears to the body some such relation as the sound of a string to the string itself: this

is perspicuous poetry, but rather cloudy philosophy.

ARITHMETIC, from the Greek ἀριθμητικὴ (*arithmētike*), 'the art of numbering,' should mean the science of number in general, including a great part of what is commonly called *algebra*; it is, however, usually restricted to mean only the science of the expression of numbers by symbols, and the application (not investigation) of all rules relating to them which are useful in the arts of life. For the method of applying principles in practice, see the names of the various rules, ADDITION, SUBTRACTION, &c. For the account of what we must call the metaphysics of arithmetic, see NUMBER; and for the history of this branch, see PYTHAGORAS, PLATO, THEON, EUCLID, DIOPHANTUS, FERMAT, &c.; for that part of algebra which particularly concerns pure arithmetic, see NUMBERS, THEORY OF; for the arithmetic of concrete numbers, see WEIGHTS and MEASURES, and such articles as YARD, POUND, &c.

All the information hitherto possessed on the main points of arithmetical history (and a great deal more) has been presented to the world in a complete shape, by Dr. Peacock, in the 'Encyclopædia Metropolitana.' Most of our information is from this article.

We find ourselves in possession of a method of representing numbers so simple and powerful, that the principle and practice of the most complicated rules follow from it with ease. It is so well known that we need not explain it; but when we separate from the rest the part which particularly distinguishes our *Numeration* from that of the ancient Europeans, we shall find that our superiority consists in the adoption of the following conventions.

1. The value of a figure depends not only upon the simple number for which it stands when alone, but upon the place in which it stands. Thus, in 888 the three eights mean eight, eight tens, and eight hundreds.

2. The place of a figure, considered as affecting its value, is determined by the column in which it stands, and in the absence of succeeding figures to indicate the existence of other columns, their place is supplied by ciphers, which of themselves are considered as having no value. Thus the 8 in 800 is of the same value as that in 863.

To complete our particular system, on which, however, none of its advantages depend, we must add that each figure is increased *tenfold* for every place which it is removed to the left. In the first two conventions consists what is called the 'local value' of the figures; in the last is found the reason for the term 'decimal notation,' from the Latin word *decem*, ten.

There can be no doubt that the mere decimal notation, which has been in use in almost every age and country, has arisen from the facility which the ten fingers afford for making calculations. The names of numbers have been almost universally formed distinct as far as ten, after which compound names have been employed. The exceptions to the rule are additional proofs of the generality of the principle; they are either deduced from five or from twenty, the number of

fingers on one hand, or the number of fingers and toes together. We call the simple symbols of numbers *digits*, or fingers; the Caribbees call the number ten by a phrase which signifies 'all the children of the hand;' and in many languages the phrases for five, ten, and twenty, are connected, either by direct derivation or common etymology, with those for the hand or fingers. In France the scale from 60 to 100 is strictly vicenary (by twenties), and in the Indian archipelago the ancient scales are vicenary. We shall here only quote two results of observation, as laid down by Mr. Peacock, which appear to be very well borne out. They are, that 'the natural scales of numeration alone have ever met with adoption,' meaning, by natural scales, those derived from the hands, or hands and feet; and that 'amongst all nations practical methods of numeration have preceded the formation of numerical language.'

But this does not mean that every nation has gone high in the scale of numbers. There are tribes which have never even risen to a *quinary* scale (by fives), owing to their never wanting, and therefore never giving names to, numbers as high as five. Aristotle mentions a tribe of Thracians which never counted higher than four; and the Yancos on the Amazon have been stopped by the complexity of their language. They count no higher than three, the name for which, in their language is, according to La Condamine, 'Poettarrarorincoaroac.'

One of the Abipones, in describing a number of men greater than ten, would mark out a space of ground sufficient to contain them. This is, in its principle, the same resource as that to which the Greeks were driven by their cumbrous notation, viz. the substitution of geometry for arithmetic.

To enable our readers rightly to estimate the advantage which we possess in our notation, we will here describe that of the Greeks, which is only equalled by that of the Chinese in its near approach to the Indian, or generally received system, and is very much superior to that of the Chinese in the simplicity of its symbols. We shall omit the substitution of letters for numbers, and content ourselves with abandoning the principle of 'local value,' and substituting in its place such a system of symbols as, without departing from the *principle* of Greek notation, will not confuse the reader by the adoption of new digits. For the actual signs used by the Greeks, see NUMERAL CHARACTERS. Let the first nine numbers be represented as usual, but let *ten* (instead of 10, in which 1 has local value) be represented by 1′, twenty by 2′, &c. Let 1″ be one hundred, 2″ two hundred, and so on; 1‴ one thousand, 2‴ two thousand, and so on: Let M stand for ten thousand, and let M affixed to a number make its value ten thousand times as great; thus, 4′2M is 420,000 in our notation. We have here improved upon the system of the Greeks, unavoidably, in order not to confuse the reader, since 2000, 200, 20, and 2, would not among them present to the eye that analogy which exists between 2‴, 2″, 2′, and 2, being in fact denoted by

$\beta\iota$, σ, κ, and β.

We now write some high numbers in our own decimal scale, accompanied by our imitation of the Greek.

46379268	4‴6″3′7M.9‴2″6′8
6007.0030	6‴7M.3′
72007106	7‴2″M.7‴1″6

In the first number, *where there is no cipher*, the Greek looks so like our own, that we might be led to imagine there was no essential difference. We might say, that as it would be natural, and was in fact usual, to write the higher numbers first, the mere occurrence of a fourth column would suggest the idea of thousands, so that a notion, which we must call one of *local value*, would be inevitably formed. But when we come to look at the second and third number, we see immediately that the continual derangement of the columns would prevent this notion from acquiring consistence. The symbol of *vacuity* is wanting; and we cannot see how great an impediment that defect presented, because we learn 20, 30, &c., as soon as we learn *twenty, thirty*, &c. And though perhaps 2′, 3′, &c., might have suggested such a contrivance, yet there was no analogy between κ (20) and λ (30) and β (2) and γ (3).

The ingenuity both of Archimedes and Apollonius was employed in the extension of the preceding system, without alteration of its principle. That of the latter we shall imitate. Calling 10,000 M_1, let ten thousand times ten thousand be called M_2, ten thousand times that number M_3, and so on, and let any one of these placed immediately after a number mean that the preceding is to be taken ten thousand times if followed by M_1, ten thousand times ten thousand if by M_2, and so on. The following number

1768,9360,0142,0193

would then be represented by

1‴7″6′8M_3.9‴3″6′M_2.1″4′2$M_1$1″9′3

on which we may make the same remarks as before. The method of Archimedes (which preceded this) differed from it only in making ten million the *radix* of the system. We now see why our arithmetic was called *ciphering*, cipher coming from an Arabic word signifying *vacant*. One such thought as occurred to Archimedes in the bath [ARCHIMEDES] might have been fourteen centuries gained to the science.

We look in vain for any thing like local value in the system of the Egyptians, or any other nation of antiquity who are known with *certainty* to have very ancient records. That of the Jews was similar to the one just described, so far as it went, and the use of some letters common to both in the numeral system, but not so in the *alphabets* of the two, proves that the notation of both had a common source.

To NUMERICAL CHARACTERS we must also refer for the Roman system, which extended itself throughout Europe during the first twelve centuries. It is much more rude than the Greek, and is a sufficient proof of the well-known inaptitude of the former people for scientific invention.

The Chinese had several systems of numeration, all containing complicated symbols, and somewhat resembling that of the Greeks in principle; but

with this important difference, that the symbol for 30, for example, has direct analogy with that for 3, being made by the juxtaposition of a symbol for ten; so that the improvement upon the Greek scale which we have been obliged to make in order to explain it, renders our imitation of the Greek a better resemblance of the Chinese. But they have no written method of expressing local value; though their *Schwanpan* is a practical use of the principle.

Before we proceed to the history of our own scale, we must extend our remark, that the 'decimal notation' and 'system of local value' are distinct things. When we agree that 10 shall stand for ten, we merely express that a number in the second column from the right shall stand for ten times as much as the same in the first column. But we are at liberty to suppose that a number in the second column shall mean nine, eight, or any other number of times what it does in the first. Thus, if we choose a *quinary* scale, in which 10 stands for 5, we reject the symbols, 5, 6, 7, 8, and 9, and our numerical scale runs thus—

1	2	3	4	10	11	12	13	14	20	21	22	&c.
one	two	three	four	five	six	seven	eight	nine	ten	eleven	twelve	&c.

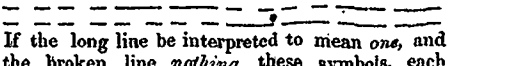
Thus 20 is *ten*, because 2 in the second column counts five times 2. But if we choose a higher scale than the decimal, we shall have to invent, instead of rejecting symbols; if, for instance, we take a *duodenary* scale, in which 10 means twelve, we are left without symbols for *ten* and *eleven*. Let *t* and *e* stand for these; then our scale of number, beginning from ten, is as follows:—

t	*e*	10	11	12	13	14	15	16	17	18	19	1*t*	1*e*	20	&c.
ten	eleven	twelve	thirteen	fourteen	fifteen	sixteen	seventeen	eighteen	nineteen	twenty	twenty-one	twenty-two	twenty-three	twenty-four	&c.

But the scale which best exemplifies the principle is the binary, in which 10 stands for 2, and in which there are consequently no symbols except 1 and 0. The system of numbers in this scale (from one to ten) is as follows:—

1 10 11 100 101 110 111 1000 1001 1010.

A Jesuit at Pekin communicated to Leibnitz the following Chinese symbol, called by them the Cova, or *lineation*, and attributed to Fohi, the founder of the empire. It is suspended in their temples, and considered as a mystery—



If the long line be interpreted to mean *one*, and the broken line *nothing*, these symbols, each being read from the bottom to the top, give a system of binary arithmetic from 0 to 7 (both inclusive). And Leibnitz asserts that there is a larger *Cova*, which goes up to 63. The late Professor Kidd corroborated this.

We trace our own knowledge of the decimal system direct to the Hindoos, who themselves ascribe it to the divinity. As to the manner of its introduction, there are some differences of opi-

nion on that subject. One and the old account is, that Gerbert, afterwards Pope Sylvester II., found it in Spain among the Moors in the latter part of the tenth century. But upon this there are strong reasons for hesitating. Another and more probable account is, that Leonard of Pisa introduced it in 1202 in a work, entitled 'Liber Abbaci,' &c. And some have supposed that the 'Alonsine Tables' (or 'Alphonsine Tables') being constructed principally by Moors at the court of Alonso, must have been the first in which the system appears. It is certain that this system had been before the twelfth century, and most probably as early as the ninth, in the hands of the Persians and Arabs, who ascribe it to the Hindoos, and call it by a name which signifies 'Hindoo science.' It is also certain that the Hindoos themselves have long used it [VIGA GANITA], and that it is easy to trace the manner in which our numeral symbols have been derived from those of the Sanscrit. In this latter language there are distinct names for *units, tens,* &c., up to what we should call *hundreds of thousands of millions of millions.* But whether we are to look to a Hindoo for the invention is a question on which no surmise can be made till some probable account of the origin of Hindoo literature can be given.

The steps by which the new notation made its way through Europe are not capable of being very clearly traced. Montfaucon found them in an Italian manuscript which was finished in 1317; and many manuscripts of the works of authors a century older contain them, but it is well known that it was usual to substitute the new figures for the old in recopying. In the library of Corpus Christi College, Cambridge, is a catalogue of eclipses from 1300 to 1348, to which they are subjoined. Graven dates on inscriptions have been given by Wallis and others as old as 1330; but, upon examination, reason has been found to suspect that 5 has been mistaken for 3. There does not seem to be evidence of any general use of the Arabic numerals before the invention of printing; and even the works of Caxton do not contain them, except in a wood-cut. Merchants continued their accounts in Roman figures up to the sixteenth century. On the whole, we think that the general use of these numerals in scientific works did not much precede, if at all, the diffusion of algebra.

The only material addition which has been made to this groundwork of arithmetic is the invention of decimal fractions. This is an extension of the principle of local value, of so simple a character, that it is surprising the Hindoos never adopted it. They write fractions as we do, omitting only the line which separates the numerator and denominator, and they make great use of decimal fractions in approximating to the square roots of numbers, but without any peculiarity of notation.

The first fractional notation which we find among the Greeks consisted in writing the denominator where we now write the *exponent.* Thus, retaining our imitation, $\frac{207}{365}$ would be written $2^{\prime\prime}7^{3\prime\prime}6^{\prime}5$. This system is principally used by Diophantus; and in Eutocius we also find a peculiar symbol, something like κ, for *one half.* Ptolemy made a further step, in the application of the method of dividing the circle to all units whatsoever, known by the name of the *sexagesimal* notation. The degree of the circle is divided into sixty minutes, the minute into sixty seconds, that again into sixty thirds, and so on: Ptolemy divides every unit in the same manner. We have still retained in our division of the circle the $'$, $''$, $'''$, &c., used by him. In the notation alluded to (which is that of Ptolemy in the particular point referred to)

$$27\ 33'\ 21''\ 63'''$$

would denote

$$27 \text{ units}, \frac{33}{60}, \frac{21}{3600}, \text{ and } \frac{63}{216{,}000}.$$

This sexagesimal notation retained its ground until the introduction of the Arabic numerals, and, with the aid of tables of reduction, was of material use.

Stifelius and Stevinus used circumflexed digits instead of $'$, $''$, &c., in the *sexagesimal* system, and an application of the same principle to the *decimal* system was first made by Stevinus in 1585. Who introduced the decimal point is a matter of discussion. Mr. De Morgan, in his recently published catalogue of arithmetical books, questions Dr. Peacock's attribution of it to Napier.

ARITHMETIC, POLITICAL. [STATISTICS, INTEREST, ANNUITIES, POPULATION, MORTALITY, &c.]

ARITHMETIC OF SINES. [TRIGONOMETRY.]

ARITHMETIC, SPECIOUS. [VIETA.]

ARITHMETICAL COMPLEMENT is that which a number wants of the next *highest* decimal denomination. Thus, what 7 wants of 10, or 3; 32 of 100, or 68; 159 of 1000, or 841; ·017 of 1, or ·983; are the arithmetical complements of these numbers. The best way to find them is to begin from the left, subtract every figure from 9, and the last significant figure from 10, as in the following examples, which include all the cases:—

N°.	17634	19·0018	1734000
Ar. C°.	82366	80·9982	8266000

ARITHMETICAL MEAN. [MEAN.]

ARITHMETICAL PROGRESSION is a name given somewhat improperly to a series of numbers which increase or decrease by equal steps, such as 1, 2, 3, &c.; 2, 4, 6, &c.; $1\frac{1}{2}$, 2, $2\frac{1}{2}$, &c. The difference between any two successive terms, being *common* to all, is called the common difference. The *data* which distinguish one arithmetical progression from another, are the *first term,* the *common difference,* and the *number of terms:* from these it is easy to find the last term and the sum of all the terms. To find the last term, multiply the common difference by one less than the number of terms, and add the first term to the product. To find the sum of all the terms, take the number of terms, the sum of the first and last, and multiply the half of either (whichever is most convenient) by the other.

ARITHMETICAL PROPORTION, the relation which exists between four numbers, of which

the first and second have the same difference as the third and fourth. Thus:—

1	2	81	82
7	3	16	12
2½	3½	1¼	2½

are severally in arithmetical proportion, and in every such proportion the sum of the extremes is equal to that of the means. Thus—

$$12 + 7 = 3 + 16$$

ARIUS was a native of Cyrenaica, in Africa. The date of his birth seems to be unknown. He was distinguished for his extensive learning, eloquence, and ascetic abstinence. The doctrine which he taught was not at that time a novelty, but had been propagated in the Alexandrine school of divinity. Arius, the two Eusebii, and others, seem to have been rather anxious to defend the church against the introduction of creeds which appeared novel to all who had been brought up in the Alexandrine method of philological divinity.

The patriarch Alexander, A.D. 318, having asserted, in a conference with his clergy, the unity of substance in the three persons in the Deity, Arius, in reply, accused the patriarch of having fallen into the error of Sabellius, who had confounded the three divine persons. Arius maintained that the Son was created out of nothing, before the creation of the universe, and that he could be called God only on account of his participation in extraordinary powers.

The Emperor Constantine commissioned Hosius, bishop of Corduba, to examine this dispute at Alexandria. Hosius having made a report unfavourable to Arius, Constantine convened the bishops of his empire, A.D. 325, in order to settle the points in dispute between Arius and Alexander. In this council at Nicæa 318 bishops were assembled. Before this body Arius still persisted in rejecting all confessions of faith which maintained the divinity of Christ and the consubstantiality of the divine word, and he opposed the expression ὁμοούσιος, applied to the Son as being of the *same* essence with the Father. He was in consequence anathematized by the synod, and exiled by the emperor to Illyricum. Capital punishment was denounced against all who would not deliver up the writings of Arius. After three years, Constantine became reconciled to Arius, through the instrumentality of an Arian priest. A confession of faith, which seemed to be in unison with the Nicene Creed, was drawn up, and presented by Arius, A.D. 330, to the emperor, by whom he was reinstated in his church at Alexandria. Arius presented to the emperor, A.D. 336, a third confession of his faith, and professed by oath to submit to the synod of Nice. It was accordingly resolved that Arius should be received into church communion in a solemn manner, but he was taken ill during the procession, and died on the same day, A.D. 336. Some writers ascribe his death to poison.

Eusebius, who became bishop of Constantinople A.D. 339, obtained permission for the Arians to celebrate public worship at Alexandria and other places of the eastern empire. After the death of Constantine, A.D. 350, and the fall of the pretender Magnentius, A.D. 353, Constantius became ruler of the whole empire, and used his power to support the Arians in the councils of Arles, 354, and Milan, 355. The history of Arianism may be divided into three periods: the first commenced a considerable time before the life of Arius, having originated in the Alexandrine schools of divinity, of which Origen was the most splendid luminary. It terminated in the synod of Nicæa, A.D. 325. The second period began with the opposition of the Eusebians to the council of Nicæa, and terminated in the second synod of Sirmium, A.D. 357. The third period terminated with the suppression of Arianism by Theodosius I. The last vestiges of Arianism in the Roman empire are found in a law of Theodosius II. A.D. 428.

(Travasa, *Storia Critica della Vita di Arrio*; Stark, *Versuch einer Geschichte des Arianismus*, Berlin, 1783.)

ARJONA, MANUEL DE, born June 12, 1761, commenced his studies at the university of Osuna, his native town, and afterwards completed them at that of Seville, where he took his degrees in civil and canon law. Jurisprudence however did not become his professional pursuit, for he entered the church, and was made canon penitentiary in the cathedral of Cordova, and one of the chapter of the chapel royal of San Ferdinand at Seville. In 1797 he received from Pius VII. the honorary appointment of one of his private chaplains. To scholastic erudition and classical learning Arjona joined an acquaintance with general literature, and distinguished himself by his efforts to promote a taste for such studies among his countrymen. Although he is chiefly known by his poetical productions, a great number of other literary compositions were found among his papers after his death (July 25, 1820), including several on ecclesiastical history and canon law: among others, his 'Historia de la Iglesia Betica.' (Quintana, *Tesoro del Parnaso Español.*)

ARK, a chest or coffer. This term is frequently used by our earliest English and Scottish poets. In 1347, in the brewhouse of the priory of Lindisfarne, was an *ark* for meal. (Raine's 'North Durham,' p. 92.) The word is still in use, in the north of England, for the chest which is used to contain meal. Noah's ark was so named from its supposed resemblance to an ark or chest. The term *ark* is used in our translation of the Old Testament for the basket or cradle in which the infant Moses was laid when he was put into the Nile. (Boucher's *Glossary*, by Stevenson.)

ARKANSAS, the largest affluent of the Mississippi next to the Missouri, rises in the Rocky Mountains, but its source is not known. Darby, in his 'Geographical View of the United States,' conjectures that its source is nearly as far N. as 42°, and 111° W. of Greenwich, but it is probably neither so far north nor so far west. The Arkansas joins the Mississippi in 33° 56′ N. lat., 91° 10′ W. long., after a course, following its bends, estimated at 2000 miles.

The Arkansas has a general eastern course as far as the meridian of 99°; it has then a winding S.E. course to about 35° N. lat., 95° W. long., from which point it resumes an eastern winding

course to about the meridian of 92° 30′, from which its course is about S.E. to its junction with the Mississippi. From its source to about the meridian of 96°, the Arkansas flows through the great plains which stretch eastward from the base of the Rocky Mountains. This region, however, is not strictly a plain; it is an undulating surface, presenting here and there detached table-lands at a small elevation above it, with knolls and small ridges. The Arkansas valley, for more than 100 miles from the place where it leaves the mountains, contains a considerable quantity of timber, chiefly cotton wood, but farther E. the timber almost disappears, and the wide-spreading prospect is nothing but a prairie. The river-valley widens in its eastern course, and the bluffs become less elevated; the bottoms are not more than a few feet above the level of the river, which in some parts is spread out a mile in breadth, and contains numerous islands. About the meridian of 97°, the Arkansas crosses the line marked in Major Long's map as the western boundary of the limestone and coal strata connected with the Ozark mountains, and about a degree E. of this it enters and traverses the hilly region of the Ozarks, in which it continues to the neighbourhood of Little Rock, when it enters the low alluvial country.

The Arkansas is joined by numerous large tributaries. Running into it on the right bank are the Negracka, or Red Fork, and the Nesuketonga, or Grand Saline, which join the Arkansas W. of the meridian of 97°, both of which probably come from the Rocky Mountains. Near the meridian of 95° the Arkansas is joined on the right bank by the Great Canadian, which rises in the Rocky Mountains, probably three degrees at least S. of the sources of the Arkansas, and is computed to run 1000 miles before it joins the main stream. Its general course is E., with a considerable bend to the S.; a space of great extent is thus included between the Arkansas and the Canadian, in which numerous streams, several hundred miles in length, have their origin and course. The great affluent of the Canadian, the North Fork, lies in this intermediate space; it joins the Canadian on the left bank six or eight miles lower down than the South Fork, which enters the Canadian on the right bank. The Canadian, though it drains an immense extent of country, is quite *stagnant* for a large part of its course in summer, and its wide bed is in many places entirely dry.

The annual flooding of the Arkansas commences early in March, and it attains its greatest height in the delta of Louisiana in the month of June; the flooding of the Arkansas is after that of the Red River, which lies further S., and contemporaneous with that of the Ohio. The flooding from the Missouri is the latest. In the bluffs of the Canadian, as well as on the upper part of the Arkansas, extensive beds of gypsum are embedded in a ferruginous clay and a fine sand of a deep red colour. Owing to this the Arkansas and the Canadian are of a deep red colour during the floods. The waters of the North Fork, of the Canadian, and of the Upper Arkansas, are of a greenish colour when not swelled by the rains.

(Darby's *View of the United States;* Long's *Expedition to the Rocky Mountains.*)

ARKANSAS, one of the United States of North America, is bounded N. by Missouri, E. by the river Mississippi, W. by the Indian territory, and S. by Louisiana and Texas. It lies between 33° and 36° 30′ N. lat., and between 89° 30′ and 94° 30′ W. long. It is 240 miles in length, and 228 miles in breadth. The area is 54,500 square miles. The population in 1830 was 30,388; in 1840 it was 97,574, of whom 19,935 were slaves.

Surface, Climate, and Products.—The eastern part of Arkansas, bordering on the Mississippi, is low and swampy, generally covered with a dense forest, and is frequently overflowed. The central part is undulating, with hills which gradually increase in height towards the W., till they become incorporated with the Ozark Mountains. These mountains enter the State from Texas, and crossing it in a N.E. direction, extend into the State of Missouri. [OZARK MOUNTAINS.] The soil is of great variety, from the most productive to the most sterile. On the margins of the rivers it is very fertile, but in many of the higher parts it is poor. Prairies are abundant and of vast extent. Cotton and Indian corn are the staple productions, but the country is also well calculated for pasturage. In many parts there is a deficiency of water; rain-water is preserved in large jars sunk in the ground. In the low tracts the heat in summer is intense, and the climate moist and unhealthy; but in the central and western parts the air is dry and wholesome. Thunder-storms in summer are often terrific. Buffaloes, deer, elks, otters, beavers, racoons, wolves, and bears, are found, and wild geese, turkeys, and quails, are abundant. The most important minerals are iron ore, coal, gypsum, and salt.

Rivers.—The principal river of the State is the Arkansas. [ARKANSAS.] The Arkansas is navigable for steam-boats to Little Rock, and when the water is high 350 miles further, to Fort Gibson, which is W. of the limits of the State. The Red River forms a large part of the S.W. boundary of the State. [MISSISSIPPI RIVER.] The White River and the St. Francis River both rise in the Ozark Mountains of Missouri. The White River is formed by two main streams, the western called the White River, and the eastern the Big Black River. The united stream, under the name of the White River, after a southern course of about 400 miles, falls into the Mississippi, 15 miles above the mouth of the Arkansas. The St. Francis River has a southern course between the White River and the Mississippi, and joins the Mississippi about 65 miles direct distance above the outfall of the Arkansas. The Washita, increased by the Saline and other tributaries, has a southern course, and having been joined, about 31° 30′ N. lat., by the Catahoola and the Tenza, the united stream then takes the name of the Black River, which empties itself into the Red River. Near the centre of the State there are numerous hot springs, the temperature of which sometimes rises nearly to the boiling point.

Agricultural Produce and Manufactures.—

In 1840 there was produced in Arkansas 4,846,632 bushels of Indian corn, 105,878 bushels of wheat, 6219 bushels of rye, 189,553 bushels of oats, 293,608 bushels of potatoes, 6,028,642 pounds of cotton, 64,943 pounds of wool, 148,439 pounds of tobacco, and 586 tons of hay. The products of the dairy were valued at 59,205 dollars, of the orchard at 10,680 dollars, and of the forest at 176,617 dollars. There were 37 tanneries and 545 manufactories of leather, such as saddleries, &c.; 53 distilleries, which produced 26,415 gallons of spirits; 10 flour-mills, which made 1430 barrels of flour; 9 printing-offices, 6 weekly newspapers, and 3 semi-weekly newspapers.

Divisions and Towns.—Arkansas is divided into 40 counties. Little Rock, on the S. bank of the Arkansas, is the seat of government. It is 1065 miles S.W. from the city of Washington, in 34° 45′ N. lat., 92° 8′ W. long. There are a state-house, court-house, 2 banking-houses, a theatre, an academy, and 2 printing-offices. The population is now (1847) about 3000. It was first settled in 1820. The other most important towns are—Arkansas, an old French settlement on the Arkansas, with about 500 inhabitants; Columbia, on the Mississippi, with 50 or 60 houses; Helena, on the Mississippi, with about 500 inhabitants; Batesville, on the S. side of White River; Fayetteville, on the N.W. side of White River, with about 500 inhabitants; and Fulton, on the N. side of the Red River.

Constitution.—Arkansas was constituted a territory in 1819, and a state in 1836. The Senate consists of not less than 17 members, nor more than 33; the House of Representatives, of not less than 54 members, nor more than 100. Members of the Senate are elected for four years; members of the House of Representatives for two years. The General Assembly meets every two years. Every white male citizen of the United States, who has been a citizen of the State of Arkansas for six months, is qualified to be an elector. All elections are by open voting. The governor holds office for four years, but is not eligible more than eight years in any period of twelve years. His salary is 2000 dollars per annum.

The judicial power is vested in a supreme court, a circuit court, county courts, and justices of the peace. The supreme court consists of a chief justice, with a salary of 1800 dollars, and two associate justices, one of whom has a salary of 1800 dollars, the other of 1500 dollars. The judges are elected for eight years, by the General Assembly, by a joint vote of both Houses. The circuit court consists of seven judges, who are elected by the General Assembly for four years; each judge has his circuit, and a salary of 1000 dollars is paid to some of the judges, and 1200 dollars to others. Justices of the peace are elected by the people, and their term of office is two years. Judges of the county courts are chosen by the justices of the peace.

Slaves cannot be emancipated by the legislature without the consent of their owners. In all trials they have counsel assigned by the court for their defence, trial by jury, and, if convicted, the same punishment as would have been inflicted on a white man. A debtor cannot be imprisoned except where there is strong presumption of fraud. Lotteries are prohibited.

History.—Arkansas derives its name from a tribe of Indians, now extinct, who were called the Arkansas. It was first explored and settled by the French in 1685. In 1763 the whole of Louisiana was ceded to Spain, who kept possession of it till 1800, when, by a secret treaty, it was given back to France. In 1803 Louisiana was purchased by the United States from France for 15,000,000 dollars, and it contained, according to the terms of the purchase, not only Louisiana, but Arkansas, Missouri, and the N.W. Territory.

(Darby's *View of the United States; Gazetteer of the United States of America*, by Haskel and Smith; *American Almanac*, 1837, 1847.)

ARKEEKO, a sea-port on the western coast of the Red Sea, in 15° 38′ N. lat., and 39° 37′ E. long. It lies 3 miles S. of the small island and town of Massowah, where the vessels from Jidda and other parts cast anchor. The goods that are destined for the Abyssinian market are then carried to Arkeeko, where the kafilas or caravans assemble. From Arkeeko the kafilas journey in a southward direction, passing over the Taranta mountains, and proceed to Dixan, the first Abyssinian town on that side, and thence to Adowa, the chief mart of trade in the kingdom of Tigré. [ADOWA.] The town or village of Arkeeko is under the rule of a nayib, or native chief, who is himself under a sort of dependence on the sovereign of Tigré.

ARKLOW. [WICKLOW.]

ARKWRIGHT, SIR RICHARD, was born at Preston, in Lancashire, on the 23rd of December, 1732, and being the youngest of thirteen children of humble parents, he received a very scanty education. He was brought up as a barber; but about the year 1760, at which time he resided at Bolton, he gave up that business and became an itinerant dealer in hair, having become possessed of a valuable secret for dyeing and preparing it for the use of wig-makers. His first effort in mechanics has been supposed to be an attempt to discover the perpetual motion; but Dr. Ure hazards the plausible conjecture that, aware of the importance of his cotton-spinning apparatus, he may, during his earlier experiments, have disguised the real character of his mechanism under that name.

In order to comprehend the grounds on which Arkwright claims so exalted a position among the founders of England's manufacturing and commercial greatness, some facts more properly belonging to the history of the COTTON MANUFACTURE must be briefly touched upon. Down to about the year 1760 the cotton manufacture, although it had for some years been rapidly increasing in extent, was carried on under great disadvantages, with extremely rude and simple machinery, and mainly as a domestic employment. No mechanism was known by which cotton-yarn could be

spun of sufficient firmness and evenness for use as the *warp*, or longitudinal threads of a web, and therefore all the cotton cloths of English manufacture were formed of a mixture of linen and cotton; the former material being used for the warp, and the latter for the *weft*, or transverse threads only. Such cloths, which, being made in imitation of East Indian fabrics brought from Calicut, were called *calicoes*, were woven by cottagers, who received from the master manufacturers the necessary quantities of linen yarn and of raw cotton, or cotton-wool, to be carded and spun into weft by the female members of the weaver's family by the tedious process of the spinning-wheel, which produced only one thread at a time. As the manufacture increased the carders and spinners became unable to keep pace with the weavers, who were sometimes compelled, in order to keep their looms at work, to pay more for their weft than their employers would allow them. Guest states that 'it was no uncommon thing for a weaver to walk three or four miles in a morning, and to call on five or six spinners, before he could collect weft to serve him for the remainder of the day.'

Conflicting statements, which cannot be fully entered into here, render it difficult to trace the history of the machinery by which Arkwright provided a remedy for this inconvenient state of things. It is, however, certain that in 1767 he employed a clockmaker named Kay, then residing at Warrington, to make a model, which was speedily followed by a working machine. This machine was first set up at Preston; but, fearing to encounter such riotous opposition as had been called forth shortly before by the introduction of Hargreaves' spinning-jenny, Arkwright removed it to Nottingham, where he obtained pecuniary assistance from the Messrs. Wright, bankers, and shortly entered into partnership with Messrs. Need and Strutt, eminent stocking-manufacturers of that town. By this important connection the mechanical skill of Mr. Jedediah Strutt, who invented the contrivance by which Lee's stocking-frame was adapted to the production of ribbed stockings, was brought to bear upon certain deficiencies of the machine with great advantage. In 1769 a patent was obtained for the machine, the most important feature of which was the use of two pairs of rollers, technically called *drawing-rollers*, the first pair revolving slowly in contact with each other, and the second pair revolving in like manner, but with greater velocity. The lower roller of each pair was fluted longitudinally, and the upper one covered with leather, and the two were pressed together with a gentle pressure by means of weighted levers, in order that they might take sufficient hold of the soft cotton passed between them. The fibres of the cotton-wool were first laid smooth and straight, by *carding* or combing, so as to produce a soft loose ribbon or cord called a *sliver*, the end of which was introduced between the first pair of rollers. In passing between them it received no further change than a slight compression, but as from them it was conducted to the second pair of rollers, moving with twice, thrice, or more times the velocity of the first pair, it was extended or drawn out to

two, three, or more times its original length; its thickness being reduced in like proportion. As this action is effected by the sliding of the fibres upon one another, the distance between the two pairs of rollers must be so adjusted, in relation to the average length of the fibres, that the two pairs may never have hold of one fibre at the same time. Such is the beautifully simple principle upon which, with the aid of twisting, the thick soft sliver or carding is converted into a fine, hard, and compact yarn or thread. This machine was patented by Arkwright under the designation of 'clockmaker,' a circumstance which has been pleaded to his disadvantage, as if he intended thereby to mislead; but it quite as probable that he merely thought to avoid the ridicule and incredulity which might have met the announcement of a piece of complicated mechanism as the invention of a barber; and it is curious that Kay mentions having been previously employed by Arkwright for thirteen weeks in making a clock, which indicates that he may have actually devoted his attention to horological mechanism sufficiently to induce him to lay claim, under such circumstances, to the title of clockmaker.

Arkwright's spinning-machine was, in the first instance, worked by horse power; but in 1771 the partners built a spinning-mill for working by water-power at Cromford, in Derbyshire, from which establishment, 'the nursing-place,' as it has been styled, 'of the factory opulence and power of Great Britain,' the machine took the name of the *water-frame*, and the yarn produced by it that of *water-twist*. It was in the arrangement of this establishment, the first of its kind, that Arkwright manifested that extraordinary talent for mechanical contrivance and adjustment, and for the no less difficult task of training human agents to take their places as part and parcel of a vast and complicated automatic apparatus, which earned for him the title of father of the factory system.

Notwithstanding the superior quality of the water-twist over other yarns, a superiority which rendered it available for use as warp, the prejudiced manufacturers formed a combination to oppose its use, and thus compelled Arkwright and his partners to commence the manufacture of it themselves, first into stockings and afterwards into calicoes similar in quality to those now used. This last-mentioned manufacture was commenced at Derby in 1773, but was for a time impeded owing to the discovery that such fabrics, of cotton only, were chargeable with an excise duty of 6*d.* per yard, as being similar to those imported from India, while the common English mixed fabrics were charged only 3*d.*; and also that by an act passed in 1720 for the protection of woollen and silk manufactures, no such fabrics of cotton might be 'printed, painted, stained, or dyed,' although by a subsequent act, passed in 1736, an exception was made in favour of such as had the warp of linen-yarn. After great difficulty and expense, occasioned by the opposition of other manufacturers, Arkwright and his partners obtained the repeal of these provisions in 1774, by an act which recognised the new manufacture, and

placed it on the same footing as that of mixed calicoes.

The invention of the machine for spinning by rollers was followed up by various improvements in the mechanism for carding and for other processes in the cotton manufacture, for which Arkwright obtained a second patent in 1775. As, however, the cheapness and beauty of the new cotton fabrics had by this time led to an extensive demand, the hostile manufacturers altered their tactics, and instead of endeavouring to put down Arkwright's inventions, they soon began to dispute his claim to them, and to appropriate them in defiance of his patent rights. The use of his new mechanism was extended in the course of a few years, by licences granted by the patentees, to a very great extent, and this circumstance rendered piracy more easy. In 1782 Arkwright computed that the new manufacture already employed upwards of 5000 persons, and a capital of 200,000*l*. In some cases the new machinery was destroyed by mobs, connived at, if not encouraged, by the higher and middle classes; while in others the unauthorized use of it without payment to the patentees was carried to such a length, that in 1781 Arkwright was compelled to bring actions against nine different parties to test the validity of his second patent. He lost the first of these, on the ground of the alleged insufficiency of his specification, and in consequence of this decision he abandoned the remainder; but on this occasion he published a detailed statement under the title of 'The Case of Mr. Richard Arkwright and Co., in relation to Mr. Arkwright's invention of an engine for spinning cotton, &c., into yarn,' with a view to obtaining relief by an act of parliament, which attempt, however, he abandoned. In 1785, having collected fresh evidence, he commenced a new trial to establish the patent of 1775, and succeeded in obtaining a favourable verdict; but by that time the number of persons interested in the overthrowing of his claim was so greatly increased that most vigorous preparations were made to annul the patent, and, an association of the Lancashire cotton-spinners having been formed, and scientific men engaged to find technical flaws in the patent, an action was brought in the same year for cancelling it by a writ of *scire facias*, nominally at the suit of the crown. The manufacturers, who, according to statements made on the trial, had expended nearly 300,000*l*. on the faith of the previous decision in their favour, were again successful; and an application made by Arkwright in the following term for a new trial was refused by the court.

It was chiefly on this last trial that evidence was adduced with the intention of stripping Arkwright of all merit as an inventor, and representing him as a grasping and ungenerous plagiarist of other men's ideas. The evidence, however, upon which it has been attempted to condemn him, abounds in inconsistencies and suspicious circumstances. The principal witness against him, his former assistant, Kay, was evidently a man of no character, who had parted from him under circumstances involving a charge of felony, and who, if his own testimony were true, must have himself

pirated and made known to Arkwright the invention of a former employer. Still more recently the details of an invention unquestionably of prior date have been brought forward to invalidate Arkwright's claim; but a limited acquaintance with the history of inventions, and a calm investigation of Arkwright's own proceedings, will, we conceive, fully clear his reputation from the imputation of unfairly appropriating the ideas of another. It is indeed indisputable that a machine for spinning by rollers was patented as early as 1738, by John Wyatt, of Birmingham, in the name of a foreigner, Lewis Paul, with whom he had entered into partnership, and that such a machine was worked, successively, at Birmingham and at Northampton; but it is also clear that after experimenting for twenty or thirty years the possessors of this mechanism were unable to turn it to practical account; and, were no other evidence required to clear Arkwright from the charge of dishonesty, we have that afforded by his own allusion to this invention in his 'Case' in 1782, at a time when the actual production of Paul's patent, the details of which have since been made public, would have been all that his opponents could desire in order to vitiate his own. It is utterly inconceivable that he could thus have referred to this invention had he really known what was contained in Paul's two patents of 1738 and 1758; and we need no better evidence of the oblivion in which Wyatt's invention was involved than the fact of its not having been brought forward by his opponents, even after he had thus directed attention to it. Of the claim to be considered the *first* inventor of spinning by rollers Arkwright is undoubtedly deprived by this prior scheme; but it can hardly, we conceive, be taken to deprive him of merit as an inventor; while, taking the least favourable view of his case, it would lead us to regard him as a man of extraordinary energy and perseverance, able to take up, to perfect, and to carry into successful operation, an idea which, in less able hands though under more favourable circumstances, had utterly failed.

Prosperity continued to attend the establishments of Arkwright and his partners notwithstanding the adverse decisions of the courts. His partnership with Mr. Strutt terminated in 1783, after which time he retained the works at Cromford, which were subsequently carried on by his son, while Mr. Strutt continued the works at Belper, which were founded about 1776. How greatly the cotton manufacture extended under the stimulating effect of his improvements may be conceived from the fact that the imports of cotton-wool, which averaged less than 5,000,000 lbs. per annum in the five years from 1771 to 1775, rose to an average of 25,448,270 lbs. per annum in the five years ending with 1790.

Little is recorded concerning Arkwright's private or personal history. In early life he married Patience Holt, of Bolton, who, in December, 1755, became the mother of his only son, Richard. After her death he married again, either in 1760 or 1761, his second wife being Margaret Biggins, of Pennington, in the parish of Leigh, and from

this wife, who is the only one mentioned by most biographers, he separated, but when or under what circumstances, is not very certain. It appears to have been in consequence of some disagreement arising from his adventurous scheming disposition; but very little reliance can be placed upon the gossip circulated respecting this and other points of his history. Arkwright was a very early riser; devoted himself most assiduously to business; was a severe economist of time; was exceedingly sanguine in his disposition; and entertained an unbounded confidence in the wealth-producing powers of machinery and manufactures. To his credit it is recorded that when upwards of fifty years of age he made strenuous efforts to retrieve the deficiencies of his early education; redeeming time from the hours usually devoted to sleep in order to apply one hour a day to grammar, and another to writing and orthography. In 1786, on occasion of presenting an address to George III. after the attempt on his life by Margaret Nicholson, he received the honour of knighthood; and in the following year he served as high-sheriff of Derbyshire. He long suffered from asthma, and died, owing to a complication of disorders, on the 3rd of August, 1792, in his sixtieth year, leaving property amounting to little short of half a million. By his second wife he had one daughter, who married Charles Hurt, Esq., and inherited part of his property. He left directions to his son, the late Richard Arkwright, Esq., for the completion of a church which he was erecting at Cromford, and also of Willersey Castle, which he was building as a family mansion. That gentleman inherited his father's sagacity and aptitude for business, and became, it has been asserted, the wealthiest commoner in England. He died on the 23rd of April, 1843, in his eighty-eighth year, leaving a large family; and his property was sworn, on the proving of his will, to exceed 1,000,000*l.*, that being, however, merely a nominal sum, taken because the scale of stamp duties goes no higher. The probate bore a stamp of 15,750*l.*, and it was reported that the legacy duty would be much more.

Further information respecting the controverted points in the history of Arkwright and his inventions may be found in the works of Baines, Guest, and Dr. Ure on the history of the Cotton Manufacture, and in a copious memoir in the *Biographical Dictionary* of the Useful Knowledge Society, and the various authorities there referred to.

ARLAUD, JACQUES ANTOINE, a very distinguished miniature painter, born at Geneva, in 1668. He acquired a great reputation at Paris and at London. He came to England in 1721, with letters of introduction to the Prince of Wales, afterwards George II., and returned in 1729 to his own country with a fortune of 200,000 francs: he died at Geneva, in 1743, and bequeathed many books, works of art, medals, and various curiosities to the library of that place. Part of his bequest were some pieces of a drawing of a Leda, which he made in Paris, said to have been copied from a basso-rilievo by Michel Angelo. Among the miniatures which he painted in London was one of the Pretender's sisters, and one of the celebrated Duke of Marlborough. (Descamps, *La Vie des Peintres Flamand*, &c.; Walpole, *Anecdotes of Painting in England.*)

ARLES (*Arelate*, Cæsar; Ἀρελάτη, Strabo; by the poets *Arelas*), the chief town of an arrondissement in France, in the department of Bouches du Rhône, 56 miles N.W. of Marseille, and 451 miles S. by E. from Paris, by the road through Lyon, Avignon, and Tarascon, in 43° 40½′ N. lat., 4° 37½′ E. long.; population 24,460. The town is on the left bank of the Rhône, just at the point where the river, dividing into two channels, encloses the marshy island of Camargue. The town is ill-built, with narrow crooked streets, and old houses. A bridge of boats unites it with the suburb of Trinquetaille, on the opposite bank of the Rhône. There is a large cathedral, the church of Notre-Dame, and the church of St. Honorat. The most striking modern edifice is the town-hall, which was built in 1673, after the design of the architect Mansard. There are a chamber of commerce, a school of navigation, a college, a cabinet of natural history, a museum of antiquities, and a public library, which contains 12,000 volumes, in the town.

The environs of Arles are extremely pretty, and contain many beautiful promenades. The vast remains of the abbey of Mont-Majeur, and near it the beautiful chapel of St. Cross, founded in 1019, are about two miles N. of Arles. The neighbourhood of the town is marshy, and ague is prevalent at some seasons.

The situation of Arles on the banks of the Rhône gives it considerable advantages for trade. There is also a navigable canal, which runs through the marshy district on the left bank of the eastern or main channel of the Rhône, from Arles to the Etang de Berre, which it enters near Istres. The corn, wine, fruits, manna, cattle, soda, salt, wool, and oil, of the surrounding country, find sale at Arles; and several manufactures are carried on, as of glass bottles, soap, silk, tobacco, and brandy. Arles has a very active coasting trade: merchant steamboats ply regularly to Marseille, and passenger steamers up the river to Avignon, Lyon, and Seyssel; about 100 vessels, of from 30 to 180 tons, are constantly under weigh for Marseille or Toulouse.

The claims of Arles to notice rest mainly upon its former greatness and its numerous existing antiquities. It is first mentioned by Cæsar ('Bell Civ.' i. 36, ii. 5), who built here twelve ships of war, previous to the siege of Massilia (Marseille). Strabo and Pomponius Mela describe it as a place of great trade and prosperity. The city suffered from the Allemanni during the decline of the Roman empire, but in the early part of the fourth century it rose to distinction under Constantine the Great, who gave it the name of Constantina, which it continued to bear in the time of Honorius, when it became the seat of the prætorian prefect of Gallia. Arles was the residence of a king of the Visigoths, and of a prefect under Theodoric, king of the Ostrogoths. Under the Merovingian kings, who became masters of Arles after the Ostrogoths, the city declined. In the twelfth

century, Arles passed under the dominion of the emperors of Germany; and became in 1212 a republic, governed by a chief entitled *Podestat*, who was elected by the people. Under this constitution it flourished greatly, but its independence was overthrown, in the middle of the same century, by Charles I., count of Anjou, who was recognized as Lord of Arles, in feudal subjection to the Emperor of Germany. About a century afterwards the city, with its territory, came finally under the kings of France.

The antiquities of Arles are numerous: the most important are—the obelisk, the amphitheatre, the theatres, and the ancient cemetery, called Eliscamps, from the ancient name Elysii Campi, 'Elysian fields.'

The obelisk stands in the middle of the Place Royale. It is antique, but not Egyptian, as has been stated: it is a monolith of granite from the quarries of Esterel, near Frejus. It was discovered in 1389 buried in the mud of the Rhône, but it was only in 1675 that it was erected on a pedestal in its present site. It is 53 feet 4 inches high. The top of the obelisk is surmounted by a globe adorned with *fleurs-de-lis*.

The amphitheatre consists of a vast space inclosed by a continuous oval building, two stories high, each of which is pierced by 60 arches; the lower story is supported on Doric pilasters, the upper on Corinthian columns. The length of the greater axis to the outer edges of the surrounding wall is 459 feet from N. to S., of the shorter axis, 338 feet from E. to W.; the rows of seats were 44 in number, and afforded room for 24,000 spectators. The longer and shorter axes of the arena are respectively 246 and 124 feet in length. In the eighth century the amphitheatre was made a fortress, towers having been built over the four gates; two of these towers still remain. In later times the whole of the interior was covered with a mass of hovels, which contained a population of about 2000: all these have been very recently cleared away.

Of the Roman theatre which has been still more recently disinterred, there remain two isolated columns of breccia, which formed part of the scena, and the cavea (pit), still containing some of the seats. A part of the exterior has been long known as the 'Tour Roland;' this is three stories high, and gives a good idea of the edifice of which it formed part. The cemetery of Eliscamps is on a hill E. of the city. It still contains several ancient tombs, those of Pagans being distinguished by the letters D M (*Diis Manibus*), and those of Christians by a cross.

The people of Arles are considered to have retained more of the manners of ancient times than the people of most other ancient towns. One instance of this is their adherence to the bull-fights, which are still kept up here. Horse and foot races are also practised.

(*Dictionnaire de la France.*)

ARLON (the Roman Orolaunum), the capital of Belgian Luxembourg, is situated in 49° 42′ N. lat., 5° 47′ E. long. The population is about 5000. It stands on a hill, near the sources of the Semoy, a branch of the Meuse, 14 miles N.W. of the town of Luxembourg. It has some iron works and furnaces, a considerable corn trade, and linen and woollen manufactures. The most remarkable building in the town is the former Capuchin convent, which is now converted into a school. Arlon was formerly fortified; it was taken and re-taken by the French and the Spaniards in the wars of Louis XIV.

ARMA'DA, a term, derived from the Latin word *armata*, 'armed,' consequently from the same root as the French *armée* and our *army*, is used in Spain to denote exclusively a naval armed force, or fleet of war. *Flota* is used in the same language for a fleet of merchantmen. Armado, which occurs in Shakspeare's 'King John,' act iii. sc. 4, Sandys's 'Travels,' p. 51, &c. is a corrupted term. So Fairfax, in the translation of 'Tasso,' i. 79,

'Spread was the huge *armado* wide and broad.'

Ben Jonson, however, writes it correctly, Armada.

Nares, in his 'Glossary,' thinks that this word was not known in England before the Spanish projected invasion in 1588; and it is now rarely used but in speaking of that particular fleet.

ARMADA, SPANISH. In the beginning of May, 1588, the preparations of Philip II. for the invasion of England, which had so long kept Europe in amazement and suspense, were brought to a conclusion; and the Spaniards, in the confidence of success, previous to its sailing, gave their fleet the name of the Invincible Armada. It consisted at this time of 130 vessels: 65 of these were galleons and larger ships; 25 were pink-built ships; 19 tenders; 13 small frigates; 4 were galeasses; and 4 galleys. The soldiers on board amounted to 19,295, the mariners to 8050; of these, 3330 soldiers and 1293 mariners had been supplied by Portugal: besides which, the rowers in the galeasses amounted to 1200, and in the galleys to 888. There were also on board 2431 pieces of artillery, and 4575 quintals of powder: 347 of the pieces of artillery had likewise been supplied by Portugal. Two thousand volunteers of the most distinguished families in Spain, exclusive of the sailors and soldiers already mentioned, are stated to have accompanied the expedition.

Philip's preparations, in the Netherlands, of a further force, were not less advanced than those of Spain. Besides a well-appointed army of 30,000 foot and 4000 horse, which the Duke of Parma had assembled in the neighbourhood of Nieuport and Dunkirk, that active general had provided a number of flat-bottomed vessels, fit for transporting both horse and foot, and had brought sailors to navigate them from the towns in the Baltic.

The details of the regular force which the English assembled to oppose the Armada, both by sea and land, are minutely given in a manuscript now in the British Museum ('MS. Reg.' 18 C. xxi.), formerly belonging to the Royal Library. At the time when Queen Elizabeth began her preparations, her fleet did not amount to more than 30 ships, none of them near equal in size to those of the enemy. Ultimately, however, the different descriptions of vessels, large and small, which formed her navy, amounted to 181 ships,

manned by 17,472 sailors. The military force consisted of two armies, one for immediately opposing the enemy, under the Earl of Leicester; the other for the defence of the queen's person, commanded by Lord Hunsdon. The army appointed for the defence of the queen's person amounted to 45,362, besides the band of pensioners, with 36 pieces of ordnance. Lord Leicester's army amounted to 18,449; the total of both armies to 63,511, besides 2000 foot who were expected from the Low Countries. The forces of the Presidentship of the North remained stationary, in case anything should be attempted on the side of Scotland; as did also the forces of the Presidentship of Wales. The fate of the Armada is too well known to need repetition here. Harassed and beaten in conflict by the lighter and better-managed ships of the English, the attempted invasion was abandoned, and the discomfited Armada endeavoured to make its way homeward, by a northward passage round the whole of the British islands, still followed by Lord Seymour with a part of the British fleet. After the Spaniards had rounded the Orkneys, a dreadful storm arose, and the whole fleet was dispersed. Horses, mules, and baggage, were thrown overboard to lighten a few of the vessels. Some of the ships were dashed to pieces on the rocks of Norway; some sunk in the middle of the North Sea; others were thrown upon the coasts of Scotland and the Western Isles; and more than 30 were driven by another storm, which overtook them from the west, on different parts of the coast of Ireland. Of these, some afterwards reached home in the most shattered condition, under the Vice-admiral Recaldo; others were shipwrecked among the rocks and shallows; and of those which reached the shore many of the crews were barbarously murdered, from an apprehension, it was pretended, that in a country where there were so many disaffected Catholics it would have been dangerous to show mercy to so great a number of the enemy. The Duke de Medina having kept out in the open seas, escaped shipwreck; and, according to the official accounts, arrived at Santander in the Bay of Biscay about the end of September, 'with noe more than sixty sayle oute of his whole fleete, and those verye much shattered.'

Strype, in his 'Annals,' reckons the Spanish loss upon the coast of England to have amounted to 15 ships and above 10,000 men, besides 17 ships and 5394 men sunk, drowned, and taken upon the coast of Ireland. The statements, however, published at the time, apparently upon authority, say, 'In July and August, ships 15, men 4791; sunk, &c., upon the coast of Ireland, 17 ships, 5394 men:' making a total of 32 ships, and 10,185 men.

It has been commonly said that the circulation of an English newspaper first began in 1588, when 'The English Mercurie' was 'published by authoritie for the prevention of false reports.' Copies of several of these Mercuries, dated Whitehall, July 23rd, July 26th, and Nov. 24th, are preserved among Dr. Birch's historical collections in the British Museum. They are marked as Nos. 50, 51, and 54 in the corner of the margin, as though part of a series, but they have been recently proved, by Mr. T. Watts of the British Museum, to have been forgeries.

(Camden's *History of Elizabeth;* Strype's *Annals of the Church;* Ellis's *Original Letters;* Watson's *History of Philip II.*)

ARMADILLO (*Dásypus*, Linn.), a genus of Edentate Mammalia, constituting the type of the group or family termed *Loricata*, from the mailed armour with which they are covered.

The armadilloes are exclusively confined to South America. They are burrowing in their habits, and in this respect, as also in the possession of teeth, they differ from the ant-eaters of the same region. [ANT-EATER.] Their food consists partly of vegetable matters, partly of insects, and partly of carrion.

Cuvier divides the armadilloes into five sections, according to the number of the teeth and of the fore-claws. 1, The *Cachicames:* these have seven teeth (molars), on each side in each jaw; four toes on each foot; the muzzle pointed; and the tail long, and encircled by osseous rings. 2, The *Apars*, which agree with the former in the number of toes, but have nine or ten teeth on each side in both jaws. 3, The *Encoubert*s, which have five claws on the fore-feet, the three middle being the longest; the teeth are nine or ten on each side, above and below. 4, The *Cabassous*, which have five toes, arranged in a peculiar manner; the thumb and the index are slender, the latter the longest; the middle has an enormous trenchant claw; the next a large but shorter claw; the fifth toe is the shortest of all: the feet are thus admirably constructed for burrowing; teeth nine or ten on each side, above and below. 5, The *Priodonts*. These have the toes still more unequal, and the nails still more enormous than the *Cabassous;* the teeth are small, and from twenty-two to twenty-four in number on each side, above and below. Cuvier's 'Règne Animal,' i. 227, and seq.)

In all the armadilloes the limbs are short, thick, and powerful; the body is depressed, broad, and stout, and covered above with plates and bands of horny or bony armour; the head is broad between the eyes, but ends in a pointed muzzle, more or less prolonged; the eyes are small; the mouth is small; the teeth (molars) are cylindrical, feeble, destitute of true roots, set apart from each other, and when the jaws are closed mutually fit into the respective intervals; the tongue is slender, smooth, and extensible, and abundantly lubricated with a glutinous saliva: it is an organ both of touch and taste. The ears vary in size in the different species.

The portions of armour which cover these animals consist of a triangular or oval plate on the chaffron, its posterior margin projecting over the neck; a large buckler over the shoulders, and a similar buckler over the haunches, while between these solid portions there intervenes a series of bands, overlapping each other's edges, and allowing to the body due freedom of motion. Each separate piece of mail consists of a multitude of small parts, all consolidated together, giving the idea of what is termed mosaic work, especially on the head and shoulders, the pattern differing in the various spe-

cies. The limbs are almost entirely concealed by the lateral edges of this dorsal armour; they are covered by a hard coarse tuberculated skin. The abdominal surface is not protected by armour, but covered by a tough coriaceous skin, more or less beset with long scattered coarse hairs; similar hairs spring from between the joints of the dorsal armour, and most numerous in young individuals. In some species however, as the Mataco (*Dasypus Apar*), in which the armour is thick and calcareous, no hair is to be seen. The tail is sometimes covered with rings of armour, sometimes only with a tuberculated skin.

The armadilloes trust to their burrows for safety; but, when surprised, they roll themselves more or less completely into the form of a ball, much in the same manner as the hedgehog; the Mataco indeed, which does not burrow, and is protected by a peculiarly solid coat of mail, can assume a completely globular figure, the head, limbs, and tail being quite concealed. From this circumstance it is called the *Bolita*, or Little Ball. Most of the species of armadillo are nocturnal, and remain concealed in their subterranean retreats during the day, from which they can only be forced out by smoke or water; and such is their strength and the firmness of their hold, by means of their scraper-like claws upon the sides of their burrow, that they have been known to leave their tail in the hands of the hunter on his attempting to drag them forth.

On level ground these animals, most of them at least, can trip along at a tolerably rapid pace. Their movements are singular, in consequence of the limbs acting without any corresponding flexures of the vertebral column; the two extremities of the trunk not being alternately raised and depressed, as in the quadrupeds which move by bounds. There is no central motion in the vertebral column, or point towards which the spinous processes converge, but all these have a direction to the sacrum.

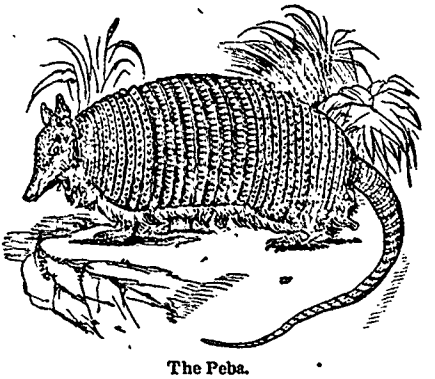
The food of the armadilloes consists of the roots of the manioc, maize, potatoes, and soft vegetables generally, together with insects, worms, small lizards, frogs, and, as Azara says, even small snakes. They are destructive to the eggs or young of birds which build their nests on the ground. They are fond of putrid animal substances, and are said occasionally to burrow into graves which are not properly secured. They feed to a great extent on the flesh of oxen slain on the Pampas for the sake of the hides and tallow, and then abandoned. On this half-putrid diet they become very fat, and are esteemed by the Indians, and also the Spaniards and Portuguese of South America, as delicacies. The animal is roasted in its shell.

Azara states that the female produces young only once a year, and brings forth six, eight, or even ten young ones at a birth; but as the teats are never more than four in number, we suspect this account to be erroneous, the more so as a female weasel-head armadillo, at the Zoological Gardens, produced only two. When first born they were quite blind, soft, and white, and about four inches in length. The skin presented all the furrows and mosaic work which characterize the plates of armour when developed. The growth of these animals was very rapid: in six or eight weeks they attained nearly to the size of their parents. One of them (born on the 3rd of November, 1831), which died on the 16th of November of the same year, had increased in weight during that short period 52 oz. 2 drs., and measured 11¼ inches from the nose to the root of the tail.

With respect to the senses of these animals, those of smell and hearing are very acute; that of sight is more limited. None of the existing species attain to a large size, excepting one, namely, the *Dasypus Gigas*, which is often three feet in length, exclusive of the tail. It is, however, but a pigmy compared to the extinct *Glyptodoa*, of which the heavy solid armour was till recently supposed to belong to the huge *Megatherium*, one of the stupendous Edentata of a former state of the surface of South America.

We may here briefly notice the following species:—

Cachicames.—The Peba (*Dasypus Peba*, Desm.).



The Peba.

This species, the *Tatouhou*, or Black Tatou, of the Guaranis, is common in Paraguay. The number of intermediate bands is somewhat variable, but generally eight or nine; hence has this animal been described under three distinct specific titles, viz. *Dasypus septemcinctus*, *D. octocinctus*, and *D. novemcinctus*, an error now rectified. The Peba is timid and nocturnal, frequenting open plains and cultivated fields, but never woods: it burrows with great rapidity, and is much hunted for the sake of its flesh. The muzzle is elongated and conical; the ears moderate and pointed; the tail long and ringed with armour. Length of head and body 16 inches; that of the tail 14 inches. Allied to the Peba is a species termed the Mule Armadillo (*Dasypus hybridus*, Desm.). Mr. Darwin states that this species seems to prefer rocky and slightly undulating ground, and hence is common in Banda Oriental and Entre Rios. It differs from the Peba in being of smaller size, with a shorter tail, and long upright ears. It is moreover diurnal in its habits, and does not burrow with such facility. A distinct species, the Verdadeiro (*D. verdadeiro*), is said to burrow in the woods of Brazil, but little is known respecting it.

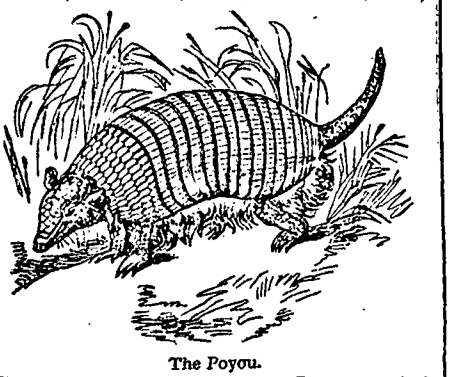
Apars.—The Mataco (*D. Apar*, Desm.). The Mataco, called also *Bolita*, is only three banded,

and has its plates of armour extremely hard and solid. The tail is very short; the ears small;

The Mataco.

the feet feeble. In its habits it is diurnal, and not well adapted for burrowing; but it can roll itself up completely into a ball, and is safe in its tessellated shell; for 'the dog,' says Mr. Darwin, 'not being able to take the whole in its mouth, tries to bite on one side and the ball slips away.' It is found in Brazil, Paraguay, and Buenos Ayres.

Eucouberts.—The Poyou, or Weasel-headed Armadillo (*D. Eucoubert*, Desm.; *D. sexcinctus*, Linn.).

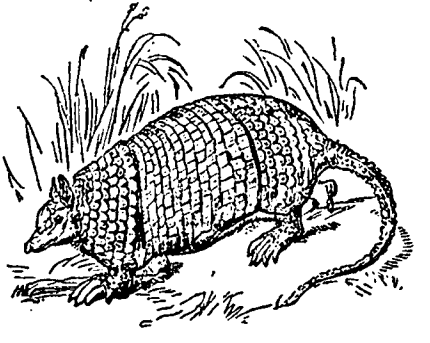


The Poyou.

This species is very common in Paraguay: it is quick in its movements, restless, confident, and inquisitive, and is said to look out of its burrow if it hears any unusual noise. It lives solitary, or in pairs, in wooded districts, where it excavates deep burrows with astonishing celerity. Its voice is a low grunt, like that of a young pig. Melons, potatoes, and other vegetables, together with carrion, constitute its food. It has a habit of squatting on the ground and remaining for some time motionless. The head is large, flat, and nearly triangular; the snout short, the ears moderate. Several examples of this species have lived in the Zoological Gardens. They exhibited but little fear, and soon became familiar. When running about in their enclosure, they would turn up the turf rapidly with their noses, as if in quest of worms or larvæ, and thus spoiled its neat appearance. Their actions were quick, prompt, and sudden. Length of head and body, 16 inches; of tail, 6 or 8 inches. Allied to the Weasel-head Armadillo is the Hairy Armadillo (*D. villosus*, Desm.),

common on the pampas of Buenos Ayres, south of that river. This species is diurnal in its habits, and indeed appears to wander about at all times, feeding upon the half-putrid flesh of horses and horned cattle. Another species is the Pichy (*D. minutus*). This animal, according to Mr. Darwin, is abundant on the arid plains near the Sierra Ventana, and likewise in the neighbourhood of the Rio Negro. 'At Bahia Blanca,' he writes, 'I found in the stomach of this armadillo coleoptera, larvæ, roots of plants, and even a small snake of the genus Amphisbæna. At Bahia Blanca, during a morning's ride, three or four were generally met with; but in order to secure them it was necessary to jump off one's horse as quickly as possible; otherwise they would have disappeared by burrowing in the sandy soil. This species often endeavours to escape detection by squatting close to the ground, and remaining motionless.' Its flesh is very delicate. The Pichy is about 10 inches in length, exclusive of the tail, which is 4½ inches.

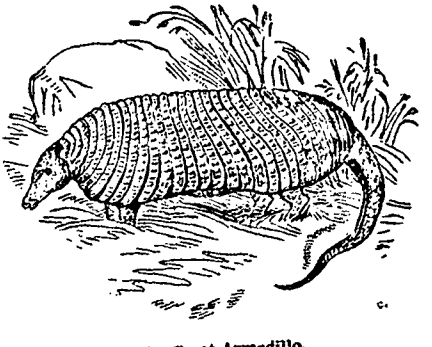
Cabassous.—The Tatouay (*D. Tatouay*, Desm.). This species, distinguished by its naked tubercu-



The Tatouay.

lous tail, is a native of Guiana and Brazil; but of its habits little is known. The size and structure of its claws, however, indicate its burrowing powers. The Tatouay is about 1 foot 7 inches long, exclusive of the tail, which is somewhat more than 7 inches. The intermediate bands are twelve in number, and the compartments of these as well as of the bucklers are square.

Priodonts.—The Great Armadillo (*D. Gigas*,



The Great Armadillo.

Cuv.). This large species inhabits Brazil and the northern parts of Paraguay, frequenting the deep forests, where it excavates profound burrows, from which it is not easily dislodged. It is said to devour the bodies of persons who die in the woods remote from any settlement, unless the most secure means of prevention are put into practice. This species measures nearly 3 feet from the nose to the root of the tail; the head is 7½ inches long; the ears 1¾; the tail, which is 1 foot 5 inches long, is thick at the base and gradually tapers to a point; it is covered with overlapping scales; the intermediate bands are from 12 to 13 in number. The compartments are rectangular. The claws are enormous.

ARMAGH, an inland county in the N. of Ireland, in the province of Ulster. It is bounded N. by Lough Neagh, E. by the county of Down, S. by the county of Louth, and W. by the counties of Monaghan and Tyrone. The greatest length from N. to S. is nearly 32 miles; the breadth, from E. to W. is about 20 miles. The area is 512½ square miles, or 328,076 acres, of which 265,243 acres are arable, 35,117 uncultivated, 8996 in plantations, 778 in towns, and 17,942 under water.

The surface is hilly, but the hills are not high except in the S.E., where they form a mountain-group, of which Slieve-Gallion, the highest mountain, is 1893 feet above the sea. These mountains are a continuation of the Mourne Mountains of the county of Down. [DOWN.] Granite is their principal constituent. To the N. of this mountainous district a considerable tract extends from the county of Down on the one side to that of Monaghan on the other, in which grauwacke and grauwacke-slate are the prevalent rocks; while red sandstone predominates in that part which lies along the margin of Lough Neagh. Limestone skirts the Callen and the Blackwater.

The Callen, the chief river in the county, rises in the barony of Fews, and flows N. about 27 miles into the Blackwater. There are some small lakes, as Lough Clay, Lough Ross, and the loughs of St. Patrick and St. Peter. The river Bann with the Newry Canal forms the eastern boundary of the county, separating it from that of Down, and affording water-carriage from Lough Neagh to the Bay of Carlingford; the Blackwater on the N.W. separates it from the county of Tyrone. The Ulster railroad was completed from Belfast to Portadown, about 25 miles, in 1842, but the remaining 11 miles to Armagh were abandoned, and a new act obtained for it in 1845.

The medium temperature in the neighbourhood of the city of Armagh, distant about 32 miles from the Irish Sea, and elevated about 58 feet above the coast, is about 49° Fahrenheit.

The soil is generally fertile, except in the mountain district, and even there the land is cultivated to a considerable extent. In the neighbourhood of the chief town numerous inclosures and cultivated fields indicate an abundant population. In the northern part of the county, towards Lough Neagh, there are very extensive bogs, the soil of which is very black and deep: but the increase of population has led to the cultivation of some parts of these, as well as of the greatest part of the mountainous districts. A large portion of the soil belongs to the church and to college establishments and corporations, which have not the power of granting freehold leases for lives; the common tenure on other properties is a lease for twenty-one years and one life. To such an extent has sub-letting been carried, that the country has been described as resembling in some parts a disjointed village, and general poverty has been the usual result. The linen trade, carried on as it is by the individual weaver, is considered to have promoted this division of land. There seems, however, to be a disposition at present to check this system, and to consolidate the small holdings into larger farms. In the hands of such occupiers superior husbandry cannot be expected. The 'con-acre' system exists to a considerable extent. Oats are the chief crop. Wheat and barley are less extensively grown. Potatoes and flax are also among the chief articles of agricultural produce; but the potatoes are inferior in quality to those grown in the S. of Ireland. Grazing is little attended to in any part of the N. of Ireland. The little farmers or cotters keep cows, but they are badly managed and hardly treated. Few beasts are fattened. There are no extensive dairy farms; but as the little farmers keep cows, a considerable quantity of butter is sold for exportation. The breed of cattle is small. Sheep are not much attended to. The horses are also inferior in size. Pigs are reared in great numbers.

Linen is the staple manufacture, which is chiefly in the hands of the small farmers; but the introduction into England and Scotland of machinery for spinning flax has been felt in Ireland, where it has produced a considerable depression of the linen trade. Cotton is also manufactured, but not to any great extent. Spinning machinery has been introduced to a certain extent.

The mineral productions of this county are inconsiderable. Marble is quarried near Armagh.

The county of Armagh is divided into eight baronies,—Armagh, Lower Fews, Upper Fews, East Oneilland, West Oneilland, Lower Orior, Upper Orior, and Tyranny. It is mostly in the archdiocese of Armagh.

Armagh returns three members to parliament—two for the county, constituency 2706; and one for the city of Armagh, constituency 933.

The entire population of the county of Armagh in 1841 was 232,398, of whom 211,893 were in the rural district, and 20,500 in the civic district. The number of children attending public schools in 1841 was 12,553. In Sept. 1844, there were 61 national schools in operation, attended by 6760 children.

The principal towns are ARMAGH, Lurgan, Portadown, and Newry; but the greater part of Newry is in the county of Down. The entire population of Newry in 1841 was 11,972, of whom 3073 are in Armagh, and 8899 in Down. [NEWRY.]

Lurgan is situated in a flat tract at the northern end of the county, two miles from the S. shore of Lough Neagh, 17 miles N.E. from Armagh, and 86 miles N. from Dublin. The population in 1841 was 4677. The town consists of one wide street on the Armagh and Belfast road, and is consequently a place of great thoroughfare. It contains a church, meeting-houses for Presbyterians, Methodists, and Quakers, a linen-hall, a sessions-house, and union-workhouse. The chief manufacture is linen, especially damasks, diapers, and cambrics, but is less flourishing than formerly. Adjoining to the town is Lurgan House, a handsome modern mansion in the Elizabethan style.

Portadown is situated on the Upper Bann, which falls into Lough Neagh about 7½ miles below the town, and communicates with the Newry Canal about 1¼ mile above it. The Bann is here navigable for vessels of 60 tons burthen. This town has been improving for some years past. Large quantities of corn and other agricultural produce are brought to market at Portadown, and forwarded to Newry by canal, the barges returning with timber, slates, coals, iron, &c. for inland consumption. The town is also a place of considerable thoroughfare, being on the main road between Belfast and Armagh, as well as a station on the line of the Belfast and Armagh railroad. A steamer crosses Lough Neagh from Ballyronan daily. A new bridge across the Bann has also added to the improvement of the town. There is a church, and there are also meeting-houses for Presbyterians and other dissenters. The population in 1841 was 2505.

Tanderagee, on the small river Cusher, a tributary of the Bann, has a church, and meeting-houses for Presbyterians and Methodists, and contained in 1841 a population of 1562.

(Wakefield's *Ireland;* Thom's *Irish Almanac for* 1846; Fraser's *Hand-Book for Ireland.*)

ARMAGH, the capital of the county of Armagh, and an archiepiscopal city, is situated in the northern part of the county, not far from the little river Callen, an affluent of the Blackwater, in 54° 21′ N. lat., 6° 39′ W. long. It is 82 miles N. by W. from Dublin, by the road.

The city stands on an eminence, with the cathedral in the centre crowning the summit. Armagh, which had sunk greatly to decay, owes much of its renovation to the munificence and public spirit of Dr. Richard Robinson, Baron Rokeby, who was archbishop from 1765 to 1794. The cathedral, after undergoing many changes from the period when St. Patrick is said to have founded it (in 445), was destroyed in 1566 by Shane O'Neil, was rebuilt in 1616 by Primate Hampton, was again destroyed in 1642 by Sir Phelim O'Neil. It was again rebuilt by Archbishop Margetson in the year 1675, was repaired and improved by Archbishop Robinson, and has since been completely restored. It is in the form of a cross 183 feet long, and 119 feet in breadth from end to end of the transepts, from the intersection of which rises a square tower, 31 feet above the roof, surmounted by a spire 40 feet high. From the ground to the top of the weathercock is 150 feet.

Archbishop Robinson built the archiepiscopal palace, adjoining the city, in the midst of a lawn skirted by plantations. He also contributed largely to the erection of a new school-house in the town. This school is a well-endowed royal foundation of Charles I. An observatory was endowed and founded by the same primate in 1791. He died however before it was finished, and it was neglected till the present primate, Lord John George Beresford, completed and indeed surpassed the original design. It stands N.E. of the town on an eminence 100 feet above the surrounding land. The observatory is directed by an astronomer nominated by the primate, and subject to a board of visitors, consisting of his grace, the dean and chapter of the cathedral, and four elected governors. He has an assistant of his own appointment, and there is a small fund for maintaining the buildings and instruments, but, unfortunately, none for publishing the observations. Archbishop Robinson also founded and endowed the public library, which now contains upwards of 20,000 volumes. Primate Robinson died in October, 1794, at Clifton, near Bristol, but his body was brought to Armagh, and interred in a vault under the cathedral.

Armagh is the assize town of the county, and contains a court-house, county gaol, market-house, linen-hall, infantry barracks, district lunatic asylum, various hospitals and charitable establishments, churches, chapels, schools, and municipal buildings suitable to a large county town.

The population of Armagh in 1841 was 10,245. The city returns one member to parliament, constituency 993.

The principal business arises from the retail trade for the supply of the populous surrounding district, and the weekly market, where a good deal of agricultural produce is sold, as well as the linen made in the neighbourhood.

The Archbishop of Armagh bears the title of 'Lord Primate and Metropolitan of all Ireland.' His income is 14,494*l.* His province includes the dioceses of Meath, Clogher, Derry, Down and Connor, Kilmore, Tuam, and Clonfert. The diocese includes four parishes in Derry, one-third of Tyrone, and nearly all Armagh and Louth: the number of benefices is 99.

(Fraser's *Hand-Book for Ireland;* Wakefield's *Ireland; Parliamentary Returns.*)

ARMAGNAC (*Armeniacum*), formerly a province of France, which formed part of the territory of Gascony, and which now forms the department of Gers. Auch was its capital. The country of Armagnac is high and hilly; it is fertile in corn, but more especially in wine, from which a large quantity of excellent brandy is distilled.

ARMAGNAC, COUNTS OF, were descended from the ancient dukes of Aquitaine and Gascony, and took their title from the county of Armagnac. John I. increased the importance of his family by marrying a daughter of the house of Bourbon. He was one of the powerful chiefs in the south-west of France, strongly opposed to the claims of the English, and for this reason highly trusted by the French king, by whom he was

made governor of Languedoc. Although we find him accompanying the Black Prince in his Spanish expedition against Peter the Cruel, he was still the prince's enemy when France and England renewed the contest. He died in 1373. His grandson, John III., who married the heiress of the house of Comminges, led an army of adventurers into Italy, where he laid siege to Alessandria, and fell under its walls in 1391. Bernard, younger brother of John III., succeeded him: he became the most celebrated of his family, and from him the great party which he headed in opposition to the Burgundians were called Armagnacs. Bernard, in 1410, gave his daughter in marriage to the Duke of Orleans, then too young to head his party, and the task consequently fell to the Count of Armagnac. This distinction enabled him to rally under his banner the warlike and needy populalation of Gascony, whom he led, in the year 1410, to attack Paris.

In 1412 both Armagnacs and Burgundians courted the alliance of England. The former made the higher offers, and stipulated to restore Aquitaine to Henry IV. of England, in return for his support. The accession of Henry V. to the throne of England, his alliance with Burgundy, his invasion of France, and the victory at Agincourt, changed the face of affairs. The Count d'Armagnac, who had not been present at the battle, but who hurried from the south with a small army to defend the capital, was now the sole reliance of the dauphin. He was accordingly created Constable in the last days of 1415, and he soon showed himself an active and severe leader. But he was at length slain by the populace of Paris, when that city was taken by the Burgundians on the 12th of June, 1418. A white scarf, worn obliquely over the person, was the badge of the Armagnacs. The populace cut a stripe of flesh, in form of this scarf, from the body of the murdered count. More than 3000 persons are said to have perished in this revolution.

John, count of Armagnac, grandson of the preceding count, though less powerful as a party chief, was equally notorious for his crimes and his turbulence. An incestuous intercourse with his sister, which he avowed, and sought to cover by a marriage, first drew upon him the indignation of the pope, Pius II., and of his sovereign, Charles VII. He was excommunicated, and forced by the royal troops to take refuge in exile. Under Louis XI., in 1461, the Count of Armagnac obtained possession of his fiefs, but soon joined in the revolt against that prince, which the Burgundians abetted. Louis XI. purchased the cessation of his enmity at the price of 10,000 crowns,—a sum bestowed in vain. At length, during a negotiation with the Cardinal d'Albi, the soldiers of the cardinal found means to introduce themselves into the fortress of Lectoure, and to massacre the count and his followers in 1473. The king's commands required the total extermination of the Armagnac race. Jeanne de Foix, the legitimate wife of the count, who was pregnant, was compelled to swallow a draught of poison. His brother Charles was seized, tortured, thrust into an unwholesome dungeon, but survived, and was liberated after the death of Louis XI.

A descendant of the family was created cardinal under Francis I.; he was known as an upright administrator and a patron of letters. He died in 1585, at a very advanced age. [NEMOURS, DUKES OF.]

ARMATOLI', a sort of national militia among the Greeks, instituted, according to some, during the Byzantine empire, but others refer it to a period subsequent to the conquest of Greece by the Turks. They were originally the mountaineers of northern Greece. They ever retained a sort of rude independence, sometimes paying a small tribute to the sultans, and being trusted by them with the suppression of brigandage in the mountain passes. The chiefs were styled Capitani, Polemarchs, or Protatos; the jurisdiction of a chief was called an armatolic, and he resided generally in the principal village of his canton. The office was hereditary, descending to the eldest son, who obtained a diploma from the pacha of his district, to whose authority he submitted. Their costume was that generally known as the Albanian; their arms consisted of a yataghan, sabre, musket, and pistols; they were brave and temperate, and inured to hardship and fatigue.

About the middle of the last century the Porte appointed a Derwend Pasha, in whose hands the care of all the passes was placed: this was a measure designed for the subversion of the armatoli. Ali Pacha of Joannina, having been appointed Derwend Pasha in 1788, made strenuous efforts to destroy their independence; but his cruelties drove the greater part to rebellion, and they fled to their native fastnesses; and, at the first cry of the revolution, issued forth to assist in the liberation of their country.

(Emerson's *Modern Greece*; Leake's *Morea*, ii. 106.)

ARME'NIA. When taken in the widest sense of the expression, Armenia embraces the country from Lake Urmia and the junction of the rivers Kur and Araxes in the east, to the upper course of the Kizil Irmak or Halys in the west; and from the upper course of the rivers Chorok and Kur in the north, to the Taurus mountains in the direction of Bir, Mardin, and Nisibis, in the south.

The Armenia of Herodotus (v. 52) bordered on the west on Cilicia, from which country it was separated by the Euphrates; towards the *N.* it included the sources of the Euphrates (i. 180); towards the S. and E. its limits are not distinctly defined; probably Mount Masius separated it from Mesopotamia, and Mount Ararat from the country of the Saspires, who occupied the valley traversed by the Araxes. (Rennell's 'Geograph. Syst. of Herodotus,' vol. i. p. 369, 2nd edit.)

The Armenia of Strabo (xi. 14) is limited on the S. by Mesopotamia and the Taurus; on the E. by Great Media and Atropatene; on the N. by the Iberes and Albani, and by the Parachoathras and Caucasus mountains; on the W. by the Tibareni, the Paryadres and Skydises mountains, as far as the Lesser Armenia, and to the country on the Euphrates which separates Armenia from Cappadocia and Commagéne.

Abúlfeda and other oriental geographers not only extend the limits of Armenia considerably to the N., so as to include Tiflis and part of Georgia, but also comprehend Cilicia and part of Cappadocia under the appellation of Belad-al-Armen.

The greater part of Armenia constitutes an elevated table-land, intersected by rapid streams, and with numerous ranges of mountains rising above it. Armenia belongs to the great plateau of Iran; its southern boundary, which rises like a wall above the lower level of Mesopotamia, is the Kurdistan range, which passes in a W.N.W. direction a little to the N. of Mosul, is cut by the deep bed of the Tigris at Jezirah, passes a little N. of Nisibin, and past Mardin to the point where the Euphrates traverses the great range of the Taurus.

Near the town of Erzerum we find a chain of mountains which is connected with the Caucasus, and separates the valley of the Chorok and its tributary streams in the west from that of the Kur and Araxes in the east, while the upper course of the northern branch of the Euphrates, often called the North Frat, marks its southern declivity. The Bin-Gheul, or Pinkiol, and part of this chain of mountains, gives origin to the Araxes and to the northern branch of the Euphrates [ARAS]; on the Barkhar Mountains the river Kur has its source.

The chain of hills which separates Armenia from Georgia, commencing near Akhalzikh (41° 37′ N. lat.), and accompanying in a south-easterly direction the course of the river Kur, is by the Georgians named Klardjethi or Taosi, by the Armenians, Medin (The Dark), or Sdorin-Govgas (The Low Caucasus).

South of the Araxes we meet with a range of mountains, called by Colonel Monteith the Mosian (Masian?) hills, some of which are covered with perpetual snow, extending from the banks of the Araxes opposite Erivan westward to the Euphrates. They are in Turkish called Kus-dagh, Kiziljeh-dagh, Aghir-dagh, or Ala-dagh; in Armenian, Dagher-dagh and Masis. They must not, in consequence of the last name, be confounded with the Montes Masii of the Greek and Roman geographers, which are farther south. At the eastern extremity of this chain, and washed by the Araxes, is situated an elevated mountain, the Abus of Ptolemy, called by the Turks Agri-dagh, and by the Persians Koh-i-Nuh (Mount Noah), and believed by the natives to be the Ararat of Scripture. Parrot, the first European traveller who ascended this mountain, found its height to be 16,200 Paris or about 17,260 English feet. According to another popular tradition in the country, the Ararat of Scripture is the present Mount Judi, S.W. of the Lake Van, in the Gordyæan mountains. About 40 miles from Mount Ararat, on the northern side of the Araxes, there is another high peak, Mount Ali Guz, the height of which Colonel Monteith states to be 15,000 feet. [ARARAT.]

South-west of the Masis is Mount Nebad or Nebadagan, according to Saint-Martin the Niphates of the ancients. Towards the south of the

Nebad are situated the Dzaghge hills, in which the Murad-chaï has its source.

South of the Murad, and forming the separation between Armenia and Mesopotamia, are the Kurdistan Mountains, already described as part of the southern boundary of the highland, or, as these parts of it were anciently called, the Masius and Carduchian mountains.

East of the Tigris, and immediately south of the Lake Van, we find the Kareh, Judi, and Amadiah mountains (the Montes Gordyæi of the ancients), and towards the frontiers of Persia the Kara-dagh. (Saint-Martin, 'Mémoires sur l'Arménie,' vol. i. p. 36-54.)

These chains of mountains and their accumulations of snow contain the sources of innumerable streams. The Tigris has its origin in the Niphates. The Euphrates, and its first great auxiliary stream, the Murad-chaï, also designated as the southern branch of the Euphrates, have their sources in the centre of Armenia. The Murad-chaï flows in a western direction as long as it remains within the limits of Armenia. The Cyrus or Kur is the principal river of Armenia. [ARAS.]

Among the lakes of Armenia, that of Van is the most important. It lies in a basin surrounded by lofty hills on the S., W., and N., and is separated from the lake of Urmia to the E. by a chain of hills. Its elevation is several thousand feet. Ptolemæus mentions it under the name of Lake Arsissa: this name still survives in the fortress of Arjis situated on the northern side of the lake. The circumference of the lake is estimated at 240 miles. It contains two considerable islands, on which have been built Armenian convents. Eight small rivers fall into the lake, but none of them are of great importance.

Towards the north-east of Erivan is the lake of Goukeka or Sevan, also named Kiagar Kuni. From it springs the river Zengay or Zenghi, which passes by Erivan and then falls into the Araxes.

In the Masis or Mosian hills, west of Mount Ararat, and at a distance of 27 miles towards the south from Kara-kulla on the Araxes, Monteith visited a lake of 24 miles in circumference, at the extraordinary elevation of 6000 feet.

The climate of Armenia is, in the higher regions, extremely cold. The summits of several of its mountains are covered with perpetual snow. The German traveller, Schulz, who visited Armenia in 1827, found the hills between Trebizonde and Erzerum, especially the Ghulat and the Karakapas, covered with deep snow in the month of June; and Tournefort found the wells near Erzerum thinly frozen over during the night in July.

The plains verging towards Azerbijan and Persia are said to be scorched in summer with excessive heat, and to require artificial irrigation for the purposes of agriculture.

The soil of Armenia exhibits in many places appearances of volcanic products. This is particularly remarked in the neighbourhood of Maku, situated in a narrow valley which extends from the Araxene plain near Ararat in the direction of the Lake Van; and also in the country around the lake of Goukeka.

Armenia produces abundance of excellent iron and copper, which are exported to Mosul. Rich mines of gold and silver exist near Kebban and Argana, in the two branches of the Taurus which inclose the valley of Karpoot (anciently Sophéne), through which the Euphrates passes in its way from Armenia to Syria; rock-salt abounds in the valley of Kulpia, which slopes towards the Araxes, four miles below the fortress of Koor Ougley. A range of hills, bordering the valley on the east side, is apparently entirely composed of that mineral, and in the sides of these numerous excavations have been made.

The valleys of Armenia are fertile in grain, tobacco, manna, hemp, cotton, and in fruit-trees, particularly a large description of apple, and walnuts. The excellence of the Armenian cotton is noticed by Marco Polo (1 c. p. 311).

Armenia seems at an early period to have been divided into the Greater and the Lesser Armenia. Armenia Minor was the part west of the Euphrates. Native writers divide Armenia into fifteen provinces, which Saint-Martin (i. p. 65) enumerates as follows:—1, Upper Armenia; 2, Daikh; 3, Kukarh; 4, Udi; 5, Fourth Armenia; 6, Duruperan; 7, Ararat; 8, Vasburagan; 9, Siunikh; 10, Artsakh; 11, Phaidagaran; 12, Akhdsnikh; 13, Mogkh; 14, Gordjaikh; 15, Persarmenia.

Armenia is now divided among Turkey, Persia, and Russia. The Russian frontier between the Black and the Caspian Sea commences on the Euxine at Fort St. Nicolas, about 10 miles south of the river Phasis or Rion; following the course of the hills which here inclose the valley of that stream, the frontier first takes an eastern direction; it then turns southwards, traverses the S.W. branch of the Kur, follows the course of the Arpatchaï to its junction with the Araxes, and after crossing the latter river proceeds S.E. straight towards the Ararat, leaving the western summit of that mountain on the Russian side. The frontier then follows the Araxes during the greater part of its middle course, to where that river breaks through the Talidj or Talish Hills: here the frontier turns S. and reaches the border of the Caspian Sea near Astara. The line which separates the Persian from the Turkish dominions in Armenia begins at Mount Ararat, and proceeds in a southern direction, following the range of hills which separate the streams falling into the Tigris and Lake Van from those that run towards the Araxes and Lake Urmia.

The name of the ancient capital of Armenia was Artáxata, or Artaxiasata. (Strabo, ed. Casaub. p. 460; Tacit. 'Ann.' vi. 33, xiii. 39, &c.) The modern site of the town is uncertain.

The German traveller Schulz discovered in 1827, near Van, the ruins of a very ancient town, called Shamiramakert (the town of Semiramis), by Armenian historians, the foundation of which is ascribed to Semiramis. Tigranocerta, which according to Tacitus ('Ann.' xv. 5) was thirty-seven milliaria N.E. of Nisibis, must, in the opinion of D'Anville and Mannert, be sought near the river Khabur. Armenian writers call the town Dikranagerd, and make it identical with the modern town of Kara-Amid or Diarbekr. (Saint-Martin, 'Mémoires,' &c. i. pp. 170, 171.) Magnificent ruins still exist of the celebrated ancient town of Ani, about four miles west of the monastery of Kotchivan, in a plain, protected towards the S. and E. by a deep and impassable ravine through which the river Arpatchai runs. The place is laid down on Sir Robert Ker Porter's map in 40° 32′ lat., 43° 36′ long. E. of Greenwich. Erzerum or Arzen-al-Rum (anciently Garin, and in Greek, Theodosiópolis), is the principal place of Turkish Armenia: Jaubert estimates the number of its inhabitants at 70,000. Akhalzikh, a fortress near the river Kur, is the principal town in Turkish Georgia. Arjis or Arjish and Akhlat are ancient towns on the N. and W. borders respectively of the Lake Van. The town of Van is supposed by Colonel Monteith to have at present about 20,000 inhabitants. Erivan and Nakhshivan are the two principal towns of Russian Armenia.

History of Armenia.—The Armenians call the progenitor of their nation and the first ruler of their country Haïg or Haïk, whose father they believe to have been Torgoma, the Thogarma of Scripture (Genesis x. 3), the son of Gomer and grandson of Japhet. The early history of Armenia is a confused mass of traditions; and the Armenians as a nation occupy no place in the early history of Asia. The country became partially subjected to the kings of Persia; and a body of Armenians formed part of the Persian army in the expedition of Xerxes against Greece, B.C. 480.

About the middle of the fourth century B.C. Vahey was upon the throne of the Haïgs. He assisted Darius in his war with the Macedonians, but fell in battle in the year B.C. 328. Armenia became a Macedonian province, and the first governor appointed by Alexander the Great was Mithrines, a Persian. But in B.C. 317, the Armenian chief, Ardwand, or Erwand (Ardoates), headed a revolution against the reigning governor, Neoptòlemus, threw off the Macedonian yoke, and maintained himself for thirty-three years as an independent sovereign. After his death the Armenians submitted to the supremacy of the Seleucidæ, until two Armenian nobles, Artaxias and Zariadras, availed themselves of the moment when Antiochus the Great was defeated by the Romans (B.C. 190), to declare their country free from its allegiance to the Syrian kings. Armenia was at this epoch divided into two kingdoms, that of Armenia Minor on the western, and that of Armenia Major on the eastern side of the Euphrates. In Armenia Minor the descendants of Zariadras continued to rule till the fall of Mithridates: thenceforward the country became attached to one or the other of the neighbouring states, and in the reign of Vespasian was made a Roman province.

In Armenia Major the family of Artaxias (the Armenian Arsacidæ) maintained itself till the year B.C. 5, and gave eight, or according to others, ten kings to the Armenian throne. Artavasdes, the son and successor of Tigranes, who was conquered by L. Lucullus, B.C. 63, was perfidiously seized by Marcus Antonius, and delivered as a prisoner into the hands of Cleopatra, the queen of Egypt (B.C.

34). After this time Armenia became an object of contention between the Romans and the Parthians, who alternately installed and dethroned its rulers.

In A.D. 232, Armenia was conquered by Ardeshir, the first of the Sassanide kings of Persia. The country remained subject to this dynasty till Dertad, or Tiridates, the son of Khosru, and the only survivor of the Arsacide family, supported by a Roman army, made it free again. Early in the fourth century Tiridates and many of the Armenian nobility were converted to Christianity by St. Gregory, whom Pope Sylvester I., in A.D. 319, confirmed as pontiff of Armenia. The conversion of Constantine to the Christian faith occurred about the same time: this circumstance, while establishing friendly relations between the Greek empire and Armenia, exposed the latter country to the increased hatred of the heathen government of Persia. New disturbances ensued, till (A.D. 387) Theodosius the Great entered into a compact with the Persian king, Sapores, by which the eastern part of Armenia was to belong to Persia, and the western part to the Roman empire. Sapores, with a view to conciliate the Armenian nobles, many of whom were quitting the country, appointed Khosru, an offspring of the Arsacide family, as a tributary king over Persian Armenia. In 428, however, the Persian king, Behram V., deposed Artaces, or Artashir, the last of the tributary Arsacide rulers, and, with the consent of the degenerate Armenian nobles, appointed a Persian officer to govern the country. All the efforts of the Persian court were now directed towards the suppression of Christianity in Armenia, and the introduction of the doctrine of Zoroaster, as the difference of religion appeared to be the chief obstacle to the fidelity of the province. The 'History of Vartan,' translated from the Armenian of Elisæus, by C. F. Neumann (published by the Oriental Translation Committee, London, 1830, 4to), exhibits a highly interesting picture of the religious wars under which Armenia was suffering in the fifth century.

After the fall of the Sassanide dynasty in 632, Armenia became the scene of conflict between the Grecian and the rising Mohammedan empire. In 885, during the caliphat of Motawakkel, an Arabian army conquered Armenia: many of the principal nobles were brought to Bagdad, where the greater number of them were forced to become converts to the Mohammedan religion. His son, Ashod, gained the confidence of the caliph, who, in 859, installed him King of Armenia. He became the founder of the Bagratide dynasty, which occupied the throne of Armenia till the year 1080. During the greater part of the tenth century, in the reign of Apas (928–951), Ashod III. (951–977) and Sempad II. (977–989,) Armenia enjoyed tranquillity. Not long afterwards the country became an object of contest between the Byzantine empire and the Seljukide Turks. Gagik, the last of the Bagratide kings, was treacherously killed (1079), and Armenia, though still partially governed by native princes, became mainly dependent on the Greek empire, while in the northern provinces the Turks, and in the southern parts the Kurds, encroached upon its limits.

From the year 1226 Georgia and Armenia suffered much from the incursion of the Mogols, which continued till near the end of the thirteenth century.

After the fall of the Bagratide dominion in Armenia Proper, Rupen, a relative of the last king, fled with his family into Phrygia, and established an Armenian principality in the Taurus Mountains north of Cilicia, which gradually extended its boundaries to the coast of the Mediterranean Sea. It soon derived importance from the services which its princes rendered to the monarchs of Europe during the crusades. Leon II., who reigned from 1185 till 1219, was in 1198 crowned King of Cilicia, by Archbishop Conrad of Mainz, who was sent for that purpose by the German emperor, Henry VI., and Pope Cælestinus III.; and a crown was likewise presented to him by the Greek emperor, Alexius. The Cilicio-Armenian kingdom continued till the latter part of the fourteenth century. The last king, Leon VI., was in 1375 taken prisoner by the Mamluks of Egypt, and, after a long captivity, wandered as an exile through Europe, and died at Paris in 1393.

The Mamluks were soon obliged to yield up their rule over Cilicia, and part of Armenia Proper, to the Ottomans. The Armenians, now a nation without a country or home, rather than endure cruel persecutions in the land of their fathers, spread themselves all over Asia and Europe. As early as the year 1331, Armenian refugees came to Kamenz in the Lausitz (Lusatia). Others followed the Ottoman conquerors to Constantinople (1453), where the Grand Signior gave them a patriarch. They were well received in Russia, where numbers established themselves at New-Nakhchivan, on the Don, at Moscow, and at St. Petersburg. In 1605 twelve thousand families were led forcibly away from Armenia into Persia, by the command of Shah Abbas. They settled at Julfa, one of the suburbs of Ispahan, giving to this quarter of the city the name of their city, Julfa, on the Araxes, in Armenia. Many who still remained at Tauriz, Erzerum, Kars, and Bayazid, have recently withdrawn to the Russian provinces south of the Caucasus. Armenian merchants are established in India, on the islands of the eastern Archipelago, in Singapore, in Afghanistan, Persia, in every part of Asia Minor, in Syria and Egypt, and in nearly all the countries of Europe. Almost every important fair or mart, from Leipzig and London to Bombay and Calcutta, is visited by them.

The *Armenian Language* (Klaproth, 'Encyclopédie des Gens du Monde,' t. ii. p. 298) is overcharged with consonants. Besides many Indo-Germanic roots, it shows analogies to the Finnic dialects of Siberia, and other languages of northern Asia. The grammar is excessively complicated: like the northern languages of Europe, it has an article attached to the end of words. It does not distinguish the genders. The declension has ten cases in the singular and plural; and in the conjugation of the verbs we find a corresponding copiousness of inflection. The ancient or literary Armenian is so different in its grammar and structure from the present Armenian that it may be considered as a dead language. In good Armenian

authors, of any age or country, no diversity of dialect is observable. The construction resembles that of the Greek language. Into the modern Armenian many foreign words have been introduced, especially from the Turkish; the grammar is altered, and the construction of sentences is modelled after the fashion of the Turkish language.

Armenian Literature.—With the exception of a few fragments of ancient songs preserved by Moses Chorenensis, we possess no literary remains of the period before the introduction of Christianity. With the Christian religion, however, a taste for the study of the Greek language and literature prevailed. Till the beginning of the fifth century, the Armenians, in writing their language, used various foreign alphabets—the Persian, the Greek, or the Syrian, particularly the last; but as the number of characters in these alphabets was insufficient to express all the sounds of the Armenian language, Mesrob invented a particular alphabet written from the left to the right, and originally consisting of thirty-six characters, to which, subsequently, two more were added. This alphabet, which was introduced in the year 406, is that which the Armenians still use.

The succession of writers, in various departments of literature, which Armenia has produced from the commencement of the fourth century down to our own age, and the zeal with which the Armenians have established printing-offices wherever they have settled in any considerable numbers, prove their fondness for the cultivation of letters. They either have, or have had, printing-offices at Amsterdam, Leipzig, Venice, Leghorn, at Leopol in Poland, at Constantinople, at Smyrna, in several towns of Russia, at Astrakhan, at Etchmiadzin, at Julfa near Ispahan, at Madras, and in several other places.

Mesrob also presented his countrymen with a translation of the Bible, made, as far as the Old Testament is concerned, from the Septuagint; but the Armenian version is supposed by some critics to have been interpolated in the sixth century from the Syriac Peschito, and in the thirteenth from the Latin Vulgate.

The Armenian historians are valuable for the information which they supply on the history of the Byzantine empire, of the Sassanidæ, the Mohammedan Arabs, the Seljuks, the crusades, the Mogols, and, in short, on the entire history of the East since the fourth century. They show, upon the whole, more judgment than the Arabian and Persian historians. The Armenian chronicles should, however, be used with caution, particularly as regards the more remote periods of history.

After the fourteenth century, Armenian literature declined. Except a valuable work on the history of Armenia, by Michael Chamchean, which was printed at Venice in 1786 (3 vols. 4to), there is scarcely any work of merit.

There has long existed at Venice a congregation of Armenian monks, who publish works on religion, theology, literature, and science. They dwell on the little island of San Lazaro, and call themselves Mekhitaristes, which name they derive from that of their founder, Peter Mekhitar, who fixed himself at Venice in 1717. ('A brief Account of the Mechitaristican Society, founded on the island of S. Lazaro,' by Alexander Goode. Venice, 1825, 4to.) They have a printing-office well stocked with Armenian types. Many important works have already come from the Armenian press of San Lazaro: one of the latest is an edition, in Armenian and Latin, of three 'Sermones' of Philo the Jew, the Greek original of which is lost. The Armenian text is taken from a MS. written in A.D. 1296, which Zohrab discovered at Leopol in Poland, in 1791, collated with another copy made in the year 1298, and found in the library of the Armenian patriarch at Constantinople.

The Armenian Christians adopt the Apostolic, the Nicæan, and the Athanasian creeds, but reject the decrees of the Council of Chalcédon, and follow the doctrine of Eutyches and of the Monophysites, in admitting but *one nature* in the person of Christ —that he is God only: this is, in the rite of their church, symbolically expressed by the use of red wine, unmixed with water, in the Lord's Supper. They assert that the Holy Ghost proceeds from the Father only. They have the seven sacraments of the Roman Catholic Church,—Baptism, the Lord's Supper, Confirmation, Matrimony, Consecration of Priests, Confession of Sins, and Extreme Unction. They admit the doctrine of the transubstantiation of the bread and wine used in the Lord's Supper, which they administer under both forms to laymen as well as to ecclesiastics, though deviating from the rite adopted by other Christian sects, by dipping the bread into the wine. The Armenian clergy are divided into monastics and seculars. The former (under which class are comprised patriarchs, archbishops, bishops, doctors, monks, and hermits) live in celibacy; the secular clergy, *i. e.* the officiating priests, are permitted and advised to marry. The Armenian Church does not acknowledge the supremacy of the Pope. It was, at the beginning of the last century, governed by four patriarchs, who resided at Etchmiadzin, Sis, Aghthamar, and Gandsasar. The number of their bishops was calculated to amount, about the same time, to between fifty and sixty.

The Armenian Christians have an æra of their own, according to which they count their years, and which commences with the year 551 of our Dionysian æra. Their year is a moveable solar year.

(Ideler, *Lehrbuch der Chronologie*, p. 439, &c.)

ARMENIACA. [PRUNUS.]

ARMENTIE'RES. [NORD.]

ARMIGER. [ESQUIRE.]

ARMILLA, a Latin word, which signifies a bracelet, or large ring, for the wrist or arm. The wearing of the armilla, or bracelet, as an ornament, is of very high antiquity. It occurs in Genesis, chap. xxiv. 22, 23, where Abraham sends his servant to seek a wife for Isaac. The Amalekite who slew Saul (2 Sam. i. 10) 'took the crown that was upon his head, and the *bracelet* that was on his arm,' and brought them to David. The armilla is often mentioned by the Roman writers, and it was worn both by males and females. It was also used as a reward for military bravery. (Gruter, 'Inscript.' MXCVI. 4.)

The Hamilton, Townley, and Knight collec-

tions of antiquities, in the British Museum, contain armillæ in great quantities, and of almost every variety of form, in gold, in silver, and in bronze.

In vol. xii. of the 'Archæologia,' pl. li., a bronze armilla is engraved, found upon the wrist of a full-sized skeleton at Westwang Field in the East Riding of Yorkshire. There are also, in the same work (vol. xxii. p. 285), some observations upon an ancient bracelet of bronze, found on the sandhills of Altyre on the coast of Murrayshire.

ARMILLARY SPHERE. The Latin word *armilla* signifies a bracelet, and the armillary sphere is one in which the principal circles of the heavens are constructed of some solid material, and put together into their relative positions; thus presenting the appearance of a hollow sphere, of which all the surface has been cut away except the equator, ecliptic, colures, &c.

ARMIN, ROBERT, a favourite comic actor and small author, was a contemporary of Shakspere, and a member of the same company of players. Armin was a pupil of the famous actor Tarleton, who died in 1588: he was in Scotland on one of the visits paid to that country by the English actors: he was one of the players licensed by King James on his accession to the English throne in 1603; and the latest publication that is certainly his appeared in 1609. In the first folio of Shakspere he is named as one of the actors who had played in the great poet's dramas. His principal or only works were the following:—'The Italian Taylor and his Boy,' 1609 (reprinted 1810), a novel of Straparola, rendered into doggrel English verse; 'A Nest of Ninnies,' 1608; 'The History of the Two Maids of Moreclacke,' a drama, printed in 1609.

ARMINIANS are the followers of James Arminius, or those who are considered to entertain his sentiments. It does not appear that the conference in which Arminius was engaged at the time of his death was productive of any good effect upon the state of party feeling in Holland. The government, however, were evidently leaning towards his side; for in the following year (1610), on sending an embassy to France, Uitenbogaert was appointed chaplain. During the absence of Uitenbogaert the disputes went on in Holland with increasing violence. A large majority of the clergy and leading religious men adopted the sentiments of Gomar, and espoused his cause. The Arminian party drew up a representation of their sentiments, which was presented to the States-General, and was named by its authors 'Remonstratio,' or Remonstrance. This gave rise to the name Remonstrants, by which the party has been usually called on the continent of Europe. The Wesleyan Methodists call themselves Arminians.

ARMI'NIUS, JAMES, was born in 1560, at Oudewater, in South Holland. He was early taken under the care of a priest called Theodore Emilius, who had forsaken the Romish church. He instructed Arminius in the learned languages, and inculcated frequent lessons of practical piety. Emilius died at Utrecht, leaving the young Arminius without any means of support. The youth soon, however, obtained a second patron in Rodolph Snell, a native of Holland. On the foundation of the University of Leyden, Arminius repaired to Rotterdam, where he was received into the family of Peter Bertius, who afterwards sent him to the University of Leyden. Here Arminius cultivated the study of poetry, mathematics, and philosophy.

After remaining at Leyden about six years, the senate of Amsterdam, being moved by the high reputation for brilliant talents and extraordinary application which Arminius had acquired, sent him, in 1582, to Geneva, then the head-quarters of the reformed Calvinistic churches. Here he received instruction from the celebrated Beza. But he soon created a prejudice against himself among the leading men on account of his enthusiastic attachment to the philosophy of Ramus, which was opposed to the philosophy of Aristotle, at that time considered as the summit of perfection. Accordingly Arminius was soon obliged to quit the place, and he immediately repaired to Basle. The prejudice against him subsiding, in 1583 he returned to Geneva. In 1587 he went back to Holland, and on repairing to Amsterdam he found that reports had been circulated there greatly to his disadvantage, respecting his favourable views of the Roman Catholic religion. He succeeded, however, in satisfying his patrons that he had been slandered, and he soon received an invitation as minister in one of the churches at Amsterdam, over which he was placed in 1588, being then twenty-eight years of age.

Arminius soon became exceedingly popular as a preacher, and all classes of men united in extolling him. He was solicited by Martin Lydius, then professor of theology at Franecker, to defend the views of his teacher, Beza, against Arnold Cornelius and Renier Dunteklok, who had published a work entitled 'Answer to some Arguments of Calvin and Beza on the subject of Predestination.' This Arminius was at first inclined to do; but, after a thorough perusal of the answer, he suspended his purpose. In 1597 he repaired to Leyden, to confer with F. Junius, who was then professor of theology there.

Uitenbogaert, a very popular and able minister, was known to sympathise in sentiment and feelings with Arminius. To him Arminius wrote, beseeching him to assist in the examination of the difficult questions in which he was engaged.

In 1598 Arminius wrote his 'Examen Modestum Libelli Perkinsii, T. E.,' or his examination of a treatise in defence of predestination, which Perkins, an Englishman, had published under the title of 'Armilla Aurea.' During the plague in 1602, F. Junius and L. Trelcatius, professors of divinity at Leyden, died, and the curators of the university in 1603 elected Arminius to fill the place of Junius.

It is said that F. Gomar, a distinguished professor of theology in Leyden at this time, was opposed to the election of Arminius. During the next year Arminius delivered a lecture on predestination, in which he maintained that God had eternally decreed to save believers and to punish the impenitent. Gomar openly attacked this lecture; Arminius replied; and thus commenced a dispute

which has not yet subsided. As the contest went on, the teachers of religion began first to dispute, then to preach and write against each other, until all Holland was in a state of religious war. In 1607 the supreme court admitted Arminius and Gomar to a conference before them, and the result was, that this council informed the States General that the disputes between the parties were on intricate points of little or no importance. The States-General enjoined the parties to drop their disputes, and to teach nothing against the creed or the catechism. Arminius and Gomar, however, still carried on their theological warfare.

In 1608 Arminius was summoned by the States-General to appear before them at the Hague and give them an account of his sentiments. This he did in his famous 'Declaratio,' published in his works. The disputes continuing with increased violence, in the next year (1609) the States-General summoned Arminius and Gomar before them once more, but this was prevented by the sickness of Arminius. He died October 19th, 1609, with great calmness and resignation, solemnly testifying that he had endeavoured to discover the truth by searching the Scriptures, and that he had never preached or taught anything which he did not believe to be contained in them.

For further information the following works may be consulted:—'Jacobi Arminii Opera Theologica,' Lugd. Bat. 1629, small 4to. 'The Works of James Arminius, D.D., formerly professor of divinity in the University of Leyden, translated from the Latin by James Nichols, author of Calvinism and Arminianism compared in their Principles and Tendency,' Volumes 1 and 2: London, 1825 and 1828. 'Acta Synodi Nationalis Dordrechti habitæ,' Dort, 1620. 'J. Halesii Epistolæ,' Hamburg, 1724. 'Calvinism and Arminianism compared in their Principles and Tendency, by James Nichols,' London, 1824, in two volumes 8vo. This important work gives the fullest information on the doctrines of Arminius.

ARMINIUS. [HERMANN.]

ARMO'RICA, ARMO'RICÆ CIVITA'TES, the name given, in the time of Cæsar, to the maritime districts of Celtic Gaul, situated between the mouth of the Ligeris (Loire) and that of the Sequana (Seine); the word is derived from the Celtic, *ar mor*, which means 'near the sea.' That tract of country was occupied by several tribes, the Veneti, Osismii, Curiosolites, Rhedones, Caletes, &c., who formed a sort of confederacy. They had a considerable fleet, with which they carried on trade with the opposite coast of Britain. After being completely subdued by the Romans, they formed part of the province of Lugdunensis Secunda; the maritime districts of this province were styled *Armoricanus tractus*, and nearly corresponded to the French provinces of Brittany and Normandy. (D'Anville, 'Notice de l'Ancienne Gaule.') Maximus, a Roman officer, having revolted with the legions of Britain against the Emperor Gratian, A.D. 383, passed into Gaul with two legions and a large number of islanders, among whom was one Conan Meriadec, a chieftain from the south of Scotland, to whom Maximus assigned the government of Armorica. This is the first recorded emigration of Britons into that province, which was followed by others.

In the middle of the fifth century, thousands of Britons, driven from their native country by the incursions of the Picts, crossed the Channel, and sought refuge among their countrymen in Armorica. That country had become an independent state under Conan's descendants, commerce had grown up, and the Christian religion had been established at least as early as the end of the fourth century.

Fresh emigrations continued to pour in from Britain; the country began to be called Bretaigne or Bretagne, and the people Bretons. The Council of Tours, held in 567, in one of its canons makes a distinction between the Breton and the Roman inhabitants of Armorica. The successors of Conan were styled Counts of Bretagne. The country was finally subdued by Charlemagne, but the name of Armorica had long before this event been superseded by that of Bretagne.

(BRETAGNE; Daru, *Histoire de Bretagne.*)

ARMOUR is a general term for any defensive habit worn to protect the wearer from the attack of an enemy. *Harness* is a name formerly applied in this country to armour in the aggregate. In the sacred writings we find the shield, helmet, and breastplate mentioned at a very early period; and *greaves*, or armour for the legs, are named among the armour of Goliath. Homer mentions them, and his descriptions of the breastplate of Agamemnon, the shield of Achilles, and the golden armour of Glaucus, indicate the highly decorated character of much ancient armour. Among the more civilized ancient nations brass, iron, and other metals were used in its fabrication; but we also read of leathern armour, or possibly armour of skins only, as used by the Libyans and Persians; and among the Egyptians, according to Xenophon, metallic armour was confined to kings and nobles, while the common soldiery wore quilted linen for helmets, and carried large wooden shields. The same material was used occasionally for other pieces of armour, for Herodotus (iii. 47) describes a breastplate of linen, on which figures of animals were woven, and which was ornamented with cotton-thread and gold.

The complete Roman armour consisted of the helmet, shield, lorica, and greaves. The lorica was originally of leather, but in the time of Servius Tullius the whole of the Roman body armour was of brass. The Roman lorica was frequently enriched on the abdomen with embossed figures, on the breast with a Gorgon's head by way of amulet, on the shoulder-plates with scrolls of thunderbolts, and on the leather border which covered the tops of the lambrequins (or pendent flaps) with lions' heads; and these were formed of the precious metals. Each Roman legion had its own device marked upon its shields. In the time of Trajan the lorica was shortened, being cut straight round above the hips. A bronze breast and back plate of this kind are preserved in the British Museum, upon the front of the former of which one of the paps of the breast still remains, like a high button, to which the shoulder-plates were fastened which held the back and breast together.

The early Britons appear to have used no armour except the shield; but many of the Anglo-Saxons, according to Aneurin, a British bard, wore loricæ of leather and four-cornered helmets, having probably derived them from the Romans. Hengist wore scale-armour; but the Anglo-Saxon soldiers appear in drawings of the eighth century with no armour besides the shield and helmet, and armed with the sword and spear. The shield was oval, of wood covered with leather, surrounded by a broad rim of metal, and having a sharp projecting boss or spike in the middle. The helmet, which is often omitted even in representations of battles, is commonly a cap of leather, with the fur outwards; but personages of rank had conical helmets of metal, gilt. When the tunic supplanted the lorica the Roman pectoral was still retained as a neck-guard, or breastplate, and seems to have been occasionally of metal, and in other cases of wool or hair, or perhaps of undressed hides. A tunic covered with flat rings, called by the Saxons 'ringed byrne,' seems to have been occasionally used; and some illuminations favour the idea that the rings were sometimes worn edgewise. Towards the close of the ninth century the *corium*, or *corietum*, was the armour generally used. It was formed of hides cut into the resemblance of leaves, and covering one another; sometimes all of one colour, as blue, &c., and sometimes of two, as brown and orange; the upper part being of the one, while that which covers the thighs is of the other. It should be observed, that the Saxon byrne, originally in shape like a tunic, became in form afterwards a complete cuirass, sitting close to the body, and generally terminating with it. The weight of the ringed byrne seems to have been found a great impediment to activity. Hence, when Harold, in 1063, obtained immediate and decisive success over the Welsh, it was owing to the change of armour among his soldiers. He had observed that these mountaineers could not be pursued to their fastnesses by his troops when clad in ringed tunics, and he therefore commanded them to use their ancient leather suits, which would not impede their activity.

In the earliest Saxon representations no distinction is made between the cynehealm, or royal helmet, and the crown, the same head-covering being depicted as worn both in the court and in the field; but Edward the Confessor appears on his *great seal* in a diadem evidently put upon a helmet. The casque worn by the nobility was of metal, and of a pointed conical shape, but ornamented with gold and jewels, and in the later specimens furnished with a *nasal*, or small projecting piece to shield the nose. Leg-guards of twisted woollen cloth, rising from within the shoe, and wound round the legs in imitation of the hay-bands used by their rude ancestors, were used by the Saxons. The shield, though retaining its oval shape, varied in size from a magnitude sufficient to cover the head and body down to a diameter of about eighteen inches.

The Danes, on their first appearance in England, seem to have had no armour beyond a broad collar or thorax of flat rings, and leather greaves, or rather shin-pieces; but about the time of Canute they adopted, probably from the Normans, a tunic with a hood and long sleeves, and *chausses*, or pantaloons, which covered the feet, all of these being coated with perforated lozenges of steel, called, from their resemblance to the meshes of a net, *macles*, or *mascles*. They wore also a rounded conical helmet, or skull-cap, with a round knob, under which were painted the rays of a star on its apex, and a large broad nasal, to which the hood, being drawn up over the mouth, was attached, so as to leave nothing but the eyes exposed. The shield remained as before, and the weapons were spears, swords, and battle-axes, or bipennes.

From the period of the Conquest, seals, especially those of our kings, and monumental effigies, furnish abundant evidence as to the changes which took place in the fashion of armour. The Conqueror himself appears on his seal in a hauberk apparently of rings set edgewise; and in the Bayeux tapestry ring-armour forming both breeches and jacket at the same time is represented. This Sir S. Meyrick supposes to be the *haubergeon*, which is apparently distinct from the tunic or *hauberk*. It would seem to have been put on by first drawing it on the thighs, then putting the arms into the sleeves, which hang loosely, and do not reach much below the elbow. The hood was then brought up over the head, and the opening on the chest covered by a square piece, through which were passed straps that fastened behind, hanging down with tasselled terminations, as did also the strap which drew the *capuchon*, or hood, tight round the forehead. Body-armour of rings or mascles sewn flat on the vesture, and of leather, likewise appear in the Bayeux tapestry. The legs of most of the figures are bound with coloured bands, after the Saxon manner, but in some of the more distinguished characters, where the hauberk is worn, they have a covering of mail, called *heuse* or *hose*, down to the ankles. The shield introduced by the Normans was of the peculiar form called the *heater* or *kite-shield* by modern writers, but by the Normans themselves termed simply *escu*, from the Latin *scutum*. All the Normans represented in the tapestry have this kind of shield, while those of the Saxons are usually round or oval.

The *chapel de fer*, which resembles in shape a Tartar cap, being a cone which projects beyond the head, appears for the first time upon the seal of Rufus; and *tegulated armour*, which consisted of little plates covering each other in the manner of tiles, and sewn upon a hauberk, without sleeves or hood, appears during the reign of Stephen, towards the close of which the nasal of the helmet seems to have been disused. Henry II. is represented on his seal in a flat-ringed hauberk, and a conical helmet without a nasal; but the flat rings gave way soon after the commencement of his reign, and the hauberk with rings set edgewise came into fashion. The shield also became shorter, and more angular on each side at the top. The second seal of Richard I. presents a cylindrical helmet, surmounted by his badge, the *planta-genista*, or broom-plant, and having an *aventaille*, or plate to protect the face. The great seal of John affords the first example of an English king wearing the

surcoat, which is supposed to have originated with the crusaders, for the double purpose of distinction and veiling the iron armour, which became very hot when exposed to the direct rays of the sun. The *hauketon*, or *aketon*, which seems to have been of cotton stuffed and quilted, was another military garment of this period.

Pourpointerie, or *pourpointing*, which consisted of padded work elaborately stitched, appears first in the great seals of Henry III., where the hauberk and chausses appear to be of this description. Some changes appear also in the helmet, which, in his second seal, is cylindrical, and has an aventaille perforated for sight and breath, made to open and shut by hinges and a clasp. The knights, or heavy cavalry, of this period were wholly covered with mail, the face and left hand excepted. A manuscript of this reign (MS. Cotton., Nero, D. i.) represents knights in armour of gamboised or padded work, with surcoats, and greaves, or shin-pieces, of steel. In this MS. appears also probably the latest specimen of flat-ringed armour. The helmets are various, some having visors consisting of a convex plate of steel, with perforations for sight and breath in the form of a cross. *Poleyns*, or coverings for the knees, are represented in this authority. These must be distinguished from *poulaines*, which were the long points of the toes of shoes worn in and before the time of Richard II. Archers are shown in illuminations of this period wearing leathern vests over hauberks of edge-ringed mail, which vests Sir S. Meyrick thinks present the primary form of the *jack*, which was of English origin, and afterwards became very cumbersome. This small vest was called a *jacket*, or, in the Latin of that time, *jaquetanus*; the *jack* or *jacque* itself being in like manner called *jacquemardus* and *jacobus*. Armour of interlaced rings, which did not require to be sewn to an under garment, and was probably introduced from the east by the crusaders, was introduced in this reign; in which also the *chanfron*, or armour for the horse's head, appears for the first time.

Considerable improvements were made in armour during the reigns of Edward I., II., and III. *Ailettes*, or shoulder-pieces, were introduced in that of Edward I., and in the following reign mixed armour, partly of plate and partly of mail, was in vogue. *Armures de fer* was a distinctive name applied to plate-armour, which was frequently decorated with such splendour as, by exciting the cupidity of enemies, to endanger the wearer. Froissart tells of a knight who, having been taken prisoner, was afterwards put to death for his beautiful armour. *Mamelieres*, or pieces put upon the breast, and from which chains descended, one to the sword-hilt, and the other to the scabbard, appear about this time. It was customary in the time of Edward II. to wear the *cointisse*, or surcoat, ornamented with the warrior's arms, over the armour. One of the earliest examples of the *justing-helmet*, surmounted by its crest, occurs in the monument of Sir Oliver Ingham, who died in 1343. Moveable visors attached to the *bacinets*, or bason-shaped skull-caps, seem to have been introduced in the reign of Edward III.; and

the monument of Humphrey de Bohun, earl of Hereford, of the date of 1367, presents the first specimen of plate-armour with *taces*, or overlapping plates to cover the abdomen, which did not become general until the time of Henry V. Increased ornament was a characteristic of the armour of the reigns of Richard II. and Henry IV., about which time Italian armourers were much employed by the English nobility. Chain-mail appears to have been entirely disused soon after 1400, complete armour of plate, of which a fine specimen is afforded by the effigy of Richard Beauchamp, earl of Warwick, who died in 1439, superseding it. Black armour was often used at this period for mourning. Immense elbow-plates form a distinguishing feature in armour from the reign of Edward IV. to that of Henry VIII. Plate-armour attained its highest perfection about the reign of Richard III., and one of the finest suits preserved in the Tower of London, accompanied by a chanfron, manæfaire, and poitral, for arming the horse, belonged to Henry VII. In his reign fluted armour was occasionally used; and in that of his successor armour was frequently stamped or engraved with arms and devices, and sometimes *damasquinée*, or inlaid with gold.

Excepting some changes in the form of the breastplate, little alteration took place in armour in the reigns of Edward VI., Mary, and Elizabeth; but armour *cap-à-pie*, or complete armour, began to fall into disrepute during the reign of James I., in the latter part of which the *jambs*, or steel coverings for the legs, were laid aside. Charles I. endeavoured to bring about a uniformity in the fashion of armour among his officers and soldiers; but during the troubles of his reign it was so far laid aside, that soon after the establishment of the Protectorate we find the helmet and cuirass only worn, the latter consisting of a breast and back plate. The wearing of armour to the knees continued only to the time of Cromwell. The cuirass and a kind of helmet, however, are still retained amongst us for the royal regiments of Life Guards; and have, likewise, been resumed in the armies both of the French and Germans.

For this account of armour, various works have been consulted; but the chief outline has been taken from Sir Samuel Meyrick's 'Critical Inquiry into Ancient Armour as it existed in Europe, but particularly in England, from the Norman Conquest to the Reign of Charles II.' The collection of ancient armour possessed by that gentleman's son at Goodrich Court, in Herefordshire, and his own extensive researches, have supplied more information upon the subject than it is probable could have been given by any other writer. The reader may also consult Sir Samuel Meyrick's 'Engraved Illustrations of Ancient Armour from the Collection at Goodrich Court,' 2 vols. fol. Oxford, 1830, where (pl. iv. to x.) a series of tournament armour of successive dates, from 1458 to 1586, is exhibited.

Some remarks on the ancient mode of putting on armour, communicated to the Society of Antiquaries by Sir Samuel Meyrick in 1821 ('Archæologia,' vol. xx.), unravel, by the help of an ancient

document, what was previously an enigma. The knight began with his feet and clothed upwards: viz. 1, his sabatynes, or steel clogs; 2, the greaves, or shin-pieces; 3, the cuisses, or thigh-pieces; 4, the breech of mail; 5, the tuillettes, or overlapping pieces below the waist; 6, the breast-plate, or cuirass; 7, the vambraces, or covers for the arms; 8, the rere-braces, or arrière-bras, the covering for the remaining part of the arm to the shoulder; 9, the gauntlets; 10, then the dagger was hung; 11, the short sword; 12, the cloak, or coat, which was worn over the armour; 13, the bacinet; 14, the long sword; 15, the pennoncel, held in the left hand; 16, the shield.

ARMS, in a general sense, include all kinds of weapons, whether of offence or defence. The latter are treated of under armour, and of many of the former fuller details are given in such articles as GUN, RIFLE, SWORD, &c. The bow and arrow, treated of under ARCHERY, was among the earliest of offensive weapons, and the SLING, which is also noticed elsewhere, perhaps comes next in point of antiquity. The principal arms of the Jews were swords, daggers, spears, javelins, bows, arrows, and slings; they also used axes or maces as weapons of war.

The earliest metallic weapons were, according to Homer and Hesiod, of χαλκός (*copper*), perhaps hardened with tin. The word is commonly translated *brass*, but the compound metal now known by that name can hardly be meant. Sharp stones were, however, much used in early times, as they still are among barbarous nations, instead of metal, especially for the heading of arrows; and spears headed with the horns of the *dorcas*, or antelope, are mentioned by Herodotus as used by the Æthiopians.

Among the Greeks the foot-soldiers were divided into ὁπλῖται (*hoplitai*), who wore armour, and carried broad shields and long spears; ψιλοὶ (*psiloi*), the light troops, who wore no other armour than a helmet, and were armed with darts, bows and arrows, or slings; and πέλτασται (*peltastai*), an intermediate kind of troops, who carried the *peltæ*, or narrow-pointed shields, and spears. Greek spears were usually of ash, with a leaf-shaped head of metal, and armed at the butt with a pointed ferule, with which they were stuck into the ground. The Macedonians used a very long spear called σάρισσα (*sarissa*), which was more than twenty feet in length.

Swords, spears, javelins, bows, and slings, were the offensive arms of the Romans, whose infantry soldiers were divided into *hastati*, who fought with spears; *principes*, who led the van; *triarii*, the third line; *velites*, the light troops; *funditores*, the slingers; and *sagittarii*, the archers. Their cavalry used the javelin on horseback. The arrows of the sagittarii had not only their pikes barbed, but were furnished with little hooks just above, which easily entered the flesh, but tore it when an attempt was made to draw them out. What greatly contributed to render the Romans masters of the world was, that as they successively fought against all nations, they renounced their own arms and methods of fighting wherever they met with better.

The Saxons, previous to their arrival in Britain, besides the buckler and dagger, used a sword bent in the manner of a scythe; but their descendants soon changed it for one that was long, straight, and broad, double-edged, and pointed. The ordinary weapons of the Saxons, after their arrival in our island, for the infantry, were spears, axes, bows and arrows, clubs, and swords. The cavalry were more uniformly armed with long spears which they carried in their right hands, and swords which hung by a belt on their left sides. The arms of the Normans differed little from those of the Saxons; their spears or lances were usually made of some light strong wood, pointed with steel, very sharp, and well tempered; to these, with the sword and dirk, they added the cross-bow. The Normans also appear to have introduced a kind of field-artillery, consisting of instruments or machines from which darts and stones were thrown to a considerable distance; to which also they added arrows headed with combustible matter for setting fire to towns and shipping. Our military weapons were probably little altered till the time of Edward I., when the English long-bow seems seems to have been adopted, and the use of which was carried to great perfection.

Gunpowder was invented in the thirteenth century, and the larger sort of fire-arms (for which see ARTILLERY) in the fourteenth. Portable or hand fire-arms were not used till a century later. They were, according to Bilius, an eye-witness, contrived in 1430 by the Lucquese, when besieged by the Florentines; and most or their subsequent improvements were also effected by Italians. The earliest known representations of hand fire-arms occur in an illuminated French translation of Quintus Curtius, written in 1468, and preserved among the Burney MSS. in the British Museum.

The recollection of the fact that *phialæ* (small pots) had been used for casting the Greek fire, may have aided the invention of fire-arms. The Emperor Leo, in his 'Tactics' (ch. xix. § 6), speaks of the use, in vessels employed in pursuit after a naval battle, of large copper tubes called σίφωνες (*siphones*), through which fire was blown into the enemies' ships; and Anna Comnena ('Alex.' l. xiii.) mentions the use of similar tubes in land warfare.

In the following enumeration the principal varieties of portable fire-arms used since the invention of gunpowder, with their accompaniments, are included:—The *hand-cannon*, probably the earliest in date, was a simple tube fixed on a straight stock of wood, about three feet in length, and furnished with touch-hole, trunnions, and cascable, like a large cannon. To prevent the priming being blown away a small pan was subsequently applied on the right side in lieu of the ordinary touch-hole. The *hand-gun*, which was cast in brass, had a longer tube, a flat piece of brass turning on a pin to cover the priming pan, and a perforated piece fixed on the breech to assist the aim. This fire-arm was in use in England at least as early as 1446, and was used to great advantage in the defence of

Constantinople in 1453. With the addition of a contrivance suggested by the trigger of the cross-bow, to convey the match, which had previously been held in the hand, with certainty to the priming, the hand-gun was converted into the *arquebus*, or, by corruption, harquebus, which is mentioned as early as 1476. Like the hand-gun and hand-cannon the arquebus was fired from the chest, so that the eye could with difficulty be brought near enough to the barrel to take aim. This was remedied in the *haquebut*, hakebut, hagbut, or hagbush, a fire-arm of German origin, in which the butt was hooked or bent so as to raise the barrel nearer the level of the eye. The *demihaque* was a long pistol, about half the weight of the haquebut, with a butt curved almost into a semicircle. The *musquet* was a Spanish invention, and first used at the battle of Pavia. The first Spanish musquets had straight stocks, and the French curved ones, and they were so long and heavy that a *rest*, or staff about as high as a man's shoulder, with a fork at the top to receive the barrel of the musquet, and a ferule at the bottom to stick it in the ground, was needed in firing it. Such a rest had been previously used by the mounted arquebusiers. In and long after the time of Elizabeth, the musqueteer was so encumbered with his unwieldy weapon, his rest, his powder-flask, his touch-box, his leathern bag of bullets, his burning match, and the sword needful for his defence after firing, that it was long doubted whether the bow was not a preferable weapon to the musquet.

The *wheel-lock*, or *rose-lock*, invented in Italy about the reign of Henry VIII., was an ingenious contrivance for supplanting the match-lock, in which a furrowed wheel of steel set in motion by a spring which was previously wound up by a detached lever, or spanner, produced sparks of fire by revolving in contact with a piece of sulphuret of iron, thence called *pyrites*, or fire-stone. Next in order of time we find the *currier*, or *currier of war*, similar to the arquebus, but having a longer barrel; and in the time of Elizabeth the *snaphaunce*, a cheap substitute for the wheel-lock, became common. It derived its name from a set of marauders whom the Dutch styled *snaphans*, or 'poultry-stealers,' by whom it was contrived to obviate the inconvenience which arose from the use of the burning match, which pointed out their position at night; and in it a spark was obtained by striking a piece of flint in the cock against a piece of furrowed steel, in a similar way to the fire-lock, to which it was a near approach. The *caliver* was lighter and shorter than the musquet, and was fired with a match-lock. The name of the *carabine*, or *carbine*, a short gun, three feet or three feet and a half long, is by some derived from a body of light cavalry called carabins, who were employed by Henry II. of France in 1559; while others suppose it to have been first used at sea, in the vessels called carabs. The *esclopetta* (in Latin *sclopeta*) was probably only the demihaque under a foreign name. The *fusil* (whence comes our fusileers or fuzileers), was invented in France in 1630, but does not appear in England until the time of Charles II. Though originally of the same length and calibre as the musquet, it was lighter, and had a fire-lock. It has been reduced in modern times. The *mousquetoon*, or *musketoon*, was shorter than the fusil. The use of the *fowling-piece* in war, was recommended by the Earl of Albemarle about 1646; his idea being to employ marksmen armed with it, much as riflemen are employed in modern warfare. The *petronel*, or *poitrinal*, so called from being fired from the chest, or poitrine, was a medium between the arquebus and the pistol. The *blunderbus* (perhaps a corruption of the Dutch *donderbris*, or thundering gun,) was shorter than the carbine, and had a wide barrel. It seems to have been derived from Holland, and was not much known before the time of Charles II. The *dragon* (from which, according to the most probable conjecture, the troops called dragoneers and dragoons take their name) resembled a small blunderbus, with the muzzle ornamented with a dragon's head. The *hand-mortar*, for throwing *grenades*, which are said to have been first used in 1594, and from which grenadiers derive their name, appears, like the dragon, to have been fired from the shoulder. The *dag*, which was made of various sizes, and with different kinds of lock, differed from the pistol solely in having the butt-end terminated by a straight oblique line instead of a knob. What is improperly termed a Highland pistol has a similar peculiarity, and is called by the Highlanders themselves a *tack*. The dag was almost coeval with the *pistol*, which was invented at Pistoia, in Tuscany, by Camillo Vitelli, in the reign of Henry VIII. The German cavalry called reiters, or more properly ritters, gave such ascendancy to the pistol as to occasion in France, and subsequently in England, the disuse of lances. Horsemen armed with them were sometimes called pistoliers. It is curious and perplexing to find that while the name dag was applied, as stated above, the Italians used pistolese to signify a great dagger, or wood-knife. The *trickerlock*, a contrivance analogous to our hair-trigger, is found during the reigns of Charles I., Charles II., and James II., applied to wheel, match, and fire-locks. The *fire-lock*, which was evidently suggested by the snaphaunce, originated with the French about 1635. Previous to its invention, the term fire-lock was sometimes applied to the wheel-lock. The *self-loading gun* originated in Italy about the close of the English Protectorate. The butt was made to answer the purpose of a flask, and a small touch-box was attached to the pan. At the breech was a cylinder, with a hole to receive the bullet. To the axle of this cylinder was affixed a lever, on turning which the bullet was conveyed to its proper place, sufficient portions of charge and priming cut off, and the piece cocked at the same time. This, therefore, rendered the fire-lock just described as expeditious as the long bow; but the contrivance was attended with great danger, and occasioned the subsequent inventions of a moveable breech containing several charges, or a small barrel to be brought to the breech when requisite to load, &c.; but none of these contrivances were ever adopted by infantry

regiments. In 1712, a brass fire-arm called the *fancy gun* was invented. It was in the shape of a walking-cane, and might be used as a gun or pistol; but it was never used for military or even general purposes.

Musket-arrows, sometimes called fire-arrows, are at least as old as the time of Queen Elizabeth. They were used during the civil war, and were employed to carry combustibles. Lord Bacon says, they were called *sprights*. The *match-box* was a tube of tin or copper, pierced full of small holes, in which a burning match could be conveyed safely and secretly, and appears to have been invented by Prince Maurice. The *powder-horn* originally opened at the smaller end, for the discharge of the powder, but was subsequently improved by closing the smaller end, and adding a tube at the other end to contain just powder enough for one charge. The more capacious *powder-flask* is of German origin, and was known in England as early as the reign of Henry VIII. The *touch-box*, a small flask for containing fine priming or serpentine powder, was introduced when the corning, or granulation, of gunpowder became usual, and it was discovered that different qualities of powder were advisable for the charge and the priming. *Bandoliers* were small cylindrical boxes of wood or tin, covered with leather, and suspended from a belt or band, each of which contained one charge of powder. These were introduced in the reign of Henry III. of France, but were superseded on the introduction of the far safer and more convenient contrivance, now called the *cartridge*, which consists of a charge compactly tied up in paper, with the ball attached to it at one end, and which is described, though not by name, in a work published in 1670. The *patron* was a small semicylindrical box for carrying pistol-cartridges. The *sweynes-feather* (*i.e.* hog's bristle) was a long rapier blade, fixed in a handle and carried in a sheath, which was given to a musketeer to defend himself with after discharging his piece. By sticking the handle in the muzzle of his gun, it constituted a very efficient weapon for acting against pike-men; to diminish his encumbrance, the sweynes-feather and musquet-rest were combined, the latter constituting the sheath of the former. This instrument, the name of which was corrupted into swan's-feather, was invented in the reign of James I., but laid aside when, towards the latter end of the civil war, the use of the musquet-rest was abandoned. It then became the practice to stick a dagger by its handle into the muzzle of the piece after discharging; in which practice we have the origin of the *bayonet*, so called from having been first made at Bayonne. The French introduced bayonets in 1671, forming them with plain handles to fit into the muzzle of the gun, but subsequently a ring was added, by which the bayonet was placed on the muzzle without interfering with the firing of the piece. This improvement was made by the French during the war with William III. of England.

(Skelton's *Specimens of Arms and Armour*; Sir Samuel Meyrick's *Memoir* on the Introduction of Fire Arms, in the *Archæologia*; Grose's *Military History*; Henry's *History of Britain*; Strutt's *Manners and Customs*; and the various authors quoted in those works.)

ARMS, COATS OF. [HERALDRY.]

ARMSTRONG, JOHN, a poet and physician, born at Castleton, in Liddesdale, Scotland, about the year 1709. In London he obtained some celebrity as an author, but never gained much practice as a physician. He died in September 1779.

His principal work is a didactic poem on the 'Art of Preserving Health,' published in 1744. The work is well spoken of by critics of the last century. He also contributed to Thomson's 'Castle of Indolence' the stanzas at the end of the first canto, descriptive of the diseases produced by indolence.

(Aikin, *Gen. Biog.*; Life in Chalmers's *British Poets*.)

ARMY. The word *army* is from the French *armée*, 'the armed,' the 'men in arms,' which is what the English word *army* means. An army is a body of troops distributed in divisions and regiments, each under its own commander, and having officers of various descriptions to attend to all that is necessary to make the troops effective when in action. The whole body is under the direction of some one commander, who is called the commander-in-chief, the general, and sometimes the generalissimo.

The whole military force of a nation constitutes its army, and it is usual to estimate the comparative strength of nations by the number of well-appointed men which they are able to bring into the field. In another sense, an army is a detachment from the whole force; a number of regiments sent on a particular expedition under the command of one person who is the general for that especial purpose. Instances of this latter sense of the word occur in the expressions 'Army of Italy,' 'the Army of Spain,' &c., as formed by Napoleon.

An army is the great instrument in the hands of the governments of modern Europe, by which, in the last extremity, they enforce obedience to the laws at home, and respect from other powers who show a disposition to do them wrong.

The legitimate purposes for which an army is maintained are essential to the well-being of a state, and every nation that has attained any high degree of civilization has always maintained such a force, at least for defence. An army, meaning by that term a body of men distinct from the rest of the nation, constantly armed and disciplined, was unknown in the early periods of the English nation and the other modern European nations. The whole male population was the army; every person learned the use of arms, and in time of common danger went out to war under the command of some chief chosen from among the heads of the tribes.

When Britain was reduced to the form of a Roman province, a regular army was permanently settled in the island, for the purpose of enforcing submission and of defence against foreign invaders. Many of the remains of Roman authority in Britain, as roads, walls, encampments, and inscriptions, are military.

It was the policy of Rome in the latter part of the Republic, and more particularly under the Empire, to recruit its legions from barbarous nations, but to employ such soldiers in countries to which they did not belong. Thus, in the inscriptions relating to military affairs which have been found in England, many tribes of Gaul, of Spain, and Portugal, are named as those to which particular soldiers, or particular bodies of troops, belonged. And so, in foreign inscriptions, the names of British tribes are sometimes found.

When the Romans withdrew their forces from Britain, the northern nations invaded the defenceless island. The conquests made by the Saxons appear to have been complete, and their maxims of policy and war became the principles of English polity. They seem to have been at first in that state of society in which every man is a soldier; and the different kingdoms which they established were the occasion of innumerable contests. The Saxon kings had powerful armies at their command; and the most probable account of the mode in which they were got together seems to be this:—the male population were exercised in military duties, under the inspection of the earls, and their deputies, the sheriffs or vicecomites, in the manner of the arrays and musters of later times.

A great change took place in the military system of England at the Conquest. It is to that period that the introduction of fiefs is to be referred, a system which provided, among other things, for an army ever ready at the call of the sovereign lord. The king, reserving certain tracts as his own demesne, distributed the greater portion of England among his followers, to hold by military service, that is, for every knight's fee, as they were called, the tenant was bound to find the king one soldier ready for the field, to serve him for forty days in each year.

Writs of military summons are found in great abundance in what are called the 'Close Rolls,' which contain copies of such letters as the king issues under seal. But the kings of England had a better security for the protection of the realm in the power which the constitution gave to the sheriff to call people out to exercise, in order that they might be in a condition to perform the duty when summoned; and in a statute of Edward I., which required all persons to provide themselves with certain pieces of armour, which were changed for others by a statute of James I. We see in this system at once the practice of our ancestors, and the beginning of that drafting of men to form the county militia, which is a part of the present military system.

It was also the practice of the early kings to send down into the several shires, or to select from the gentry residing in them, persons whose duty it was to attend the musters or arrays. The persons thus employed were usually men experienced in military affairs; and when the practice became more general, there was a permanent officer appointed in each county, who had the superintendence of these operations, and was called the lieutenant: this is the origin of the present lord-lieutenant of counties, an officer who cannot be traced to a period earlier than the reign of Henry VIII.

The early kings of England of the Norman and Plantagenet races had these three means of arming men for the general defence of the realm: the quota of men which the holders of the knights' fees were bound to furnish; the posse-comitatûs, or whole population, from sixteen to sixty, of each shire, under the guidance of the sheriffs; and such hired troops as they might think proper to engage. But the posse-comitatûs could not be compelled to leave the kingdom, and only in particular cases the shire to which they belonged; and the king had only his feudal and mercenary troops at command when he carried an army to the continent, or when he had to wage war against even the Scotch or Welsh.

The inconveniences attendant on the military services due from those who held their lands of the crown disposed both parties to consent to commutations. Money was rendered instead of service, and thus the crown acquired a revenue which was applicable to military purposes, and which was expended in the hire of native-born subjects to perform service in the king's armies in particular places and for particular terms. The king agreed by indenture with various persons to serve him on certain money-terms with a certain number of followers in some expedition, or certain determinate expeditions. There appears little difference between this and the modern practice of recruiting armies. It was chiefly by troops thus collected that the victories of Creci, Poictiers, and Agincourt, were gained.

Troops thus levied, together with foreign mercenaries, made the nearest approach that can be discovered in English history to a permanent, or a *standing army*. Charles VII. of France (1423–1461) first introduced standing armies in Europe, and this policy was gradually imitated by the other European states. In England, probably in a great degree owing to her insular situation, this took place later than in most continental countries.

The few troops who formed the royal guard were the only permanent soldiers in England before the civil wars. The dispute between Charles I. and his parliament was about the command of the militia. Charles II. kept up about 5000 regular troops as guards, and to serve in the garrisons in England. These were paid out of the king's own revenue. James II. increased them to 30,000; but the measure was looked on with great jealousy. In the Bill of Rights (1689) it was declared that the raising or keeping a standing army within the kingdom, in time of peace, unless it be with consent of parliament, is against law. A standing army has ever since been maintained. It is raised by the authority of the king, and paid by him; but there is an important constitutional check on the royal prerogative in the necessity for acts of parliament to be passed yearly, in order to provide the pay and to maintain the discipline. [MUTINY ACT.]

ARNAOUTS. [ALBANIA.]

ARNALDO DA BRESCIA was born in the town of Brescia about the beginning of the

twelfth century. He studied in France under Abelard. Having returned to Italy, he became a *monk*. The corruption of the clergy was very great, and Arnaldo, endowed with an impassioned mind and a great flow of oratory, began to declaim against the ambition, the temporal power, and the luxurious life of abbots, prelates, cardinals, and the pope. Arnaldo maintained that ecclesiastics ought to be subordinate to the civil power; that the disposal of kingdoms and principalities did not belong to the church of Christ; and that the clergy ought to be satisfied with their tithes and the oblations of the faithful. To these doctrines he added others of a mystical character about the Trinity and the nature of the soul, which were eagerly laid hold of and perhaps distorted by his enemies. By preaching against the temporalities of the church, Arnaldo had excited the passions of the people; Brescia revolted against its bishop, and the fermentation spread to other towns. It is stated by Otto of Freisingen that Innocent II. had Arnaldo condemned, together with other heretics, in the Council of Lateran, in 1139, and he was banished from Italy. (Mosheim's 'Ecclesiastical History,' translated by Dr. Murdock, and the translator's *note* on Arnaldo.) He proceeded to France, where he met with an unrelenting adversary in Bernard, abbot of Clairvaux, who denounced Arnaldo, and forced him to seek refuge at Zürich, where he remained five years. But Bernard traced him there also, and caused the Bishop of Constance to banish him from his diocese. Arnaldo returned to Italy, and hearing that Rome had revolted against the pope, he repaired there, and put himself at the head of the insurrection. Lucius II. had died of wounds received in a popular affray, and Eugenius III., a disciple of Bernard, was driven from the city. Arnaldo exhorted the Romans to re-establish the Roman republic. The multitude were hurried on to excesses which Arnaldo probably never contemplated. They murdered or ill-treated the cardinals and nobles of the papal party, and shared the plunder in the name of Brutus and Cato, Fabius and Paulus Æmilius. But Arnaldo remained poor and free from reproach.

Rome continued for ten years in a state of anarchy. Eugenius III. died in 1153, and his successor Anastasius IV. having followed him to the grave shortly after, Adrian IV. was elected Pope in 1154. He was a man of a more determined spirit than his predecessors. He excommunicated Rome, and the Romans quailed before the spiritual authority. To be reconciled to the pontiff they exiled Arnaldo, who took refuge in Campania. When the Emperor Frederic I. came to Rome to be crowned, the pope applied to him to have Arnaldo arrested. Frederic gave his orders to the Margrave or Viscount of Campania, and Arnaldo, being delivered into the hands of the Prefect of Rome, was strangled, his body burnt, and the ashes thrown into the Tiber, in 1155. He met with the usual fate of the reformers of corruption. [ADRIAN IV.]

ARNAULD, ANTOINE, a French theological and philosophical writer of the seventeenth century, was born at Paris in 1612. After being ordained priest, he was made Doctor of the Sorbonne in 1641. He exhibited an early disposition for theological controversy, by writing the 'Théologie Morale des Jesuites,' in which he exposed the dangerous casuistry adopted by several moralists of that order. Soon afterwards the disputes which broke out among the French clergy about Jansenius, bishop of Ypres, and his book 'Augustinus,' gave Arnauld a fresh opportunity of exercising his polemical talent. [JANSENISTS.] Arnauld took the part of Jansenius in two letters, which were condemned by the Sorbonne, and the writer was expelled from that learned body. He then withdrew to Port Royal des Champs, where Pascal, Nicole, and other learned men of that time, resorted for quiet and studious retirement. There they wrote various works on literature, philosophy, and religion, which bear the name of the works of MM. de Port Royal. Arnauld wrote parts of several of these works, such as the 'Grammaire Générale Raisonnée;' 'Elémens de Géometrie;' and 'L'Art de Penser.' His next work, in which he was associated with his friend Nicole, 'De la Perpétuité de la Foi de l'Eglise Catholique touchant l'Eucharistie,' was dedicated to the Pope. This occasioned a warm controversy between Arnauld and the reformed minister Claude, in the course of which Arnauld wrote 'Du Renversement de la Morale de J. C. par la Doctrine des Calvinistes touchant la Justification,' Paris, 1672. Arnauld, at the same time, continued his war against the Jesuits, and wrote the greater part of the work styled 'Morale Pratique des Jesuites,' 8 vols. 12mo. That powerful and ambitious society did not bear this patiently; they represented Arnauld as a dangerous man, and Louis XIV. issued an order for his arrest. Arnauld concealed himself for some time, but afterwards, considering it prudent to leave France, he repaired to Brussels in 1679. There he published, in 1681, his 'Apologie pour les Catholiques.'

About this time he entered into a controversy with his old friend Father Malebranche, who, in his metaphysical works, had announced some peculiar doctrines on the subject of grace, predestination, and other theological problems. In refutation of these, Arnauld wrote his 'Traité des Vraies et des Fausses Idées,' Cologne, 1683; and afterwards, 'Réflexions Philosophiques et Théologiques sur le Nouveau Système de la Nature et de la Grace du Père Malebranche,' 1685. He continued to the last, although past eighty years of age, to carry on his various controversies, with the Jesuits, with Malebranche, with the Calvinists and with the sceptic philosophers, among whom was Bayle. His last work was 'Réflexions sur l'Eloquence des Prédicateurs,' 1694. He died in his exile at Brussels, on the 8th of August of that year. His works, which filled more than 100 volumes of various sizes, were collected and published at Lausanne and at Paris, in 50 volumes 4to. 1775-83. Arnauld was one of the most learned men of his age, a sincere but enlightened Catholic. He was one of the first to extricate theology from scholastic subtleties. He contributed to the French version of the New Testament published at Mons, and he was an advocate for having

the Missal, or service of the church, translated into the vulgar tongue.

(*Vie de Messire Antoine Arnauld,* by Larrière, which forms the last volume of Arnauld's Works, printed at Paris and Lausanne, 1775–1783, 4*to.*)

ARNDT, JOHN, was born in 1555, at Ballenstadt, in the duchy of Anhalt. He applied himself to theology, and became a clergyman of the Lutheran church. He wrote a book on 'True Christianity,' with the object of giving the study of religion a practical influence on the moral conduct of its followers. This work, first published in German, has been translated into Latin, French, Danish, Flemish, Bohemian, and English. Arndt was a great promoter of practical religion, or that which, in ecclesiastical history, is called *pietism.* His book is still considered one of the best treatises of Christian morality ever written. An English translation was published in 1815 by William Jaques—'True Christianity, or the whole Economy of God towards Man, and the whole Duty of Man towards God,' 2 vols. 8vo. London. Arndt was minister at Quedlinburg, and afterwards at Brunswick. In 1611, George, Duke of Lunenburg, presented him to the church of Zell. Arndt died at Zell in 1621.

ARNE, THOMAS AUGUSTINE, born in 1710, was the son of an upholsterer in King Street, Covent Garden, and educated at Eton. He was intended for the profession of the law; but his bias led him towards music, in which he made rapid progress. He soon imbued his sister with a love of the vocal art, and qualified her to appear in Lampe's opera, 'Amelia,' and afterwards in Arne's own 'Rosamond,' and 'Comus.' In 1740 Arne married Miss Cecilia Young, a pupil of Geminiani, and a performer of eminence. In 1742 he went with her into Ireland, where both were engaged by the Dublin manager, the one to sing, the other to compose. There he produced his masques, 'Britannia,' and 'The Judgment of Paris;' 'Thomas and Sally,' an afterpiece; and 'Eliza,' an opera. In 1745 he acceded to the request of the proprietor of Vauxhall, who thus added Mrs. Arne to the list of his vocal performers, her husband at the same time becoming his principal composer. Subsequently, he wrote his two oratorios, 'Abel' and 'Judith,' after which the University of Oxford conferred on him the degree of Doctor in Music. His greatest work, or that which has most contributed to his fame, 'Artaxerxes,' was composed in 1762, in imitation of the Italian opera. Dr. Arne also produced, in 1765, an entire Italian opera at the King's Theatre, Metastasio's 'Olimpiade,' of which no notice is taken by any of his biographers. He afterwards composed 'The Fairies,' the music to Mason's 'Elfrida' and 'Caractacus,' additions to Purcell's 'King Arthur,' 'Love in a Village,' the airs for the Stratford Jubilee, several canons and glees, and 'Rule Britannia.' Dr. Arne died in March, 1778, and was buried in St. Paul's church, Covent Garden, leaving an only son.

ARNHEM, ARNHEIM, or AERNEM (the Roman *Arenacum*) is the capital of the Dutch province of Guelderland: it stands on the right bank of the old Rhine, 56 miles by railway from Amsterdam, and 90 miles by the river from Rotterdam, in 52° N. lat., 5° 52′ E. long.; population 15,000. Arnheim stands at the foot of a small range of hills, called Veluwe, running northward towards the Zuider Zee. There is at Arnheim a bridge of boats across the Rhine. The town was fortified by Cochon in 1702: the ramparts are now converted into promenades. Arnheim has four gates, a reformed Dutch church which has a high tower, and contains the tomb of Duke Charles of Guelderland, a Roman Catholic church, a small Lutheran church, a governor's residence, and a very old-fashioned town-house. Coleseed, rye, oats, &c. are brought in great quantity to Arnheim. The town has a considerable transit trade along the Rhine by means of steamers between Rotterdam and Strasburg: it has communication also with Amsterdam and other towns of Holland by a railroad which passes through Utrecht, and which is to be continued from Arnheim to join the Cologne and Dusseldorf railway already completed as far as Duisburg. The neighbourhood of Arnheim contains many pleasant country residences of the nobility of Guelderland.

ARNI, the Indian name of the wild buffalo. [Ox.]

ARNI'CA, a genus of plants belonging to the natural order Compositæ. One species of this genus grows in Europe, the *A. montana,* and is known by the common name of Leopard's-Bane. It was at one time admitted into all the British Pharmacopœias, but at the present time is only retained in the Dublin. The plant has been examined by various chemists, and in every part there has been found an acrid resin and a volatile oil. In combination with these Chevallier and Lassaigne found in the flowers an acrid bitter principle, which they have called Arnicine, and the root contains a considerable quantity of tannin. In large doses it produces inflammation of the alimentary canal and coma. In small doses it acts as a general stimulant, increasing the pulsations of the heart, and acting as a diaphoretic and diuretic. It is used in Germany in cases of low fever, in nervous diseases, in amenorrhœa, and in adynamic diseases generally.

ARNO, called by the Romans *Arnus,* the principal river of Tuscany, rises on the southern slope of Mount Falterona, a projection from the central ridge of the Apennines, about 20 miles N.E. of Florence, in 11° 39′ E. long., and 43° 52′ N. lat. It descends by the village of Stia into the long and deep valley called Casentino, one of the higher regions of Tuscany, running in a S.S.E. direction between the great central ridge and an offset from it, which divides the Casentino from the valley of the Sieve, and afterwards from the Valdarno. The Arno receives in its course numerous torrents from both ridges. Having passed the large village of Poppi and the town of Bibbiena, the direction of the valley, and consequently the course of the Arno, change to a more southern course, being confined to the eastward by another offset from the central ridge, which divides the waters of the Arno from those

of the upper Tiber. Issuing from the lower Casentino, the Arno enters the plain of Arezzo, where having received the waters of the northern Chiana, it suddenly turns to the westward, entering a deep mountain gorge, appropriately called l'Imbuto, or 'the funnel.' Passing through the small valley of Laterina, it issues out of it by another narrow and wild pass called Valle dell' Inferno, which is 3 miles in length. The Arno next enters the beautiful region called the Upper Valdarno, one of the most delightful rural spots in Tuscany, and perhaps in the whole world. It is a valley about 14 miles in length, and from 3 to 5 in breadth, bounded by two ranges of hills, and sheltered on the N.E. by the lofty and rugged Apennines, among which the wooded summit is distinguished that overhangs the convent of Vallombrosa. The valley itself is a continued succession of gardens and orchards, and the hills are covered with vineyards or verdant pastures. Several neat towns and villages are scattered about, besides numerous hamlets and cottages on the hill slopes. Through this valley the Arno runs in a N.N.W. direction. At Incisa the mountains close again on both sides, and the Arno runs through a deep channel excavated in a ridge of limestone rock, and in a direction nearly due N., until it passes Rignano, beyond which, in the mountains on the right bank, a valley opens, through which the Sieve flows into the Arno. Here the river, after a circuitous course of more than 60 miles, is only 13 or 14 miles direct distance from its source. It now turns westwards by Varlungo, and enters the plain of Florence, dividing that city into two unequal parts. About 10 miles below Florence, and beyond the bridge and village of Signa, the Arno runs in a deep channel excavated through the base of Mount Golfolina, which is said to have been cut by the old Etruscans. A wider passage being thus opened for the river, the plain of Florence, which was a marsh before, was drained. The course of the river here diverges one or two points towards the S.: 10 miles farther the hills on the left bank recede, and leave a plain between them and the river, in which are the towns of Empoli and San Miniato. Here the Arno receives the Elsa, a considerable stream coming from the S., which has its source in the high lands near Siena that divide the basin of the Arno from that of the Ombrone. On its right bank the Arno receives several streams which come from the northern Apennines above Pistoja, and the waters from the lake or marsh of Fucecchio, and from that of Bientina. About 10 miles below San Miniato the Arno, after receiving the Era, a large stream from the S., enters the plain of Pisa, through which it makes several considerable windings, passes through the town of Pisa, and enters the sea about 5 miles westward of it: 43° 41′ N. lat., 10° 15′ E. long.

The whole course of the Arno, with its numerous windings, is about 140 miles in length. Its breadth varies greatly: near Florence it is about 400 feet, but the waters are very low in summer, and the river is then fordable. Within the city of Florence the bed of the Arno is considerably narrower, being confined by the walls of the quays. At Pisa, however, it still retains the appearance of a considerable river. Between Pisa and Florence the Arno is navigable for barges; but in summer the navigation is often interrupted in consequence of the shallowness of the water. The tract of country watered by the Arno constitutes the most populous, most productive, and most thriving part of Tuscany. In the upper valleys of the Arno, between Arezzo and Florence, a vast quantity of bones and whole skeletons of the largest quadrupeds of other climates, the mastodon, elephant, rhinoceros, and hippopotamus, are found, as well as beds of lignite.

The Arno, like all the rivers which descend from the Apennines, is subject to sudden overflowings. The quantity of earth and stones which it then carries down from the mountains has raised its bed in many places nearly as high as the adjacent fields. Embankments have been made along the greater part of its course, and are kept up at a considerable expense. But in cases of extraordinary rains and storms in the highlands where it has its source, the Arno rushes down with such fury as to overcome all obstacles and inundate a great part of the country. Among the more disastrous inundations, that of September, 1537, is recorded, when the Valdarno and the whole plain of Florence were overflowed, and trees, mills, cattle, and even houses, were carried away. Two-thirds of the city of Florence were inundated, the water being in some places eight feet above the pavement; and two of the bridges of Florence were carried away. In November, 1740, another great inundation occurred, owing to the prevailing sirocco, which melted the snows that had fallen on the Apennines. The confluence of the Sieve, just above Florence, a river which swells from the same causes and generally at the same time as the Arno, greatly contributes to these inundations.

ARNO'BIUS, according to Hieronymus ('De Viris Illustribus,' c. 79), was a rhetorician and afterwards a presbyter of Sikka in Numidia, in the reign of Diocletian. Lactantius was the most distinguished disciple of Arnobius. Hieronymus states, in his 'Chronicle,' that Arnobius attacked Christianity, until he had some impressive dreams, which induced him to wait upon the Bishop of Sikka, who, however, did not trust him, knowing his former enmity to the gospel. Arnobius wrote his seven books of 'Disputations against the Heathen' to convince the bishop that he was converted. But the statement of Hieronymus, who refers it to the twentieth year of Constantine, A.D. 326, contains a manifest anachronism. Arnobius appears in his 'Disputations' not like a man recently changed by dreams, but as a man of a ripe conviction, although without ecclesiastical orthodoxy. Arnobius came to a knowledge of the truth by carefully reading the New Testament, especially the Gospels, and he was not biassed by the ecclesiastical orthodoxy of the North African church. We may ascertain generally the time in which he wrote his 'Disputations' from their con-

tents: he refutes the accusation which had excited the Diocletian persecution, namely, that the calamities of the empire were a consequence of the spread of the Gospel, which caused a neglect of the gods. Arnobius replies:—'If men, instead of relying upon their prudence, and following their own propensities, would try to obey the doctrines of Christ, which bring peace and salvation, the whole world would be soon changed, and the iron taken from the service of war would be employed in the works of peace.' (l. iv. c. 36.) The persecutions of Diocletian commenced A.D. 303.

Only one manuscript of Arnobius is known to exist; it is now at Paris. The first edition of the 'Disputations' is that by Faustus Sabæus, Rome, 1542, fol. The last and best edition of Arnobius is by Conrad Orelli, Leipzig, 1816, in two volumes 8vo.

The works of the Semi-Pelagian Arnobius of Gaul have sometimes been erroneously ascribed to Arnobius Afer. Arnobius of Gaul wrote, about A.D. 460, a commentary on the psalms, edited with a preface by Erasmus, at Basle, 1537; at Paris, 1539; at Basle, 1560; and other works.

ARNOLD, BENEDICT, was born at Norwich in Connecticut, in North America, on January 3, 1740, of parents in very humble life. He was apprenticed to a druggist, but having been unsuccessful in business, he was the more ready, when the revolutionary war broke out, to take up arms, for which he was well fitted both by inclination and capacity. He threw himself into the contest with great ardour, and raised a company of volunteers at Newhaven, in his native state. His activity, boldness, and skill, soon brought him into notice; and when in the summer of 1775 it had been determined to attempt the capture of Quebec, he and General Montgomery were fixed upon by Washington to conduct the expedition. The march of Arnold across a then unknown and pathless region, at the close of the year, is one of the boldest military exploits on record.

Arnold distinguished himself greatly in the military operations that followed; and was severely wounded in the leg in the unsuccessful assault upon Quebec on December 31, 1775, in which General Montgomery fell. On his return from this enterprise he continued in active service, and gave on many occasions the highest proofs of bravery and military talent. In one of the actions which immediately preceded the surrender of General Burgoyne at Saratoga on the 16th of October, 1777, his wounded leg was struck, while he was on horseback, by a cannon-ball; and this accident rendering him unable for some time to take the field, he was appointed by Washington to the command of Philadelphia, which the English had recently evacuated. In this situation he was guilty of such acts of rapacity and oppression, in order to support the ostentation and luxury in which he indulged, that he was ordered to be tried by a court-martial, and on the 20th of January, 1779, he was sentenced to be reprimanded by the commander-in-chief. On this disbonour Arnold threw up his commission. The embarrassment of his affairs, however, was so great, and the demands of his creditors became so pressing, that he soon found it necessary to attempt something to repair his broken fortunes. In these circumstances he appears to have formed the deep and atrocious design for which his name is now chiefly remembered, and by which it has been covered with infamy. He resolved to make an offer to the British general, Sir Henry Clinton, of his services in betraying his country and the cause for which he had hitherto fought. His proposals were accepted, and it was agreed that he should employ all his art and interest in order to obtain the command of the important fort of West Point on the Hudson, with the view of delivering it up to the enemy. It was in this negotiation that Major André was taken, but Arnold contrived to escape to an English sloop. He was allowed to retain in the British army the rank of brigadier-general, which he had held in that of the United States. In the beginning of the following year he was sent with an expedition into Virginia, where he committed great devastation. After this he made a still more destructive incursion into Connecticut, his native state. Having taken Fort Trumbull, near New London, he barbarously put the unresisting garrison of the fort to the sword, and set the town on fire. He served afterwards in Nova Scotia, and also in the West Indies, where he was taken prisoner by the French, from whom, however, he made his escape. After the conclusion of the war he took up his residence in England. In July, 1792, a duel was fought near Kilburn Wells, between General Arnold and the late Earl of Lauderdale, in consequence of certain expressions which the latter had used at a public meeting, and would not retract. Arnold was attended by Lord Hawke, and Lord Lauderdale by Mr. Fox. His Lordship declined to return his adversary's fire, but said, that if he was not satisfied he might fire on till he was. On this the parties separated. Arnold died in Gloucester Place, London, in 1801.

ARNOLD, SAMUEL, was born in 1740, and was placed at an early age among the choristers of the royal chapel, under Mr. Bernard Gates: he afterwards completed his musical studies under Dr. Nares. His first production was an air, 'If 'tis joy to wound a lover,' which immediately spread itself far and wide, and, though a mere trifle, at once made the author popular. At the early age of twenty-three he became composer to Covent-garden Theatre, and in 1766 also undertook to fill the same office at the Haymarket. He produced about forty musical pieces, the most popular of which were, 'The Maid of the Mill,' 'The Son-in-Law,' 'The Castle of Andalusia,' 'Inkle and Yarico,' 'The Battle of Hexham,' 'The Surrender of Calais,' 'The Children in the Wood,' &c. 'The Mountaineers,' 'The Cure of Saul,' 'Abimelech,' 'The Resurrection,' and the 'Prodigal Son,' were compositions of a graver cast. He afterwards made an unsuccessful speculation at the once famous 'Marylebone Gardens.' In 1783 he was appointed organist and composer to the king. In 1789 he succeeded Dr. Cooke as conductor of the Academy of Ancient Music; and in 1793 became organist of Westminster Abbey. He then undertook the

publishing of the works of Handel and Boyce; and afterwards produced two more oratorios, the 'Redemption' and the 'Triumph of Truth.' Dr. Arnold died in 1802, and was interred in Westminster Abbey; he left a son and two daughters.

ARNOLD, THOMAS, D.D., was born at Cowes, in the Isle of Wight, June 13, 1795. His father, William Arnold, was collector of the customs in that place. At the age of eight he was sent to Warminster, and four years afterwards to Winchester College. As a boy he was remarkably shy and indolent, a character which presented a strong contrast to the frankness and activity of his subsequent life. In 1811 he was removed to Oxford, having obtained a scholarship in Corpus Christi College. Here he devoted his attention chiefly to the philosophers and historians of antiquity, among whom his favourite authors were Aristotle and Thucydides. In 1814 he took a first-class degree, and the year after was elected Fellow of Oriel College. In 1815 and 1817 he was chancellor's prizeman for the Latin and English essays. Having overcome certain scruples respecting some points in the Thirty-nine Articles, with which he appears to have been harassed about the time he graduated, he was ordained deacon in 1818, and priest in 1828, when he undertook the chaplaincy of Rugby School. In 1820 he married Mary, youngest daughter of the Rev. J. Penrose, rector of Fledborough, Notts, having in the previous year settled at Laleham, near Staines, where he employed himself in the preparation of seven or eight young men for the universities. Here a great and decisive change came over his character. The indolence and restlessness by which his early years had been marked, entirely disappeared, and he acquired those settled, serious, earnest views of the nature and purpose of life, which actuated him ever after. The time which was not occupied with his pupils was devoted to collecting materials for his edition of Thucydides, writing articles on Roman History for the 'Encyclopædia Metropolitana,' and preparing the way for his 'History of Rome,' which he did not live to finish.

In August 1828, he entered upon his duties as head-master of Rugby School, to which he had recently been elected. Here his great talents for instruction and the management of young men acquired a suitable sphere for their activity. The result was soon apparent, not only in the eminence which Rugby rapidly obtained, but in the beneficial change which, by its example, was impressed upon other institutions of a similar nature. Dr. Arnold retained the old classical basis of tuition, but gave it breadth by connecting it with other departments of learning; inspired it with life and vigour by the practical views to which he directed it; and imparted to it elevation and dignity by what had heretofore been wanting in public schools, the introduction of a high moral and Christian element. As he could not come into frequent personal contact with every one amongst his pupils, he governed the school, and made his influence felt through the whole of it, by means of the sixth form, or highest class of boys. To add to their authority, and for the sake of maintaining order and government among the boys themselves, he kept up the system of fagging; but he stripped it of its repulsive features, and invested it with a moral force, by making it the ground of a solemn responsibility on the part of those who exercised the power. His views on this subject will be found in the 'Journal of Education,' 1834–5, to which there is a reply by Professor Long, the editor of that work.

In this occupation he spent the last fourteen years of his life; and during that period, though so diligently engaged in his own proper duties, took the deepest interest in all the public events and political questions of the time. In 1835 the office of a fellowship in the Senate of the new London University was accepted by Dr. Arnold. He at first consented to join the University 'without insisting on a Scriptural examination, on the alleged ground of fact, that such an examination was not practicable on account of the objections of different classes of Christians, and on the hope, which he distinctly expressed, that the Christian character of the University might be secured without it.' But he subsequently became convinced that 'the Scriptural examination was both practicable and all but indispensable.' In December 1837, he succeeded in carrying a resolution 'that, as a general rule, the candidates for the degree of Bachelor of Arts shall pass an examination either in one of the Four Gospels or the Acts of the Apostles in the original Greek, and also in Scripture History.' In consequence of the remonstrances from various bodies of dissenters and from the Council of University College, London, and partly in consequence of the strong representation of the Secretary of State (Lord John Russell), through whom an appeal had been made by the remonstrants to the law officers of the crown, a larger meeting of the Senate of the University of London was held, in February 1838, in which the former motion was overruled, and in its place it was resolved, 'that examination in the Hebrew text of the Old Testament, and in the Greek text of the New, and on Scripture History, shall be instituted in this University; and that all candidates for degrees in arts may, if they think proper, undergo such examination.' The Senate immediately proceeded to institute a voluntary examination, with prizes, in the texts of the Old and New Testaments and in Scripture History. Dr. Arnold finally withdrew from the Senate of the London University, in November 1838, being led, 'after the fullest consideration and inquiry, to the conclusion that the voluntary examination would not be satisfactory.'

The year before Dr. Arnold's death he was appointed by Lord Melbourne to the regius-professorship of modern history at Oxford—an appointment which gave him the most lively satisfaction. But he lived to deliver only his introductory course of lectures. He died on the 12th of June, 1842, at the close of the half-year, of spasm at the heart, and was buried in the chapel at Rugby. He left a widow, with five sons and four daughters.

His correspondence is the best record of his life, and affords the most vivid representation of his character. It has been published in 2 vols.,

with a Life by the Rev. A. P. Stanley. His chief work is his 'History of Rome.' He also published an edition of Thucydides, with Notes, and five volumes of Sermons. His miscellaneous works have been collected in one volume.

(Stanley, *Life and Correspondence of Dr. Arnold*, 4th ed.)

ARNOTTO, or ARNATTO, the inspissated extract from the fruit of the *Bixa Orellana*, is used by dyers to give a bright orange colour to silk goods, and to give a deeper shade to simple yellow colours. It is further used in many of our dairies to give a reddish colour to cheese, which it does without adding any disagreeable flavour or unwholesome quality. The Arnotto of commerce is brought to us from South America. It is moderately hard, brown on the outside, and of a dull red within. It comes in cakes of about two or three pounds weight each, and is generally enveloped in large flag-leaves previous to being packed in casks. In this state it receives the name of flag arnotto, to distinguish it from a less known variety called roll arnotto. Arnotto dissolved in potass and water forms Nankin dye; and most of its solutions are effected with alkalies. A varnish is made from it with alcohol.

The consumption of arnotto has been much increased in this country of late years. In 1820 the quantity brought to use but little exceeded 50,000 pounds; whereas in 1845 it exceeded 350,000. It formerly paid a duty of twopence per pound, but this was repealed in 1845.

ARNSBERG, one of the three departments into which the Prussian province of Westphalia is divided. It is bounded N.W. by the circle of Münster; N.E. by that of Minden; E. by the principality of Waldeck, and Hesse Darmstadt; S.E. and S. by the duchy of Nassau; S.W. by the circle of Coblenz; and W. by those of Cologne and Düsseldorf. The surface of Arnsberg contains 2986 square miles; the population is 465,775. It is subdivided into 12 circles, which contain 55 towns, and 3420 villages and hamlets.

ARNSBERG, a circle in the administrative district of Arnsberg, which has an area of 274 square miles, and a population of 27,472. The northern part of the circle, in which is the great forest of Arnsberg, consists of valleys hemmed in by high hills; but the southern part is more level. The soil is stony, but produces a sufficiency of grain, flax, and potatoes for the consumption of the inhabitants. Timber is felled in the forest of Arnsberg, and exported in large quantities to the adjacent circles. The principal river is the Ruhr, which rises at Winterberg, and flows into the Rhine between Duisburg and Ruhrort. Iron, marble, salt, and brick-earth, are the chief minerals of the circle, in which there is little manufacturing industry.

ARNSBERG, the capital both of the department and of the circle of Arnsberg, is situated on a hill half surrounded by the Ruhr, about 40 miles S.W. of Paderborn, in 51° 22′ N. lat., 8° 2′ E. long.; population 4100. It commands a delightful prospect of the mountainous scenery round it, and of the ruins of the ancient castle in the old town, in which the meetings of the 'Holy Fehme' were sometimes held. [FEHME.] The courts of civil and criminal justice of the department are held in Arnsberg. There are several government offices, a gymnasium, and a savings bank. The town has little trade.

ARNSTADT, the chief town of the upper division of the principality of Schwarzburg-Sondershausen. It is delightfully situated on the Gera, 11 miles S. of Erfurt, in 50° 49′ N. lat., 10° 57′ E. long.; population 4842. There are 4 churches, several government offices, a college, an orphan and a lunatic asylum, a public school, a house of correction, and several woollen and brass-ware manufactories in the town, which has a good trade in leather, linen, fruit, grain, and timber. The town also contains many oil and flour-mills, one of which has thirty sets of grinding stones. A profusion of gardens and orchards lie scattered round the town; and the remains of two ancient castles, the Käfernburg and Altenburg, are striking features in its environs.

ARNSWALDE, a circle in the department of Frankfurt, in the Prussian province of Brandenburg. Its area is 493 square miles, and its population 29,210. It is bounded N. and N.W. by Pomerania, is watered by the Drage and some smaller rivers, and contains several small lakes. It has an abundance of forests, and a sandy soil, which, however, yields much grain and timber, and feeds numerous herds and flocks. The chief town, Arnswalde, contains 3020 inhabitants, and manufactures linens and woollens. It stands between three lakes, which are well stocked with fish.

AROI'DEÆ, an order of monocotyledonous plants, the species of which are all acrid in a high degree, some of them so much so as to be dangerous poisons, as, for example, the Dumb-Cane of the West Indies, which paralyses the mouth if only chewed. This acrid principle is so far removed by roasting or boiling, that the underground stems may, in some cases, be used as food. The colocasia of the tropics, and some other species, are common articles of food among the negroes; but they are said not to agree very well with Europeans. In this country only one kind of aroideous plant, the *Arum maculatum*, is found wild. The root of that species which is commonly named the Cuckoo Flower, is eatable when properly prepared, just as those which have already been mentioned.

Aroideæ are also remarkable for the heat which some of the species give out when flowering, and for the exceedingly offensive odour of others at that time.

AROLSEN, on the Aar, 23 miles S. of Cassel, is the residence of the princes of Waldeck. The town is regularly built, possesses woollen, leather, and iron-ware manufactories, a grammar-school, 3 churches, and 2050 inhabitants. The palace is a handsome structure of spacious dimensions; it contains a gallery of paintings, valuable collections of coins and antiquities, and a library of 30,000 volumes. The town stands in 51° 25′ N. lat., 8° 56′ E. long.

ARO'MA is the supposed principle of odour in plants, formerly called by Boerhaave *Spiritus Rector*. This quality generally resides in the

essential oil; but there are some vegetables that have a strong odour which yield but little or no essential oil, as the jessamine and the violet; or when an oil in small quantity is procured from them, it has not a powerful smell. As plants exhale their odour when exposed to the air, and communicate it to water at a lower temperature than that at which it could be distilled, it has been imagined that some principle of a more subtile nature exists, in which the odour resides, and that it is this which imparts smell to the oil. In fact, however, the property of odour belongs to proximate vegetable principles of different kinds, in which there is no reason to suppose the existence of any common principle; essential oil is unquestionably the most usual cause of its production, and it is capable of being volatilized in small quantity at a low temperature, and thus diffused through the atmosphere or communicated to water.

AROMATARI, GIUSEPPE DEGLI, a physician and naturalist, born about the year 1586 at Assisi, a town of the duchy of Spoleto, in the States of the Church, Italy. His father was a physician. His studies were begun at Perugia, and continued at Padua, where he studied successively logic, philosophy, and medicine. He obtained his degree of doctor of medicine in his eighteenth year, and immediately afterwards established himself as a physician at Venice, where he remained practising for fifty years; nor could he be prevailed upon to quit it by the most tempting offers and solicitations made to him by the Duke of Mantua, the King of England, and Pope Urban VIII. He died at Venice on the 16th of July, 1660.

During this long period he devoted himself to his profession, to the study of the mode of generation or reproduction of plants and animals, and to polite literature. He accumulated an immense library, extremely rich in manuscripts. His only publication connected with polite literature was, 'Riposte alle Considerazioni di Alessandro Tassoni sopra le Rime del Petrarca,' Padua, 1611, 8vo. His contributions to medicine and natural history consist of an essay on hydrophobia, and a letter on the generation of plants from seeds, which was entitled 'Disputatio de Rabie Contagiosa, cui præposita est Epistola de Generatione Plantarum ex Seminibus,' Venice, 1625; and Frankfort, 1626, 4to.

A letter addressed to Dr. Bartholomew Nant gave the outline, or heads of chapters, of a large work which he intended to write on generation, but which his numerous professional engagements and delicate state of health prevented his accomplishing. The views, however imperfectly developed, are more in accordance with those held in the present day by our most distinguished vegetable anatomists and physiologists, than many of those entertained for a long period subsequent to the time in which he lived. He taught that the so-called seeds of plants were not, as a whole, the new plant, but that a very small portion of a seed possessed the principle of life, the rest being intended for the nourishment of this part. This corresponds to the embryo and albumen of modern writers. The existence of this embryo in a seed rendered it fertile; its absence caused it to be unfertile. The development of this embryo took place in a twofold direction, a portion of it ascending and constituting the *plumule*, the other descending and constituting the *radicle*.

He asserted the analogy between seeds and the eggs of animals, and even designated seeds the *eggs of plants*; both in the early stages of their growth receive their nourishment from the albumen by which they are surrounded, but afterwards the chicken takes up its nourishment by its mouth, a plant by its roots. In both cases the young embryo existed previous to hatching or germination, being by these processes only developed, and not then formed.

His principles respecting the generation of animals were known to, and adopted, and promulgated at full length, by Harvey in his treatise 'De Generatione.'

(Mazzuchelli, *Scrittori d'Italia.*)

AROMATICS are agents obtained from the vegetable kingdom, exercising a peculiar influence over the digestive powers, and possessed of more or less odour or fragrance. Of this odour, by which they can at all times be recognised, the most usual vehicle is an essential or volatile oil, as stated in the article AROMA. Indeed, volatile oil exists in all aromatic plants, and in every part except the cotyledons, save in the nutmeg and a very few other seeds; but this aromatic oil does not reside in the same part in every kind of plant. In umbelliferous plants we find it mostly in the fruits (the *vittæ*), yet, in angelica, celery, and parsley, it is diffused through the whole structure. Labiate plants, such as mint, balm, rosemary, and lavender, have it in the leaves and stem; cinnamon in the bark; all terebinthinate plants in their young branches. The iris florentina (*orris*) and others have it chiefly in the root; the scitamineæ equally in the root (ginger) and the seeds (cardamoms): the rose and chamomile have it in the petals; yet it is not equal in all the petals of the chamomile, being greatest in the yellow florets of the disk; hence, doubling the flowers of the chamomile, by which the yellow florets of the disk are diminished, and the white florets of the ray increased, lessens the virtue of the flowers.

Aromatics are seldom applied to the organ of smell for the purpose of influencing the system in a remedial manner, but are usually introduced into the stomach. As all aromatics contain volatile oil, their action is generally referred to this principle; but there cannot be a doubt that the more fixed principles which they contain contribute greatly to their effect. Volatile oils, when separated, act chiefly on the nervous system; but aromatics influence the digestive organs, the function of assimilation, and the circulation. They are themselves digested, but previous to this process commencing, or going any length, they produce, by direct contact with the internal surfaces, a peculiar effect, which we perceive beginning at the lips and palate, and accompanying them in their progress to the stomach. They scarcely excite any general action of the system, but expend their power chiefly upon the stomach, and,

in a less degree, upon the intestinal canal; increasing the vital force of the former, and quickening the muscular action of the latter. They also communicate to the stomach a greater power of resistance to unpleasant sensations, as under their influence many articles can be borne by it which would otherwise be rejected; and this happens equally with regard to food and medicines.

The necessity for the employment of aromatics is greater in warm climates and weather than in cold; and we find the plants which furnish them grow in the greatest abundance in hot countries. Throughout the East Indies the natives restore the powers of the stomach by chewing betel, which consists of slices of the areca nut, sprinkled with fresh lime, wrapped up along with some aromatic in a leaf of the *piper betel*. The Indians of South America use the *Erythróxylum Peruvianum* (called *coca*) along with the leaves of the *Chenopódium Quinoa*, mixed with quicklime, to stimulate the impaired powers of the stomach during their long and toilsome journeys over the heights of the Andes. On the same principle, the Europeans who visit tropical countries use curry and other hot dishes. But in every quarter of the globe we find condiments used along with all articles difficult of digestion, especially vegetables, fish, and young meat, such as veal.

ARO'NA, a town of Piedmont, in the division of Novara, on the western shore of the Lago Maggiore; population about 5000. It stands on the Simplon road from Switzerland to Milan, from which another post-road branches off from Arona to Novara, Vercelli, and Turin. Arona is a neat and bustling little town, with a small harbour on the lake; it carries on a considerable transit trade between Piedmont and Switzerland. Its situation is delightful, just within the last range of hills above which the snowy Alps are seen towering, and at the opening of the wide plains of Lombardy. The country near Arona produces good wine. San Carlo Borromeo, the celebrated archbishop of Milan, was born in the castle adjoining Arona, which is now in ruins. A colossal statue 66 feet high, and standing on a pedestal 46 feet in height, was raised to him, on a hill above the town, in 1697.

ARPEG'GIO (in Italian, 'to play on the harp'), is, when applied to keyed instruments, the striking the notes of a chord in rapid succession, as in the manner of touching the harp, instead of playing them simultaneously, the notes, when struck, being held out the full remainder of the time.

ARPI'NO, the Roman *Arpinum*. This very ancient city is situated near the confines of the Neapolitan kingdom, in the province of Terra di Lavoro, about 68 miles S.E. of Rome, and 65 miles from Naples. It stands on an eminence to the left of the river Garigliano, and near the confluence of the Fibreno (the ancient Fibrenus), with the Garigliano (the ancient Liris). The town of Arpino, like most others in Italy, gradually descended, as peace and tranquillity were established, from the lofty hill top to lower ground, and it now stands on an inferior ridge nearer to the Liris. The population is about 10,000; woollen cloth, parchment, paper, and leather, are manufactured in the town and its vicinity.

The old town, which before the extension of the power of the Roman republic formed part of the territory of the Volsci, was built on the summit of a steep rock. An ancient arch, presenting a sharp arrow-head, in the style of the gothic arch, a considerable extent of Cyclopean walls, an ancient cistern, four subterranean arches, and other ruins, still remain. Arpinum is often mentioned in Roman history: it was the birthplace of Marius and Cicero. The ancient remains, in addition to those already mentioned, existing in and about Arpino, are the cloacæ, or common sewers of the city, which, like those of Rome, are capacious, and built in the finest manner, and the ruins of a Roman skew bridge across the Liris, between Arpino and Sora. This bridge the people fondly assign, as they do almost every vestige of antiquity in the neighbourhood, to their great countryman, and have always called it 'Il Ponte di Cicerone.' Only one arch, which is of good construction, remains entire, but, as well as can be judged, there were three other arches.

ARQUEBUS. [ARMS.]

ARQUES. [SEINE INFERIEURE.]

ARRACA'CIA is a genus of umbelliferous plants, which comprehends a species of as much importance in the tropical parts of America as the parsnip and carrot are in Europe. This plant, the *Arracacia esculenta of botanists*, is cultivated in great quantities in the neighbourhood of Santa Fé de Bogota, in the cooler districts among the mountains, and in other parts of the state of Colombia, where it is called Arracacha. It resembles the common hemlock in appearance, but the leaves are much broader, the stems are not spotted, and the flowers are of a dingy purple colour; it is also of smaller stature.

The root is of the same nature as the tuber of a potato, only it is forked, or divided into several lobes, each of which is about the size of a large carrot. These, when fit for eating, are boiled like the potato, and become of a firm but tender consistence, not at all mealy, and have a flavour intermediate between a chestnut and a parsnip. It appears that an immense produce of arracacha is obtained in the South American provinces, where it has long been as much the staple nutriment of the population as the potato or the yam in other places; and as it will only thrive in the colder districts, it was once expected to form an important agricultural plant in Europe. It has however been found, upon trial, unable to accommodate itself to our uncertain climate, and to perish as soon as the cold nights and damp weather of autumn approach, without having been able during the summer to perfect its tubers. It is therefore only cultivated now in botanical collections.

ARRACK. [ARACK.]

ARRAGON. [ARAGON.]

ARRAGONITE is a mineral which has a right rhombic prism as its fundamental form, but presents many modifications. These crystals have been found abundantly in a ferruginous clay in

Aragon in Spain, where they occur accompanied by sulphate of lime; and they are also met with in numerous other parts of Europe. Arragonite is a carbonate of lime, chemically almost identical with calc-spar; but of different crystallized form, heavier and harder than that substance. Sp. gr. 2·931.

ARRAIGNMENT. This word is derived by Sir Matthew Hale from *arraisoner, ad rationem ponere*, to call to account or answer, which, in ancient law French, would be *ad-resoner*, or, abbreviated, *a-resner*. Arraignment means calling a person accused to the bar of a court of criminal judicature to answer to a charge made against him. The proceeding at present consists in calling upon the prisoner by his name, reading over to him the indictment upon which he is charged, and demanding of him whether he is guilty or not guilty.

ARRAN, Island. [BUTESHIRE.]

ARRAN, Isles of. [GALWAY.]

ARRAS, the capital of the former province of Artois, and of the present department of Pas-de-Calais, stands on the Scarpe, in 50° 17½′ N. lat., 2° 46′ E. long.; population 24,439. It is a first-class station on the Paris and Brussels Railway through Amiens; its distance by this route from Paris is 133 miles, from Brussels 96 miles, and from Amiens 42 miles. Arras may be regarded as consisting of three parts. The *Cité*, or what may be termed the old town; the *Ville*, or the new town; and the Citadel, which was erected by Vauban, and is one of the strongest in this part of France. The Cité and Ville were formerly separated by a ditch and wall; there was also between them a narrow valley, through which the little stream, the Crinchon, flowed. The handsome stone houses and large squares, surrounded by colonnades, of the modern part of the town, the cathedral, a gothic edifice in a bold style of architecture, the town-hall, another gothic building, and extensive barracks, entitle Arras to rank among the finest cities of France.

Arras is the see of a bishop, whose diocese comprehends the department of Pas-de-Calais. The Scarpe is navigable from this town; the trade consists both in the agricultural produce of the neighbourhood and in the manufactures of Arras itself, which are cottons and woollens, lace, soap, beet-root sugar, leather, and pottery. There are also many oil-mills.

Among the literary and scientific institutions are a college, a school of engineering, a school of design, a school for deaf-mutes, a secondary school of medicine, a seminary for the education of the clergy, a public library containing 34,000 volumes, a cabinet of natural history, a museum, a botanical garden, and several literary, commercial, and scientific societies.

Arras appears in the Roman writers under the name of Nemetacum, but it afterwards took that of Atrebates, from the people who possessed the town with the surrounding territory. From this name Atrebates, both the town (Arras) and the country (Artois) receive their designation. It appears, from the writings of St. Jerome, that in his time it was a manufacturing town, and had been pillaged by the barbarians. When the Franks first established themselves in the N.E. part of France, Arras formed part of their dominions; and the earlier kings of France placed the lordship of the town in the hands of the bishops of Arras, who retained it till the time of the Emperor Charles V. Charles V., having compelled the kings of France to give up the right of sovereignty over that part of the Burgundian dominions which had come to him by inheritance, made them yield at the same time the city of Arras, which he then subjected to the temporal power. It came again under the dominion of France by the treaty of the Pyrenees, in 1659.

ARREOY, a remarkable institution, which formerly subsisted in Otaheite and the other islands of the Society group, of which little is known with precision, but which it is asserted involved infanticide for political purposes. The first notice of the existence of this institution was brought to Europe by Cook, on his return from his first voyage in 1771. The account given in the narrative of the voyage published the following year was however generally supposed to have received a colouring from the florid pen of Hawkesworth, by whom the book was written. In the narrative of his second voyage, which he wrote himself, Cook appears inclined to soften down certain of the features of the former representation. Subsequent statements were given by Dr. Forster and others, for the most part differing from each other in important particulars. The fullest account, we believe, that has appeared, and at the same time the latest, is that given in Ellis's *Polynesian Researches*, vol. i. pp. 311–344.

ARREST is the seizing of a man's person by authority of law.

In criminal matters the object of an arrest is to secure the person of one who has or is supposed to have committed an offence, in order that he may be brought before a magistrate. If there appears sufficient ground of suspicion to justify the person being put upon his trial, the magistrate takes measures for securing his presence before the proper court, either by committing him to prison, or by taking bail for his appearance.

An arrest may be made either by virtue of a warrant, or, where the law authorizes it, without warrant. The only warrants which occur in the ordinary administration of the law are such as are issued by justices of the peace.

When a charge is made before a magistrate, it is his duty to examine the witnesses upon oath, and to take down their statement in writing; and then, if he see any probable ground of suspicion against the party charged, he issues a warrant for his apprehension. The person to whom the warrant is directed, generally some constable or other peace-officer, is bound to execute it as far as the magistrate's jurisdiction and his own extends, but if the party to be arrested escapes into another county, the warrant cannot be executed without being *backed*, that is, signed by a justice of the peace for that county. [WARRANT.]

But in many cases an arrest may be made without a warrant; particularly by officers connected with the administration of justice. A

constable, for instance, may arrest, in case of felony, if there is reasonable ground of suspicion; and for any breach of the peace actually committed in his view.

An officer may, upon a criminal charge, break open doors, if, upon demand of admittance, it cannot be otherwise obtained; he may likewise, in apprehending a person charged with felony, use any degree of force that may be necessary; and if the person charged attempt to save himself by flight or resistance, and is killed by the officer (there being no other means of preventing an escape), the homicide is justifiable; but if he kill the officer with the intent to oppose him in the execution of his duty, it is murder.

Private persons also are not only authorized, but required, to apprehend any person who commits a felony in their presence; and in pursuing such felon they will be justified in breaking open doors, and in using force, as much as an officer.

There are also several cases where private persons have the power of arresting given them by act of parliament. Any person whatsoever is authorized to apprehend for any offence against the Vagrant Act, 4 & 5 Geo. IV. c. 83. And where persons are found committing any offence against the Larceny Act, or the Malicious Injuries Act, 7 & 8 Geo. IV. c. 29 and 30, they may be apprehended, without warrant, by any peace-officer, or by the owner of the property, or by his servant, or any person authorized by him.

When an officer has arrested any one, he ought to take him before a magistrate to be examined as soon as possible. If a private person has made the arrest, he will in general be justified either in taking the party arrested before a justice of the peace, or delivering him over to a constable of the place, and this alternative is expressly given him by the Vagrant Act; but the Larceny Act and the Malicious Injuries Act require that the person arrested should be forthwith taken before a justice of the peace. But if a person be apprehended in an attempt to commit a felony at night, he may lawfully be detained, even by a private person, till he can be carried before a magistrate.

There is likewise another mode of arrest for felony, and that is upon *hue and cry* raised. [Hue and Cry.] (Hale's 'Pleas of the Crown,' vol. i. p. 575, vol. ii. p. 72–120; Stephen's 'Summary of the Criminal Law,' p. 239–244.)

Arrest in civil cases is of two kinds: 1, that which takes place before trial, and is called arrest on mesne process; 2, that which takes place after trial and judgment, and is called arrest on final process, or arrest in execution.

With regard to arrest on mesne process, since the statute 1 & 2 Vict. c. 110, ss. 2, 3, 4, 5, 6, all civil actions, except the three real actions which still exist, must be commenced by writ of summons, and no defendant can be arrested before a judgment has been obtained against him, unless it be shown by the affidavit of the plaintiff, or of some other person, to the satisfaction of a judge of one of the superior courts, that such plaintiff has a cause of action against the defendant to the amount of 20*l.* or upwards, or has sustained damage to that amount, and that there is probable cause for believing that the defendant is about to quit England unless he be forthwith apprehended. The judge is then authorized to issue a writ of capias against such defendant; the proceedings upon such writ are the same as they were under the writ of capias, which formerly was used as the commencement of all personal actions which were commenced in the superior courts of common law, when the object was to arrest a person or hold him to bail. [Capias.]

This application to the judge may be made and the defendant arrested at any time after the commencement of the action, and before final judgment shall have been obtained therein.

The statute 7 & 8 Vict. c. 96, s. 57, enacted that no person shall be taken or charged in execution upon any judgment obtained in any of her majesty's superior courts, or in any county court, court of requests, or other inferior court, in any action for the recovery of any debt wherein the sum recovered shall not exceed the sum of 20*l.* exclusive of the costs recovered by such judgment. But the 8 & 9 Vict. c. 127, which *is* entitled 'An Act for the better securing the payment of Small Debts,' provides for the taking of the body of a debtor, against whom judgment has been obtained 'in a sum not exceeding 20*l.* besides costs of suit;' and the first section of this act prescribes the form of proceeding in such case. The provisions as to taking the body under the 'Act for the more easy Recovery of Small Debts and Demands in England,' 9 & 10 Vict. c. 95, are contained in sections 99-101.

Certain personages were from the earliest times privileged from arrest on civil process; either entirely so, or temporarily. A list of them is given in Blackstone's 'Comm.' vol. iii., Lee's ed. note 23. A peer of parliament is always exempt from arrest on civil process.

Arrest on *final* process, or arrest in execution, is one of the means by which a party who has succeeded in an action may compel performance of the judgment.

When execution has been taken out against the property, and there is not enough to satisfy the judgment, execution against the person may afterwards be resorted to; but if the person has once been taken in execution, no process can in his lifetime issue afterwards against the property. [Execution.]

An arrest is made by seizing or touching the defendant's person. The officer is not justified in breaking open the defendant's house in order to arrest him; but, when once the arrest is made, he may break into any house in pursuit of him.

ARREST OF JUDGMENT. After an action at law has been carried through all the stages previous to the judgment, and the plaintiff has up to this point been successful, the defendant may still move in arrest of judgment: that is, he may pray the court to withhold or arrest the judgment from the plaintiff, on the ground that there is some error on the face of the record which vitiates the proceedings. In consequence of such error, on whatever part of the record it may arise, from the commencement of the suit to this

period, the court is bound to arrest the judgment. The error must be such as is apparent on the record: and generally speaking it must not be an error in a mere point of form. This was formerly otherwise; but certain statutes have been passed at different periods, called the statutes of jeofails and amendments, by the effect of which judgments at the present day cannot, in general, be arrested for any merely formal objection. [AMENDMENT.]

(Stephen, *New Comm.* iii. 628; Stephen, *On Pleading;* Comyn's *Dig.*, tit. 'Pleader,' § 48.)

As to Arrest of Judgment in criminal cases, see Stephen, *New Comm.* iv. 436; Comyn's *Dig.*, 'Indictment,' iv.

ARRESTMENT in the law of Scotland is a process by which a creditor may attach money or moveable property which a third party holds for behoof of his debtor. It bears a general resemblance to foreign attachment by the custom of London. [ATTACHMENT.] The person who uses it is called the arrestor; he in whose hands it is used is called the arrestee, and the debtor is called the common debtor. It is of two kinds, arrestment in execution, and arrestment in security. The authority of the local courts was enlarged in regard to arrestments, and the process was generally regulated, by the 1 & 2 Vict. c. 114. The practice on this subject will be found in Darling's 'Powers and Duties of Messengers-at-Arms.'

ARRHIDÆ'US, a bastard son of Philip III. of Macedonia, who, on the death of his half-brother Alexander (B.C. 323) was named his successor by acclamation of the Macedonian troops (Diod. xviii. 2), and consent of Alexander's generals. His title was strengthened by marrying Eurydice, grand-daughter of Perdiccas, Philip's elder brother. Being of weak intellect, he was a mere tool in the hands first of Perdiccas, then Antipater, and finally of Polysperchon, who, in conjunction with Olympias, set up as a rival to him, Alexander, son of Alexander the Great by Roxana, who was born after Alexander's death. Eurydice called in the assistance of Cassander; but falling into the hands of Olympias, was, with her husband Arrhidæus, put to death, B.C. 317. [ANTIGONUS; ANTIPATER; PERDICCAS.]

ARRIA'NUS, FLA'VIUS, a native of Nicomedia in Bithynia, was probably born during the reign of Domitian, or of Nerva, but the time is uncertain. In the twentieth year of the reign of Hadrian, B.C. 136, the successor of Trajan, Arrian was governor of Cappadocia, and in this capacity he addressed a letter to the emperor, containing an account of his voyage from Trapezus (Trebisond) on the Black Sea, along its eastern coast as far as Dioscurias or Sebastopolis. This is the only date in his life that can be fixed with certainty. In his youth Arrian was a pupil of Epictetus, who then resided at Nicópolis in Epirus. Epictetus died probably in the earlier part of Hadrian's reign, and Arrian commenced his career as a writer by publishing the 'Encheiridion,' or 'Manual,' which contains the moral doctrines of his master. [EPICTETUS.] He wrote also eight books, of which four are extant, entitled 'The Philosophical Disquisitions of Epictetus,' which, as he tells us in his preface, contain the very words of his master. After the death of Epictetus and the publication of his philosophical works, Arrian acquired the privileges of a Roman citizen and the Roman name of Flavius. Suidas (Ἀρρι̃ανὸς) says, on the authority of Heliconius, that he attained the consulship. That he was governor of Cappadocia with full powers, is evident from the 'Periplus of the Euxine Sea' and other authorities. In his native city of Nicomedia he held the priesthood of Ceres and Proserpine.

After the death of Hadrian (B.C. 138), Arrian wrote numerous historical works; but that alone which is preserved is the 'History of Alexander's Campaigns in Asia,' in seven books, founded principally on the histories of Ptolemæus, the son of Lagus, king of Egypt, and Aristobulus, the son of Aristobulus, both of them the companions of Alexander in his wars. This is almost the only source for the history of Alexander's conquests. Arrian's narrative, however, is often incomplete, and occasionally obscure. The obscurity sometimes, though rarely, arises from the language of the writer, but mainly from the difficulties which he must have experienced in reconciling conflicting authorities. (Arrian's 'Preface.') A tone of good sense and impartiality characterizes this valuable work.

As a continuation to his 'History of Alexander,' he wrote a little work, still extant, entitled 'Indica,' which contains much curious matter on the natural productions of India, and the manners of its inhabitants. It contains also an extract from the 'Voyage of Nearchus' (cap. 20, &c.), who conducted the fleet of Alexander from the Delta of the Indus to the Euphrates. Arrian's work on the History of Alexander's successors, in ten books, is only known by an extract from Photius.

'The Periplus of the Erythrean Sea,' that is, the coast description of part of eastern Africa, Arabia, Persia, and India, is by some critics assigned to a period somewhat later than that to which Arrian's life can with reasonable probability be extended. This interesting monument of the early commerce of the Indian Ocean has been illustrated by Dr. Vincent. ('Periplus of the Erythrean Sea.') His remaining extant works are the 'Periplus of the Black Sea,' a fragment entitled 'The Order of Battle against the Alans,' and a book on Hunting. Arrian in general affected to imitate the Attic Greek of Xenophon, but the little treatise on India is written in a kind of Ionic dialect.

Arrian made Xenophon the Athenian his model; and he wrote something corresponding to almost every work of Xenophon. Arrian calls himself the younger Xenophon, and sometimes simply Xenophon. The following quotation is from Arrian's book on Hunting:—'This I shall say, being of the same city with Xenophon, and having the same name, and from my youth up having had the same pursuits—hunting, military science, and philosophy.' Arrian shows by his remarks that he was well acquainted with field sports. His description of his favourite dog Hormè, his constant companion and friend, is written with the feeling of a sportsman, and gives us a

favourable opinion of his character. How long the second Xenophon, huntsman, general, historian, and philosopher lived, we do not know. (St. Croix, 'Examen Critique,' &c.; Dodwell's 'Dissertations' in vol. i. of Hudson's 'Minor Greek Geographers.')

The latest editions of Arrian's History of Alexander, are that of Ellendt, 1832, and of Krüger, 1835. The Periplus of the Euxine and Erythrean seas is in Hudson's 'Minor Greek Geographers,' vol. i. A translation of Arrian's book on Coursing was published by J. Bohn, London, 1831, with classical and practical annotations, and with an appendix and twenty-four embellishments from the antique. An English translation was published in 1729, in 2 vols. 8vo, by Mr. John Rook, of 'The History of Alexander's Expedition, with Notes, historical, geographical, and critical.' There is a translation of the 'Periplus of the Euxine Sea,' by Dr. William Falconer, published in London, in 4to, in 1805.

ARRIA'ZA, JUAN BAUTISTA, one of the most noted modern Spanish poets, was born at Madrid in 1770. He first displayed his literary talents in a poem on the last Duke of Alba (1796), and an anonymous volume of poetry, entitled 'Primicias,' 1797. He came to England in quality of secretary to the Spanish embassy, and while in this country he completed his 'Emilia,' Madrid, 1803. After spending about two years at Paris, he returned home in 1807, just before the breaking out of the revolution in Spain, when, taking an active part in politics, he attacked the Afrancesados and the Cortes, both in verse and prose, first in his 'Poesias Patrioticas,' and next in his 'Discursos Politicos.' He died at Madrid in 1837.

As a poet Arriaza stands very high among contemporary Spanish authors. His poems are remarkable for felicity of style and beauty of versification.

(*Conversations-Lexicon der Gegenwart.*)

ARRIE'GE. [ARIE'GE.]

ARRIS, in French *Areste* and *Arete*, is a term employed in building to express the intersection or line in which the two straight or curved surfaces of a body, forming an exterior angle, meet each other. The term is synonymous with edge; but the term edge only is used in reference to parallelopipedal bodies, on which the length and thickness may be measured.

ARRIS FILLET, a small triangular piece of wood, used to raise the slates of a roof against the shaft of a chimney or a wall, to throw off the rain more effectually; it is used for the same purpose also in forming gutters round skylights, which have the same inclination as the roof, and are slightly raised above it.

ARROBA. [WEIGHTS AND MEASURES.]

ARROE is a Danish island off the eastern coast of Schleswig, due S. of the island of Funen, and at the southern entrance into the Little Belt. Its superficial area is about 32 square miles; it contains a town and market-village, and has 6500 inhabitants. The surface of the island is a continued level, interrupted only by a lake called the 'Wilt-See;' the soil is very rich and productive, but has no wood. Arröeskiöping, at the eastern side of the island, in 54° 53′ N. lat. and 10° 35′ E. long., is the capital; it has a convenient harbour, formed by the opposite shore of the island of Deyerbe, with which Arröe is connected by a bridge; population 1400. The market-village is called Marstall; it is situated on the western side of the island, and contains about 1480 inhabitants, wholly mariners and fishermen. The island itself forms part of the Duchy of Schleswig.

ARROO, a large island, or, strictly speaking, a group of islands, situated S. and W. of Papua or New Guinea, and N.E. of Timor-laut island. The cluster consists of five islands, divided from each other by such narrow channels that the whole have been sometimes considered as one island. The centre lies nearly in 6° S. lat., and 135° E. long. The length of the whole from N. to S. is about 140 miles, and the average breadth about 35 miles. The Chinese trade with these islands, procuring from Arroo pearls, tortoise-shell, edible birds'-nests, and an aromatic bark named missoy, which resembles cinnamon. Birds of paradise are very numerous in these islands: they are caught by the natives for their plumage; their flesh, when preserved by fumigation, is bought by the Chinese traders.

ARROW. [ARCHERY; ARMS.]

ARROW-HEADED CHARACTERS. [CUNEIFORM CHARACTERS.]

ARROW-ROOT is a farinaceous substance prepared from the roots or tubers of various plants; that from America and the West Indies being the produce of *Maranta arundinacea* and *Maranta indica*, and that from the East Indies being from the *M. indica*, and from several species of *Curcuma*. Among other plants which yield a similar substance is the cuckoo-pint, *Arum maculatum*. It is prepared by either grating or beating the tubers in a mortar to a pulpy consistence; separating the fibrous matter from the pulp by mixing it with a quantity of water, and passing it through a hair-sieve; and then suffering the pure farina to subside from the remaining milk-like fluid, and, if needful, purifying it still further by successive washings and strainings. The moisture is at length evaporated by exposure to sun and air, and when perfectly dry the powder is packed in boxes or casks, in which state it may be kept for many years. West Indian arrow-root is usually of a pure white, and East Indian has a yellowish tinge. Its taste is insipid, and the powder emits a crackling sound when pressed in the hand, and retains the impression of the fingers, which common wheat starch does not. It is frequently adulterated with potato-starch; which, however, is not, like genuine arrow-root, soluble in cold water. Compared with wheat-starch, arrow-root yields, when dissolved in equal proportions in warm water, a thinner and more slimy solution. Being very easy of digestion, arrow-root constitutes a valuable article of food for children and delicate persons. It is used mixed with boiling water or milk, or in the form of puddings, and may be given plain, or with wine or spices. Potato-starch is not so digestible, and, if prepared from potatoes in the spring, is liable to disturb the stomach. The common English name of this preparation is derived from the use to which

the South American Indians applied the roots of a plant once confounded with the Maranta, but now called *Alpinia galanga*, as an antidote to the effect of poisoned arrows.

A'RSACES was the founder of the Parthian monarchy. Justin speaks of him as being 'of doubtful origin, but tried valour, used to live by robbery;' who, in the belief that Seleucus (Callinicus) was conquered by the Gauls in Asia, attacked Andrágoras, the governor of the Parthians, and took possession of the empire of the nation' (xli. 4). According to Arrian ('Phot. Bibl.' No. 58), a personal and family quarrel led him to raise the standard of revolt from the Syrian empire, B.C. 250, during the reign of Antiochus Theos, father of Seleucus, who, busied with his Egyptian wars, neglected this new source of disturbance until Arsaces had gathered a sufficient party to resist him successfully. Seleucus Callinicus made two expeditions into Parthia: the first failed, and the second was still more unfortunate; for he was defeated in a great battle, taken prisoner, and died in captivity. The day of that defeat was long observed by the Parthians as the commencement of their independence. Arsaces reduced the neighbouring district of Hyrcania, and died, according to Justin, in a 'ripe old age.' The Parthian kings, to the end of their empire, assumed from him the general title of Arsacidæ.

ARSA'CIDÆ, a name given to the Parthian kings, from Arsaces, their progenitor. [PARTHIA.]

ARSAMAS. [NISHNEI-NOVGOROD.]

ARSENAL, a public establishment where naval and military engines, or warlike equipments, are manufactured or stored. The Royal Arsenal at Woolwich is the chief establishment of this kind in England. In France the chief arsenal is at Paris. Toulon, Marseille, and Brest, are naval arsenals.

ARSENIC is a peculiar metal, which, though long known, was first examined with tolerable precision by Brandt in 1733; it is very frequently met with in nature; sometimes in its pure metallic state, but more commonly combined with other metals, as iron and cobalt, or with sulphur, and frequently united with oxygen. Arsenic has a steel gray colour and considerable brilliancy; its combining equivalent is 38; its density is 5.700 according to Berzelius, and 5.884 by Turner's experiments; when sublimed, Dr. Thomson states that its density is only 5.235; the native metal is granular, and the artificial crystalline; it is extremely brittle, and consequently easily powdered. When arsenic is exposed to the air, it soon loses its lustre, and becomes black on the surface. When kept under water, it undergoes no change; if heated to 356° Fahrenheit, it is volatilized, without previous fusion; the vapour has a strong smell, resembling that of garlic, and this, to a certain extent, is relied upon as proof of its presence; the vapour readily condenses in small brilliant crystals of metallic arsenic.

Arsenic and oxygen combine in two proportions, and both compounds possess acid properties; that which contains the smaller quantity of oxygen is termed *arsenious acid*; according to Berzelius it consists nearly of—arsenic 2, oxygen 3; combining weight 100.

As a natural product, arsenious acid is extremely rare; it may be artificially prepared by many processes; but these are needless, for arsenious acid is met with abundantly, and very pure, as an article of commerce; being formed and volatilized during the roasting of cobalt ores, it is first condensed in an impure state, and purified by a second sublimation in an iron vessel. Arsenious acid (oxide of arsenic, the white arsenic of the shops) occurs in compact masses of various sizes, colourless and opaque; the density is about 700; it has very little taste, but is a virulent poison.

Arsenic acid, that containing the larger quantity of oxygen, exists in nature much more commonly than the arsenious acid, in combination with lime, copper, iron and lead. It consists, according to Berzelius, of arsenic 2, oxygen 5; combining weight 116. It may be formed artificially from arsenic by the aid of nitro-muriatic acid. It is of a milk-white colour; it contains no water, but when exposed to the air attracts it until a solution of specific gravity 1.935 is obtained. The anhydrous acid has not a very strong taste, but the aqueous solution is extremely sour. It is extremely poisonous.

Arsenic and hydrogen combine to form a gas, which, however, when subjected to intense cold, is condensed into a limpid liquid resembling æther. The gas has an extremely fetid smell; its specific gravity is 2.695; it is fatal to animals when it forms only 1-10th of the air which they breathe. It is composed of 3 volumes of hydrogen gas, and 2 of the vapour of arsenic, condensed into 2 volumes; or of 2 atoms arsenic, and 3 atoms hydrogen; combining weight 79.

There is also a solid compound of arsenic and hydrogen, obtained by electro-chemical means.

Arsenic and chlorine combine to form chloride of arsenic. This chloride, which may be produced in many ways, is a colourless volatile liquid, which combines with oil of olives and of turpentine, and partially dissolves sulphur and phosphorus when heated. It is supposed to consist of arsenic 2, chlorine 3; combining weight 184.

Arsenic does not appear to unite with carbon; it combines with bromine, iodine, fluorine, selenium, and phosphorus; but the resulting compounds are not important.

Arsenic and sulphur may be made to combine in four different proportions; of which two yield *realgar* and *orpiment*. Realgar, a red sulphuret, is of a deep-red colour, brittle, easily reduced to powder, inodorous, tasteless, and insoluble in water: its specific gravity is about 3.338; and its constitution is, arsenic 1, sulphur 1; combining weight 54. It is found native, and may also be prepared artificially. It is poisonous, but less so than arsenious acid. Orpiment, a yellow sulphuret, is commonly composed of thin plates, which are of a very fine yellow colour, and flexible to a considerable degree: its specific gravity is 3.452. It is insoluble in water, and inodorous. It is composed of, arsenic 2, sulphur 3; combining weight 124.

Arsenic and metals in general combine with great facility: those which are malleable it renders brittle, and those which are difficult to melt it renders fusible. These alloys do not form an important class of bodies.

We have now to notice the salts that contain the *arsenious* acid, and which are termed *arsenites*.

Arsenite of ammonia is merely a solution, incapable of assuming a distinct crystalline form. *Arsenite of potash* forms a saline but uncrystallized mass, employed in making *mineral green*, and also *liquor arsenicalis*. *Arsenite of soda* is a viscid mass, which may be evaporated to the state of small granular crystals. The *arsenites of lime* and of *barytes* are white powders. *Arsenite of copper* is much used as a green paint. *Arsenite of silver* affords a fine yellow colour.

The salts that contain the *arsenic* acid are termed *arseniates*. The *arseniate of ammonia* is a large rhombic crystal, which may easily be converted into octahedral crystals of *biarseniate of ammonia*. *Arseniate of potash* is an uncrystallizable deliquescent mass; but the *biarseniate* is a transparent crystal. *Arseniate* and *biarseniate* of soda are crystallizable salts; and the *arseniates* of *barytes* and of *strontia* are both soluble salts. *Arseniate of silver* is of a brick-red colour.

As to the general properties of arsenical acids and salts, we shall merely remark that both the acids are precipitated yellow by sulphuretted hydrogen; the arsenites are precipitated yellow by the salts of silver, and green by those of copper; while the arseniates are thrown down red by the silver salts, and blue by the copper ones.

ARSENIC, *Medical Properties of.*—As metallic arsenic has no effect upon the human system, we will confine our observations to the employment and mode of action of the white oxide or arsenious acid, and its compound, the arsenite of potash. The precise character of the taste of white arsenic is a matter of dispute; it is generally said to be acrid and corrosive, followed by an impression of sweetness; but Dr. Gordon states, that it is *at first* always sweet, but afterwards somewhat acid. (Gordon, 'Dissert. Inaug. de Arsenico,' Edinb. 1814, p. 9.)

If a small quantity of the white oxide of arsenic, such as $\frac{1}{30}$th or $\frac{1}{15}$th of a grain be swallowed, in about a quarter of an hour the individual experiences an agreeable sensation of comfort and warmth about the stomach, which gradually extends itself over the whole of the abdomen. The appetite and thirst are moderately increased, the secretion of urine becomes more abundant, and the evacuations from the intestines often more frequent, and of a pulpy or pappy character. From the intestinal canal the peculiar action propagates itself over the whole system. The heat of the surface is augmented, and the increased temperature is experienced particularly about the forehead and eyebrows, and the skin is bedewed with a breathing perspiration. At the same time an increased strength and frequency of pulse is felt. The whole muscular system acquires energy and elasticity; the involuntary muscles especially become more powerful and vigorous in their action; the respiration is gently accelerated. The nervous system partakes of the impulse communicated to the frame, and the spirits as well as the courage of the individual rise, liveliness and regularity characterizing the whole functions of the system. The white oxide of arsenic is therefore a tonic; and its employment in small doses is not only safe but beneficial.

Arseniate of potash, before its regular introduction into medical practice, had long been employed in Lincolnshire for the cure of intermittents, under the name of the *Tasteless Ague Drops;* and, from having been introduced into practice by Dr. Fowler, it is frequently called *Fowler's Solution*. It is the 'Liquor Arsenicalis' of the 'London Pharmacopœia,' and is never given in larger quantity than three or five drops, and should always be taken about half an hour after a meal, to prevent it coming into direct or immediate contact with the inner coat of the stomach. It is still employed in intermittent fevers: the greatest advantage is derived from it in the tertian and quartan forms, the quotidian often resisting this and all other remedies. It has sometimes been given in remittents which approached nearly to the character of intermittents. In rheumatic cases it has been used, and is most successful when the pains are markedly periodic, or true to a particular hour in their return. It is equally applicable whether these be general or local, as in some rheumatic affections of the eye. In nodosities of the bones from rheumatism it is also very valuable. In some affections of the nervous system it is useful. In cancer it has been employed both internally and externally.

In case of an over-dose, the best plan is to give a large quantity of lime-water, cold, as the arsenite of lime is almost insoluble, and nearly inert. After that, an emetic of sulphate of zinc (ʒ i in a pint of distilled water); then copious draughts of oil (castor oil if possible), or milk. After which the case must be treated on general principles. [Antidotes; Poisons.]

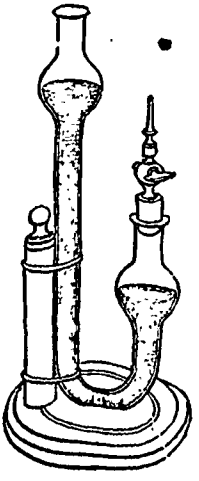
ARSENIC, *Detection of.* Of all substances, arsenic is that which has most frequently occasioned death by poisoning, both by accident and design; and great anxiety has been shown to discover a good mode of detecting its presence.

Supposing a white powder to have been found under suspicious circumstances, the following is one of the modes in which the investigation is carried on. A little of the powder is burned with black flux, under circumstances which will enable the charcoal of the flux to combine with the oxygen of the arsenious acid (if any be present in the powder) and liberate the metallic arsenic. If any liquid, or the contents of the stomach, are suspected to contain arsenic, one method is to add to them a solution of sulphuretted hydrogen. By the action of sulphuretted hydrogen on the arsenious acid a yellow solution is first formed, and by heat, or after exposure to the air, the excess of sulphuretted hydrogen is got rid of, and yellow sulphuret of arsenic is thrown down; this is collected, dried, heated with black flux, and

metallic arsenic will sublime. The same treatment may be adopted with any substance supposed to contain yellow or red sulphuret of arsenic (orpiment or realgar), supposing them to have occasioned poisoning.

If the suspected liquid be tolerably free from colour, then various fluid tests may be used to prove the presence of arsenic previous to the process of reduction just described; especially the ammoniurets of copper and of silver. It is the arsenious acid and the arsenites which usually produce the poisonous effects; the arsenic acid and the arseniates rarely so. If such occur, however, it may be well to know that sulphuretted hydrogen throws down from a solution of arsenic acid yellow sulphuret of arsenic, as with arsenious acid; but with ammoniuret of silver it gives a peculiar reddish precipitate of arseniate of silver. The biarseniates give immediately arseniate of silver on the addition of the ammoniuret of silver; but the neutral arseniates require a little acetic acid to produce this effect.

The late Mr. Marsh devised some extremely delicate means of detecting the presence of arsenic. The liquid suspected to contain the poison is acidulated with sulphuric acid and placed in contact with metallic zinc, both of which must be previously ascertained to be free from arsenic; if any arsenic be present in the liquid, the hydrogen gas generated reduces and dissolves it, forming arsenuretted hydrogen gas. This gas is to be lighted at a jet, and a piece of white porcelain or of glass is to be held over the flame, when, if any arsenic be present, a brilliant black spot of metallic arsenic is deposited on the glass or porcelain. The annexed drawing represents a convenient form of instrument for the purpose: it consists of a bent tube, having two bulbs blown upon it, fitted with a stop-cock and narrow jet. Slips of zinc are to be put into the lower bulb, which is afterwards to be filled with the acidulated liquid to be examined; on replacing the stop-cock, closed, the hydrogen gas, or arsenuretted hydrogen gas, as the case may be, collects and forces the fluid into the upper bulb, which then acts by its hydrostatic pressure, and expels the gas through the jet as soon as the stop-cock is opened.



The other method of proceeding is to boil a slip of bright metallic copper in the fluid suspected, previously acidulated with hydrochloric acid. If arsenic be present, the copper is covered with a whitish alloy, and then by heating the metal in a test tube, the arsenic is volatilized, and sublimes in the metallic state in the cold part of the glass. This method is susceptible of detecting very minute portions of arsenic.

The scientific committee of the Prussian government has suggested an improvement in Marsh's apparatus, which in the opinion of Berzelius surpasses all other modifications on account of the certainty and distinctness of the result.

ARSENICAL MINERALS. Those minerals in which arsenic acts the part of the electro-negative element may be considered as forming a mineralogical family or class, according to the new chemical arrangement of Berzelius. This family comprehends four genera, some of which comprise many species. The first genus consists of metallic arsenic; the second of metallic arsenurets; the third of arsenious acid; and the fourth of compounds of arsenic acid.

The geological position of arsenical minerals is confined to primitive districts, where they occur in metalliferous veins, usually associated with metallic sulphurets, to which the arsenurets have considerable analogy. The only genus which has been found in any quantity is the second, the most abundant species of which are the arsenurets of cobalt, nickel, and iron, which are found both in veins and beds. The fourth genus appears to owe its origin to the action of the atmosphere on the arsenurets; they occur frequently in union with the phosphates, with which they are isomorphous; consequently the phosphoric acid is frequently more or less replaced by the arsenic, or the reverse.

The arsenic contained in any mineral may, in general, be readily detected by the blow-pipe, owing to the characteristic odour of the vapour of metallic arsenic.

Native arsenic is usually found in veins, accompanied by sulphur and sulphurets; it occurs massive, also in reticulated and stalactitic shapes, and of a curved lamellar composition, exceedingly like the layers of an onion. When fractured, the new surface presents a metallic lustre and a tin white colour, which, however, soon tarnishes, becoming a very dark gray. It is brittle, has the specific gravity 5·766, and its hardness is 3·5.

The second genus presents us with a very valuable series of minerals, owing to properties of the metals with which the arsenic is combined. One species is the copper pyrites; another copper metal; another arsenical silver, which possesses a curved lamellar composition of thin crystalline plates. Arsenical pyrites possesses a tin white colour and a metallic lustre.

White arsenic, which constitutes the third genus, is found crystallized in octahedrons, and also in botryoidal and stalactitic forms, frequently pulverulent. It occurs in metallic veins, and probably is the product of the decomposition of other minerals. The lustre is vitreous, and colour white, with a slight degree of transparency. Its specific gravity is 3·698. It is readily recognised under the blow-pipe: if alone, it is volatilized; if on charcoal, it is volatilized with the production of the garlic odour.

ARSE'NIUS, a native of Crete, the son of Michael Apostolius, a Greek of the fifteenth century, who, being exiled from Greece, fled to Italy, where he enjoyed for some time the patronage of Cardinal Bessarion. Having lost his

favour, he went to Crete, and gained his livelihood as a transcriber of manuscripts. He lived at Rome in the pontificate of Leo X., who made him Archbishop of Malvasia, or Monembasia, a town on the eastern coast of the Morea, not very far from the promontory of St. Angelo. He published a collection of Greek apophthegms of remarkable men, at Rome, in 1523. He also published Scholia on the first seven plays of Euripides, taken partly from Moschopulus, Lascaris, and Thomas Magister — partly from earlier sources. Venet. 1534. Having become a member of the Roman church, he was excommunicated by the Greek church. (Fabric. *Bibl. Gr.* vol. i. p. 655, 6; vol. x. p. 222 and 491, &c.; Bayle.)

ARSI'NOE, the name of a city in Egypt, at the head of the western branch of the Red Sea, and near the termination of the canal which unites the Red Sea and the eastern branch of the Nile: its name, which was derived from Arsinoë, the wife of Ptolemæus Philadelphus, appears to have been changed to Cleópatris. The modern site of Suez must correspond nearly to that of Arsinoë. (Strabo, xvi. 769.)

Arsinoë was also the name of a *nome*, or one of the ancient provincial divisions of Egypt which corresponds to the modern Faioum.

ARSI'NOE, a daughter of Ptolemæus I., king of Egypt, and of Berenice, was married to Lysimachus, king of Thrace, whose eldest son, Agathocles, had espoused Lysandra, the half-sister of Arsinoë. Arsinoë induced her husband to consent to the death of Agathocles, and Lysimachus was involved in war with Seleucus in consequence of this crime. Lysimachus fell in battle in Asia, and his kingdom was seized by Seleucus. Seven months afterwards Seleucus was assassinated by Ptolemæus Ceraunus, the elder brother of Ptolemæus Philadelphus, who also put to death the two children of his half-sister, Arsinoë, after he had inveigled her into a marriage with him. Their mother he banished to the island of Samothrace. (Justin, xxiv. 3.) Arsinoë probably remained at Samothrace till she was summoned to Egypt, to become the second wife of her brother, King Ptolemæus II. Philadelphus, king of that country, who reigned from B.C. 284 to 246. This was the first example of such a marriage among the Greek kings of Egypt.

Strabo (x. 460) attributes to this Arsinoë the founding of a city called by her own name on the banks of the Achelóus, in Ætolia. (Steph. Byzant.) This fact, if true, will tend to confirm the opinion, of the Arsinoë, the wife of Lysimachus, being afterwards the wife of Ptolemæus Philadelphus. The strange adventures of her life, and the confusion in this period of history, render it very difficult to believe all the history of Arsinoë, as it is given by the various authorities.

A statue of Arsinoë existed at Athens in the time of Pausanias (i. 8); and there is a beautiful gold medal of her in the British Museum.

ARSINOE, a daughter of Lysimachus, king of Thrace, was the first wife of Ptolemæus Philadelphus (according to the opinion of some critics), by whom she had three children, Ptolemæus, Lysimachus, nd Berenice. But it would appear from Pausanias (i. 7) that this Arsinoë was the second wife. Suspecting that she was plotting against his life, Ptolemæus banished her to Coptos, or some city of the Thebaïs. (*Schol.* Theocr. xvii. 128.) It is probable that she escaped and fled to Cyréne, where she was received with much kindness by King Magas, the half-brother of Ptolemæus Philadelphus. Magas married her, and adopted her daughter, Berenice, who was afterwards given in marriage to Demetrius, son of Demetrius Poliorcétes, who was summoned from Macedonia for this purpose. Demetrius, on his arrival, according to Justin, gave his affections to Arsinoë, instead of her daughter, which led to his assassination, and the marriage of Berenice and Ptolemæus III., by which the kingdoms of Cyréne and Egypt were again united. (Justin, xxvi. 3.) There is great difficulty in identifying this Arsinoë, and much difference of opinion on the subject. (Schlosser, *Universal historische Uebersicht*, th. ii. abth. i.)

ARSINOE, daughter of Ptolemæus III. Euérgetes, was married to her brother, Ptolemæus IV. Philopator: she is called Eurydice by Justin, and the Cleopatra of Livy (xxvii. 4) seems to be the same. She was present at the battle of Rhaphia, fought between her husband and Antiochus the Great, B.C. 217, and is said to have contributed not a little to gain the victory. [ANTIOCHUS.] Ptolemæus afterwards, seduced by the charms of Agathoclea, ordered Arsinoë to be put to death. (Justin, xxx. 1; Polyb. xv. 33.)

ARSIS and THESIS, two words which were used by the Greeks to signify the elevation (ἄρσις) and depression (θέσις) of the voice in metrical recitation, and also a similar rising and falling in musical notes. In what manner the arsis and thesis were performed is not now precisely known.

ARSON (from *ardeo*, to burn) signifies, according to the old common law doctrine, the offence of maliciously burning the house of another. But the statute (7 & 8 Geo. IV. c. 30, sec. 2) has given a more extensive signification to the term: 'That if any person shall unlawfully and maliciously set fire to any church or chapel, or to any dissenting chapel duly registered, or to any house, stable, coach-house, outhouse, warehouse, office, shop, mill, malt-house, hop-oast, barn, or granary, or to any building or erection used in carrying on any trade or manufacture, or any branch thereof, whether the same, or any of them respectively, shall then be in the possession of the offender, or in the possession of any other person, with intent thereby to injure or defraud any person, every such offender shall be guilty of a capital felony.' The firing must be wilful in order to constitute the crime of arson; but an intent to injure or defraud may be inferred from circumstances; nor is it any defence to a charge of arson to show that the accused had no particular malice towards the owner of the property. The burning of a man's own house, if it be situate in a town, or so near to other houses as to endanger them, is a misdemeanour at common law, punishable with fine and imprisonment. Arson is no longer a capital offence, unless fire is set to a dwelling house when

some person is therein. (7 Will. IV. & 1 Vict. c. 89, sec. 2.) There are other provisions as to arson in this statute, such as setting fire to coal mines, stacks of corn, &c.

ART-UNIONS are societies for the encouragement of the fine arts by the purchase of works of art out of a common fund raised in small shares or subscriptions; such works of art, or the right of selecting them, being distributed by lot among the subscribers or members. The success of similar associations in Germany and Prussia led to the establishment in 1837 of the Art-Union of London, which, though it has given rise to many others, remains at the head of such societies in this country. In it every member subscribes annually the sum of one or more guineas, receiving accordingly one or more shares in the advantages held out. Part of the sum thus raised is expended in the engraving of one or more works of art, of which every subscriber receives a copy; but, though the prints thus distributed are such as would, in the ordinary course of trade, cost the full amount of the subscription, they are, owing to the combination of a very large body of subscribers, and the avoidance of risk, produced at so small a cost as to leave the greater part of the subscribed funds available for the purchase of original pictures or pieces of sculpture. The sum thus appropriated is divided into prizes of from 10*l.* to 300*l.* or 400*l.*, which are distributed by lot among the subscribers; the prize-holders being allowed, under certain restrictions, themselves to select works of art to the specified amount. These works of art, previous to their delivery to the prize-holders, are gratuitously exhibited for three or four weeks to the subscribers and the public. The amount subscribed to the Art-Union in the first year of its establishment was only 489*l.* 6*s.*; but in the year ending with March, 1847, the subscriptions amounted to 17,871*l.*, of which 10,730*l.* was allotted for the purchase of works of art, the remainder being devoted to engravings and to various measures for promoting national taste in matters of art. The gratuitous exhibition of 1846 was attended by upwards of 200,000 persons.

Doubts having been raised as to the legality of art-unions, temporary acts were passed in 1844 and 1845 to indemnify their managers from the penalties to which they were supposed to be subject; and in 1846 an act (9 and 10 Vic. c. 48) was passed to legalize such as have been or may be incorporated by royal charter, or may have their rules and deed of partnership approved by a committee of the privy council. The Art-Union of London was incorporated by royal charter on the 1st of December, 1846.

ARTA, the ancient Ambracia, a town of Albania, is situated on the left bank of the river of the same name, 7 miles from the north shore of the Gulf of Arta, and 36 miles S.S.E. of Joanina, in 39° 8 N. lat., 20° 59′ E. long. It is governed by a bey under the pachalick of Joanina, and before the struggle for Grecian freedom was a very large and populous city, but having been stormed in 1828 by the Greeks, under Marco Botzaris, it was reduced to a ruinous state. Hellenic remains of considerable extent may still be seen forming the base of the present walls of the castle, which is situated close to the river in the northern quarter of the town. There are also remains of the convent built by the Empress Theodosia, about the year 845, and of another convent, or cathedral, of the same style, but more recent date. Arta is a bishop's see, and has several Greek churches. In the quarter set apart for trade, each art has its separate street or bazaar, and articles of dress manufactured here are held in high estimation. The floccatas, or shaggy capotes of Arta, are considered the finest; woollens, coarse cottons, and Russia leather, are also manufactured, and this town derives some commercial benefit as the entrepôt between Joanina and the gulf. There is a bridge of Venetian construction over the river Arta at the town.

ARTA, GULF OF (called the Ambracian or Ambraciot Gulf by the Greek and Latin writers), is an arm of the Ionian Sea, between the ancient Epirus and Acarnania, and now the boundary between the Turkish province of Albania and the kingdom of Greece. It is 25 miles long and 10 wide, and is contained between 38° 52′ and 39° 3′ N. lat., 20° 43′ and 21° 10′ E. long. Across the entrance is a bar composed of soft sand and sea-weed, over which the greatest depth of water is 15 feet, and the channel is intricate. Having passed this, the gulf is navigable for vessels of the largest size, and is perfectly free from danger, except off the low shores, where flats extend in some places nearly a mile. The deepest water is 36 fathoms, which is towards the head of the gulf. The narrowest part of the entrance is only 700 yards, and half a mile is its general width in the direction of N.E.; it then turns sharply round a low point to the S.E., and opens out much wider for about four miles, the western shore being low and the eastern high. A second entrance is then formed by the two high capes of La Scara and Madonna to the large basin of the gulf, the northern shore of which consists of low sandy ribands, separating large lakes and marshes from the gulf. Between these lakes and a range of hills that runs from E. to W., at a distance of eight or nine miles from the shore, lie the plains of Arta, which are rich and fertile; but, from the thinness of population and want of commerce, they are little cultivated, and principally devoted to pasture. To the eastward, and directly on the coast of the gulf, rises the Makronoro ridge, about 250 feet in height, along which runs the road from Albania into Greece. The southern shore is generally rocky except at the bottom of the bays formed by its irregular line. The western shore, from Cape La Scara northwards towards La Mazoma, is first rocky and steep; then come grassy cliffs, with a narrow shingly beach at the foot, and lastly, the hills slope gradually down to a low shore.

The only towns on the shores of the gulf are, Prevesa, on the northern side of the entrance, and Vonitza, at the bottom of a bay of the same name on the southern shore. From the town of Arta on the north coast the gulf derives its name. [ARTA.] At Salahora, which is the port of Arta, there is a custom-house, and there is one also in

Karavasara and Loutraki bays. Two rivers, the Luro (ancient Charadrus) and the Arta (ancient Arachthus), flow into the gulf on its northern shores; both are navigable for boats, seven or eight miles from their mouths. A small stream also flows through the town of Vonitza, affording an abundant supply of excellent water. The gulf abounds in fish of the finest quality, particularly of the mullet kind; there are also soles, eels, pilchards, and very large prawns. The pilchard fishing is generally farmed from the Greek government of Vonitza, by parties of Sicilians, who salt them down in barrels from the nets. There is a rise and fall of about two feet in the gulf; but this is so much influenced by the wind that it cannot be considered as a regular tide.

ARTABA'NUS, the last of the Parthian dynasty of the Arsácidæ, succeeded his brother. In A.D. 199 the Emperor Septimius Severus invaded his dominions and sacked Ctesiphon, his capital. Caracalla, the son and successor of Severus, having asked and obtained in marriage the daughter of Artabanus, entered the country with a Roman army, and in the middle of the festivities gave orders for a massacre, A.D. 216, in which the king himself escaped with difficulty. To revenge himself, Artabanus took the field with a numerous army. Caracalla was now dead, having been assassinated on his march between Carrhæ and Edessa, and was succeeded by Macrinus. After a hard-fought battle of two days, the Romans came to terms, by informing the Parthian king of the death of Caracalla, and by restoring the prisoners and booty taken at Ctesiphon. This satisfaction, however, was dearly bought; for it led to the overthrow of the Parthian monarchy. Artaxerxes, otherwise called Ardeshir, took advantage of the losses sustained by the Parthians to incite the Persians to revolt. [PERSIA.] After the revolt had been maintained three years, the king and his rebel subject met, and after three days' hard fighting Artabanus was beaten, taken, and put to death, A.D. 229. The Parthians in consequence became subject to the Persians, after having been their masters for 475 years. (Herodian, iii. c. 9; iv. c. 10 to 15; Lives of S. Severus, Caracalla, and Op. Macrinus in the *Historia Augusta;* Bayle, *Anc. Univ. Hist.* v. xi.)

ARTAXE'RXES, or ARTOXERXES, a Persian name, and evidently a compound word, *Arta-Xerxes.* Herodotus (vi. 98) interprets it to signify 'a great warrior.' *Arta* very commonly occurs as the first part of many ancient Persian names, such as Arta-banus, Arta-pates, &c. Ammianus Marcellinus (xix. p. 147, ed Lindenbr. 1603) interprets it as 'conqueror of wars.' We are inclined to consider the root as the syllable *ar,* which appears in many different languages under the form of *er, ir,* and *art,* with the addition of *t,* which is not elementary: in all of them it has the idea of courage or strength. "Αρης, *Mars, vir,* and *Art,* in this Persian word, seem to have the same root. (Harder, *Persepolis,* p. 127; Grotefend, *Beilage zu Heerens Ideen,* i. p. 589; Creuzer, *Symbolik,* i. p. 784; Pott, *Etymologische Forschungen,* &c. Lemgo, 1833.)

ARTAXERXES, or ARTOXERXES, surnamed Longímanus (in Greek Macrocheir), from his right hand being larger than his left, was the second son of Xerxes I., and succeeded to the throne on the murder of his father and his elder brother Darius by Artabanus, B.C. 465 or 464. During his reign the Egyptians revolted under Inaros, B.C. 460, and nearly freed their country from the yoke of the Persians. They also received a numerous body of Athenian auxiliaries. Artaxerxes employed Achæmenes to reduce them to obedience, but he was defeated and slain. (Herodot. iii. 12; vii. 7.) In a second expedition which he sent under Artabázus and Megabýzus, the Athenians were obliged to evacuate the country, B.C. 455, leaving Egypt in the hands of the Persians. The Athenians now sent a body of troops under Cimon to take possession of Cyprus. Cimon defeated the Persians several times, and had nearly reduced the whole of the island, when he was cut off by disease, B.C. 449. Peace was then concluded on the following conditions:—1, That all the Greek cities of Asia should enjoy full independence. 2, That no Persian ships of war should enter the sea extending from the coasts of Pamphylia as far as the entrance to the Black Sea. 3, That no Persian army should approach within a horseman's day's journey of the Grecian seas, or three days' journey, according to Diodorus. 4, That the Athenians should attack none of the possessions of the King of Persia. This peace was concluded the same year that Cimon died. (Diod. xii. 4.) Artaxerxes seems to have spent the remainder of his life in peace: he died after a reign of forty years (forty-two, Ctes.), B.C. 425, and was succeeded by his son, Xerxes II.

Themistocles, when he fled from Greece, found an honourable reception at the court of this Artaxerxes. The date commonly assigned to this event (B.C. 466) is either incorrect, or we must place the commencement of Artaxerxes' reign a little earlier. [THEMISTOCLES.] (Thucydides, i. 104-110; Diodorus, lib. xi. xii.; Ctesiæ *Persica in Phot. Bibl.* p. 119, or, Baehr's ed. of Ctesias, 1824.)

ARTAXERXES, surnamed Mnemon from the excellence of his memory, was the eldest son of Darius II. and Parýsatis, and succeeded to the throne on his father's death, B.C. 405. His younger brother, Cyrus, who claimed the crown as being the first born after the accession of his father, conspired against him, and would have been put to death but for the intercession of his mother, who obtained his pardon, and even his continuation in the command of the maritime provinces of Asia Minor. At Sardis he collected a large force with the intention of usurping the throne, and proceeded with these troops and a body of Greek mercenaries to attack the king. This is the expedition of which Xenophon has left us so interesting an account. [ANABASIS.] Cyrus fell in a battle at Cunaxa, about 40 miles from Babylon, B.C. 401. This expedition had revealed to all Greece the weakness of the Persian empire, and Agesilaus was at last appointed to command the Spartan troops in Asia Minor. He overran the greater part of the western provinces of Asia Minor, but Artaxerxes by bribery succeeded in

exciting a Grecian war against Sparta. Agesilaus was recalled to the defence of his country, and the Persians soon afterwards gained a naval victory near Cnidus, principally by the assistance of Conon the Athenian, B.C. 394. The Spartans were at last induced to sign the treaty of Antalcidas, which gave up every thing for which they had been contending, B.C. 387. [AGESILAUS.] Cyprus did not submit [EVAGORAS], and it required more than ten years to reduce it to subjection. Artaxerxes conducted in person a war against the Cadusii, a people inhabiting the mountains on the west and south-west side of the Caspian Sea, and he exhibited a patience under fatigue which astonished his courtiers. He married his own daughters, Amestris and Atossa, the first example in Persian history of such an unnatural alliance. Towards the latter years of his life he put his son Darius to death in consequence of a conspiracy which he had formed against him. Artaxerxes was unsuccessful in his attempts to reduce Egypt. [AGESILAUS.] He died from grief on account of the bad conduct of Ochus, the youngest of his sons, B.C. 359, at the age of ninety-four, and was succeeded by Ochus.

(Plutarch's *Life of Artaxerxes;* Diodorus, lib. xiii. xiv.; Ctesias; Xenophon's *Anabasis.*)

ARTAXERXES, called Ochus before he ascended the throne, was the third son of Artaxerxes Mnemon. He began his reign by putting to death all those of the royal family from whom he thought himself likely to incur danger. Egypt, which never quietly submitted to the sway of the Persians, was at this time in revolt, and governed by the last of its native princes, Nectánebus II. Artaxerxes led a powerful army against him, and completely broke the strength of Egypt, B.C. 354. He was assassinated by Bagoas, his favourite eunuch, an Egyptian by birth, B.C. 338, who placed on the throne Arses, the youngest son of Ochus. (Diodorus, lib. xvi. xvii.; Justin. x. 3; Plutarch's *Agesilaus.*)

ARTEDI, PETER, a distinguished naturalist, was born Feb. 22, 1705, at Anund, in Angermanland, Sweden. His father was a clergyman. In 1716 he was sent to the school of Hernösand, where, while others spent their hours of relaxation in play, he devoted himself to the study of fishes and the collecting of plants. In 1724 he went to the university of Upsal to study philosophy and theology, but he gradually abandoned these, and at last gave himself up to medicine and natural history. In 1728 Linnæus likewise went to Upsal to study medicine, and on inquiring who among the students was pre-eminent, all answered, Peter Artedi; on which Linnæus sought his acquaintance. Their friendship continued through the whole period of their residence at Upsal, which was seven years, during which time an honourable rivalry subsisted between them, each abandoning to the other the departments of natural history in which he seemed to excel. In this way the study of fishes and the amphibia was assigned to Artedi, while Linnæus surpassed him in a knowledge of birds and insects. In testimony of their friendship, before the departure of Linnæus for Lapland and Artedi for England, they mutually constituted each other heir to their papers and collections of natural history, the survivor pledging himself to publish whatever manuscripts might seem worthy of the public eye.

In September, 1734, Artedi sailed from Stockholm to London, where he met with the most courteous reception, particularly from Sir Hans Sloane. During his stay in London he wrote the preface to his 'Ichthyologia.' In 1735 Linnæus, after his Lapland tour, went to Leyden, where, after residing a few weeks, he was agreeably surprised to find himself joined by his friend Artedi. The means of Artedi being now almost exhausted, he meditated a return to his native land; but a very different fate awaited him. Albert Seba, an old and wealthy apothecary of Amsterdam, who had collected an unrivalled museum of objects of natural history, had published two volumes descriptive of quadrupeds and serpents, and when about to publish the third concerning fishes, he requested the assistance of Linnæus; but he, being occupied with other matters, declined Seba's offer. Linnæus however recommended his friend Artedi. Previous to this Artedi assisted Linnæus in his great 'Systema Naturæ,' particularly in the departments of fishes and in the umbelliferous plants. Indeed it was the intention of Artedi, after his work on fishes should have been finished, to devote himself entirely to the study of umbelliferous plants. Having entered upon his new office, he drew up for the work of Seba the descriptions, the synonymes, the genera, and species of nearly all that remained.

About this time, Linnæus, having finished his 'Fundamenta Botanica,' hastened to Amsterdam to show it to Artedi, who on his part showed Linnæus his 'Philosophia Ichthyologica,' which had been the work of several years' labour. This delightful and advantageous interchange of ideas soon experienced a melancholy interruption; Artedi, on the 21st September, 1735, when returning to his lodgings from the house of Seba, fell into one of the canals of Amsterdam, and was drowned.

Linnæus, in conformity with their testamentary arrangement, claimed his manuscripts; but the landlord, on account of some small debts, refused to give them up. They were purchased by Dr. Cliffort, and by him presented to Linnæus. Among them he found the 'Philosophia Ichthyologica' alone finished; the 'Synonymologica,' a work of immense labour, complete, but confused. Linnæus devoted more than a year to render these works complete, and then gave them to the world, preceded by a well-written life of the author, in 1 vol. 8vo, Leyden, 1738. Linnæus had previously availed himself of them, for the department of fishes, in his 'Systema Naturæ,' published at Leyden in 1735.

ARTEMIDO'RUS of Ephesus wrote a treatise on general geography, in eleven books. He wrote probably about one century B.C. His geographical work is very often quoted by Strabo, by Pliny, in his 'Natural History,' and by Stephanus of Byzantium. The passages thus quoted are collected in Hudson's 'Minor Greek Geographers,' vol. i. We can collect from Strabo that Artemidorus visited Spain, Rome, and Alexandria.

ARTEMIDO'RUS, surnamed Daldianus, from Daldis, a city of Lydia, which was his birthplace, is the author of a work in five books, entitled Ὀνειροκριτικά, or, 'The Interpretation of Dreams.' He lived in the time of the Antonines; and collected his materials by travelling in Greece, Asia, Italy, and various other countries, and registering such communications as he was favoured with by those who studied the interpretation of dreams. The fifth book, entitled Ἀποβάσεις, or, 'Results,' is addressed to the author's son: it contains ninety-five short dreams, and the events which followed. The first edition was by Aldus, 1518, 8vo; the last by Reiff, Leipzig, 1805, 2 vols. 8vo, one of text and the other of notes. An English translation was published in 1644, in 12mo, under the title of 'The Interpretation of Dreams, digested into five books, by that ancient philosopher Artemidorus.' Of this work a tenth edition was published in 1690.

A'RTEMIS, one of the ancient Greek divinities, known to the Romans as Diana. In Homer and Hesiod she appears as the daughter of Jupiter and Leto (Latona), sister of Apollo, and the goddess who presided over hunting. She traverses the woods, armed with the bow and arrow, and attended by nnmerous nymphs. She is a pure virgin. In a temple at Megalópolis in Arcadia her statue stood by the side of that of Ceres, and she was clothed with the skin of a hind; a quiver hung from her shoulder; she had a lamp in one hand, and two serpents in the other. (Pausan. viii. 37.) In the Greek tragic poets she appears under another character, according to which the favour of the goddess must be obtained by the sacrifice of human victims. Iphigenía, daughter of Agamemnon, on her return from the Tauri, introduced this barbarous feature in the worship of Artemis. All the various fables about Artemis were collected by the Alexandrine poets of later times, and fitted to one another so as to form a whole.

Artemis was a favourite subject with the artists of Greece, and they have generally represented her as a huntress. In the works of Scopas, Praxíteles, and Timótheus, Artemis was represented of a slender form; her hips and breasts without the fulness of womanhood. The countenance is that of Apollo, only with a softer expression and more full; the hair is sometimes bound over the forehead, but more frequently in a bunch behind or on the top of the head in the manner peculiar to the Dorians. The dress is a Doric vest, either tucked up high, or reaching to the feet; and the shoes are Cretan. Sometimes a dead or dying stag lies at her feet.

(Filhol, *Galérie Napoléon*, v. 366; Visconti, *Iconographie*, xlii. 1; *Diana Lochæa* in Millin, *Monuments Inédits*, ii. 34; Müller, *Archäologie der Kunst*, Breslau, 1830.) [DIANA; SELENE; HECATE.]

ARTEMI'SIA, the daughter of Lygdamis, became Queen of Halicarnassus, a city on the coast of Asia Minor, when her husband died. She attended Xerxes in his expedition against Greece, B.C. 480, and furnished five ships, which were second only to those of the Sidonians. In the council of war before the battle of Salamis she strongly represented to Xerxes the folly of risking a naval engagement. In the battle she displayed so much courage, that Xerxes declared 'that the men behaved like women, and the women like men.' To her Xerxes intrusted the care of his children, that they might be transported in safety to his kingdom. (Herodot. vii. 99; viii. 87-103.)

ARTEMISIA, daughter of Hecatomnus, king of Caria in Asia Minor, and wife of Mausólus, whom she succeeded on his death, B.C. 353. She proposed two prizes, one in tragedy, and another in oratory, to those who should pronounce the best panegyric on her husband. The successful competitors were Theopompus and Theodectes. She caused a monument to be erected to the memory of Mausolus, which, for its grandeur and magnificence, was considered one of the seven wonders of the world. It was called 'mausoleum' from the name of her husband, and hence the name mausoleum is often applied to funeral monuments. It seems to have existed in the time of Strabo (p. 656). She died after a reign of two years, and was succeeded by her brother, Idrieus, B.C. 351. (Diod. xvi. 45.)

ARTEMI'SIA, an extensive genus of plants belonging to the natural order Compositæ, and remarkable for the intense bitterness of many of its species. It is easily recognised by the multitude of fine divisions into which its leaves are usually separated, and the numerous clusters of small, round, drooping, greenish-yellow, or brownish flower-heads, with which its branches are loaded. The most interesting species are Tarragon, Southernwood, and Wormwood.

Tarragon (*Artemisia dracúnculus*) is a Siberian species, with undivided, very narrow, smooth, and rather succulent leaves; when bruised they emit a stimulating odour, and if chewed produce a peculiarly pungent moisture in the mouth, which is so generally considered agreeable that the leaves are employed as a pickle, and as an ingredient in some kinds of vinegar.

Southernwood (*Artemisia abrótonum*), an odoriferous herb found all over the south of Europe from Portugal to the Dardanelles, and thence through Palestine, Persia, and the middle of Asia into China, is frequently seen in old-fashioned gardens, where it was cultivated for its peculiar aromatic scent.

Wormwood (*Artemisia absinthium*), is an indigenous perennial plant met with on waste places, but that which is required for medical use is mostly cultivated. The upper part of the stem, with the leaves and unexpanded flowers, should be collected, for these parts possess the peculiar aroma, with a strong bitter taste; while the lower part of the stem is merely aromatic, and devoid of bitterness. Wormwood possesses the properties common to aromatic bitters, but it seems to possess also some peculiar ones rendering it worthy of more attention than it receives. The bitter principle is readily absorbed, so that the flesh of animals fed upon it becomes manifestly bitter. Ale in which wormwood has been steeped (purl) is more heady than other ale. Absinthium

greatly increases the appetite, and promotes digestion, particularly in torpid systems and debilitated constitutions. Those who by excess have impaired their stomachs, have recourse to wormwood to renovate their powers. Hence the demand among gourmands for the spirituous preparations, such as the Crême d'Absinthe.

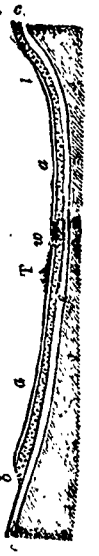
ARTERY, from the Greek ἀρτηρία (*arteria*), signifying an air-vessel, because the ancients, ignorant of the circulation, and finding the arteries always empty after death, supposed they were tubes containing air. By the term artery is meant a vessel which conveys blood from the heart to the different parts of the body: a vein, on the contrary, is a vessel which conveys blood from the different parts of the body to the heart. All the arteries of the system proceed from two great trunks immediately connected with the cavities of the heart, viz. the pulmonary artery, which arises from the right ventricle, and the aorta, which springs from the left ventricle. [HEART.] The pulmonary artery conveys blood from the right ventricle of the heart to the lungs; the aorta carries blood from the left ventricle of the heart to all the parts of the system, and consequently is the common source of all the arteries of the body, with the exception of those which circulate through the lungs. [AORTA.] The arteries derived from the aorta contain arterial blood, those derived from the pulmonary artery contain venous blood, and this latter vessel is the only artery in the system which does not contain arterial blood, that is, carbonized or proper nutrient blood. [BLOOD.]

The arterial system is arborescent, the arterial trunk always dividing into branches, and the larger branches into branches more and more minute, so that the blood in the arterial system is always flowing from larger into smaller tubes. The organization of the arteries is peculiar, and differs considerably from that of the veins. They are of a yellowish-white colour, and are composed of three distinct membranes, which are superimposed one upon the other, and which are intimately united by delicate cellular tissue. Each of these membranes is called a tunic, or coat, and each possesses a peculiar structure, and performs a separate function in the circulation of the blood.

1. The internal tunic consists of a membrane, colourless, transparent, and thin, yet so firm and strong that it is supposed to resist more than any of the others the bursting of the artery by the current of the blood. 2. The middle tunic, called also the fibrous and the muscular, is composed of yellowish fibres, which pass in an oblique direction around the calibre of the vessel, forming segments of circles which are so joined as to produce complete rings. This coat is firm, solid, and highly elastic. The characteristic of this coat is contractility. If it be mechanically irritated, or if a chemical stimulant, such as ardent spirit or ammonia, be applied to it, the vessel contracts forcibly upon its contents. 3. The external tunic, called also the cellular, consists of small whitish fibres, very dense and tough, interlaced together in every direction. It is much thicker in the large trunks than in the small branches, the reverse of the fibrous coat. Its outer surface is covered by a loose and flocculent cellular substance, which connects the artery with the surrounding parts, and particularly with the sheath of the vessel. Its firmness and resistance are so great, that it is not divided, however firmly a ligature may be placed around the artery.

All the arteries of the body possess the power of extension, but their most important vital property is their contractility, that is, their power of diminishing their capacity, or approximating their parietes, and thus proportionally acting upon their contents. Even the large trunks possess this property in some degree; but it resides chiefly in the ultimate divisions of the arterial branches, that is, the capillary vessels.

ARTESIAN WELLS are perpendicular perforations or borings, through which water rises from various depths, according to circumstances, above the surface of the soil. Such perforations have been named Artesian wells, from the opinion that they were first used in the district of Artois in France. They are seldom more than a few inches in diameter, and are made by means of the usual boring instruments. Their action is due to the constant endeavour of water to seek its level, as will be readily understood by means of the accompanying diagram.



Let *h*, *l*, *w*, *l*, *h*, be the surface of a country upon which stands the town T: *a*, *a*, a bed or thick mass of rock, either impervious to water, or through which it percolates with difficulty: *b*, *b*, a sandy rock, or one through which water easily percolates among the strata that occur beneath the rock *a*, *a*, and are concealed by the latter in the plain on which the town, T, stands, but crop out, as it is geologically termed, or rise to the surface from beneath the rock *a*, *a*, at the heights, *h*, *h*, on each side: *c*, *c*, *c*, a rock through which water either cannot pass, or percolates with difficulty. It will be obvious that the rain-water, falling on the heights, *h*, *h*, and which may not run off into the drainage depressions, will be absorbed by the exposed part of the rock, *b*, *b*. From the action of gravity the water would pass downwards upon the rock, *c*, *c*, *c*, which being impervious, or nearly so, to the passage of water, it will be checked, and take a direction under the other impervious, or nearly impervious, rock, *a*, *a*, percolating through all parts of *b*, *b*. From its endeavour to seek its own level, the water will strive to force its way through the superincumbent rock; but, being unable to do so, it will, in the natural order of things, remain beneath, free from evaporation. If, under these conditions, a perforation be made at *w*, near the town T, through the rock *a*, into the rock *b*, *b*, the water in the latter will rise over the surface of *a*, *a*, at *w*, in proportion to the height of *l*, *h*, above the level of *w*, and to the checks, from various causes, which it receives while

percolating through the rock *b*, *b*, which may, in fact, be considered as the inside of a great pipe, into the two ends of which water is poured; so that when a hole is pierced in the upper side of the pipe, as at *w*, the water will spring up, and endeavour to attain the level of the water at the ends.

In some cases which are essentially similar to the above, the circumstances may appear very different to the general observer. Geological science is, indeed, always requisite to point out where borings may be made with a probability of success. The fact that the water of Artesian wells increases in temperature with the depth of the borings affords an argument in favour of the interior heat of the earth.

ARTEVELD, JACOB, a brewer of Ghent, and a great popular leader in the early part of the fourteenth century.

Louis, then count of Flanders, had married a niece of Charles le Bel, king of France; but his conduct had created great dissatisfaction among the four principal chartered communes, or municipalities, of the county of Flanders, namely, Ghent, Ypres, Bruges, and the country or district of Bruges, which was called *le Franc*, or 'free country.' Bruges during this period repeatedly revolted against Count Louis, and at last took him prisoner, and kept him till the people of Ghent, who were then jealous of their neighbours of Bruges, rescued the count. Another and a more general insurrection of the Flemings was put down by Philip de Valois, who had succeeded Charles le Bel; he defeated the Flemings in a great battle at Mount Cassel in 1328, and obliged them to surrender at discretion. The leaders were put to death, and the towns were heavily taxed.

The war, which broke out some years afterwards, between Philip de Valois and Edward III. of England, gave occasion to another revolt of the Flemish towns. This time Ghent took the lead, and the burghers elected for their captain Jacob Arteveld, a brewer, who superseded the authority of the count, and was in fact the ruler of Ghent. Jacob had the great qualities, as well as the vices, frequently found united in the character of a demagogue. He was active, eloquent, and bold, but violent, overbearing, and tyrannical. He flattered the people, proscribed the nobles, and divided their spoils amongst those of his own party. Edward of England having sent messengers to Flanders, for the purpose of bringing the Flemings to act with him against Philip of France, Arteveld declared for him, and induced the people of Ghent to form an alliance with the English. In order to remove the scruples of the Flemings on account of their allegiance to the French crown, he advised Edward to assume the title of King of France. Count Louis, who was attached to King Philip, opposed Arteveld's intrigues, and in a diet held in the town of Bruges, he caused one of the promoters of the English alliance to be seized and beheaded at Rüppelmonde. The people of Ghent, infuriated at this proceeding, marched to Bruges, and compelled its burghers to join the English alliance; and the insurgents, strengthened by the assistance of the English, defeated the count and his nobles, who were obliged to evacuate Bruges. The war continued with varying success, when, at length, Arteveld proposed that Edward's son, the young Prince of Wales, afterwards called the Black Prince, should be elected governor of Flanders, on the understanding that the country was to be made by Edward a sovereign duchy. But the Flemings, although they wished to humble their count, were not prepared to disinherit him and his line altogether; and they began to mistrust Arteveld's intentions. A dispute broke out at Ghent between the various trades. Arteveld did not take an open part in the contest, but being jealous of the rising authority of Gerrard Denys, the dean of the weavers, he secretly introduced into Ghent 500 English soldiers, whom he lodged in his premises. Denys and the weavers cried out treason, attacked Arteveld, and killed him, with many of his English soldiers, in July, 1344. The Flemings, however, continued in their hostility to Count Louis, who fell at the battle of Crecy in 1346, fighting in the French ranks. He was succeeded by his son Louis II., called *de Male*, from the castle of Male, his favourite residence. Arteveld's authority in Flanders lasted seven years, during which, in spite of many acts of violence and injustice, the cities prospered in their trade, and enjoyed great respect among their neighbours.

(Oudegherst, *Chroniques et Annales de Flandre.*)

ARTEVELD, PHILIP VAN, was the son of Jacob Arteveld. Philippa, Edward III.'s queen, held him at the baptismal font, and from her he received his Christian name. His father left him wealth, and his mother, a woman of a prudent character, watched over his youth. She negotiated an early marriage for him with a lady of good family, after which Philip lived quiet and happy with his wife and mother, keeping aloof from all public affairs. But he had a name which was connected with party feelings and recollections. A fresh revolt broke out at Ghent in 1379 against Count Louis de Male, and after several engagements and many atrocities perpetrated on both sides, the count succeeded in intercepting all supplies to the insurgent city, which was reduced to great distress. Van der Bosch and the other leaders of the Ghentese, proposed Arteveld to the people, and he was elected Captain by acclamation. Arteveld, seeing that it was impossible to hold out any longer for want of provisions, conceived the bold resolution of marching out with a chosen body of men and attacking the count, who was then at Bruges. He left Ghent on the 2nd of May, 1382, with 5000 men, determined to conquer or die, and halted in a good position, within three miles of Bruges, where the next day the count and the forces of Bruges were utterly defeated, and the commerce of Bruges was annihilated for a time by this catastrophe. The count remained concealed that night and the following day in the house of a poor woman, who had often received charity at his palace gate.

After the capture of Bruges, the other towns of Flanders, with the exception of Oudenarde,

opened their gates to Arteveld. But the Duke of Burgundy, regent of France, induced the young king, Charles VI., to assist Count Louis in putting down the Flemish insurgents, before the English had time to join them. A large force was collected under the command of Olivier de Clisson, a skilful but merciless commander: the oriflamme was displayed, and the campaign began in November, 1382. The French advanced to Roosebeke, between Courtray and Ghent. Arteveld rashly advanced to attack them. The battle lasted only half an hour, and 25,000 Flemings were killed, most of them while pursued by the French, and Arteveld himself perished among them.

(Barante, *Histoire des Ducs de Bourgogne de la Maison de Valois.*)

ARTHRO'PTERUS, a fossil fish from the lias near Bristol. (*Agassiz.*)

ARTHUR. We shall divide this article into two heads: the first, comprising those particulars of the life of this celebrated British chief which appear to rest on historical evidence; the second, giving a short account of that mass of fictions concerning him which forms the earliest portion of our national literature.

He was a prince of the tribe of Britons called Silures: according to some accounts, the son of Meiric ap Tewdrig (Owen, 'Camb. Biog.'); according to the common story, of Uther named Pendragon (Dragon's Head,) a title given to an elective sovereign, paramount (at least nominally) over the many kings of Britain. The date of Arthur's birth, or even of his accession to his paternal inheritance, it is vain to inquire. He appears to have commenced his martial career about the year 500, and was raised to the Pendragonship, according to Owen, in 517; according to Whitaker, in 508. Nennius asserts that he gained twelve victories over the Saxons. Of these, eleven have been determined by Mr. Whitaker ('Hist. of Manchester,' vol. ii. chap. 2), with great acuteness and plausibility, to have been fought in Lancashire, or still farther to the north, at a period anterior to his election to the Pendragonship. The next most important of these battles is that of Badon (placed by Whitaker at Badby in Wiltshire; by Camden and Turner at Bath; by Carte, in Berkshire), the twelfth battle in the list of Nennius, mentioned also by Gildas, Bede, and others, was that which checked the progress of Cerdic, and compelled him to content himself with those provinces along the south coast which he had already gained; from which Arthur is not recorded to have tried to expel him. The date of this is variously placed. Whitaker, following Matt. West., says 520, which a doubtful passage in Gildas seems to confirm. From this time we hear no more of Arthur, until the revolt of his nephew, Modred, or Medrod, which led to the fatal battle of Camlan in Cornwall, in 542. Modred was slain, and Arthur, mortally wounded, was conveyed by sea to Glastonbury, where he died and was buried. Tradition preserved the memory of the place of his interment within the abbey, as we are told by Giraldus Cambrensis, who was present when the grave was opened by command of Henry II., and saw the bones and sword of the king, and a leaden cross let into his tombstone, with the inscription in rude Roman letters, 'Hic jacet sepultus inclitus Rex Arturius, in insula Avalonia,' as seen by Leland, and copied from an attested copy by Camden. A popular traditional belief was long entertained among the Britons that he was not dead, but had been carried off to be healed of his wounds in Fairy-land, and that he would reappear to avenge his countrymen, and reinstate them in the sovereignty of Britain.

The Arthur of romance is a very different person. He is the son of Uther Pendragon by Igerna, wife of Gorlois, duke of Cornwall, and owed his birth to a magical device, by which Uther assumed the form of the lady's husband. He succeeded to his father when fifteen years old, and immediately prosecuted hostilities against the Saxons in the north of England, whom he defeated in many battles. After that of Mount Badon he hastened to Scotland, to relieve Dumbarton (Alcluyd), besieged by the Scots and Pihts. Having done this, he returned southwards, kept his Christmas at York, and employed himself in destroying the Pagan temples of the Saxons, and restoring the Christian churches. The following summer he conquered Ireland and Iceland, and then returned to Britain, where he spent twelve years in peace. We need not dwell on his foreign conquests of Norway and Gaul, which occupied ten years more. He then returned to England, and held a great festival at Caerleon in Monmouthshire, where he was solemnly crowned, a multitude of tributary kings attending him. Not long after the Romans demanded tribute; on which he collected a mighty army, and passed into Gaul. There he defeated the Romans, and was preparing to cross the Alps, when he received intelligence of the revolt of Modred, who had allied himself with the Saxons, Scots, and Pihts. Arthur gained two victories, one on the coast of Kent and one near Winchester, and forced Modred to fly into Cornwall, where a third engagement, fatal to both, was fought on the river Camlan.

Such is the story told by Geoffry of Monmouth, and much later by Buchanan ('Historia Scotica'), and adopted with all manner of additional fiction by the romancers. The island abounds with memorials of the fame of Arthur, whether he be a real or imaginary person: we have Arthur's Seat; Arthur's Round Table, in more than one place; Arthur's Castle; the Welsh call the constellation Lyra Arthur's Harp (*Telyn Arthur*); and the principality abounds in monuments of art or nature which bear his name. The industry of the topographer would soon multiply references.

(For the genuine history of Arthur, see the *History of the Anglo-Saxons*, by Sharon Turner, and Whitaker's *History of Manchester*. The work of Geoffry, and the early romances which relate to Arthur, will be found fully treated of in Warton's *History of English Poetry*, vol. i.; Ellis's *Specimens of Early English Metrical Romances;* and Dunlop's *History of Fiction.*)

ARTICHOKE. [CYNARA.]

ARTICLE is the name given by modern grammarians to the two little adjectives *the* and *an* in the English language, and to words of like import in other modern languages, the former being called the definite, the latter the indefinite article. We do not attempt a more philosophical definition, because the separation of these words from the other adjectives of language, whether pronouns or not, appears to depend upon no very accurate principle; and the distribution of the parts of speech would perhaps not be the less philosophical, if the so called articles were restored to their proper place. The indefinite article *an* is only a corruption of the adjective *one*, or, as our ancestors wrote it, *ane;* and *a* is a still more violent corruption of the same word. Thus in German *ein* is at once equivalent to our *one* and to *an*. In the same way the French *un*, Italian *uno*, Spanish *uno*, &c., are evidently derived from the Latin *unus*. On the other hand, the definite article will appear, on the slightest consideration, to be a corrupted demonstrative pronoun. The term article or ἄρθρον (a joint) was invented by the Greek grammarians, but as used by them it is only applied to the definite article, and also to what, by modern grammarians, is called emphatically the relative (*who*). Nor is there any inconsistency in applying the same term to these two notions, which will be found on examination to have a common origin. The element το (*to*) of the Greek language, corresponding in power to our word *this*, was employed perhaps originally to denote a physical object pointed out at the time by some action of the body; secondly, to an object mentioned just before, and thus mentally present both to speaker and hearer; or, lastly, to an object forthwith to be brought before the hearer's mind. In the last case we are likely to have a repetition of the defining particle, as, 'I gave you *the* book *which* you asked for,' or, what is equally good, except in rhythm, 'I gave you *that* book *that* you asked for.' It was from the contemplation of such a sentence as this that the Greeks considered the defining particles as performing the office of joints which connect the two propositions together; and to distinguish the one article from the other, that which precedes the noun (the) was called the *prepositive* article, and that which follows it, viz. the relative, the *postpositive* article. The qualifying terms are perhaps not very well chosen, but undoubtedly the term article is very expressive of these relative particles, which in all cases, or nearly so, do perform the duty of connecting two propositions together; and hence we ought not to be surprised that a large proportion of the conjunctions have their origin in the relatives or demonstratives. But the repetition of the defining, demonstrative, or relative particle is no way necessary. Whether we say 'I gave you that book' (pointing to it), or, 'You asked for a book that (or that book) I gave you,' or, lastly, 'I gave you that book you asked for,' the word *that* performs in all cases the same duty. The two ideas thus logically connected in the expression—'I gave you the book that or which you asked for,' are—'You asked for the book: I gave you the book.' It is only a luxury in language to vary the forms according to the mere place in a sentence that a word may occupy; and if, in the more polished forms of the Greek language, we find the demonstrative, the definite article, and the relative distinguished, yet they are all evidently derived from a common parent, το, and its dialectic varieties. In Homer, the article does not yet appear; in Herodotus, the same element performs at times all the three offices. As we descend chronologically we find the tragedians still confounding the diverging forms of the relative and article, and even in certain phrases, retained by the later writers, traces of the same confusion arising from a common origin were yet to be seen. Matthiæ in his 'Grammar' has so fully acknowledged this triple power of the Greek pronoun, that he treats of the article under the three heads:—1, of the article; 2, of the article as a pronoun (he means a demonstrative pronoun); 3, of the article for the pronoun relative.

The Latin language had but an imperfect definite article in its pronouns *hic, ille, is;* but besides these we find the relative at times employed where the English idiom at least requires the demonstrative *this;* and what is called the conjunction *quod* (that), like the corresponding Greek ὅτι, or French *que*, has the form of a relative, and the meaning of a demonstrative. To trace the same analogy in the Teutonic languages, the German *der*, of which *de* only is radical, is at once demonstrative, relative, and definite article. So completely does the German agree with the Greek, that, when *der* threw off much of its demonstrative power to play the part of the mere article, a kind of doubled form, *dieser*, was adopted for the pure demonstrative on the same principle of formation as οὗτος, from ὅς, with the same meaning in Greek. And lastly, the English philologist will find the same threefold power among the derivatives from the English allied root *the*, viz. among the forms *this, that, then, than* (compare the Latin *quam*), *there, thence, the*, &c. The form *that* is still retained, as was before observed, with the power of the relative; but in the older writers, *there, thence*, &c., were freely used where we now only employ *where, whence*, &c.

Horne Tooke, whose views of etymology were neither extensive nor accurate, has fancied that the English article *the* is the imperative of an Anglo-Saxon verb dean, *to take*. ('Diversions of Purley,' Taylor's edition, ii. 63.) We need not repeat that it is allied to the German *der*, or rather the Dutch *de*, for the *r* is merely the characteristic of a masculine nominative, to the Gothic *sa* or *tha*, and through these to the Greek element *τό*, a form which actually occurs in the English *to-day* (ho-die), and no etymology for the English article will be satisfactory which does not equally apply to all these languages. In the same way the definite articles of the modern languages derived from the Latin are all referable to the Latin demonstrative *ille, illa*, &c.

ARTICLES OF FAITH. [CONFESSION.]

ARTICLES OF THE PEACE, a term applied to a recognizance or obligation to the king, entered on record, and taken in some court by some

judicial officer, whereby the parties acknowledge themselves to be indebted to the crown in the sum required, with condition to be void and of none effect if the party shall appear in court on such a day, and in the mean time shall keep the peace. (Blackstone, *Comm.* iv. ch. 18; Burn's *Justice.*)

ARTICLES OF WAR. [MUTINY ACT.]

ARTICULA'TA, or ARTICULATED ANIMALS, Cuvier's third great section of the animal kingdom, equivalent to the sub-kingdom *Homogangliata* of Professor Owen. This group comprehends the *Annelida*, the *Myriapoda*, the *Insecta*, the *Arachnida*, and the *Crustacea*. For a general outline of the characters of this sub-kingdom, see the article ANIMAL.

ARTICULATION, the term by which anatomists express the union of the different bones of the skeleton. The junction of any two bones, however firmly or loosely connected, or in whatever mode the union may be effected, is designated by the name of articulation. Commonly two substances are employed as the media by which the connection is established, namely a firm and strong membranous tissue termed ligament [LIGAMENTS], which may be considered as the band by which the bones are tied together, and a peculiar substance termed cartilage or gristle [CARTILAGE], which is often interposed between the surfaces of the bones to be united, and which, besides serving as the bond of union, accomplishes other purposes.

The objects to be obtained in the economy by the union of the several bones of the body are various and even opposite, requiring almost every conceivable variety in the mode of their connection. And such variety actually exists; but still these varieties admit of classification, and they may all be arranged under three heads, namely those which form immoveable, moveable, and mixed articulations.

1. Immoveable. Bones forming cavities of this class are generally so firmly united that they admit either of no motion whatever, or only of a very slight degree of it, the union being effected sometimes by the apposition of the surfaces of strong and flat bones; at other times by the formation of numerous prominences and depressions which mutually receive each other: examples of both these modes of union are found in the articulation of the bones of the head and face. *Suture* is the term given to this mode of union, when the bones are firmly impacted into each other by indentations like the teeth of a saw; and the bones of the cranium are nicely adjusted and firmly united to each other in this manner. At other times a ridge is formed in one bone which is received into a groove fissured in another. The bony part of the septum which divides the nostrils affords a specimen of this mode of union, while the teeth are secured in their sockets, that is, a conical surface is firmly impacted in a cavity, very much as a nail is fixed in a board.

2. The moveable articulations are those in which the bones are in contact, but not continuous with each other; such, for example, is the union of the arm with the shoulder, the fore-arm with the arm, the wrist with the hand, the lower jaw with the head, the head with the trunk, and so on. In these cases the articulating surfaces are mutually adapted to each other, in general one being convex and the other concave, and the bones are maintained in their situation by the firm and strong membranes termed ligaments.

3. The mixed form of articulation resembles the immoveable in having the bones connected by an intermediate substance (cartilage), and the moveable in admitting some degree of motion between the surfaces. The articulations between the several bones that form the spinal column afford examples of this mode of union.

ARTICULATION. [VOICE.]

ARTIFICIAL HORIZON is generally a cylindrical cup about three inches in diameter, or a rectangular trough, either of them about half an inch deep, and containing quicksilver. A circular plate of glass, whose surfaces should be accurately parallel to one another, is laid on the surface of the quicksilver in the cylindrical cup, but the trough is usually covered by a roof formed of two inclined planes, each of which is a frame carrying a plate of glass with parallel surfaces. By these means the wind is prevented from agitating the fluid.

The surface of the quicksilver being considered as a plane touching the surface of the earth at the place of the observer, is parallel to the rational horizon of that place; and consequently the angle between the plane of the quicksilver and a visual ray from the object to that plane, when corrected for refraction and parallax, is equal to the angular elevation of the object above the true horizon of the place.

An artificial horizon of the kind just mentioned is generally used on land for the purpose of obtaining the altitude of a celestial body by means of an octant, sextant, or reflecting circle, and occasionally it is employed to obtain the angular elevation of a terrestrial object. The rays of light from the object, falling on the quicksilver, are reflected from thence to the eye of the observer; and the angles made with the reflecting surface by the incident and reflected rays being equal to one another, the reflected image of the object appears as much below the horizon, or surface of the quicksilver, as the object itself is above it; thus, on bringing, by the motion of the index of the instrument, the two images in coincidence, the angle read on the arc will, the eye being very near the quicksilver, be equal to twice the angle of elevation.

On a journey the conveyance of quicksilver is often inconvenient; and therefore scientific travellers have attempted to use, as an artificial horizon, a circular plate of polished metal, or a dark glass, from which light may be reflected as from a mirror. The horizontality of such an instrument is ascertained by means of a spirit-level placed upon it, and the adjustment is effected by three screws which pass through the frame of the mirror at equal distances from one another.

The artificial horizons permit very accurate observations to be made on land, but it is evident that they cannot be used at sea, even though well suspended in jimbals, on account of the unsteady motion of the ship. The 'Nautical Top,' proposed

by Mr. Serson, and improved by the late Mr. Troughton, having been found unavailable, the only contrivance which appears likely to serve the purpose of an artificial horizon at sea is a spirit-level applied to the face of an octant or sextant. Instruments of this kind have been executed; and for merely nautical observations they possess sufficient accuracy, the altitudes obtained with them being within two or three minutes of their true values.

ARTILLERY (probably from the old French *artiller*, to fortify), in its more general sense embraces all kinds of missiles, and the engines employed in projecting them. Since the introduction of gunpowder, it has been applied chiefly to large ordnance, together with their ammunition and appurtenances.

The earliest military engines were, in all probability, those for casting large stones, which are mentioned in 2 Chron. xxvi. 15, as in use about B.C. 1000. The names of the *balista* or *ballista*, which was employed for throwing stones, and the *catapulta*, for throwing darts and arrows, imply a Greek origin, but ancient writers differ in their accounts of their invention. Both were much used in the Roman times; and Vegetius, in the fourth century, notices other similar engines under the names of onagri, scorpiones, arcubalistæ, fustibuli, and fundæ.

Such machines do not appear to have been used in England until the Norman invasion, and were used by the Normans chiefly in sea-fights, for throwing Greek fire, quicklime, and other combustibles, as well as stones and darts. Richard I. employed against the Saracens some such engines, worked by the force of the wind acting upon sails. The espringal, trebuchet, mangona, mangonel, bricolla, petrary, matafunda, berfrey, engine-a-virge, and war-wolf, were machines of this character, some of which were of great power. Edward I. used engines at the siege of Stirling Castle, in 1303, which threw stones of 300 lbs. weight.

The invention of gunpowder, though it did not for a long time supersede the ancient artillery, gradually brought about great changes in the art of war. Edward III. used cannon (then called 'crakys of war') against the Scots in 1327, after which allusions to such artillery become frequent. The first cannon, which were called *bombards*, were very clumsy, wider at the mouth than the chamber, and formed of bars of iron bound together with hoops. The earliest cannon-balls were of stone. *Hand-cannon* [ARMS] carried by two men, and fired from a rest in the ground, were early used; and *carts of war*, conveying light artillery, are mentioned in a Scotch act of parliament in 1456. In the fifteenth century cannon, of various shapes and sizes, bore many different names, among which we find culverynes, fowelers, and serpentynes.

From Monstrelet and other authorities it would appear that cannon began to be formed by casting about the middle of the fifteenth century. Iron bullets (of which Monstrelet mentions one weighing five cwt.) began also to be used, but not to the exclusion of those of stone. A hard mixed metal called *font-metal*, or *bronze*, was early invented for the casting of cannon; and the casting of this kind of ordnance was commenced in England in 1535. In the sixteenth century the size of cannon was reduced, and they were made of superior form.

One of the largest cast cannon now existing is a brass one at Bejapoor, which was cast in commemoration of the capture of that place by the Emperor Alum Geer, in 1685. Its extreme length is 14 feet 1 inch; the diameter of its bore 2 feet 4 inches. An iron shot for this gun of proper size would weigh 1600 pounds.

For *mortars* we are indebted to workmen who were employed by Henry VIII.; those made for him about 1543 being, according to Stowe, 'at the mouth from 11 to 19 inches wide,' and employed to throw hollow shot of cast-iron, filled, like modern bombs, with combustibles, and furnished with a fuse. Among the cast-iron ordnance made by these workmen are mentioned fawconets, fawcons, minions, and sakers; and demy cannons, weighing about three tons each, were made of cast-iron by one of their successors in 1595.

Of the various kinds of cannon, several of which are mentioned above, the *falcon* seems to have been of two inches and a half bore; the *demi-culverin* of four inches bore; the *mynion* of three inches and a half bore; the *culverin* of five inches and a half bore; and the *sacar*, or *saker*, of three inches and a half bore; the weight of the shot, however, not being in all cases proportionate to the bore.

Petards, which are explosive engines employed in sieges, were first used by the Huguenots in 1580. Red-hot balls were fired in the defence of Cherbourg in 1418, again at the siege of La Fère in 1580, and again in 1782 at Gibraltar. The *howitzer*, an improvement on the mortar, was first used in 1697; and the *carronade*, a kind of short cannon, or long howitzer, about 1779. *Iron rockets*, called, from their inventor, Sir William Congreve, Congreve rockets, were first used at the bombardment of Copenhagen.

The *battering-ram*, which consists of a heavy beam headed with iron, slung in such a manner that it may be made to butt with destructive force against a wall or gate, is usually classed with ancient artillery, though it is not embraced in the definition of the word. Pliny says it was invented at the siege of Troy, but Homer has no mention of it. It was mentioned by Ezekiel (iv. 2, and xxi. 22), who lived about 590 years B.C. It was sometimes, but rarely, used during the middle ages.

(Grose's *History of the Army of England*; Glenie's *History of Gunnery*; Henry's *History of Great Britain*; Wraxall's *History of France*; Sir William Monson's *Naval Tracts*.) [CANNON, GUNNERY, &c.]

ARTI'SIA (Presl). This name is equivalent to STERNBERGIA. At present the opinion prevails that this is an internal portion of another plant, and not a palm-stem, as once conjectured. Coal formation.

ARTOCA'RPEÆ (or the Bread-Fruit tribe), a natural order of plants, nearly related to *Urticeæ* (the Nettle tribe), from which it is so difficult to

separate them by any precise character, that there are many who consider them nothing more than a section of Urticeæ. The species are all found in the warmer parts of the world, and many of them are natives of the tropics only. Their milk, which is always acrid, renders some of them intensely poisonous, as the Upas Tree of Java, and certain Indian species of fig; nevertheless, if the milk is naturally absent from any particular part of an Artocarpeous plant, that part becomes eatable and even wholesome. Thus the fruit of the cultivated fig, up to a short period before its maturity, remains milky, and at that time it would prove exceedingly unwholesome, but when ripe the milk disappears, is replaced by sugar, and the fruit becomes, as we all know, extremely wholesome. The same explanation is probably applicable to the case of the Bread-Fruit, which forms an article of food with the South Sea Islanders.

ARTOCARPUS, or the Bread-Fruit, is the genus which has given its name to the preceding natural order. It consists of trees having stems of very considerable size, with large leaves, which are exceedingly rough with little points.

A Bread-Fruit is a fig turned inside out, and much larger in all its parts; that is to say, the flowers which form the bread-fruit and fig grow, in both cases, upon a fleshy receptacle; but in the former the receptacle is solid and bears its flowers externally, while in the latter it is hollow and bears its flowers internally.

Many species are known, some of which, as *Artocarpus chaplasha* and *hirsuta*, are large trees, and yield valuable timber in the forests of Bengal and Malabar. The only two, however, we propose to notice here are the bread-fruit and the Jack.

The Bread-Fruit (*Artocarpus incisa*) is a native of the South Sea Islands, and of many parts of the Indian Archipelago; it inhabits only such places as are both hot and damp; Dr. Roxburgh complains that the winters of Bengal are much too cold for it. It forms a moderate-sized tree, rarely exceeding forty feet in height, with leaves deeply divided into sharp lobes, and sometimes as much as three feet long. The fruit is green and of considerable size, equalling a melon of the larger kind in dimensions, and is of many different forms: one variety produces it free from all spines on the surface or from seeds internally; this is the best sort: others are split into deep lobes, or covered all over with the sharp-pointed fleshy tops of the calyxes. The nuts, when roasted, are said to be as good as the best chestnuts; but it is principally for the fleshy receptacle that it is valued. When roasted it becomes soft, tender, and white, resembling the crumb of a loaf; but it must be eaten new, or it becomes hard and difficult to swallow. It forms so important a part of the support of the South Sea Islanders that it was introduced by the British Government into the West Indies, where it is still cultivated, and whence it has been carried to the continent of America. It does not appear, however, equal to the plantain as an article of human food.

The Jack (*Artocarpus integrifolia*) is also a native of the islands of the Indian Archipelago, and is in its general appearance like the Bread-Fruit, but its leaves are totally destitute of all laceration, and its fruit, which is very prickly, weighs 60 or 70 lb. This latter is yellow, and constitutes the principal part of the diet of the natives in some parts of India; but it is said to have an offensive odour, and to be little esteemed by Europeans: all, however, concur in attesting the excellence of the nuts when roasted.

ARTS, DEGREES IN. Degrees, such as are now given in our universities, probably originated with the incorporation of universities in the eleventh and twelfth centuries.

The term *master* is believed to be the oldest among those of graduation. Eugenius II., by the 34th canon of a council held at Rome in 826, mentions the appointment of magistri and doctores, masters and doctors. This was confirmed by a decree of Leo IV. in another synod at Rome, in 853. (Muratori, 'Antiq. Ital.,' tom. iii. col. 830.)

Du Pin ('Nouvelle Bibliothèque des Auteurs Ecclésiastiques,' 4to, Paris, 1700, tom. x. p. 171) states that the academies or universities which were originally established, were in the thirteenth century reduced to form. That of Paris, which had begun to be formed in the preceding century, had grown famous from the number of its scholars, and for the masters with which it furnished all Europe. In its origin, he adds, it was composed of *artists*, who taught the sciences and philosophy; and of Divines, who made commentaries on Peter Lombard's 'Book of Sentences,' and explained the Holy Scriptures. Mention of these two faculties only occurs in the constitutions made for the university by the Cardinal di S. Stefano, legate of Pope Innocent III., in 1215. The whole number of arts was originally *seven*, and these were distributed into the *trivium*, comprehending grammar, logic, rhetoric, and the *quadrivium*, comprehending music, arithmetic, geometry, astronomy. Artidoctor and artista are ancient names for masters of arts, mentioned by Du Cange.

Gregory IX., whose pontificate continued from 1227 to 1241, is said first to have instituted the inferior rank of *bachelors;* whose name was derived from *bacilla* (little staves), either because they were admitted by receiving a little wand, or because as following the title adopted for the novices of the soldiery, who exercised with sticks in order to learn to fight with arms. The bachelors were exercised in disputations, of which the masters were the moderators. Much upon the etymology of the names of bachelor and master may be seen in Bacmeister's 'Antiquitates Rostochienses,' in the third volume of the 'Monumenta Inedita Rerum Germanicarum,' fol. Lips. 1743; col. 953. The honours conferred upon learned men, in the form of these degrees, greatly increased the number of scholars in all the universities of Europe.

The degrees both of bachelor and master of arts were conferred at Oxford in the time of Henry III., and the degree of master of arts probably much earlier. The degrees for Laws are said to have come into the university in 1149. (Gutch's edit. of Wood, vol. i. p. 52.)

For information on the education of Oxford and Cambridge, particularly with reference to the de-

gree of B.A., the fees, &c., see *Journal of Education*, Nos. I. III. IV. VIII. X. XIII. XV.; on that of Dublin, Nos. XI. XII.; and on the Scotch Universities, Nos. VII. VIII. IX.; and also the Oxford, Cambridge, Dublin, Durham, and University of London *Calendars*.

ARTS, FINE. The fine arts are generally understood to comprehend those productions of human genius and skill which are more or less addressed to the sentiment of taste. They were first employed in embellishing objects of mere utility, but their highest office is to meet our impressions of beauty or sublimity, however acquired, by imitative or adequate representation.

The great use of the arts is to humanize and refine, to purify enjoyment, and, when duly appreciated, to connect the perception of physical beauty with that of moral excellence; but it will at once be seen that this idea of usefulness is in a great measure distinct from the ordinary meaning of the term as applicable to the productions of human ingenuity. A positive use results indeed indirectly from the cultivation of the formative arts, precisely in proportion as their highest powers are developed. Again, as illustrating science, the fine arts may be directly useful in the stricter sense, but this is not the application which best displays their nature and value. The essence of the fine arts, in short, begins where utility in its narrower acceptation ends. That this principle exists in nature we immediately feel, in calling to mind the merely beautiful appearances of the visible world, and particularly the colours of flowers. The fine arts in general may be considered the human reproduction of this principle. The question of their utility therefore resolves itself into the inquiry as to the intention of the beauties of nature.

With regard to the classification of the arts, those are generally considered the most worthy in which the mental labour employed and the mental pleasure produced are greatest, and in which the manual labour, or labour of whatever kind, is least apparent. This test would justly place poetry first. It would be an invidious as well as a very difficult task to assign the precise order in which painting, sculpture, architecture and music, would follow poetry and its sister, eloquence; but it may be remarked, that the union of the arts is a hazardous experiment, and is often destructive of their effect.

ARUM. [Aroideæ.]

ARUN, River. [Sussex.]

ARUNDEL, a parliamentary borough in the rape of Arundel, in the county of Sussex, on the river Arun, a short distance from the sea; 55 miles S.S.W. from London, and 10 E. by N. from Chichester. It stands on a declivity on the N.W. bank of the river, the course of which is very winding in this neighbourhood: 50° 51′ N. lat., 0° 33′ W. long. The population of Arundel in 1841 was 2583.

The trade of the place is small, though vessels of 150 tons can come up to the town, and a canal unites the Arun with the Wey, an affluent of the Thames. There is, however, a good deal of bark shipped, as well as timber for the use of the dockyards. The custom-house being at Arundel keeps up the business of the place, which might otherwise be drawn away to Little Hampton, about four miles distant, on the east bank of the Arun, at its mouth. The Brighton and Chichester railway passes between Arundel and Little Hampton. A neat stone bridge, of three arches, over the Arun, unites the main part of the town with a smaller portion which lies on the opposite bank of the river. The church is an ancient gothic structure with a low tower. The chancel contains many monuments of the former owners of the castle and others, and has been partly repaired, but is yet unfinished and dirty. The nave and transepts are used for divine service.

The most striking feature in Arundel is the ancient castle, which gives to its possessor (now the Duke of Norfolk) the title of Earl of Arundel. This instance of a peerage attached to the tenure of a house is now an anomaly. In 11 Henry VI. it was decided, that the tenure of the Castle of Arundel alone, without any creation, patent, or investiture, constituted its possessor Earl of Arundel. (Nicolas's 'Synopsis of the Peerage,' 27; Cruise's 'Digest,' 3 vols. 152; Report of the Lords' Committee respecting Peerage, 1820.) The castle stands high, on a steep circular knoll, partly natural, partly artificial, close to the town, and is enclosed on the N. and W. by a deep ditch, now dry. It commands an extensive prospect over the low flat country towards the sea as far as the Isle of Wight. Arundel Castle is mentioned as early as the time of King Alfred, who bequeathed it by his will to his nephew Adhelm. After the Norman conquest, it was given by William I. to his kinsman Roger de Montgomeri, created Earl of Arundel and Shrewsbury. Afterwards the castle passed into the family of Albini, from them to the Fitz-Alans, and at last, by the marriage of the heiress of this race with Thomas, duke of Norfolk (in the reign of Elizabeth), into the family of the Howards, by whom it is still retained.

In the civil war between Charles I. and his parliament, Arundel Castle was held and garrisoned by the latter. It was, however, taken by Lord Hopton in 1643, surrendering to him at the first summons; and two months after was as suddenly retaken by Sir William Waller. From that time it continued little better than a mass of ruins until it was restored by the late Duke of Norfolk to its ancient magnificence. The modern parts are in the gothic style, built of freestone. The park is very extensive and finely wooded, including a great variety of picturesque scenery.

The town was incorporated by Queen Elizabeth, and the corporation consists of a mayor, twelve burgesses, a steward, and other officers. It formerly returned two members to parliament, but the Reform Bill reduced the number to one. The boundaries of the borough (which are nearly coincident with those of the parish) were not altered.

(*Beauties of England and Wales*; Neale's *Views of the Seats of Noblemen and Gentlemen*; Dallaway's *History of the Western Division of Sussex*.)

ARUNDEL, EARL OF. [Arundel Marbles.]

ARUNDEL MARBLES, certain pieces of sculpture, consisting of ancient statues, busts, mutilated figures, altars, inscriptions, &c., the remains of a more extensive collection, formed in the early part of the seventeenth century by Thomas Howard, earl of Arundel, and presented in 1667 to the University of Oxford, by Mr. Henry Howard (afterwards Duke of Norfolk), the Earl of Arundel's grandson.

Thomas Howard, earl of Arundel and Surrey, the founder of this collection, was the only son of Philip, first Earl of Arundel of his family. The year of his birth is fixed by Sir Edward Walker, to 1586.

In 1603, soon after James's accession, he was restored in blood by act of parliament, and to such honours as he had lost by his father's attainder, as well as to the earldom of Surrey. The dukedom itself was detained from him.

In 1607 the Earl of Arundel was sworn of the privy council. He soon after travelled into France and Italy, and during his stay in those countries he imbibed that love for the fine arts by which he was afterwards distinguished.

He remained abroad till 1611, and on his return was made K.G. He went again into Italy, and began to form his celebrated collection. When he returned to his own country, in 1614, he embraced the communion of the Church of England; for he had been bred a Roman Catholic in the strictest austerities of that persuasion. In 1621 he was appointed, or rather restored, to the place of Earl Marshal of England. King Charles I., upon his accession, continued him in this office.

After the assassination of the Duke of Buckingham, the Earl of Arundel, who had been the duke's enemy, acquired a considerable share of favour and confidence. In 1637 he was appointed steward of the royal household; and in 1640 nominated general-in-chief of the country south of Trent. It fell to his lot to be deputed to give the royal assent to those two fatal bills which cost Charles his crown and his life; the bill of attainder against Strafford, and that by which it was enacted that the parliament should not be dissolved but by its own consent.

In June 1641, he presented a petition beseeching the king to restore him to the dukedom; but Charles would favour him no further than by the grant of a patent creating him Earl of Norfolk. Disgusted by this half measure, and foreseeing the dreadful storm which was then gathering, he quitted his country. He wandered slowly over most parts of Italy, and at last settled at Padua, where he died October 4th, 1646. His body was brought to England, and buried at Arundel.

The Earl of Arundel's character has been drawn at considerable length by two writers, the Earl of Clarendon and Sir Edward Walker. Sir Edward Walker remarks, 'He was the greatest favourer of arts that this age hath produced; his collections of designs being more than of any person living. His paintings, likewise, were numerous, and of the most excellent masters.'

The Earl of Arundel was the patron of many distinguished men. It was from his example and recommendation that Charles I. was originally induced to study and encourage the arts. When Lord Arundel determined to collect a gallery of statuary, he retained two men of letters for that purpose. The well-known John Evelyn was sent to Rome, and Mr. (afterwards Sir William) Petty undertook a hazardous journey to the Greek islands and the Morea.

We learn from catalogues, that the Arundelian collection, when entire, contained 37 statues, 128 busts, and 250 inscribed marbles, exclusive of sarcophagi, altars, and fragments, and the inestimable gems.

Arundel House and gardens were converted into streets about the year 1678, when it was determined to dispose of the statues by sale. One portion, consisting principally of busts, was purchased by Lord Pembroke; these are now at Wilton. A second was purchased by Sir William Fermor (the father of the first Earl of Pomfret), who removed them to his seat at Easton Neston in Northamptonshire. Henrietta Louisa, countess dowager of Pomfret, in 1755, transferred these marbles to the University of Oxford, where they became again united to the inscribed marbles which had descended to Henry, second son of the former and sixth Duke of Norfolk, and had been presented by him to the University, in 1667. A few statues and broken fragments were given to a Mr. Arundel, a relation of the Duke of Norfolk; one or two of these were subsequently given to the Earl of Burlington, and went to Chiswick House. A few elegant remains were carried to Mrs. Temple's seat at Moor Park, near Farnham, in Surrey. The cameos and intaglios finally became the property of the dukes of Marlborough; and are now known by the name of the Marlborough Gems.

The greater part of the Greek inscriptions in the Arundel collection now at Oxford were obtained, as has been already noticed, at Smyrna. They arrived in England in 1627, soon after which they were carefully examined by the learned Selden, who in 1628 published his 'Marmora Arundelliana,' a thin quarto volume, in which twenty-nine Greek and ten Latin inscriptions of this collection are deciphered and illustrated.

The Arundel and Pomfret marbles are at present preserved at Oxford in two rooms belonging to the public schools, beneath the picture gallery. Of the Arundel portion, that which the University places at the head of its collection is the Greek inscription known by the name of the PARIAN CHRONICLE. Among the more important marbles of the Pomfret donation are the colossal torso (for that portion only is antique) of a Minerva galeata, restored as a statue by Guelfi; a Venus Vestita, or Leda; Terpsichore; a young Hercules; an Athleta, which has been called Antinous; a female figure, unrestored, of early Greek work; and three statues of senators, one of which is usually considered as Cicero.

(Selden's *Marmora Arundelliana*, and the *Marmora Oxoniensia* of Prideaux, Maittaire, and Dr. Chandler; Dallaway's *Anecdotes of the Arts in England*.)

ARUNDO, a genus of grasses, in which a number of useful species was once comprehended; but

in consequence of the altered views of botanists regarding the limits of genera, it is now confined to the *Arundo Donax*, and the species most nearly agreeing with it. The *Arundo Donax*, a native of the south of Europe, the Caucasus, Egypt, and Siberia, is one of the largest grasses that we have in cultivation; it is not unusual to see it, in rich soil, 9 or 10 feet high, with leaves as broad and as long as the blade of a small sword. A beautifully variegated variety is that which is usually seen in gardens. *Arundo phragmites*, the common reed, now forms the genu PHRAGMITES.

ARUSPEX. [HARUSPICES.]

ARVA, the most northern of the 13 counties which compose the circle of Hither Danube, in Western Hungary. It is bounded on the E., N., and N.W. by Galicia. The surface measures 794 square miles. There are 5 market towns, 92 villages, and 101,734 inhabitants in the county. The principal rivers are the White Arva and the Black Arva; the former flows into the latter, which itself falls into the Waag, an affluent of the Danube. Arva is very mountainous, and its chief productions are oats, potatoes, and flax. Its extensive forests afford large supplies of timber and fuel, and abound in bears, wolves, foxes, wild cats, &c. The chief towns are—Alsó-Kubin, the capital, which is situated on the left bank of the Arva, and has 1118 inhabitants: Trsztena, N.E. of Kubin, also on the Arva, which has a population of 2650, who manufacture linen and brandy.

ARVE, a river which rises in the mountains of Savoy, flows to the N.W., and falls into the Rhône just below Geneva. Its whole course is about 60 miles. The source of the Arve is on the Col de Balme, at the N.E. extremity of the valley of Chamouni; but its waters are chiefly derived from the glaciers, which cover the northern face of the chain of Mont Blanc. The Arve is an extremely rapid river.

ARVI'COLA. [MURIDÆ.]

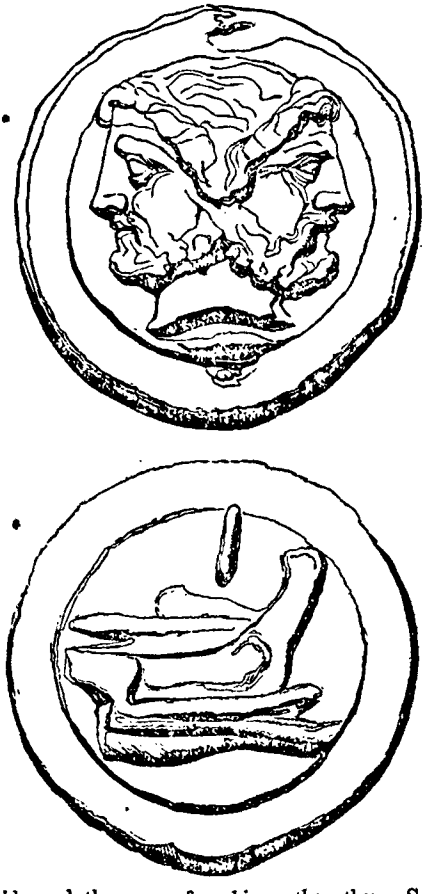
ARZOBISPO, YSLAS DEL, sometimes called Bonin Islands, are a group of islands in the Pacific, situated south of the Japanese island of Niphon, between 26° 30′ and 27° 45′ N. lat., and 141° and 143° E. long. The group consists of three clusters of islands, extending nearly due south and north. The northern cluster is composed of numerous small islands and pointed rocks, and has much broken ground about it, so that it can only be approached with great caution. This cluster is called Parry's Group. The middle, or Peel's Group, consists of three islands of moderate size. The largest, Peel's Island, is four miles and a half long. The whole group occupies nine miles in length. The southern group is called Baily's group. The islands are of volcanic origin and surrounded by deep water. It appears that they were discovered by the Spaniards, but it is not known at what time. The whalers in the Pacific visit them to take in water, and get a supply of fresh provisions by killing turtles, which are very numerous. On the western side of Peel's Island is a good harbour, called Lloyd's Harbour; it is surrounded by high hills, and is apparently the crater of an extinct volcano.

(Beechey, *Narrative of a Voyage to the Pacific.*)

AS. The Roman As was a weight, consisting of twelve *unciæ* or ounces; it was also called *libra*, *libella*, and *pondo*, or the pound. *As*, *Assis*, or *Assarius* (Eckhel, 'Doctrina Num. Vet.' tom. v. p. 2), was likewise the name of a Roman coin of copper, or rather of mixed metal, which varied both in weight and composition at different periods of the commonwealth; but which originally actually weighed a pound, whence it was called *As libralis*, and sometimes also *Æs grave*.

The first coinage of this description, according to Pliny (xviii. c. 3; xxxiii. c. 13), took place in the reign of Servius Tullius. The first Asses of Tullius had the figure of a bull, ram, boar, or sow, upon them.

The next in point of antiquity to the As which bore the figure of an animal, is the As which was stamped with the two-faced head of Janus on one



side, and the prow of a ship on the other. See Pinkerton's 'Essay on Medals,' vol. i. p. 100, who adopts his opinion of this being the second As in point of antiquity, from a manuscript 'Dissertation on the Etruscan and Roman Early Coins, written by the late Dr. Charles Combe. Ovid, in his 'Fasti,' expressly alludes to the As thus marked; and it is described by Pliny (xxxiii. 3).

The earliest Asses were cast probably in imitation of the Etruscan coins, which the Romans appear to have copied. In the British Museum there are even four Asses united together, as they were taken from the mould or matrix, in which many were cast at once. In most of the Asses preserved in our cabinets, the edge shows evidently where they were severed from each other, and where the piece at the mouth of the mould was cut off. From being cast, it will be judged that they are not very correctly sized. As the As fell in weight, the smaller divisions were not cast, but struck.

According to Pliny, the As continued of its original weight till the first Punic war, when, the treasury being exhausted, it was reduced to two ounces. This, however, is improbable, and is confuted by the coins themselves; since we find Asses of all weights, from the pound downward to Pliny's two ounces. The As must, therefore, he says, have gradually diminished to ten ounces, to eight, to six, to four; and when the size was so much reduced, still more gradual diminutions must have taken place to three, and to two ounces. One or two of the pieces which remain might even imply that the decrease was more slow, to eleven, to ten, to nine, &c., but it is to be observed that neither the As nor its parts were ever correctly adjusted as to size, so that the marks upon them only, not their comparative magnitude, distinguish the divisions. The middle of the first Punic war being about the year of Rome 502, or B.C. 250, supposing Pliny to be correct, would be the time of the reduction of the As to two ounces.

Pliny adds, that in the second Punic war, when Q. Fabius was dictator, and the Romans were pressed by Hannibal, the As was further reduced to one ounce. This event is ascribed to B.C. 215. He adds, again, that, by the Papirian law, Asses of half an ounce were coined. A Papirius Turdus, who was tribune B.C. 178, is suggested by Pighius (ii. 343) as possibly the author of this law; but Eckhel ('Doctr. Num. Vet.' vol. v. p. 5) considers the time uncertain. This weight of the As, however, continued till Pliny's time, and long after.

The As libralis with the head of Janus is the most common form now found of the As, previous to its being reduced to two ounces.

The coined divisions of the As were the *semis*, *quincunx*, *triens*, *quadrans* or *teruncius*, *sextans*, and *uncia*. There were other divisions of the As by weight. These were the deunx of eleven ounces, the dextans of ten, the dodrans of nine, the bes of eight, the septunx of seven, the sescuncia of an ounce and a half, and the semuncia of half an ounce. But none of these have been found in a coined form in numismatic cabinets; they are therefore universally considered to have been nominal sums.

The *Semis*, *Semissis*, or *Semi-As*, half the As, or six unciæ, was of various types, but always marked with an S. The *Quincunx*, the division of five ounces or portions of the As, is of very rare occurrence. All the other portions of the As exist in the collection of the British Museum; but the quincunx, it is believed, exists in no cabinet at present in this country.

The *Triens* was the third of the As, or piece of four unciæ. Four globules, or pellets, to indicate its value, occur on both sides. The *Quadrans* was the fourth of the As, or piece of three unciæ. The value of the coin was uniformly denoted by three globules.

The *Sextans* was the sixth of the As, or piece of two ounces. The value is denoted on each side by two globules. On some Sextantes the value is designated on one side only.

The *Uncia*, twelfth of the As, or piece of one ounce, is marked by a single globule.

As the As fell in weight, larger denominations of coin were struck, bearing names relative to the As. The As was latterly marked I. The *Dupondius*, or double As, was marked II.; the *Tressis* III.; the *Quadrussis* IV. There were even *Decusses*, or pieces of ten Asses, in copper, marked X. Olivieri mentions one in his own cabinet weighing upwards of twenty-five Roman ounces, which must have been cast when the As was about three ounces; for, as has been mentioned, they are far from being correctly sized. In the Musæum Etruscum is a Decussis of forty Roman ounces, cast when the As was four ounces. The Denarius, Quinarius, and Sestertius were silver coins. According to Pliny, when the As was reduced to one *uncia* in the second Punic war, the *Denarius*, which was originally equivalent to 10 Asses, the Quinarius to 5, and the Sestertius to 2½, were respectively made equivalent to 16, 8, and 4 Asses. Notwithstanding the As fell, it still continued to be called libra.

The word *As* was also used in accounts for the whole of any heritage, &c., to late times. *Heres ex asse* was the phrase used by the jurisconsults for an heir to a whole estate. The word As, indeed, with its subdivisions and multiples, was used generally as the representative of number, both in defining measures of length, the proportions of an inheritance, &c.

ASAM, or *Taekha*, a country of Asia, at the north-east extremity of Hindostan. Asam is a valley of great extent, stretching from the meridian of 90° 30′ E. to that of 97° 30′, or upwards of 440 miles, between two elevated mountain-ranges; the slopes of which, as far as they belong to this valley, advance on the north to the parallel of 28° 30′ N. lat., and on the south to 25° 30′.

Along the north side of this valley, the most eastern chain of the Himalaya mountains extends. This chain contains a great number of peaks covered with snow, especially between the meridians of 92° and 93°, and of 94° and 95°. Toward the source of the Brahmapootra it seems to decrease in height, and here it is connected with that extensive mountain-region which contains the sources of all the large rivers that drain the peninsula beyond the Ganges and the southern provinces of China, and which has not yet been explored by Europeans. The mountain-range which extends along the southern side of the valley is much less elevated, and varies in height. Where it skirts the upper course of the Brahmapootra and its numerous sources, it may attain an

elevation of from 13,000 to 14,000 feet, and may be compared in height, if not in extent, to the Alps of Switzerland. Farther to the south-west it takes the names of the Patkoi, the Naga, and the Garrow hills, which are of lower elevation.

Asam, with the bordering districts, comprehends an area of about 70,000 square miles; but the kingdom of Asam itself contains only 24,000 acres of this area; the rest being occupied by rude mountain districts.

The Brahmapootra rises between the parallels of 28° and 29°, and the meridians of 97° and 98°. The upper part of its course is first from N.E. to S.W.) and then from S.E. to N.W., between high mountains, in a narrow valley, till changing its direction to nearly due south it passes the sacred pool called the Brahmakoond, and soon afterwards leaves the mountain-region and enters the plains of Asam, between 96° and 97° E. long. Through these plains it follows a winding course until it enters the province of Bengal. In the valley of Asam it flows about 500 miles. Among the lateral rivers which flow into it are the Noa Dihing, the Buri Dihing, the Deyong, the Suban Shiri, and the Manas.

Asam, though not situated within the tropics, partakes of the tropical climate, the seasons being distinguished by the abundance of rain, or the continuance of dry weather. During the rainy season (June to September) the quantity of water brought down by the rivers from the northern mountains is so immense as not only to fill the wide bed of the Brahmapootra, but even the channels of the southern rivers up to the place where they issue from the mountains. At the time of the inundation the inhabited places would be isolated, if they were not connected by causeways, eight feet high and about eighteen feet broad. These causeways are almost the only lasting monuments of human industry in this country, but they have in the late unsettled times partly gone to decay.

The soil all over the valley, except some hilly districts, is alluvial, and the result of the annual inundations: it is perhaps not exceeded in fertility by that of any other country, and would maintain a largely increased population, were it not that the Abors, the Miris, the Khamtis, and other neighbouring mountain tribes, interfere with the industrial occupations of the Asamese. Only a small part of the valley is under cultivation, chiefly in rice. Wheat, barley, and millet, though they succeed well in the more elevated and drier districts, are not much used. Kidney beans, black pepper, chilies, ginger, turmeric, capsicums, onions, garlic, cocoa-nuts, oranges, cotton, the gum-copal tree, caoutchouc, betel, areca, opium, tobacco, are among the vegetable produce of the valley. A considerable quantity of fine silk is produced, from four species of silk-worms which are reared. Some very interesting attempts have been made within the last few years to encourage the cultivation of the tea-plant in Asam; for which see THEA.

Oxen and buffaloes are reared, but only for the plough, as the inhabitants do not eat beef. Horses, sheep, and goats are reared in small numbers; the sheep are covered with hair instead of wool. The buffalo is found in a wild state. The elephant and bear are only met with in the forests and mountains of the eastern and southern districts; but deer, tigers, and leopards, abound in the numerous tree jungles. In some parts the small black long-armed apes are frequent, and in some rivers otters and river-turtle of a very large size. Fish and wild ducks are every where plentiful.

Little is known of the metallic wealth of this country: farther than that gold, iron, coal, salt, and garnets, are said to have been met with.

Asam is divided into three provinces, Camroop, Asam Proper, and Sadiya, of which the first occupies the western districts, from the boundary of Bengal to the 93d meridian; Asam Proper is in the middle, and extends to the junction of the Brahmapootra with the Dihong; and Sadiya lies to the east of it, and stretches to the heads of the sacred river. Asam Proper contains the best-cultivated districts, and the few places which deserve to be called towns; Jorhath, the residence of the sovereign or raja, and Rungpoor, the most industrious place, the ancient capital Gerghong being almost entirely abandoned; but these places exhibit only a collection of huts, and contain no shops, the inhabitants of the country supplying all their necessaries by domestic industry.

The Asamese, or inhabitants of the plains, are doubtless of Hindu extraction, which appears from their physical constitution, their language, and their religion: all of which resemble very closely those of Bengal. The better classes dress pretty well: the women, and most of the men, are always clothed in silk. Cotton, not being grown in the country, is only used by the rich people. Their habitations are miserable constructions, consisting only of thatched huts, with walls of bamboo-mats, and supported by posts, with arched roofs and mud floors. Each apartment forms a separate hut. In such huts are lodged the king and the nobility, as well as the poorest man in the country. The natives have made but slight progress in industrial skill.

The sovereign is considered as the only proprietor of the land, and the cultivators, who are called *pykes*, have only a temporary interest. For the privilege of cultivating the soil and enjoying its fruits, they are bound to work four months of the year for the king, or to pay him a compensation. It would seem that this constitutes the only tax they have to pay.

The mountaineers, who inhabit the ranges to the north, east, and south of the valley, are mostly Buddhists, and some of the valleys occupied by them are better cultivated than the plain, chiefly perhaps from not being exposed to hostile invasions. They cultivate rice, Indian corn, yams, mustard, pepper, cotton, and tobacco; and they rear cattle, swine, and dogs. Their habitations are commonly much larger and more convenient than those of the inhabitants of the plains. These mountaineers speak languages altogether differing from that of the Asamese, and which do not appear to have much affinity to one another. There are about ten distinct tribes of these mountaineers.

The ancient history of Asam is entirely fabulous. It seems for a long time to have been under the sway of sovereigns of Hindu origin, and to have undergone many revolutions. In the seventeenth century the Mogul emperors of Hindustan attempted to conquer Asam, but failed. In the early part of the present century the Burmese obtained possession of it; but in 1826 they were expelled, and the country was placed under the protection of the East India Company.

The commerce of Asam is of very little importance. The mountains which surround it on all sides, except on the west, are of such a description as to preclude almost entirely the possibility of conveying commodities to the contiguous countries. A little, and only a little, intercourse is kept up across the mountains with Tibet and Ava. The commercial intercourse of Asam at present seems to be almost entirely confined to that with Bengal, which is indeed of very little importance. Asam exports the coarsest kinds of silk, but not in great quantity, and receives in return salt and cotton goods made at Dacca.

(Buchanan, Bedford, Neufville, and Wilcox, in the *Asiatic Researches; Asiatic Journal; Map of India East of the Ganges*, by Berghaus.)

ASAPH, ST., a city in Wales, which, like that of Llandaff, is in fact only a village. The population in 1841 was 782. It is situated near the western extremity of Flintshire, on the slope of a hill between the rivers Elwy on the W. and Clwyd on the E. The cathedral of St. Asaph crowns the summit of the hill. It consists of a nave with aisles, choir without aisles, transepts, and central tower. It is one of the smallest of the cathedrals of England and Wales. The entire length from W. to E. is 178 feet. The length of the transepts from N. to S. is 108 feet. The height of the nave from pavement to ceiling is 60 feet. The height of the central tower is 93 feet. The architecture is generally of the style called Decorated English. The cathedral was thoroughly repaired about 1833, and the bishop's palace and the deanery were rebuilt about the same time. The cathedral is poor in monumental antiquities.

The diocese of St. Asaph comprehends parts of Denbighshire, Montgomeryshire, Caernarvonshire, Merionethshire, Flintshire, and Shropshire. The number of benefices is 149, of which 121 are in the patronage of the bishop. By the act 6 & 7 Will. IV. c. 77, the bishoprics of St. Asaph and Bangor were to be united. The present annual income of the Bishop of St. Asaph is 5300*l.* The average net annual revenue of the two bishoprics is estimated at 9968*l.* The future annual income of the united see was fixed at 5200*l.* There would consequently have been a surplus of 4768*l.*, and it has been decided by an order in council that 4750*l.* should be paid annually out of the income of the united see into the hands of the Ecclesiastical Commissioners. An act to prevent the union of the two sees was brought into the House of Lords, and was passed by that House July 24, 1846.

The corporation includes a dean, precentor, chancellor, treasurer, three canons, seven cursal canons, four minor canons, organist, six choristers, and other officers.

St. Asaph is a parliamentary borough contributory to the Flint district.

(Browne Willis's *Survey of St. Asaph;* Bingley's *Tour round North Wales; Parliamentary Papers.*)

A'SAPHUS (Brongniart), a very extensive genus of fossil Crustacea (Trilobites), most abundant in the lower Palæozoic strata. *Asaphus Buchii* marks the Cambrian or lower Silurian beds, as *A. caudatus* is frequent in the upper Silurian beds.

ASA'RUM, a genus of plants, belonging to the family of the Aristolochieæ. The *Asarum europæum* is known by having two obtuse kidney-shaped leaves on each stem. It is a perennial plant, found in woods in different parts of Britain. The root, which is employed under the name of *asarabacca*, contains a camphor-like principle, and a bitter principle, called asarin, which is combined with gallic acid. To these it is indebted for its action on the human system. Taken into the stomach in a state of very fine powder, it causes vomiting; in coarser powder, it generally purges. It was formerly employed as an emetic instead of ipecacuanha; but, from the violence of its effects, it is now properly laid aside in medical practice: it is still, however, used in veterinary medicine, to vomit and purge. The fine powder applied to the nostrils causes sneezing, and a flow of mucus from the membrane which lines the nostrils. It is therefore extensively employed as an errhine, and is the basis, or chief ingredient, of many cephalic snuffs.

ASBESTUS must be considered, in mineralogy, rather as a term implying a peculiar form sometimes assumed by several minerals, than as a name denoting a particular species; it is in fact applied to varieties of the amphibolic minerals, such as actinolite, tremolite, &c., which occur in long capillary crystals, placed side by side in parallel position, and thus giving rise to a fibrous mass. Those varieties, the fibres of which are very delicate and regularly arranged, are called *amianthus*, a Greek term signifying unpolluted, unstained. Of the finest kinds, the individual crystals are readily separated from each other, are very flexible and elastic, and have a white or greenish colour with a fine silky lustre. Though a single fibre is readily fused into a white enamel, in mass it is capable of resisting the ordinary flame, so that when woven it produces a fire-proof cloth. Those varieties in which the crystals are coarser, with scarcely any flexibility, are called common asbestus. It is generally of a dull green, and sometimes a pearly lustre, and readily fuses before the blow-pipe flame. It occurs more frequently than the amianthus, or finer kind, and is usually found in veins traversing serpentine.

There are three other varieties, known by the names of mountain feather, mountain wood, and mountain cork, which differ from the common asbestus by the fibres interlacing each other.

A'SCALON, a town of Palestine, on the shore of the Mediterranean, about 12 miles N. of Gaza, was one of the 'fenced cities' of the Philistines,

but shortly after the death of Joshua it fell into the hands of the tribe of Judah; it was afterwards successively under the Assyrians, Persians, Greeks, and Romans.

There was a celebrated temple of the Heavenly Venus at Ascalon, which Herodotus (I. 105) mentions as having been plundered by the Scythians B.C. 630. Forty granite columns, belonging to an ancient Greek temple, are still standing, with marble capitals and friezes. There are also the remains of a Roman amphitheatre. In the early ages of Christianity, Ascalon became an episcopal see; and it was one of the strongholds of the Crusaders. On the plains of Ascalon a battle was fought between the crusaders under Godfrey de Bouillon and the Saracens under the Vizier of Egypt.

The town stands on an extensive semicircular hill, the declivity of which is nearly insensible towards the land, but of considerable abruptness on the sea-coast. The walls of the town, with their towers and battlements, are still standing, and among the ruins are vast Gothic churches, a palace, and a chapel dedicated to the Virgin, blended with traces of more ancient date.

At a short distance to the northward is a small modern village called Scalona, evidently a corruption of the ancient name; and here is the port for the small vessels that trade along the coast.

Ascalon is in 31° 35′ N. lat., 34° 47′ E. long.

(William of Tyre; Count Forbin's *Voyage au Levant.*)

ASCARIDES. [ENTOZOA.]

ASCENDANT. [ASTROLOGY.]

ASCENSION, RIGHT and OBLIQUE, and ASCENSIONAL DIFFERENCE, astronomical terms, of which the two latter are nearly out of use, while the term *right ascension* is preserved, in a somewhat different signification from its original meaning, to denote one of the angles by means of which the position of a star is ascertained.

If we suppose a person at the equator, looking directly towards the east, and raising his arms on each side till they are horizontal, his fingers will then point towards the two poles (which at the equator are in the horizon), and a line drawn through his arms will be a part of the axis on which the heavens appear to turn. Every star will rise vertically, that is, if the diurnal motion were quick enough to justify the phrase, would appear to shoot above the horizon directly upwards. The great circle of the heavens which his eye traces out as he raises his head without turning to right or left, is the equator, and the same point of the equator rises every day with the same star. If there be a remarkable star in the equator, from the rising of which the spectator chooses to begin his *astronomical* day, he will know the time of rising of any star as soon as he knows how far the point of the equator which rises with it is from the star at whose rising he begins to count the twenty-four hours.

Substituting the meridian (which always passes through the poles) for the horizon, this method of reckoning may be used in any latitude. For the same point of the equator always comes upon every meridian with the same star; but, instead of using a star in the equator as the point from which to reckon, the vernal equinox is preferred, or the point at which the sun's path crosses the equator when he ascends into the northern hemisphere. The distance of the point of the equator just mentioned from the vernal equinox, measured upon the equator according to the order of the signs, in degrees, minutes, and seconds, is the right ascension *in space* of the star. The same turned into time is the right ascension in *time*, and indicates the interval which elapses between the times when the equinox and star severally come on the meridian.

The old term *oblique ascension* is an extension of the *right ascension*, as derived from our first illustration, to the *obliqus* sphere, in which one pole is above the horizon, and the other below. The difference between the oblique and the right ascension, was called the *ascensional difference*.

ASCENSION DAY, a festival of the Christian church, on which the ascension of Our Lord is believed by some authors to have been celebrated from the very first century of the Christian æra. It has been held for ages on the Thursday next but one preceding Whit-sunday. (Brady's 'Clavis Calendaria,' vol. ii. p. 357.) It is also called *Holy Thursday.*

It was on this day that in ancient times the minister of every parish, accompanied by his churchwardens and parishioners, was accustomed to go round the limits of his district, to deprecate the vengeance of God, to beg a blessing on the fruits of the field, and to preserve the rights and boundaries of the parish. The week in which Ascension Day occurs is usually called Rogation Week, from the Rogations or Litanies which were used in the perambulations.

ASCENSION ISLAND lies in the South Atlantic, between Africa and Brazil; it is 685 miles N.W. of St. Helena, and 1450 from the coast of Africa. It is 7½ miles long, and 6 wide. The island is of volcanic origin, and presents a surface of conical hills from 200 to 300 feet in height, some of them with craters. At the eastern part of the island is a double-peaked mountain 2818 feet high, which from its comparatively verdant appearance has obtained the name of Green Mountain. The whole island is of a desolate character, with a vast quantity of rocks lying upon each other, with great chasms between them, and strewed with scoriæ, pumice, and other volcanic substances.

The island was discovered in 1501, and derives its name from having been seen on Ascension Day. It was then entirely barren and uninhabited. It was long supposed to be without fresh water, but small springs have been discovered.

In 1815, during the confinement of Napoleon at St. Helena, the British government took possession of Ascension Island as a military station. In 1821 the establishment was increased, and in consequence of the great exertions of the garrison, the island is now in a state of progressive improvement as to its resources, natural and artificial.

Roads have been made and iron pipes laid down to convey the water from the springs to the fort, near which a large tank has been excavated, capable of containing 1700 tuns. Pasturage is rapidly making its appearance; there is a moderate supply of cattle and sheep, which, with turkeys, guinea-fowl, and almost every description of live stock, thrive well. During the season when the turtle come ashore to deposit their eggs, parties are stationed on the beach to take as many as are likely to be required before the next season; these are afterwards kept in a large salt-water pond and taken out when wanted. Guinea-fowl are very abundant, partridges, pigeons, and rabbits from the Cape of Good Hope, with other species of game, have been imported, and the horse has also been added to the list of their useful animals. On the Green Mountain, above the height of 2000 feet, all sterility ceases; the soil is a rich mould, yielding almost every species of esculent vegetable. In the valleys also, where the soil offers any prospect of success, spots are set apart for the cultivation of vegetables. Several kinds of fruit have been successfully tried, and thus an island which was once a desert of cinders, now yields most useful vegetable productions. The anchorage is safe, and the island is never visited by gales of wind, but a heavy surf rolls on the beach, which sometimes interrupts the communication with the shore for days together. There is no regular tide, and the rise and fall is very trifling. The fort is in 7° 56′ N. lat., 14° 24′ W. long.

ASCE'TICS (*ἀσκηταί*) a term applied to the pugilists, wrestlers, and other athletæ, among the ancient Greeks, who prepared themselves by abstinence for their combats; subsequently, the term was extended to all those who practised the severity of virtue. The exercise of severe virtue among the Pythagorean and Stoic philosophers was called *ἄσκησις, askesis:* it consisted in chastity, poverty, watchings, fasts, and retirement. The Christian ascetics were divided into *abstinentes*, or those who abstained from wine, meat, and agreeable food, and *continentes*, or those who, abstaining from matrimony also, were considered to attain to a higher degree of sanctity. [MONACHISM.]

ASCHAFFENBURG, the chief town of the department of Aschaffenburg, in the circle of Lower Main in Bavaria. It is delightfully situated on the Main in 50° 2′ N. lat., 9° 7′ E. long., 25 miles S.E. of Frankfort; population 6800. The town is surrounded by walls on all sides but that towards the river, is irregularly built, and the streets are mostly narrow, steep, and crooked. The Johannisburg is a handsome palace, forming a large and regular square, with towers to each face; it stands on the highest ground in the town, close to the banks of the Main. Attached to it are a library, picture-gallery, cabinet of engravings, collection of ecclesiastical rarities, and a series of models in cork of ancient temples and ruins. The immediate vicinity of the palace abounds in picturesque scenery. The old Gothic collegiate church, which contains several fine tombs, the massive buildings of the ancient university, the former mansion of the Teutonic order, and the town-hall, are all deserving of inspection. There are 8 churches, a lyceum, gymnasium, ecclesiastical seminary, an institution for the education of females conducted by the English sisterhood, and a school of design in the town. Aschaffenburg manufactures coloured paper, tobacco, perfumery, wine, soap, brandy, &c.

Aschaffenburg also gives name to one of the subdivisions (*Landgerichte*) of the circle of Lower Main, which has an area of 191 square miles, and a population of 24,000. It contains several small towns, the principal of which are—Stockstadt, population 1505: Damm, on the Aschaff, which has manufactures of paper and potash, and nursery-grounds and apiaries; population 1476: and Schweinheim, situated among orchards and vineyards; population 1472.

(Stein's *Handbuch der Geographie.*)

ASCHAM, ROGER, was born in 1515, at Kirby Wiske, near North Allerton, in Yorkshire. His father was house-steward in the family of Scroope. Roger, his third son, having passed his first years under the care of his parents, was received into the family of Sir Anthony Wingfield, who committed his education, with that of his own sons, to a domestic tutor of the name of Bond; and in 1530 placed him at St. John's College, Cambridge. Greek now began to be taught in the universities, and more especially at Cambridge, owing to the influence of Cheke and Smith; and on his admission into college, Ascham applied himself to the study of that language.

He took his bachelor's degree in February 1534, and on the 23rd of March following was chosen fellow of his college. Ascham had been educated in the doctrines of the Romish church; but he entered into the controversies of the day, and became a Protestant. His love for an academic life did not confine him to its severer studies. He had learned to play on musical instruments, and was one of the few who excelled in the mechanical art of writing. He became M.A. in 1537, in his twenty-first year, and commenced to act as tutor. Many of his scholars rose to eminence, and one of them, William Grindal, was made master of languages to the Lady Elizabeth, afterwards queen. The university appointed Ascham to read Greek in the schools, and paid him a stipend; but a lecture being founded by Henry VIII., Ascham quitted the schools, and returned to explain Greek authors in his own college.

To divert himself after the fatigues of study, his favourite amusement was archery, and he wrote a small treatise, in which the praise and precepts of archery are joined, entitled 'Toxóphilus,' published in 1544, and dedicated to Henry VIII. In this year he was chosen University Orator, in which capacity he wrote the University letters to the king, and to the great men at court. About this time also he was employed in teaching many illustrious persons to write a fair hand, and, among others, Prince Edward and the Lady Elizabeth. In 1548, upon Grindal's death, Ascham was appointed to instruct the Lady Elizabeth in the learned languages, a duty which he discharged for two years with great reputation to himself, and much satis-

faction to his pupil; but at length, on account of some ill-judged whispers, Ascham took such a distaste to some persons in the Lady Elizabeth's family, that he left her a little abruptly, and returned to Cambridge.

In the summer of 1550 he took a journey into Yorkshire; and it was on his return to London that he visited the Lady Jane Grey, at her father's house at Broadgate in Leicestershire, where he found her reading the 'Phædon' of Plato in Greek, an interview which he has described in his 'Scholemaster.'

On the 20th of September following, he embarked with Sir William Morysine, who was sent on a mission to the Emperor Charles V. in Germany. Ascham was three years abroad, during which he visited Venice, and wrote 'A Report and Discourse of the Affaires in Germany.' Ascham acted both as secretary and tutor to Morysine. Herodotus, Sophocles, Euripides, and Demosthenes, were the books which the ambassador and his secretary read.

On the death of Queen Mary, in 1558; having previously been reconciled to the Lady Elizabeth, now queen, he was constantly at court, fully employed in his two offices, one of secretary for the Latin tongue, and the other of tutor to her Majesty in the learned languages. He read daily with the queen some classical author.

In 1559 Elizabeth gave him the prebend of Westwang in the church of York. In 1563 he was invited by Sir Richard Sackville to write 'The Schoolmaster,' a treatise on education, upon an occasion which he relates in the beginning of the book. He completed the treatise, but it was not published till after his death.

Ascham died Dec. 30, 1568, and was interred in the church of St. Sepulchre, near Newgate.

Although his wife is said to have brought a fortune to Ascham, he died in indifferent circumstances. His widow dedicated 'The Schoolmaster' to Sir William Cecil in 1571. The work contains good directions for learning the Latin language, and maintains the principle that mildness and kind treatment on the part of the master, are more efficient than severity. There are three books of Ascham's Latin epistles, and some Latin poems. The last and best edition (with the omission of the Poems) is by W. Elstob, 8vo, Oxf. 1703. Ascham's English works were published by the Rev. James Bennet, 4to, Lond. 1767, with a Life of Ascham prefixed by Dr. Johnson; repr. 8vo, Lond. 1815. A few of Ascham's original letters are preserved among the Lansdowne Manuscripts in the British Museum.

The Latin 'Life of Ascham,' subjoined to the different editions of his letters, by Edward Grant, Master of Westminster School, is the groundwork of all the biographies of Ascham.

ASCHERSLEBEN, a circle in the department of Magdeburg, in the Prussian province of Saxony, containing 170 square miles, and 42,039 inhabitants. QUEDLINBURG is the capital. It is an uncommonly fertile tract of level country, and raises large quantities of corn, flax, and rape-seed. The town of Aschersleben lies near the confluence of the Wipper and Eine, and on the banks of the last-mentioned river: 51° 46′ N. lat., 11° 27′ E. long.; and 18 miles S.E. of Halberstadt; population 9100. The town is surrounded by walls, with 5 gates; and has 3 churches, 3 hospitals, a gymnasium, and orphan asylum. It has manufactures of flannels, friezes, linens, &c.

ASCI'DIA, a group of molluscous animals, belonging to the class *Tunicata*, *Les Acephales sans Coquilles*, Cuvier; *Acephalophera heterobranchiata*, De Blainville. [MALACOLOGY.]

ASCLEPIADÆ. [ÆSCULAPIUS.]

ASCLEPIA'DEÆ. Among dicotyledonous plants there is a natural order which may be known from all others by the single character of its grains of pollen adhering together within a sort of bag which occupies the whole of the inside of each cell of the anther; and when it falls out sticks to glands of a peculiar character occupying the angles of the stigma. Independently of this circumstance, the anther and stigma adhere firmly together, and the fruit is a very curious body, consisting of two carpels, which, when young, are parallel to each other and united at the point, but when ripe are both on the same plane, pointing in different directions, and shedding a large quantity of seeds, the end of which terminates in long down.

To this order the name of asclepiadeæ has been given, in consequence of the genus *asclepias* being the largest which the order contains. It consists of shrubs or herbaceous plants, abounding in an acrid and usually milky juice, and found in their greatest abundance in tropical countries, but rarely in cold latitudes. At the Cape of Good Hope they form a singular stunted deformed vegetation, in the form of the leafless succulent stapelias, the flowers of which are among the most fœtid productions of the vegetable kingdom. A great many species of asclepias inhabit North America, and for their beauty are frequently cultivated in Europe, especially the orange-coloured *asclepias tuberosa*. Their roots are acrid and stimulating, and usually emetic. Their flowers have curious horned processes added to the corolla.

ASCLE'PIADES. This name was common to a great number of persons, which has caused some confusion both in the ancient and modern accounts of Asclepiades the physician, of whom only we propose to treat.

Asclepiades was a native of Prusa in Bithynia, but the time of his birth is unknown, nor can we ascertain which of the three towns of Bithynia called Prusa claims the honour of his birth. He appears, when young, to have spent some time at Alexandria, and at Parium, on the Propontis; probably also at Athens, where, if the story told in Athenæus (iv. p. 168) refers to him, he gained his living at first by grinding at a mill during the night, in order that he might attend the lecturers on philosophy during the day. In Athens he appears to have been on terms of intimacy with Antiochus, the academician, the master of Cicero.

It is not known in what year he came to Rome, but he lived there at least during the earlier part of Cicero's life; he was probably some years older than the Roman orator. He is

said to have lived to a great age, free from all disease, and to have died by accidentally falling down stairs.

The foundation of the healing system of Asclepiades was the doctrine of corpuscles, which he borrowed from Heraclides of Pontus. He is said to have been the first who divided diseases into acute and chronic, and to have considered them essentially different. Like his predecessors, he considered fever as an unnatural heat in all or most parts of the body, connected with a quick pulse; and he attributed it, as well as inflammation, to obstruction. He observed the double-tertian fever which was so common in Rome, and is described by writers after him. He distinguished very accurately between the violent or febrile dropsy, and the chronic one, unaccompanied with fever. The practice of Asclepiades was in many respects good. He trusted more to dietetic means than to the use of medicines; and often recommended a change in the mode of living, in which he studiously attended to the most minute particulars. He disapproved of the frequent use of emetics and purges, and in place of the latter he recommended clysters. Bloodletting he practised pretty often, especially in inflammatory cases; but yet he considered that this practice was not equally useful in all climates. On the Hellespont, near his native country, it was often very serviceable, but in Rome and Athens frequently dangerous. He recommended cupping to be used with great caution. He approved of friction in many cases, the gentle motion of the sick in a kind of hanging bed, and to him we must perhaps attribute the shower bath, 'pensilis balinearum usus.' Asclepiades gained great favour among the Romans by his use of wine in many complaints, in which, up to his time, it had not been employed; yet he prescribed it with caution. Laughter, music, and singing he also considered as frequently efficacious in the cure of diseases.

Asclepiades, according to Pliny (xxvi. 3), was originally a rhetorician; Cicero also ('De Orat.' i. 14) speaks of his eloquence. Pliny treats him as an impudent quack, who gained great practice by humouring the whims of his patients, and prescribing such remedies as would be sure to please. If we are inclined to view him as an adventurer in the medical line, such as start up occasionally in modern times, still, as much of his practice was very good and safe, we may give him credit for being at least a clever quack.

(Sprengel, *Versuch einer pragmatischen Geschichte der Arzneikunde*, 2nd ed. Halle, 1800, vol. ii. 6-27; Asclepiadis Bithyni *Fragmenta*, by Gumpurt, Weimar, 1794; Chr. F. Harless, *Medicorum Veterum, Asclepiades*, &c. Bonn, 1828.)

ASCLE'PIAS, a genus of plants, the type of the natural order Asclepiadeæ. [ASCLEPIADEÆ.] Many of the species possess powerful medicinal qualities, and hence the name of the genus from Æsculapius (Asclepios), the god of medicine.

A. Syriaca, Syrian Swallow-wort, is a native of Syria and Egypt. The nectaries or leaflets of the corona, like some other species of Asclepias, act as fly-traps. The sap of this plant is white, and contains a considerable quantity of caoutchouc. It has been recommended as an expectorant. The seeds are covered with down, which it was at one time proposed to spin into textures for wearing apparel; it is however more adapted for stuffing mattresses and pillows. *A. Curassavica*, Bastard Ipecacuanha, is a native of Curaçoa, Essequibo, Cumana, and Trinidad. Its roots are frequently sent to England as ipecacuanha. The juice in the West Indies is reputed to be anthelmintic and styptic. The root dried and powdered acts as an emetic, but not so efficaciously as the root of the true ipecacuanha (*Cephaelis Ipecacuanha*). The roots of *A. prolifera* are also emetic. *A. tuberosa*, Tuberous Swallow-wort, is a native of North America. The roots are diaphoretic. Many other species of this genus are used as medicines in the countries where they grow.

Some of them are handsome border flowers, and worthy of cultivation. They thrive well in peat earth, or a light rich soil of any kind. They may be propagated by dividing the root in the spring, or by sowing the seed.

(Don, *Gardener's Dictionary*; Burnett, *Outlines of Botany*.)

A'SCOLI, (*A'sculum Picénum*) an episcopal town in the Papal State in the delegation of Fermo ed Ascoli. It lies on the right bank of the Tronto, and between it and the Castellano, just above the confluence of the two rivers, in 42° 50′ N. lat., 13° 37′ E. long.; population 12,000. It is built on a rising ground, overlooking a fine and fertile plain. The valley of the Tronto is celebrated for its fertility: it abounds in vines, olive and other fruit trees, and is studded with villages and country-seats. The mouth of the Tronto, called Porto d'Ascoli, is defended by a castle; and there is anchorage for small vessels. Ascoli is a frontier town of the Papal State, being only 3 miles from the boundary of the kingdom of Naples, and 15 N.W. of Teramo, the chief town of Abruzzo Ultra I.

The origin of Asculum is lost in the obscurity of the ante-Roman ages. It was the chief town of the Picentes, who were descendants of the Sabines, and was at one time allied to Rome; but having afterwards declared against the latter, was taken after a battle by the consul Publius Sempronius, B.C. 275. After a lapse of nearly two hundred years passed in subjection to Rome, the people of Asculum joined the Marsian confederacy, and began the Social War by killing the Proconsul Servilius, and all the Romans whom they found within their territory. Cneius Pompeius Strabo marched against them, but was defeated, and driven within the walls of Firmum. The following year Pompeius, who was then consul, marched with a fresh army, and besieged Asculum. Titus Judacilius, a native of the place, attempted to relieve it, but did not succeed; whereupon he drank poison, and recommended his friends to follow his example rather than behold the destruction of their country. Asculum soon after surrendered at discretion, and was treated with the utmost severity. It was afterwards restored by the Romans, who sent a colony there; and it continued

to be the principal town of Picenum. After the fall of the empire it suffered by the irruptions of the barbarians; its bishops, however, retained, from the fifth to the thirteenth century, a sort of authority over the town and district; and they continued, until the end of the last century, to be styled Bishop Princes of Ascoli. Ascoli was annexed to the States of the Church in 1426.

ASCOLI DI SATRIANO (*A'sculum A'pulum*), an episcopal town in the Neapolitan province of Capitanata, situated on a hill in 41° 9′ N. lat., and 15° 27′ E. long., 66 miles E.N.E. of Naples, and 10 S.E. of Bovino. Asculum was anciently one of the principal towns of Daunia. It is first mentioned in history on the occasion of the war of Pyrrhus, who fought a battle against the Romans in its neighbourhood. Having espoused the cause of Hannibal, its territory was given up to the Roman veterans after the expulsion of the Carthaginians. It became afterwards a Roman colony. Asculum was destroyed by Roger the Norman, but was subsequently restored.

ASCO'NIUS, Q. PEDIA'NUS, one of the earliest commentators on Cicero. It appears from a passage in one of his commentaries ('Ad Orat. pro. Scaur.' p. 176, ed. Lug. Bat.) that he was employed on his work about A.D. 41, in the reign of Claudius. Eusebius makes him seventy-three years of age in the seventh year of Vespasian's reign, A.D. 76. At that time he became blind, and survived the calamity twelve years. (Euseb. 'Chron. ad Olymp.' ccxiii. 3.) These are the only facts which are known of his history. The most important of his labours was his Commentary on the Orations of Cicero, which he wrote for the instruction of his sons ('Ad Orat. pro Mil.' 6.) It seems to have extended to all the orations; but only fragments have been preserved; though some of them are much disfigured by the glosses of some ignorant grammarian, they are still full of valuable information. We are indebted for the greater part of what we possess of Asconius to Poggio, who, during the Council of Constance, A.D. 1416, discovered a manuscript of Asconius at the Monastery of St. Gall, in Switzerland. This manuscript, which is now lost, contained fragments of a commentary on nine orations: 'Divin.;' 'In Verrem,' 3; 'Pro Corn.;' 'In Tog. Cand.;' 'Contra Pis.;' Pro Scaur.;' and 'Pro Mil.' The commentary refers chiefly to historical facts. The historians on whom he seems chiefly to depend for his information are Livy, Sallust, and Fenestella. The Commentary on the Orations against Verres is of so different a character from that on the others, that it seems not improbable that it is the work of a later writer, who availed himself partly of the labours of Asconius. Other scholia attributed to Asconius have been discovered by A. Mai ('Auctor. Class. e Vatic. Cod. editi Angel. Maio,' Rom. 1828.) The latest edition of the Commentaries of Asconius is by J. C. Orelli and Geo. Baiter, Zürich, 1833, which forms a part of Orelli's edition of Cicero. The subject of Asconius is fully discussed by Madvig, 'De Q. Asconii Pediani, &c., Commentariis Disputatio Critica,' Copenhagen, 1828.

ASDRUBAL. [HASDRUBAL.]

ASEERGHUR, a town and fortress in the province of Candeish, and presidency of Bombay, is situated in 21° 28′ N. lat., and 76° 23′ E. long., about 15 miles N. by E. from the town of Burhaunpoor. Aseerghur was the capital of Candeish when that province was subdued by the Emperor Akbar. The fortress crowns the top of a hill 750 feet high, and is abundantly supplied with water. Its importance in the eyes of the natives may be estimated from the fact that it was considered as the key of the Deccan. It surrendered however without much resistance to the army under Colonel Stevenson in 1803. On the conclusion of peace it was restored to Scindia. It made a much better stand in 1819 against a besieging army of 20,000 men, under Generals Doveton and Malcolm; but was at length captured, after sustaining a bombardment of sixteen days, with the loss of 213 men killed and wounded on the part of the English. The loss, on the part of the garrison, was 138 killed and wounded. The population of the town, which stands at the base of the hill whereon the fortress is erected, is about 2000.

(Mill's *British India;* Hamilton's *East India Gazetteer.*)

ASELLIO (or, in the Latinized form, ASELLIUS), GASPAR, a physician, who was born about 1581, at Cremona. He became professor of anatomy at Pavia. He was the discoverer of the *lacteals*, or the set of vessels which absorb or suck up the nutritious portion of the food of animals—the chyle, from the upper part of the intestinal tube, in order to convey it to the heart and lungs, so that it may become incorporated in the blood.

He drew up, but never published, an account of his discovery. This treatise was printed after his death, which happened in 1626. It is entitled, 'De Lactibus, seu Lacteis Venis, Quarto Vasorum Mesaraicorum Genere Novo Invento, Dissertatio,' with figures of the vessels in three different colours: 4to, Milan, 1627, and 4to, Basle, 1628; Leyden, 1640, and again 1641, and 8vo, at Amsterdam, 1645, and lastly among the works of A. Spigelius, folio, Amsterdam, 1645.

Asellius left a MS. treatise on poisons, but it does not appear to have been published.

ASH. [FRAXINUS.]

ASH, MOUNTAIN. [PYRUS.]

ASH-WEDNESDAY. This, which is the first day of Lent, had formerly two names; one was *caput jejunii*, 'the head of the fast,' the other was *Ash-Wednesday*, so called from the ancient ceremony of blessing ashes on that day, with which the priest signed the people on the forehead in the form of a cross, adding this admonition, 'Memento, homo, quod cinis es, et in cinerem reverteris' (Remember, man, that thou art ashes, and shalt return to ashes). The ancient discipline of sackcloth and ashes on Ash-Wednesday is at present supplied, in the English established church, by reading publicly on this day the curses denounced against impenitent sinners, when the people are directed to repeat an 'Amen' at the end of each malediction. (Wheatley 'On the

Common Prayer,' 8vo, 1722, p. 227; Brand's 'Popular Antiquities,' vol. i. p. 79.) Brady, in his 'Clavis Calendaria,' says, the primitive Christians did not commence their Lent until the Sunday now called the first in Lent. Pope Felix III., in the year 487, first added the four days preceding the old Lent Sunday, to complete the number of fasting days to forty, of which it now consists.

ASHANTEES, a powerful nation of western Africa, who are supposed to have migrated from another region many centuries ago.

In the early part of the 17th century, Ashantee is supposed to have been a small but powerful monarchy, firm and compact as a nation, but unsettled as to towns and habitations. In the latter part of the same century the Ashantees gained a great victory over a neighbouring nation, the Dinkiras. The king, named Sai Tooto, conquered neighbours on other sides of him, and gradually created an empire, including tributaries and allies, which was chiefly of a feudal complexion, by the union of all those kingdoms and principalities between 6° and 9° N. lat.; and between 4° W. long. and the river Volta. The empire of Ashantee, however, was still separated from the coast by a tract of forty or fifty miles in breadth, occupied by independent states. The same sovereign built Coomassie, the capital; and first opened up a connection with the Dutch settlers on the coast.

During the 18th century, the Ashantee kingdom was increased by the acquisition of Akim, Assin, Gaman, Bouromy, Yobati, and other neighbouring states. In 1800 new victories were gained over the tribes of Ghofan and Ghobago, which led to new accessions of territory.

In the year 1807 the English had the first opportunity of experiencing the skill and valour of the Ashantees. The English forts of Cape Coast Castle and Annamaboe, on the sea coast, were in the country of the Fantees; and when the Fantees were attacked by the Ashantees, in the year 1807, the English came to their aid, but met with a severe and most disastrous defeat. The English governor was forced to sue for a truce, when nearly all his soldiers were killed; and this peace is said to have been tarnished with conditions very derogatory to the English government. During the next nine years, the vanquished Fantees made many attempts to shake off the Ashantee yoke; and some efforts made by the English governor of Cape Coast Castle to aid them led to another war in 1816, which was again disastrous to the English. An embassy was sent to Ashantee, headed by Mr. Bowdich, who succeeded in concluding a treaty of peace and commerce with this powerful African nation.

In 1818 a British consul was appointed at Coomassie, the capital of Ashantee; and a new treaty opened increased means of intercourse between the English and the Ashantees—not without some opposition from the African company, however, who wished to retain the commerce of the district in their own hands. The Company, the authorities at Cape Coast, and the Fantees, all threw obstacles in the way of the treaty; and so little harmony existed, that by 1823 the English were again involved in war with the Ashantees. This war continued at intervals until 1826, when the English succeeded in driving the Ashantees completely away from the sea-coast, confining them to the interior territory.

The state next to Ashantee on the east is that of Dahomey, from which it is separated by the river Volta, otherwise named the Aswada. Its western boundary on the coast was the river Assinee; but in the interior, the province of Gaman lies in great part beyond even the westernmost branch of that river, there known under the name of the Bara. To the north and north-east of Gaman are the Manding tribes, and the independent Moslem states of Kong and Enkasy.

The outline of the coast opposite to Ashantee is more appropriately described under its common appellation of Gold Coast [Coast, Gold]. Its general direction is from east to west, although from Cape Three Points in long. 2° 40′ W., it trends on both sides considerably towards the north. The chief rivers which fall into this part of the Gulf of Guinea, are the Volta, or Aswada, the course of which, for nearly 200 miles before it reaches the sea, is almost due south; but the principal branch appears to rise from a mountainous tract considerably to the westward;—the Praa, or Chamah, one branch of which (the Boosempra) flows from the east, while another passes near Coomassie, the capital, and here receiving the former, descends by a course almost due south to the sea, which it reaches about 2° 10′ W. long., forming the boundary between the Fantee and Ahanta territories; the Ancobre (or Rio de Cobre, that is, in Portuguese, the Serpentine River), on the west side of Ahanta; and finally, the Assinee, formed of the united waters of the Tando and the Bara, which join about 6° 10′ N. lat. The hilly portion of the country is in the east and north-east, in the provinces or states of Aquapim, Akim, Aquambo, and Akeyah; but there are no mountains of any considerable height.

The greater part of the country from the sea-coast, as far as 50 or 60 miles to the N. of Coomassie, is still a thick forest, through which travelling is impossible, except along the paths or roads which have been conducted with great labour in different directions from the capital. The city of Coomassie, according to the reckoning of Mr. Dupuis, (the consul appointed in 1818), stands nearly in 6° 51′ N. lat., and in 2° 16′ W. long., from Greenwich. Mr. Bowdich has given both a plan and a long description of this barbarian metropolis. It is built, he says, upon the side of a large rocky hill of iron-stone, and is completely surrounded by a half-stagnant stream, or rather marsh, varying from 50 to 100 yards in breadth. The town is an oblong, nearly four miles in circuit, without including a suburb or back town, half a mile distant. Of the principal streets, four are each half a mile long, and from 50 to 100 yards wide. But the streets are merely ranges of fields, bordered with rows of houses. The houses are built in straight lines, and the open spaces between the two rows have each a name. The palace stands in a long and wide street which runs through the centre of the town, and is inclosed by a high wall.

Besides the eight great roads, which, according to Dupuis, lead from Coomassie, there are numerous minor roads, although most of them are merely narrow footpaths, and are often quite impassable. Most of the towns and villages are on the line of some of the great roads. The inland tracts are greatly superior to those that lead down to the coast,—an advantage which they owe both to the longer time they have been in use, and to the nature of the country through which they are cut. From beyond Coomassie down to the coast, as has been already observed, the soil is thickly covered either with lofty trees, or with brushwood and trees intermixed; but many of the parts traversed by the great roads in the upper country are open plains.

The men of Ashantee, according to Mr. Bowdich, though very well made, are not so muscular as the Fantees. The women he thought in general handsomer than those of Fantee. Among the higher classes both sexes are remarkable for the cleanliness of their persons; but the lower orders are for the most part very dirty.

The most remarkable among the habitual characteristics of the Ashantees are their warlike ferocity and their love of blood. These passions have, as usual, deeply coloured their religious belief and observances. The most horrid of the practices by which they express their devotional feelings are those in which they indulge at what are called the Yam and the Adai customs, the former commencing in the early part of September, when the consumption of the yam crop begins, the latter taking place, alternately on a greater and less scale, every three weeks. On all these occasions human blood flows in torrents.

The government of Ashantee appears to be a despotism, partially controlled by an aristocracy, and to a greater extent by the ancient customs of the country. But in whatever degree the royal power may be restrained by these opposing forces, it appears to be unlimited in regard to the right to dispose at pleasure of the property, the liberty, and the lives of all classes of the population. The king, however, is said always to consult his great council before entering upon a war or upon any other business of public importance. The diminution of the numbers of the nobility has been for some reigns a policy steadily pursued by the crown; and Mr. Bowdich says that the order had been at last reduced to only four individuals. There is, however, besides the hereditary nobility, a council of captains, whose advice at least is usually asked by the king on important occasions. The law of succession to the throne (and the same rule holds as to the estates of private individuals) is in some respects very singular, the nearest heir being the brother, the next the sister's son, the next the son, and the next the chief vassal or slave. In the Fantee country it is asserted that the slave comes in before the son, who only inherits such property as his mother had possessed independently of her husband.

In Ashantee, besides the negroes, there is a large population of Moslems, that is of Moors professing the Mohammedan faith, who have penetrated thither from the north of Africa. These

people, possessed as they are of the art of writing and other acquirements not shared by the negroes, form a very influential body wherever they are established. In former times they appear indeed to have been left by the government in the enjoyment of almost complete independence. At Coomassie and many of the other towns the commerce with distant places is almost entirely in the hands of the Moslems. The provinces in which they are chiefly found are to the north of Coomassie; and it is stated that wherever they exist in considerable numbers the negro population is much less ferocious, and in general farther advanced in civilization.

The language of Ashantee is said by Mr. Bowdich to have an abundance of vowel sounds, few aspirates, and much euphony. Their music is sweet and animated. Among their musical instruments are a flute made of a long hollow reed, with three holes; a box called a Sanko, the top of which is covered with an alligator's or antelope's skin, having a bridge raised over it, across which are extended eight strings; immense horns, made of elephants' tusks; and an instrument somewhat like a bagpipe. They have also drums made of the trunks of trees hollowed out; and in their martial concerts the noise is increased by the aid of castanets, gonggongs, flat sticks, rattles, and old brass pans.

The walls of the Ashantee houses are usually formed of stakes and wattle-work, filled up with clay. All have gable ends and ridged roofs, consisting of a framework of bamboo, over which is laid a thatch of palm leaves, tied with the runners of trees. Many of them have arcades, and many also are highly ornamented with plaster, paint, carving, and other decorations. The doors are formed of entire pieces of cotton wood; and deals of the same wood, cut out with an adze, are also sometimes, though rarely, used for flooring. There is frequently an upper-story supported on rafters. The windows are described as being of 'open wood-wook, carved in fanciful figures and intricate patterns, and painted red;' and the frames as 'frequently cased in gold, about as thick as cartridge paper.'

The principal manufacture of the Ashantees is that of cotton cloth, which they weave on a loom worked by strings held between the toes, in webs of never more than four inches broad. Silk is sometimes interwoven with the cotton. The cloths which they produce are often of great fineness of texture, and their colouring of the highest brilliancy. They paint their patterns with a fowl's feather. Another of the arts in which they have attained considerable excellence, is the manufacture of earthenware. They also tan leather, and work in iron, brass, and gold. Articles formed of gold abound in the houses of all the wealthier inhabitants; and in the king's palace those of most common use are described as being made of this precious material.

Gold is found in this country both in mines and in particles washed down by the rains. According to Dupuis, the richest gold mines known to exist in any part of Africa are those in Gaman. Some of the richest of these mines are said to be

esteemed sacred, and on that account are not worked. The wealthier inhabitants load their persons with lumps of native gold; some which Dupuis saw, he thinks, must have weighed fully four pounds. In Akim, and some other parts of the empire bordering on the Volta, from which much gold was formerly obtained, the mines are now either exhausted, or at least are no longer worked. There are many rich mines in the small district of Adoom, westward from Cape Coast and about three days' journey from the sea; and during the rainy season, it is said that not fewer than eight or ten thousand slaves are employed in washing for gold dust on the banks of the Bara, in Gaman.

The rainy season in Ashantee may be said to commence with the month of May; but the heaviest rains are from about the middle of September to the end of the following month. In some years, however, there is little or no rain at all during the usual season. Mr. Bowdich found the temperature to vary from 58° to 86°.

The yam is the chief vegetable that is cultivated in Ashantee. But there is also grown a good deal of corn, rice, sugar-cane, and a mucilaginous vegetable called encruma, somewhat resembling asparagus. The plantations are of considerable extent, and very neatly kept. The principal domesticated animals are cows, horses of a small breed, goats, and a species of hairy sheep. Among the wild animals with which the region abounds are lions, elephants, hyænas, wild hogs, deer, antelopes, alligators, and a variety of snakes. Among the birds are vultures, parrots, and several small species of beautiful plumage, which sing melodiously.

(Bowditch, *Mission to Ashantee*, 4to. Lond. 1819; Dupuis, *Journal of a Residence in Ashantee*, 4to. Lond. 1824.)

ASHBORNE. [DERBYSHIRE.]

ASHBURTON. [DEVONSHIRE.]

ASHBURTON, LORD. [DUNNING.]

ASHBY-DE-LA-ZOUCH. [LEICESTERSHIRE.]

ASHDOD, or ASDOD (Ἄζωτος, of the Greeks), is situated on the shores of the Mediterranean, in Palestine, about 9 miles N.E. of Ascalon, and 10 S.S.W. of Jamnia, in 31° 45′ N. lat., 34° 37′ E. long. It was one of the five Philistine cities, and, at the division of the promised land, it fell to the lot of the tribe of Judah (Joshua xv.), who, however, appear not to have obtained possession; for we find (1 Samuel v.) that 300 years subsequently the Philistines, in their wars with the Jews, having captured the ark of the covenant, brought it to Ashdod, and placed it in the temple of their god Dagon, which fell to the earth before it. David probably got possession of Ashdod when he 'took Gath and its towns out of the hand of the Philistines.' (Chron. i. chap. 18.) It was taken by the Assyrians about B.C. 714, but afterwards fell into the hands of the Egyptians, after sustaining, according to Herodotus, a siege and blockade of twenty-nine years in the reign of Psammitichus, during which it must have suffered greatly, for Jeremiah calls it 'the remnant of Ashdod.' The temple of Dagon was destroyed by Jonathan Maccabæus, and the town burnt during the wars between Alexander Balas and Demetrius. It seems never to have recovered its former splendour, though A. Gabinius, the Roman governor of Syria, ordered it to be rebuilt. By the Romans it was called Azotus, and is also noticed by this name in Strabo and the Acts of the Apostles. Its modern name is Asdoud. There are no remains of its former grandeur.

ASHDOWN FOREST. [SUSSEX.]

ASHER. [PALESTINE.]

ASHES, the remains of any thing burned, whether of vegetable or animal origin, and to a certain extent of mineral bodies also.

Vegetable Ashes.—Woody fibre, termed chemically *lignin*, is composed of oxygen, hydrogen, and carbon: it constitutes nearly the whole of all vegetable matter, and it is almost entirely dissipated when burnt. Two of its elements, by combining with the oxygen with which they were already united, and a fresh portion acquired from the atmosphere, form new compounds. The carbon of woody fibre is the element which remains longest unacted upon, and on this circumstance the preparation of charcoal from wood depends. When, however, this carbon has been totally dissipated by the long-continued and combined action of heat and the oxygen of the air, there remains only a small quantity of ashes composed of mineral ingredients derived from the soil. Ashes vary in composition according to the nature of the plant, the soil in which it grows, and of the manure used upon it.

The substances usually contained in the ashes of land plants are potash, soda, lime, magnesia, silica, the oxides of iron and of manganese, chlorine, carbonic acid, sulphuric acid, and phosphoric acid. Alumina occurs rarely, and sometimes oxide of copper has been met with. Very frequently more than one-half of the ashes of vegetables consists of carbonate of lime. The quantity of ashes varies, not only according to the soil, age, and aspect of the plant, but also in different parts of the same plant, from one and a half to three and a half per cent. of its weight, after drying in the air. Sometimes the ashes amount to four or five per cent., and in the bark of the oak to six per cent.; the quantity and quality of the ashes also vary in the same kind of wood from accidental circumstances. The soluble part of wood-ashes consists of the alkaline sulphates, carbonates, and chlorides; while the insoluble matter is chiefly composed of carbonate of lime, and probably of magnesia, phosphate of lime, and phosphate of iron.

The incineration of wood is a most important operation; from its ashes are obtained the immense quantities of impure potash, and the carbonate called *pearlash*, imported from America and other countries. The sap of plants contains also other vegetable acids, as the oxalic, citric, tartaric, malic, &c.; and the salts which these form with potash are decomposed by heat, and yield the carbonate.

The ashes of land plants yield principally the salts of potash; those of marine plants afford a large quantity of soda salts, and especially the carbonate. There are several varieties of *salsola* and *salicornia* cultivated on the coasts of Spain, which, when full grown, are cut, dried, and burnt

in trenches; the resulting ashes are called *barilla*, and are imported in the state of hard grey porous masses. *Kelp* is the ash of some varieties of sea-weed, especially of the *fucus saccharinus* and *fucus vesiculosus;* it contains carbonate of soda, which used formerly to be often procured from it.

Coal ashes are extremely various both in their appearance and composition. Thus, much of the coal of the north of England, under common circumstances, burns to a cinder, which is a mixture of the ashes of the coal with some carbonaceous matter requiring rather a high temperature to burn it, on account of its being enveloped by incombustible matter. The coal of Somersetshire burns to red ashes, evidently coloured by peroxide of iron; those of the Staffordshire coal are nearly white. The quantity of ashes yielded by different kinds of coal varies considerably; according to Kirwan, Wigan coal contains 1·57 per cent. of ashes; Whitehaven coal 1·7, and Swansea coal 3·33 per cent.; they consist principally of silica and alumina, with small quantities of lime, sometimes magnesia, and also peroxide of iron; but they do not contain either the chlorides, phosphates, or alkaline salts found in wood-ashes. *Peat ashes* differ chemically from both the other kinds.

Animal ashes resulting from the burning of bones and other animal solids, consist principally of phosphate of lime, with traces of salts of lime, magnesia, and soda.

Mineral ashes, such as those of Vesuvius, as examined by Vauquelin, were greyish in colour; they were tasteless, and found to consist of alumina, oxide of iron, muriate of ammonia, sulphate of lime, potash, copper, manganese, lime, and charcoal. Vauquelin also analyzed the ashes ejected in the same year from Ætna; they were of a grey colour, and in fine powder; they contained sulphur, sulphates of lime, copper, and alumina, and several other mineral ingredients.

ASHFORD. [KENT.]

ASHLAR, or ASHLER, is a term applied in masonry to rough stones as they are taken from the quarry, and also to the dressed stones used for the facing of walls, which may be either plain, tooled, or rusticated. The word is spelt both ways, but Nicholson, in his 'Architectural Dictionary,' gives *ashlaring* as the term for the operation of bedding such slabs of stone as are employed for facing brick or rubble walls, and *ashlering* as a term in carpentry for the short pieces of upright quartering used in garrets to cut off the acute angle between the floor and the sloping rafters of the roof.

ASHMOLE, ELIAS, an eminent antiquary and herald, the founder of the museum which still bears his name at Oxford, was the son of a saddler of Lichfield. He was born May 23rd, 1617. He studied law, and in 1638 became a solicitor in chancery. In February 1641, he was sworn an attorney of the Common Pleas. In 1645 he became one of the gentlemen of the ordnance in the garrison at Oxford, and then commissioner and afterwards receiver and registrar of the excise at Worcester. In the midst of these employments he entered himself of Brazennose College, Oxford, where he applied himself to the study of natural philosophy, mathematics, and astronomy, and where his acquaintance with Sir George Wharton led him into the absurd mysteries of astrology.

In 1646 Mr. Ashmole fell in with Sir Jonas Moore, Mr. William Lilly, and Mr. John Booker, esteemed the greatest astrologers of their time, and was admitted into their fraternity. In 1650 he published a treatise written by Dr. Arthur Dee upon the philosopher's stone, under the title of 'Fasciculus Chemicus, or Chymical Collections,' &c., by James Hasolle, Esq., in which name, the letters of his own will be found transposed. Towards the close of 1652 his 'Theatrum Chymicum Britannicum' appeared, a quarto volume, containing many pieces of our old hermetic philosophers. He then devoted himself to the study of antiquity and records. This recommended him to Sir William Dugdale, whom he accompanied when making his survey of the Fens. In 1658 he published a treatise on the philosopher's stone, entitled 'The Way to Bliss.' In 1659 the younger Tradescant made over to him the museum of curiosities, in Lambeth, London, which the two Tradescants, father and son, had been long accumulating.

King Charles II., in 1660, bestowed upon Mr. Ashmole the place of Windsor herald; and appointed him to make a description of the royal collection of medals.

On November 2, 1660, Ashmole was called to the bar in the Middle Temple hall; and in January, 1661, admitted F.R.S. Soon after this time the secretaryship of Surinam was bestowed upon him. On the 17th of February, 1665, Sir Edward Byshe sealed his deputation for visiting Berkshire, which visitation he began on the 11th of March following. On the 19th of July, 1669, he received the degree of M.D. from the University of Oxford by diploma. Having finished his 'History of the Order of the Garter,' he presented that work to the king, May 8, 1672, who presented him with a privy seal for 400*l*. In 1675 he resigned his office of Windsor herald. In 1679 Mr. Ashmole lost by fire the greater part of his library, a cabinet of 9000 ancient and modern coins, and a great collection of seals, charters, and other antiquities: his manuscripts, however, and his gold medals, were preserved, by being in the house which had been Tradescant's, at Lambeth.

In 1682 Ashmole sent to the University of Oxford the collection of rarities which he had received from the Tradescants, together with such additions as he had made to them; to which he afterwards added the donation of his manuscripts and library. This is still called the Ashmolean Museum.

Ashmole spent the latter part of his life in retirement. He died May 18, 1692, in the 76th year of his age. His body was interred at Lambeth.

Besides the works already noticed, which were published during his life, Ashmole left large collections in manuscript.

(The dates and facts in the preceding memoir

have been principally taken from the *Diary of his Life*. See also Wood's *Athenæ Oxonienses*, Bliss's edition, vol. iv. p. 354; *Biogr. Brit.* by Kippis, vol. i. p. 293.)

ASHOVER. [DERBYSHIRE.]

ASHTON-UNDER-LINE, a manufacturing town and parliamentary borough in the hundred of Salford in Lancashire, on the north bank of the river Tame, which here divides the counties of Lancashire and Cheshire. Duckinfield, which forms a suburb of Ashton across the river, and is united with it by a bridge, is in the latter county. Ashton is 6½ miles E. of Manchester, and 186½ miles N.W. by N. of London.

Ashton is a thriving place, and on the whole well laid out and well built. The church is large and ancient. A new church, the cost of which was defrayed by a grant from the commissioners for building new churches, has also been erected. It is of gothic architecture, and has a square embattled tower surmounted by pinnacles. The court-house is a handsome building, with a theatre and a concert-room over it.

The chief business of Ashton is the cotton manufacture. The goods produced are chiefly ginghams, muslins, and calicoes. The Manchester and Ashton, Peak Forest, and Huddersfield canals, which connect Ashton with the manufacturing districts of the north and middle of England, much promote the trade of the town. The Sheffield, Ashton-under-Line, and Manchester railway, extends its communications to the east and west. Hats, woollens, and silks, are manufactured here or in the neighbourhood, and coal is dug in the adjacent districts in considerable quantity. There are more than twenty collieries.

The population of the parliamentary borough of Ashton-under-Line in 1841 was 22,514. It returns one member to Parliament.

(Aikin's *Description of the Country round Manchester; Parliamentary Papers.*)

ASIA, under which name we at present comprehend all the countries to the east of Europe and northern Africa, was also applied by the Greeks to the countries bordering on the eastern shores of the Mediterranean Sea, and extending thence eastward. It is supposed that this name was originally applied to a small district on the western coast of Anatolia. In the progress of time, as the countries east of it became known to the Greeks, the name of Asia became co-extensive with their discoveries, till at length it was customary to designate by it one of the great divisions of the globe.

Asia as known to the Greeks and Romans.—From the earliest records of European history, the Homeric poems, we learn that an intercourse existed, before the war of Troy, between the inhabitants of Europe and Asia. But as far as we can infer from our authorities, it was more of a hostile than a pacific nature. Commercial exchange seems to have been nearly confined to a few Phœnician vessels which visited the islands of the Archipelago and some ports of Greece. The establishment of Greek colonies in Ionia, and the Greek navigation of the Black Sea, gradually led to a knowledge of western Asia. About 550 B.C., a large number of separate states were incorporated into the extensive Persian empire, which comprehended nearly all the countries between the Mediterranean Sea on the west, and the Belur-Dagh on the east, the Caspian on the north, and the mountains which border the valley of the Indus on the west; and as many of the Greek colonists were placed in close communication with this empire, geographical knowledge of the interior rapidly extended.

Before the time when Herodotus wrote, the Persian empire had become stationary. Accordingly we find that the geographical knowledge of the Greeks, for more than a century, did not advance beyond the ancient boundaries of that empire. But as the intercourse, both hostile and pacific, between the Greeks and Persians had during that period considerably increased, their knowledge of the different provinces composing the Persian empire was also enlarged. By the subsequent conquests of Alexander, the remoter provinces of the Persian monarchy, of which a great part till then had only been known in such general outlines as those given by Herodotus, and by the vague information of individuals, were at once opened to the Greeks. Besides his advance towards the north-east, Alexander crossed the Indus and four of the rivers which traverse the Panjab, and advanced to no great distance from the banks of the Jumna and the valley of the Ganges. His exploration of the valley of the lower Indus, the voyage of his admiral Nearchus along the coast, and the transference of the commerce of Tyre to Alexandria, together with the spread of the geographical knowledge formerly possessed by the Phœnicians, all tended to make Asia better known to Europeans. Very soon after the death of Alexander, we find that Egyptian vessels from the ports of the Red Sea began to visit the shores of Malabar, and to venture as far as Cape Comorin and the island of Ceylon (called Taprobane by the Greeks). But the information thus acquired related chiefly to the harbours and sea-coasts.

The successors of Alexander, being almost continually engaged in wars among themselves, did not add largely to the then existing knowledge of Asia. At a later date, when the Romans extended the boundary of their empire to the Tigris and the Euphrates, their military expeditions being carried on in countries previously known, could add very little to the store of information. We ought, however, to make an exception with respect to the Caucasus. In their wars with Mithridates, king of Pontus, the armies of the Romans passed the boundaries of the then known world, and arrived at Mount Caucasus, with whose extent and situation they became acquainted, though they did not enter the valleys which lie in its bosom. In proceeding farther to the shores of the Caspian Sea, they got information of a commercial road through Bactria, by which the countries on the south of the Caspian Sea carried on an active commerce with India; and soon after another route was discovered, which led over the high table-land of Upper Asia to the Seres, or

Chinese, probably the road which still passes through the town of Kashghar. The growing taste for Asiatic luxuries led to much intercourse along such of the routes as were then known.

The knowledge which the ancients acquired concerning the geography of Asia is embodied in the systematic works of Strabo, of Pliny, and of Ptolemy of Alexandria, the last of whom raised geography to a science by basing it on astronomical principles. From these writers it is evident, that only those countries into which the Macedonian conqueror had carried his arms were known with some degree of correctness as to their general features, and that beyond them their knowledge was limited to a few places traversed by commercial roads, and to the harbours. Besides these works, the 'Periplus' of Nearchus, and another probably written in the second century, and attributed to Arrian, give a more particular description of the coast of eastern Africa and of Asia. Another 'Periplus' likewise, which certainly is the work of Arrian, contains a brief coast description of the Pontus Euxinus (Black Sea). [ARRIANUS.] As to the geography of northern Asia, few additions seem to have been made after the time of Herodotus and Alexander. In some respects there seems to have been a retrograde movement, as Herodotus knew the Caspian to be a lake, which Strabo believed to communicate with the northern ocean. Ptolemy in his map restored the Caspian to its true character of an inland sea, but he placed its length from east to west instead of from north to south, as Herodotus had done.

Asia as known in the Middle Ages.—For many centuries after the birth of Christ little was done to advance European knowledge of Asia. The Byzantine or eastern Roman empire, and the Sassanide dynasty in Persia, effected something in this respect; but the rise of the Saracenic power checked all advance for a time. The intolerance by which the Mohammedans in the first two centuries of the Hegira (commencing A.D. 622) were distinguished, interrupted every sort of commercial intercourse with India as well as with Upper Asia. Circumstances, however, arose which led them to abate their intolerance and to adopt a more enlightened policy. Science began to be cultivated, arts to flourish, and commerce to be promoted among them. Geography had its full share of the advantages resulting from this favourable change. As every true Mohammedan was bound by his religious tenets to visit at least once in his life the Kaaba of Mecca, travelling became more frequent among the Arabians than it ever has been in any other nation; and as the love of letters increased and became more general, the number of their geographical works, travels, and voyages increased in the same proportion. Ibn Haukal, Edrisi, Abulfeda, Ibn el Wardi, and Ibn Batuta, all Arabian geographers or travellers, have left descriptions of various parts of Asia, written between the tenth and the fourteenth centuries.

The Arabs seem also at an early period to have renewed the commercial intercourse with India by the Red Sea and the Gulf of Persia, and to have soon extended their navigation beyond the extreme limits attained by the Greeks of Alexandria. There are extant two works on the countries about the seas of China, written, as it is thought, by Ibn Wahab and Abu Seid about the end of the ninth century. But the Arabs did still more for geography by establishing it as a science on mathematical and astronomical principles, and thus following up the work of Ptolemy. The Calif Al Mamun (813-833) ordered a degree of the meridian to be measured, and this task was executed by the three brothers Ben Shaker in the great plain to the north-east of Damascus, between Palmyra and Racca, on the banks of the Euphrates. In subsequent attempts at the projection of maps, the Arabs soon became sensible of the want of actual astronomical observation. This led them to the erection of observatories, and to the completion of astronomical tables. Two works of this kind still exist: one composed about A.D. 1345, in the observatory built at Maragha, near the Lake of Urmia; and the other in 1449 at Samarcand.

Two hundred years before the Christian æra the Chinese were anxious to collect geographical information concerning the extensive provinces and tributary kingdoms of their dominions; and they have continued this work to the present day. Besides the information thus collected by means of the administration of the different provinces, the emperor was in the habit of sending ambassadors, who were instructed to gather useful information concerning the countries they were sent to, and to include it in their reports of the embassies: the reports were afterwards deposited in the archives of government. From such materials the geographies of the Chinese empire were composed and published in print, the art of printing having come into general use among the Chinese in the tenth century. These works contain very abundant information concerning Tartary, Corea, Tibet, Turkistan, and Bucharia, and even valuable notices on Siberia, Persia, and India, as well as on Siam, Tonkin, Java, Formosa, and Japan. The Chinese language being now more studied by Europeans than formerly, these geographical works are becoming every year better known.

Europeans began to renew their acquaintance with the countries of Asia on the shores of the Mediterranean in the eleventh century by pilgrimages, and soon afterwards by the Crusades (1096-1272) undertaken for the delivery of the Holy Sepulchre from the Infidels. The navies of the Italian republics accompanied these expeditions; and the citizens of Pisa, Florence, Genoa, and Venice, thus acquired extensive knowledge of the East. About the middle of the thirteenth century the Mongols conquered Russia, and their increasing power led to a spread of geographical knowledge. Pope Innocent IV. and King Louis IX. of France suggested the plan of directing the power of the great Mongol empire and its warlike army against the Mohammedan princes in western Asia, their implacable enemies; but this object did not seem practicable

to the projectors of this plan, unless they could previously convert these barbarians to the Christian faith. For that purpose some friars were sent to the court of the great Khan; John di Plano Carpini in 1246, Father Ascelin, a Dominican, in 1248, and William Rubruquis, or Ruysbroeck, in 1254; and though they did not succeed in the main object of their mission, the information which they acquired of the countries through which they passed made the Europeans for the first time acquainted with the immense extent of those regions formerly called by the vague name of Scythia, which from that time obtained the name of Mongolia, or Tartary. At a somewhat later period, from 1275 to 1292, the Venetian Marco Polo resided at the court of Kublai Khan, the Mongol emperor; and as he enjoyed the favour of the emperor in a very eminent degree, and was well acquainted with the most important languages spoken by the people of the country, he was frequently sent on missions to the remotest provinces of the Mongol empire, which were so distant from one another that he was often obliged to travel six months before he arrived at the place of his destination. In all his missions and travels he had been in the habit of keeping a journal, and of entering what appeared to him most worthy of being recorded. On his return to Italy his incredulous countrymen importuned him by unceasing questions, and at length he resolved to make an extract from his journal of the most remarkable objects which he had seen or heard of. This he did; and the result shows how extensive and accurate was his knowledge of Asia. [POLO, MARCO.]

After the time of Marco Polo the number of travellers in Asia increased; but as none of them traversed any considerable part of it, they commonly tried to enliven their works by fables or inventions of their own, or by exaggerating the information which they had obtained by intercourse with the natives. Of this description are the narratives of the monk Hayton, the monk Oderico di Portenau (about 1318), and Sir John Mandeville (about 1358). Somewhat more trustworthy were those of the Spanish ambassador Gonzalez Clavijo, who in 1406 was sent to the court of the famous Timur at Samarcand; the German adventurer, John Schildberger, who served in the armies of Bajazet, the Turkish emperor, of Timur, and Shah Rokh, from 1400 till 1427; and especially the Venetian, Josaphat Barbaro, who travelled (1436-1471) in the countries east of the Mediterranean Sea, and carefully collected many remarkable facts. But all these travellers, though they brought back to Europe some useful information, contributed little or nothing to the extension of our knowledge, as to parts which had previously not been known at all, or only very imperfectly.

Progress of Modern Discovery in Asia.—Vasco de Gama arrived, in 1498, at Calicut, on the coast of Malabar, and the Portuguese pushed their discoveries in these seas with such activity and zeal that, in the course of less than half a century, they had explored them as far as Japan.

Their first efforts to establish a commerce were directed to the coast of Malabar; and, as the Arabs or Moors, who then carried on a very active trade with these countries, tried every means to exclude them from these parts, and to embroil them with the numerous sovereigns among which this coast was divided, they were soon obliged to have recourse to arms, and to enter into alliance with some of the native powers. In a few years they had acquired a complete knowledge of the whole coast, from Cape Comorin to the Bay of Cambay and its rich emporiums, Surat and Baroach; and as early as 1509 they made several settlements on the southern coast of Guzerat as far as Diu, which then had a considerable commerce with Persia and Arabia, and they erected on this coast some fortresses. The following year Alfonso Albuquerque took from the Mohammedan monarch of Deccan the famous town of Goa, which soon became the centre of all the Portuguese dominions in India, and the seat of the viceroy and colonial government. The Portuguese now made advantageous treaties with the petty sovereigns along the whole coast of Malabar; and also obtained a footing in Ceylon. In 1511 Albuquerque conquered Malacca; and between that date and the year 1523 the Portuguese made themselves acquainted with Coromandel, Orissa, Bengal, Chittagong, the Burmese peninsula, and numerous islands in the Indian Ocean.

In 1516 the Portuguese, under Ferdinand Perez, arrived at the coast of China, in the Gulf of Canton; and after some difficulty and delay they obtained the island of Macao as a settlement. In 1542 the Portuguese reached as far as Japan; and if their object had only been commerce they might greatly have enriched themselves; but the spirit of conquest much retarded their commercial enterprizes. They exhausted their strength in forming settlements both in the Old and New World; and many of their Asiatic possessions gradually fell into the hands of the Dutch. These latter did not materially increase our geographical knowledge of the countries in which they settled. They published, indeed, a few descriptions of some of their colonies, and their natural productions, especially of the plants and shells (Rumphius, 'Amboinische Raritätenkammer;' Rheede, 'Hortus Malabaricus;' Fr. Valentyn's 'Beschreibungen,' &c.); but these works were generally defective in geographical information. The most important communication belonging to this period was furnished by the German naturalist, E. Kämpfer, who, in the capacity of Dutch physician, resided in Japan from 1684-1692, and has given a good description of that country.

The northern part of Asia, which had not been known either to the ancients or moderns, suddenly emerged in the fifteenth century from the obscurity in which it had hitherto been involved. The sovereigns of Russia, who for more than two centuries had been dependent on the Tartarian princes of the family of Gengis-Khan, obtained the full sovereignty of their country in 1461; and under various princes, adventurers and voy-

agers, the Russians became acquainted with the vast region of Siberia, even to Behring's Strait, before the end of the seventeenth century. The discovery and conquest of Siberia were completed by Peter the Great, who took possession of Kamtchatka in 1696.

In the sixteenth century the Jesuits obtained a footing in China; and by degrees some of them found opportunities of traversing various parts of the Chinese empire, and the countries of central Asia. Thus Father Ben. Goës travelled (1607) from India through Kashghar, Yarkand, and the desert of Gobi, to the great wall of China. Other Jesuits succeeded in insinuating themselves so far into the favour of the great Emperor Kanghi, that some of them always accompanied him in his expeditions and travels, or were sent on certain missions. By these means they acquired a considerable knowledge of China and the countries dependent on it, as Mantshuria, Corea, and even of the great desert called Gobi, as well as of the manners, character, and institutions of the inhabitants of those countries. The observations of the Jesuits were published. But the greatest service which they rendered to geography was their map of China, which was made under the authority and at the expense of the Chinese government, by the friars Bouvet, Regis, and Jartoux, between 1708 and 1718; and after having been corrected by the friars Felix d'Arocha, Espinha, Hallerstein, and Gaubil, was published at Peking, by the authority of the Emperor Kienlong in 1760, in 104 sheets. The great imperial geography, entitled 'Taythsing-y-thoung-tchi,' written by the order of the Emperor Kienlong, may be considered as a commentary on this map.

Discovery in south-western Asia went on more slowly. The Turks obstructed research in Asia Minor; but the Persians offered more facilities; and hence we have many valuable narratives relating to that country. Such information is contained in the travels of Pietro della Valle (1614-1626), Adam Olearius and Albrecht von Mandelsloh (1633-1639), John Thevenot (1652), John Baptist Tavernier (1665), and especially in those of John Chardin, the court jeweller of the King of Persia and of Charles II. of England, who discovered the ruins of Persepolis; and of Francis Bernier, the physician of the Emperor Aurungzebe, who first gave some information on the valley of Cashmere. Gasparo Balbi, a Venetian jeweller, made a journey to India (1579-1588), by the route of Aleppo, Bir, the Euphrates as far as Felugia, and Bagdad. Rauwolf, in 1574, also descended the Euphrates from Bir. As soon as the Turks relaxed somewhat of their obstructive policy, other regions were made known by the researches of Halifax, Maundell, Tournefort, Lucas, Pococke, and Niebuhr.

The geography of India, that country which, since it first became known, had always most excited the curiosity of the learned, and attracted the speculations of the merchant, was longer involved in obscurity than almost any part of Asia. Up to the middle of the last century its coasts were very imperfectly determined, and very little indeed was known of the interior of the country itself. A few travellers, as Thevenot, Tavernier, and Bernier, had given some information about a few districts and routes, but it was extremely scanty. The true geographical knowledge of these countries began in the Deccan with the wars of the East India Company and the French (about 1740), and in Hindostan with the conquest of Bengal (1757). From this time its progress was extremely rapid. The expeditions against Hyder Ali and Tippoo Saib; the wars with the Pindarries and the Mahrattas; and the capture of Pondicherry and Ceylon, furnished large accessions to the geographical knowledge of India. The travels and memoirs of Forbes, Buchanan, Heyne, Wilkes, Perceval, Davy, Marsden, Valentia, Heber, Malcolm, &c., supplied much additional information. Many separate memoirs, either inserted in the Transactions of the Asiatic Societies of Calcutta and London, or published separately, have illustrated the geography, geology, natural history, or antiquities of some separate district or place. It may be truly said that India, which sixty or seventy years ago was less known than almost any other country of equal extent, has since that time been so well explored by the industry of our countrymen, that there are few countries out of Europe on which we have better information.

The political and military proceedings of the East India Company have been the means of making known large regions, exterior to India Proper, which before were hardly known. In this way much knowledge has been obtained of the gigantic Himalaya range, by the researches of Turner, Raper, Webb, Hodgson, Crawford, Moorcroft, and others; of the countries on the W. of the Indus, by the researches of Mountstuart, Elphinstone, Grant, Christie, Pottinger, Burnes, Conolly, &c.; of Persia, by the travels of Malcolm, Jones, Kinneir, Morier, Ouseley, Porter, Rich, Frazer, Chesney, &c.; and of India beyond the Ganges, by the travels and narratives of Symes, Buchanan, Crawford, and others.

Next to the English the Russians have, in modern times, been most active in extending and completing our geographical knowledge of Asia. The establishment of mines in Da-uria on the Amur, and in the Altai mountains between the Irtish and Oby, gave rise to the travels of many scientific men, and the publication of several interesting travels and treatises; such as those of Messerschmidt, Müller, De Lisle de la Croyère, Gmelin, Falk, Pallas, Georgi, Sivers, Von Ledebour, Meyer, Von Bunge, Hess, A. Erman, Alexander von Humboldt, Timkowski, and many others. The regions of the Caucasus were explored by Simonof, Güldenstadt, Reineggs, Von Biberstein, Klaproth, Parrot, Engelhardt, Kupfer, Lenz, &c. The desert country east of the Caspian has been explored, under Russian auspices, by Nazarof, Murawieff, Meyendorf, Eversmann, Von Berg, Lewchini, &c.

General View of the Extent and Figure of Asia.—Asia, whose area is more than five times that of Europe, differs materially in its physical

figure from Europe and Africa. Africa is like a body without members, but Asia extends its limbs in three directions, preserving at the same time a preponderant mass of body; Europe, on the contrary, which may be considered as an appendage or continuation of Asia, exhibits a preponderance in its numerous limbs over the mass of the body.

The great mass of Asia may be compared to a four-sided figure, whose four unequal angles are placed respectively on the Isthmus of Suez, the innermost angle of the Gulf of Tonkin, Cape Shalatzkoi in Siberia, and on the peninsula adjacent to the Gulf of Cara, E. of Nova Zembla. It consequently extends to the S. of the Tropic of Cancer, and in some parts stretches N. of the Arctic Circle. The northern side of this figure, lying within and parallel to the Polar circle, is the shortest, extending only about 2700 miles; that near the Tropic, the longest, measures upwards of 5000 miles. Four-fifths of the whole area of Asia, or about fourteen millions of square miles, are comprehended in this figure; the whole of its surface amounts to about seventeen millions and a half.

From this extensive continental mass, which may be considered as the body of Asia, its members project on the E., S., and W., in the form of peninsulas and headlands. These peninsulas are that of the Tshuktshes jutting out towards America (with an area of 64,000 square miles), that of Kamtchatka (containing 56,000 square miles), that of Corea of equal extent, the curved arc of the coasts of China, and the three extensive peninsulas stretching S. into the seas of India and Arabia—the peninsula beyond the Ganges occupying 777,000 square miles, India within the Ganges comprehending upwards of a million of square miles, and Arabia about an equal extent: the three last, taken together, have an area nearly equal to Europe. And lastly, the peninsula of Asia Minor, which, not unlike a bridge leading to Europe, has served to facilitate the passage of nations and of civilization. The northern coast alone, though much more indented than any part of the coast of Africa, does not exhibit in its formation peninsulas of great dimensions. These members, detached from the main body of the continent, contain nearly three millions and a half of square miles.

The extensive tract of land which occupies the centre of the continent, and is beyond the reach of any of the seas enclosing Asia, is far superior in extent to the members which surround it; this tract forms what may be called *Central Asia*, and has remained in a state of lasting uniformity, in manners and civilization, whilst its appendages, which lie round it, have undergone numerous changes, and made great progress in the arts of civilization. From this elevated plateau or table-land, the surface descends in gradual and diversified terraces and slopes to the level lowlands which surround them. The table-lands themselves are traversed by numerous mountain-chains, and are everywhere enclosed by high ranges; but though these mountains are among the highest and most extensive on the globe, they occupy, when compared with the table-lands, a comparatively small surface.

The table-lands, in the interior of the continent, form two separate systems different both in extent and in elevation: they are, as it were, two terraces, a higher and a lower one. The eastern system of these table-lands comprehends the plateau of Tibet and that of the great desert called Gobi, and the countries lying between them; it rises from 4000 to 10,000 feet above the sea, and in some parts still more: the western, containing the plateau of Iran (Persia), does not generally attain the height of 4000 feet. The latter may occupy an area of about 1,700,000 square miles; the former, more than thrice as large in extent, contains about 7,600,000 square miles, and both taken together more than two-fifths of all Asia; the remainder of the continent is occupied partly by the terraces, by the intervention of which the table-lands sink gradually towards the lowlands, and partly by the lowlands themselves. The length of both systems of table-lands taken together and measured from west to east, from the Black Sea and the Persian Gulf to the sea adjacent to the coasts of Corea, is upwards of 5500 miles. Its breadth from south to north varies considerably: it occupies in its greatest extent on the east, between its southern boundary in the Chinese province of Yunnan and the northern in the country of the Mantshu Tunguses, from 1800 to 2000 miles; but on the west, between the coasts of Carmania and Gedrosia in Beloochistan, and the steep slopes to the lowlands of Bucharia, less than 700 miles.

The boundary of these plateau-regions is marked by Taurus and Caucasus at the north-western extremity, and by Mount Elburz at its slope towards the deep depression of the Caspian Sea; it afterwards advances farther north in the Altai range in Siberia, and on the north-eastern extremity is bounded by the alpine region of Da-uria. On the east the boundary is indicated by the mountain-ranges in western China. The southern boundary is formed by the Himalaya range and its branches. Farther to the west, where the plateau of Iran projects towards the south, the table-land region is separated from the Indian Sea by the mountains of Beloochistan, and thence from the Gulf of Persia by the steep Persian mountain-range, and afterwards by the Taurus. Both systems of table-lands are so connected, that, properly speaking, they form only one elevated and continuous protuberance on the surface of the earth, but they decrease considerably in breadth where they join one another; and exactly at this point of junction numerous high masses rise and form an extensive mountain-knot, where the ranges of the Himalaya, Hindu-Kuh, Thsungling, and Belur, meet one another; thus these table-lands are, at the same time, joined and separated in a very characteristic manner.

From the margin of these table-land systems there issue several separate mountain-chains, not connected with one another, but which form more or less a part of the table-lands themselves; and this formation has given rise to numerous and most extensive river systems, which, descending

through the intervening terraces, direct their winding course towards the north, south, west, and east, and thus give to the internal countries of this continent an open communication with the ocean. The northern border of the smaller plateau is formed by a mountain-range from the Hindu-Coosh to the Dardanelles; the south-east border by another range from near the mouths of the Indus to Lycia, in Asia Minor; and the southern border of the Great Plateau by the Himalaya; all three ranges being nearly parallel, and each range being not far short of 3000 miles long.

We have remarked that the two great systems of high table-land are connected by an alpine region extending between the far advancing angles of two lowlands; that of India from the south, and that of Bucharia from the north, which seem to tend to meet one another, but are interrupted by the high summits of the mountain-region. Such a juxtaposition of all the great features which nature exhibits on the surface of the globe, on such a colossal scale, and in so limited a space, makes this one of the most remarkable spots on the face of our planet. This maximum of the contrasts of natural features, placed in the centre of the continent, is the principal characteristic which distinguishes Asia. By drawing a circle with a radius of a few hundred miles round this common centre, we comprehend in it the countries of Cashmere, Sogdiana, and Cabulistan, the ancient empires of Bactria, Delhi, and Samarcand, the cold table-lands of Tibet, of Khotan, and of Kashghar, up to the ancient Seres and Paropamisadæ; the most elevated snow-topped summits on the globe, the richest and most diversified alpine regions and valleys, the sources of the greatest and, in an historical point of view, of the most remarkable rivers of central Asia, the Panjab of the Indians on the south, the famous Mawar-al-nahr on the north, and the richest plains in these lowlands; we have Persia on the west, India on the east, Bucharia, Turkistan, and Tibet on the north. It is the centre of Asia fixed by nature; one of the great physical influences which prompted man to progress and to civilization in the early ages of his history.

Eastern Plateau or Table-Land.—The highest part of the Eastern or Greater Plateau lies in a direction from S.W. to N.E. to the northernmost bend of the river Amur. On this most elevated part of the eastern highland the table-lands of Great and Little Tibet probably rise to the height of from 10,000 to 14,000 feet above the level of the sea; and perhaps the elevation of the deserts of the Gobi, about the lake of Khu-khu-nor, or Koko-nor, is not much less. That part of the highland which is situated to the south-east of the axis seems to contain some very high table-lands; but the greatest part of it is probably occupied by very high mountain-ranges, which descend towards the adjacent low countries with a rapid and steep declivity, and by themselves constitute the most extensive mountain region of the globe. This alpine region, however, if we except a small part of the Himalaya range, is almost entirely unknown to Europeans.

To the north and north-west of the axis extends the greater of the two triangles composing the trapezium of the plateau. It sinks gradually towards the lakes of Baikal, Zaizang and Aral, forming a series of terraces which continually exhibit less of the characteristic features of the table-lands, till they terminate with the steppes round the Lake of Aral, which are below the level of the ocean; the surface of the Lake of Aral itself is 186 feet beneath the level. These steppes, therefore, do not form a part of the highland, but of the low and deeply depressed plains which surround the Caspian Sea and the Lake of Aral. Two of the highland lakes, Zaizang and Baikal, are about 1600 and 1800 feet respectively above the level of the sea. The desert of Gobi, occupying part of the plateau, is not a level plain, but sinks towards the middle, where it is about 3000 and in some places only 2600 feet above the sea, and forms a long extended flat valley, lying from west to east. The lowest part of this valley is occupied by the proper Gobi, called also Shamo (*i.e.* sea of sand); its surface is covered with sand, and abounds in salt. Westward of this desert, the plateau is crossed from east to west by two minor ranges of mountains; and these, with the Altai on the north, and the Himalaya on the south, enclose the three wide plains which occupy the central countries of Asia, and in which respectively are found the three large lakes of Balkash, Lop, and Tengri. These three plains comprehend the three countries known under the names of Zungary, Tangut, and Tibet, and their general level probably rises higher and higher as they advance from north to south.

The mountain-chains of the highland are little known to us, if we except a small portion of the Altai mountains, and a part of the Himalaya range. Various notices relating to them are given under CHINA, SIBERIA, TARTARY, &c.; but for more connected details see ALTAI MOUNTAINS and HIMALAYA MOUNTAINS.

The highland of eastern Asia is on every side surrounded by extensive terraces, through which the great river-systems descend to the low lands bordering on the ocean.

On the mountain-ranges which bound the table-lands on the N. four great rivers take their rise; the Irtish from the Lake of Zaizang joins the Oby and Tobol; the Yenesei unites with the Angara, which issues from the Lake of Baikal, and with the two Tunguskas; the Lena, with its great tributary the Witim; the fourth is the Amur. They run respectively 2000, 2500, 2000, and 1900 miles, measured along the course of the rivers. The Irtish, with its tributaries, drains upwards of 1,300,000 square miles, the Yenesei about 1,000,000, the Lena nearly 800,000, and the Amur about 850,000,—all taken together a surface much more extensive than that of Europe, and by far the greatest part of it belongs to Siberia. The navigation on the principal water-courses from S. to N. is very inconsiderable; but it is much more important in their tributaries running E. and W., by means of which a water-communication is established through the greatest part of the countries lying between the Ural Mountains and Okhotzk.

From the eastern mountain region two extensive terraces descend gradually towards the Pacific Ocean, besides a great number of smaller ones. The latter are watered by smaller rivers, but the two former give rise to the two great river-systems of the Hoang-Ho and the Yantse-kiang, of which the former runs upwards of 2000 miles, and the latter more than 2900, if their great bends are taken into account. Each of them carries off the waters of a surface of above 700,000 square miles. The sources of these two rivers are not very distant from one another on the table-lands, but in their middle course they are widely separated to the N. and S. by the ranges which form the borders of the highland; in the lowlands of China, however, they converge again, and their embouchures are only about a hundred miles distant from one another; but before they fall into the sea they are connected by numerous canals.

The rivers of southern Asia form three distinct groups, of which those of India E. of the Ganges are little known: only their mouths and the lower parts of their course have been explored. The principal among them are the Camboja, Irawaddy, and Meinam, which discharge a vast body of water into the Indian Ocean.

The rivers of India within the Ganges run in a direction quite different from that of the rivers beyond the Ganges, which are parallel to one another. The Ganges and the Indus take a diverging course and enter different parts of the sea; but their tributaries, especially the Jumna and the Sutledge, approach one another, and facilitate the commercial intercourse of the nations which inhabit the banks of the principal streams. The advantages which result from these rivers flowing into different gulfs are still greater. The Gulf of Bengal brings the inhabitants of the peninsula into communication with the nations of Malay origin and with the Chinese, whilst the Gulf of Malabar opens to them the coasts of Persia and Arabia. It is principally through this direction of its rivers that India within the Ganges has enjoyed such opportunities of civilization over India beyond the Ganges. The chief features of these great rivers, all of which rise in the Himalaya, are described under the heads BRAHMAPOOTRA, GANGES, and INDUS. The Ganges system drains 650,000 square miles of country, and the Indus system about 400,000.

Besides the great plateau of eastern Asia there are subordinate table-lands of lesser height, offshoots from the central one. Such are the plateaus of southern China, Laos, and the Deccan in India. This last, which is the peninsula or southern part of India, has an average elevation of 3000 to 4000 feet above the level of the sea, and is separated from the plains of northern Hindustan by the Vindhya range of mountains.

Western Plateau or Table-Land.—The western Asiatic Plateau or Highland, though much smaller in extent, forms the second principal feature in the physical character of this continent. It is not only nearer Europe, but likewise much more akin to it in its natural structure, and for both reasons more closely connected with it in an historical point of view. The form of its surface, less colossal and extensive in its parts, more nearly resembles that of Europe; and the same may be said of its climate and people.

The Highland of Western Asia, which is named the high Table-land of Iran, has the figure of a rectangular oblong, extending from the Upper Indus through all Western Asia to the shores of the Grecian Archipelago. Its centre is occupied by Persia; over its western parts extends the dominion of the Turks, and its eastern division contains Afghanistan. It is materially distinguished from the Highland of Eastern Asia by its surface being more generally cultivable, and exhibiting extensive tracts which either are cultivated or were so formerly.

The northern edge of the Highland, which extends along the southern shores of the Caspian Sea and the deep plains of Bucharia, is historically famous for containing the Bactrian, Parthian, Hyrcanian, and Caspian mountain-passes, which are narrow defiles, offering a passage for the armies of the conquerors descending from Iran to the N. This country has for many centuries been the abode of warlike mountain tribes, whose chiefs, by holding possession of the mountain-passes on the N., have extended their dominion over the extensive plains of the table-land. The commercial route from Asia Minor to India passes near the northern margin of the table-land. The southern margin is still more distinctly marked by nature. It is separated from the low and narrow coast and the wide plains watered by the Tigris and Euphrates, by a broad mountain tract, which beginning at the mouth of the Indus extends to the place where the rivers of Mesopotamia, breaking through the rocky masses of the high table-land, enter the low plains. This mountain tract consists of from three to seven ridges, running parallel to one another, and separated by as many narrow longitudinal valleys, which sometimes extend many days' journey in length. The ridges themselves rise like terraces from the low coast higher and higher. Beyond them extend the wide table-lands. There are three frequented routes across these ridges from the highland of Persia to the lowland near the coast. One leads from Gambroon to Kirman; another from Bushire to Kazrun, Shiraz, Persepolis, and Ispahan; and the other from Bagdad to Kermanshaw and Hamadan. The table-land itself is traversed by some ridges of hills, which extend mostly in a general direction E. and W., and attain only a moderate height above the plain; it is also furrowed by a few valleys, or rather depressions of the surface, which more or less are covered with green meadows, or scanty pastures or steppes, and in a few places with sandy deserts or a soil impregnated with salt.

The most remarkable and characteristic feature in the surface of Persia is the absence of any considerable river, though this country occupies a space at least equal to that of all Germany. This does not arise from a want of spring water, which is found at no great depth under the surface almost everywhere, and renders this country cultivable in most districts; but it is owing to the want of extensive valleys traversed by running

waters. This want has deprived it of an extensive river system, and consequently of the most powerful means provided by nature for a continual progress in civilization.

Westward of Persia the table-land loses some of its sameness of feature, and becomes much more mountainous and diversified. Kurdistan, Azerbijan, Armenia, and the sources of the rivers Tigris and Euphrates, here occur. The table-land is broken up into four distinct masses, of which one forms Armenia, with an elevation of 6000 to 7000 feet; another is the high mountain region of the Caucasus; a third is the highland of Anatolia, or Asia Minor; and a fourth is the Syrian mountain region.

Western Asia, though indented by gulfs and arms of the sea, which make peninsulas and headlands, is not favourable to the formation of extensive river systems, which only occur on the eastern side of Asia. Only one extensive river system exists in this country, and this consists of two large rivers, the Euphrates and Tigris. When these rivers have forced their way through the Taurus, they begin to converge and to surround Mesopotamia, till they approach but do not actually unite in the ancient Babylonia. Their waters traverse the same delta, and enter the Persian Gulf by one channel. These double-river systems are observable in other parts of Asia.

The peninsula of Arabia projects from the highland of Western Asia, and may be considered as an entirely independent member. Arabia is divided from the mountain-system of the Taurus by the lowland of Syria, which extends to the S.W. of the Euphrates; and the *Nejd* or highland of the peninsula is in itself a plateau. [ARABIA.]

The Lowlands of Asia.—The Lowlands of Asia are everywhere situated without the highland regions and the valleys formed in the extensive terraces around them. These latter, according to a rough estimate, may occupy a surface of about 4,300,000 square miles, or more than one-fifth of the whole extent of Asia, and consequently there remain about 6,000,000 square miles for the surface of the lowlands. These lowlands lie spread around the more elevated parts of the interior, and occupy countries of great extent along the sea, so that the lower course of the great river-systems traverses these often widely stretching plains with many great windings and with very little fall. In these plains the great empires, by which the history of this division of the globe is so distinguished, have attained their greatest power, and continued for the longest period of time. The extensive low plains are six in number; they are different in their natural character, and in no way connected with one another.

The first is the great Chinese Lowland on the eastern shore of Asia, along the Pacific Ocean, beginning at Peking and extending nearly to the tropic; it enjoys a temperate climate, and exhibits the most advanced state of agriculture, the most extensive system of canals, the most active internal navigation, and is the richest and most populous granary in the whole world.

The second is the Indo-Chinese Lowland, which comprehends the kingdoms of Camboja and Siam. It unites the advantage of being situated S. of the tropic with those of being plentifully provided with water, and it is therefore exceedingly well adapted to the culture of rice.

The third is the Lowland of Hindustan, which comprehends the northern part of India, and extends in the form of a triangle between the Gulf of Bengal and that of Guzerat. It is bounded by the two river systems of the Ganges and Indus, and overtopped by three table-lands, those of Tibet, of Iran, and of the Deccan.

The fourth is the Lowland of Syria and Arabia. Only its northern half is watered by the river-system of the Euphrates and Tigris, while its southern half suffers much from want of moisture, and presents an arid and desert aspect.

The fifth is the northern or Siberian Lowland, which is by far the most extensive of all, occupying more than half the area of all the lowlands of Asia taken together, and extending along the Polar Sea the whole length of the continent from the Ural Mountains to the Pacific Ocean. Though traversed by extensive river-systems, it derives little advantage from this circumstance, on account of the extreme coldness and sterility of the northern and most extensive portion.

The sixth is the Lowland of Bucharia, which is entirely continental, not being in contact with any part of the ocean, and only watered by inland seas, the Caspian and the Lake of Aral. It extends from Tibet to the banks of the Volga. Its extensive plains, which are scantily watered, are a kind of mean between sandy deserts and agricultural soil, and their surface is mainly formed of gravel. They are what are commonly called *steppes*—plains covered with grass, and without wood, in which are scattered, like oases, a few tracts of cultivable ground. Such a country is the natural abode of nomadic tribes, who, having little to attach them to their native soil, are prone to wander in search of more fertile regions.

Minerals.—Among the mineral products of Asia, precious stones are very abundant. Rock-crystal is found in the greatest variety; amethysts in the Altai, Himalaya, and Ural Mountains; carnelians and agates, in western India and in the Gobi desert; cashelongs and onyxes, in Mongolia; yu, or oriental jade, in Turkistan; different kinds of jasper, in the Altai mountains; pearl-stone, marcasit, on the shores of the Gulf of Okhotzk; beryl, in the mountains near the Lake of Baikal; lapis lazuli, in the same mountains, as well as in the Hindu Coosh, and on the banks of the Oxus; topazes, in the Ural Mountains; circony, chrysoberyl, sapphires, on the island of Ceylon; rubies, in Ceylon and in Badakshan; turquoises, in Khorasan; diamonds, in Deccan, Borneo, and the Ural Mountains.

Volcanic products are met with on the Sunda Islands, in Japan, and Kamtchatka, in the neighbourhood of Tauris, and many parts of the highland of Armenia, and in Western Anatolia.

Steatite, earth-flax, asbestus, and kaolin, or the finest porcelain-clay, are found in China and Japan;

talc in Siberia; coals in northern China, and different parts of Hindustan; rock-salt in the Ural Mountains, northern China, the Panjab, Ajmeer, Yemen, Anatolia; salt in the salt-seas of the steppes, and sometimes on the surface of the ground; sal-ammoniac in the volcanic steppes of Central Asia, not far from the river Ili; nitre in Hindustan; borax, or tinqual, in Tibet; petroleum, near Baku, on the shores of the Caspian Sea, on the Euphrates at Hit, and other places, and at Kerkook east of the Tigris; asphaltum, on the Dead Sea, in Palestine. Hot springs are very abundant in the snow-covered mountains of the Himalaya range, especially along the upper branches of the Ganges, and also in the N.W. of Anatolia.

Of the metals, gold is found in Japan, Tibet, Yun-nan, Cochin China, Tonkin, Siam, Malacca, Borneo, Asam, Ava, and in the Ural Mountains; many rivers bring down gold in their sands; silver in China, Da-uria, Japan, Armenia, Anatolia, and the Ural Mountains; tin in Malacca, Anam, the Sunda Islands, and the empire of the Birmans; mercury in China, Japan, and Tibet; copper in the Ural and Altai mountains, Japan, China, Nepaul, Azerbijan, Armenia, and Mount Taurus; malachite in China and Siberia; iron from the Ural Mountains, through central Asia as far as the Peninsula beyond the Ganges, as well as in Japan and Persia; lead in Da-uria, China, Siam, Japan, Georgia, and Armenia.

Extensive layers of fossil shell-fish are found on the highest table-lands of Tibet, from 16,000 to 18,000 feet above the sea, and the strata of the tertiary formation in Siberia are full of animal remains of the old world, as the elephant, mammoth, rhinoceros, &c.

Inhabitants.—As Asia is the most extensive of the great divisions of the globe, it is likewise far superior to the rest, if we consider the number of its inhabitants, their variety, and historical fame. Upwards of 400 millions are dispersed over its surface; consequently, twice as many as the inhabitants of Europe, and more than eight times that of the inhabitants of America, which continent in its area approaches nearer to Asia than any other.

The number of foreigners who have settled in Asia is extremely small, compared with the numbers who have left it to inhabit other divisions of the globe. We may estimate the number of Europeans in India at a hundred thousand; those settled in Siberia, the descendants of the Cossacks included, at two millions; and the Greeks of European origin, inhabiting Anatolia, at one and a half or two millions, though these Greeks have long ago been changed into Asiatics. Few settlers have gone to Asia from Africa and America, and still fewer from Australia. The Egyptians never settled in Asia, but the Arabs settled in Egypt. Negro slaves are dispersed over Persia, Arabia, and Hindustan, but they are few in number.

If we consider the inhabitants of Asia according to the physical division of three principal races, the white (or Caucasian), the yellow (or Mongolian), and the black (or Ethiopian), and three intermediate races, namely the dark brown (or Malay), the negro-like (or Papuas, also called Austral negroes), and the copper-coloured (or American), we find that the greatest number of these races, and of those nations which connect them, are dispersed over the surface of this continent. They cannot always be exactly distinguished by the form of the skull, the hair, or the complexion of their skin. The three principal races border on one another in the elevated valleys of Central Asia, where the skulls of the Cashmirians show their Caucasian origin; whilst those of the Bhots, or inhabitants of Bhotan and Tibet, are Mongolic, and between them the skull of the Dom negroes is found. Adopting the division of nations according to their languages, the following groups may be enumerated in Asia.

The first in the order of historical importance is the Semitic nations. These are the Syrians and the Chaldæans, or the ancient Aramæans; the Phœnicians probably still exist in their ancient country, especially near the Libanus; the Jews, who from Palestine have been dispersed over all Asia as far as the coast of Malabar and the northern provinces of China; the Arabs, who are the most numerous of this race and less mixed with other nations, are dispersed through all western Asia as far as the mouths of the Indus and the sources of the Oxus.

To the Indo-Germanic group belong the inhabitants of India, who speak the numerous dialects or languages derived from or connected with the Sanscrit. This remark applies also to the nations of Iran, as the Persians, perhaps the Kurdes, Beluches, Gipsies, and even the Bucharians, &c., though many of them have been mixed with other nations of Turkish, Mongolic, or Arabic origin. Besides these we must enumerate the Ossetes in Mount Caucasus, and some nations of slavish origin inhabiting Asia, as well as the greatest number of the inhabitants of Europe. The Armenians may belong to this group; but the point is not yet determined.

The Georgians and Mingrelians form the Caucasian group; but there are also aborigines of a different stock inhabiting the Caucasus.

The Turkish nations form one of the most extensive groups. The greatest number of them occupy Central Asia, where they are called eastern Turks. Farther to the west, in the low land about the Lake of Aral, they receive the name of Turkomans; and still farther in Asia Minor, and in the Ottoman empire of Europe, they are named Turks or Osmanlis. These nations may be considered as the principal stock of this great division, but its branches extend to the north and to the south between other nations of Mongolic or Persian origin, and are manifoldly interwoven and mixed with them; and although the physical structure of their body sometimes may display the most remarkable differences, these nations, from Pekin to Constantinople, speak dialects (called by us the Turk-Tartarian dialects) which are understood by all of them. The Turkmans, the Uzbeks, the Kirghes, the Bashkirs, the Kumuks, and numerous other tribes, are offshoots from the great Turk-Tartarian stock.

The nations of Samoiedic origin occupy two

different countries distant from one another. The southern division inhabits the banks of the Upper Yenesei and the mountains of Sayansk, where the remnants of the formerly very numerous Samoiedic nations have remained in that country, of which they were the aborigines. The northern division is settled along the Polar Sea to the north of the Lower Tunguska, and extends from the mouth of the river Yenesei to that of the Oby, and farther west to the northern part of the Ural Mountains, and even in Europe as far as the White Sea. The Yenesians are an isolated and small tribe, whose abode is confined to the valley of the river Yenesei in its middle course, and who formerly, like their neighbours the Samoiedes, inhabited the mountains of Sayansk and of the Altai range, but like them were obliged to emigrate towards the north, when other nations which lived in their neighbourhood began to press upon them with superior force. The nations of Finnic origin belong less to Asia than to Europe; only two small tribes of them being found in Asia.

The Mongolic stock of nations branches out into three great divisions—the proper Mongols, the Buriates, and the Olöt or Kalmucks. The proper Mongols are settled on the southern side of the desert of Gobi, and are known by the several tribe-designations of the Tsakhars, the Khalkas, the Khors, and the Sokbos; a few of them are under Russian dominion, but the greater number are subject to China. The Buriates inhabit the country surrounding Lake Baikal. The Olöts, or Kalmucks, are spread over most of the country from Baikal to the Volga, and are divided into four great branches—the Zungares, the Turgut, the Khoshöd, and the Turbet.

The Tungooses form one of the most extensive families of nations in the north-eastern countries of Asia, occupying all that part which lies to the east of the northern Samoiedes on the Polar Sea, of the Yenesians, of the Uriank-hai on the upper course of the Yenesei river and on the mountains of Sayansk, and to the north-east of the Mongolic tribes. The branches of the Tungooses are very numerous, but in modern times none of them has rendered itself conspicuous, except that tribe which occupies the south-eastern corner of the country inhabited by them, and is called Mantchoo, which conquered China in the middle of the seventeenth century, and still governs that country. These Mantchoo Tungooses are found dispersed over all the provinces of the Chinese empire, where they constitute the military nobility.

The north-eastern part of Asia is occupied by small tribes of Yookaghires, Koriakes, Tchuktches, and Kamtchadales; who differ considerably from the Tungoose stock. Near the mouth of the Amur river are the Kurile tribes.

The Japanese speak a language peculiar to themselves; and though their civilization exhibits a striking similarity to that of the Chinese, it seems not to have been influenced by the latter, but to have risen entirely from the peculiar character of the Japanese. The Coreans, or inhabitants of the peninsula of Corea, constitute likewise a separate nation, which many centuries ago inhabited the mountain range which forms the northern boundary of the peninsula, and then were called Siänpi; at present they are confined to the peninsula itself by their neighbours, the Mantchoo, who occupy the country farther north, and are quite different from them.

The Chinese constitute the most numerous and most civilized nation of eastern Asia, forming by far the greatest part of the population of China itself, and possessing a very rich literature. They are also dispersed over the other countries subject to the court of Pekin, and even beyond this boundary, where, however, they have only settled in more modern times.

The inhabitants of Tibet, who call themselves Bhot or Bhota, constitute a very numerous group of tribes, which are far dispersed over the table-lands of eastern Asia, to the north of the Himalaya Mountains, but all of them are very little known. The same may be said of the inhabitants of Anam, Siam, Pegu, Ava, and Birmah, and other nations at the south-east extremity of Asia. The Malays are better known; they perhaps once occupied the mountain region of the peninsula of Malacca, but at present are only settled on the Sunda Islands and the southern extremity of that peninsula. They speak a distinct and cultivated idiom, which is far diffused, on the west as far as Madagascar, and on the east over the islands of Sunda and the Philippines, and even to the most eastern island groups of the Pacific Ocean.

Political Divisions.—There are only six empires of great power and importance which possess among them the whole continent. The others, of less extent and importance, are either dependent on these six, or at least are subordinate. The east of Asia is occupied by the Chinese empire, the north by Russia, and the south by the British dominions; the other states lying between them, as the empire of the Birmans, and the kingdoms of Siam and Cochin China, are only of the second or third rank. The west of Asia, however, comprehends Persia, Turkey, and Arabia; and if we except the small states of Khiva and Bokhara in the lowlands round the Lake of Aral, there hardly exists an independent nation or sovereign of any weight in political matters.

The Russian empire extends through two of the great divisions of the globe, from the Atlantic Sea to the Pacific Ocean, and contains about 7,400,000 square miles, with a population of about 62 millions; more than two-thirds of its surface, namely, 5,800,000 square miles, and only one-fifth of its population, namely about 12 millions, belong to Asia. Besides the two great Tartarian kingdoms of Kasan and Astrakhan, the Russian empire in Asia contains—Siberia; the Caucasian provinces; the steppes of the Kirghises, and the Siberian islands and peninsulas in the Polar region of the Pacific Ocean, as far as the north-western shores of North America. Up to the year 1822 Siberia was only under the orders of military governors: but at that period it was placed under a civil government, and divided into two great provinces or general governments, namely, Western Siberia, which comprehends the

governments of Tobolsk, Omsk, and Tomsk; and Eastern Siberia, to which belong the governments of Irkutzk, Yeneseisk, Yakutsk, Okhotzk, and Kamtchatka.

The Chinese empire is limited to one of the great divisions of the globe, Asia, but it comprehends more than one-fourth of its surface, namely, upwards of five millions of square miles, with a population which has been variously estimated from 230 to 360 millions. China occupies the first place among the political bodies of Asia, and in this position it has maintained itself for two thousand years, whilst the power of Russia does not yet reckon two hundred. The head of the Chinese empire is at a short distance from the Pacific Ocean, on the eastern side of the table-lands of the Gobi and of Tibet, in the rich and fertile and densely populated lowlands of China, or in that part which is properly called China (Chin). But all the other provinces to the north of the Great Wall and to the west of its western extremity, must be considered as an appendage, which is of comparatively very little political importance with regard to the whole empire. As provinces of inferior political importance, but forming an impenetrable barrier to intercourse with the neighbouring nations, we must consider all the countries extending over the Chinese table-lands, the boundaries of which are nearly coincident with those of the highlands of eastern Asia. The Chinese empire accordingly comprehends three classes of countries. The first class comprehends China Proper alone, the permanent seat of government and the residence of the sovereigns. The second class is composed of three great kingdoms, subject to the court of Pekin,—Mantchooria, Mongolia, and Chinese Turkistan. The third class is composed of the protected countries, which have only in part received Chinese institutions, such as Tibet, Bhotan, Undes, Ladakh, and other small countries on the table-lands towards the south and west; and on the east the peninsula of Corea and the island of Formosa, as well as the Liquejos or Liew-kiew Islands.

The *British dominions in the East Indies* are, for the most part, in India, or the peninsula within the Ganges, a country which is little less than half the surface of Europe. If we consider only the immediate possessions of the British in India, excluding even the island of Ceylon, we find that they have a population of from seventy to eighty millions on a surface little exceeding 650,000 square miles; but the British influence is not limited to the immediate possessions of the three presidencies of Calcutta, Madras and Bombay; it extends over a great number of dependent and protected sovereigns, who possess a territory as large as that of the East India Company, and, taken together, probably not less than forty millions of subjects. The whole number of such rajas and nawaubs exceeds forty, and some of them possess countries of considerable extent, as the monarchs of Oude, of Nagpoor, Mysore, Sattarah, Travancore, and the Nizam of Golconda. To this we must add the island of Ceylon. The events of the last few years have tended to produce great changes in the political aspect of Western India; and it is yet to be seen how far Sinde, Beloochistan, Afghanistan, Cabool, Lahore, and Cashmere, are to be ranked among tributary states. By the peace concluded at the termination of the Burmese war (1826), the possessions of the Company have been increased, by the acquisition of many provinces in India beyond the Ganges, including Aracan.

The *Portuguese*, whose settlements were formerly so numerous on the coasts and in the islands of the Indian Sea, have preserved only Goa, Damaun, Diu, Macao, and a few other places, which are supposed to contain about 30,000 square miles, and half a million of inhabitants.

The *French* settlements in Asia are confined to India, and comprehend the governments of Pondicherry, with the towns of Pondicherry and Carical, on the coast of Coromandel, and a few other places, among which Chandernagor, in Bengal, and Mahé, on the coast of Malabar, are the most important. The whole area possessed by the French does not exceed 450 square miles, with a population of 200,000 individuals.

The *Danish* colonies of Tranquebar and its territory, on the coast of Coromandel, and Serampore, on the Ganges, have been recently purchased by the British government.

The *Dutch* possess the rich island of Java and other settlements.

The dominions of Japan, Ava, Siam, Anam, and Cochin China, in the east and south-east; and those of Bokhara, and Khiva, in Central Asia, are far subordinate to the three great empires. Of the nations whose power prevails in western Asia—the Persians, the Arabs, and the Turks, the empire of Persia would doubtless exercise a decisive influence, if it still formed one entire and undivided empire; but for more than half a century this country has been divided into two sovereignties, Eastern Persia, or Afghanistan, and Western Persia, or Persia Proper, nearly equal in extent, and each comprehending upwards of 500,000 square miles. Afghanistan is now so completely severed from Persia, that the latter is weaker than ever. Both countries, however, preserve the importance which is secured to them by their geographical situation, as being the countries through which the commercial intercourse between eastern and western Asia is carried on.

Arabistan, the country of the Arabs, is of very little weight in the political affairs of Asia, and has always been so since the destruction of the caliphat. Its inhabitants are for the most part divided into wandering tribes, who are mostly independent of one another, and therefore cannot act in union and with effect. Some of them are subject to the Turkish empire, but the Arabs and Turks consider one another as personal enemies, and have frequent feuds. Though this country is very thinly peopled, its inhabitants may be estimated at from ten to twelve millions. At the present moment it may be said that the power of the Turkish emperor over Arabia is only nominal.

The Turkish empire constitutes the last of the three great powers of western Asia; but its power in Europe having considerably declined, espe-

cially of late years, this has had a corresponding effect on its political relations in Asia. Anatolia, or Asia Minor, is the chief Turkish territory in Asia.

Botany.—With reference to the character of its vegetation, Asia may be conveniently divided into seven regions—1, the Siberian; 2, the Tartarian; 3, the Cashmerian; 4, the Syrian; 5, the Himalayan; 6, the Indian; and 7, the Malayan or Equinoctial.

1. The *Siberian* region in its general features is essentially European on the W., and similar to the W. coast of America on the E. Its northern portion experiences in many places extremely rigorous winters and short summers, and the earth is perpetually frozen below the vegetable mould that overlies the surface.

The vegetation is of the most stunted description; cabbages will not exist, and corn is almost unknown in a growing state. In somewhat milder districts the country is clothed with immense forests of birches, larches, and pines. Great numbers of gentians, especially *G. algida,* large patches of the yellow *Rhododendron chrysanthum,* and the rich purple *Rhododendron dauricum,* with quantities of dwarf almonds and a great variety of other pretty flowers, fill the meadows and open parts of the country. Lilies of different kinds are met with in abundance in the eastern parts of the Siberian region, and their bulbs are used in Kamtchatka for food: in many places are also found rhubarbs, especially that sort called *Rheum undulatum.* Corn is cultivated successfully only in the southern parts of the Siberian region.

2. The *Tartaric* region resembles the Siberian in most respects; and it may even be doubted whether it ought to be botanically distinguished. It may, however, be characterized as being essentially Siberian in its genera, but distinct in the majority of its species. Of the few species which botanists have seen from the most southern part of this region, scarcely any are met with in Siberia. What is called by travellers Tartaric Furze, has been ascertained to consist of prickly species of *Genista, Astragalus,* and *Caragana;* and the gooseberries, and currants, and willows, and rhubarb, are all of kinds unknown to the N. of Asia, starved and stunted by the miserable climate.

The passes to the northern face of the range of stupendous mountains which divide the *Himalayan* region from that on the W., are described by Burnes as almost destitute of vegetation; but the assafœtida plants grow there in great luxuriance, and form the principal pasture of the flocks which browse on them. An umbelliferous plant, called Prangos, is also found a valuable winter food for sheep.

In some places of this Trans-Himalayan region many trees are met with, among which are Tartaric species of ash, hazel, cypress, oaks, poplars, birches, pavias, &c. The Neoza pine, the seeds of which are eatable, like those of the stone pine in Europe; the Indian cedar, and a few other trees, with a northern aspect, straggle on the mountains from the Indian side: where the climate is less arid, fruit of great excellence is produced; and in Kunáwur, barley, buckwheat, and turnips, were seen at 13,600 feet; and a little lower the ground was covered with thyme, sage, and many other aromatic plants.

3. In the northern districts of Persia, and in that district which may be called the Cashmerian region, the vegetation is very similar to that of Europe. Rice, oranges, and olives, pomegranates, almonds, and fig trees, remind the traveller of Italy, while grapes, mulberries, and the ordinary European fruit trees cast a northern aspect over the scenery. All things that require much heat and light to arrive at perfection, such as tobacco, the opium-poppy, the manna-ash, are produced in the Cashmerian region in the greatest excellence. In Cashmere the most interesting part of the flora is collected. In this province flourish many of the fruits now cultivated in Europe; apricots, peaches, plums, cherries, apples, pears, and grapes, all in the greatest profusion, supply the markets. The walnut, which here is wild, is cultivated extensively for the sake of the oil which is pressed from its seeds, and used in cookery, for burning, and instead of linseed oil for painters' work. The vine, horse chesnut, rice, and corn flourish here. The Singhara nut forms an object of general cultivation in the lakes which surround the city of Cashmere. Nothing perhaps is more remarkable in Cashmere than its floating gardens, formed from the entangled stems of water-lilies covered with earth, and planted with melons and cucumbers, which, thus treated, arrive at the highest state of perfection, and are produced in great numbers.

4. The *Syrian* region comprehends the greater part of Turkey in Asia, and the N. of Arabia. At its western extremity it resembles the N. of Africa and the S. of Europe in many of its plants; on the E. it is occupied by species having a certain degree of relation to the others, but more Indian in their character. Desolation is the characteristic of a very large part of this region; destitute of water, and scorched by a fervid sun, it is impossible for the vegetation to consist of any but stunted shrubs or starved and withering herbs. Sinde may be considered the most south-eastern point of the Syrian region; here the vegetation of uncultivated tracts is described as of a miserable description. Great quantities of a sort of tamarisk, intermixed with thorny acacias, a deformed euphorbia, neem trees, and peepuls, constitute the principal features of the scenery.

5. The *Himalayan* region is characterized by an intermixture of tropical and temperate plants, the former of which ascend the sides of the hills till they lose themselves among the latter, which in their turn give way, as the snow is approached, to truly alpine vegetation. As the Himalayas ascend from the plains, the pine-apple is found no longer to flourish; mangoes and custard-apples suffer from cold; the plantain is only able to exist in consequence of the numerous coverings formed by the sheaths of its leaves. The trees are nearly the same as those of the plains of Upper India, consisting almost entirely of dicotyledonous

species, which lose their leaves in the cold weather as completely as trees in more northern climates.' Two species of *phœnix*, or date, form the only palms that are met with; and bamboos become few and weak. But within the Himalayas are found oranges in a wild state, arborescent plants related to the cashew-nut, cassias, bauhinias, and gigantic cotton-trees, great forests of saul trees, and shrubby euphorbias. Cane-palms reach these valleys, but ascend no higher; and are met by a pine which descends from the mountains till it loses itself amidst tropical forms and a few straggling elms, willows, roses, violets, and other European-looking plants.

It is in the mid region of the Himalayas that its most lovely features are to be seen. Here in many places occur in the rainy season a few lingering tropical herbs, which are protected from the cold in winter by the earth in which they grow; the trees are oaks, sycamores, elms, hornbeam, and pine-trees, and the shrubs berries, roses, and honeysuckles, all of Indian species but European forms. Here also are found numerous saxifrages, crowfoots, geraniums, and violets, with gentians, primroses, and labiate plants, and the scarlet rhododendron.

As we ascend from the second belt, trees of rhododendron and *Quercus lanata* are first passed through. To them succeed pines and firs of various kinds; oaks in great variety, yews, birches, sycamores, and poplars, roses, viburnums, and honeysuckles; after which follow patches of snow, with the Himalayan bamboo, levelled with the ground. To these succeed forests of *Quercus semicarpifolia*; and finally the limits of vegetation are marked by a few starved yews and junipers.

The agriculture of this region is as singular as the other parts of the vegetation; wheat is sometimes cut at the top of a mountain, and rice at its foot. Maize, millet, and many small grains constitute 'the rain-crop;' capsicums, turmeric, and ginger, are grown as high as 4000 feet; cotton succeeds even in Kumaon, and wheat is cultivated as high as 10,000 feet.

6. In the *Indian* region we include Arabia Felix, Birma, Siam, Cochin China, and the continental lands connected with these countries. What is called jungle is met with in most parts of this region.

In these damp and swampy forests eternal pestilence reigns; so that the native woodcutters are often unable to remain in them more than a few days at a time. It is here, however, that are found the sapan trees, so important for their extreme hardness, teak, and many of the finest of the Indian timber trees, and numerous species of ferns, together with those singular plants called by botanists *orchideous epiphytes*, which cling by their aërial roots to the branches of trees.

In the cleared ground, where the soil is exposed to the rays of the sun and the earth is dried by a free ventilation, palms and evergreen trees of remarkable kinds are met with. Mangoes, Palmyra-trees, cocoa-nuts, and Gomuto palms are of frequent occurrence; a coarse grass overruns the plains, except in the cultivated spots, which are occupied by rice, sesamum, cotton, hemp, sugar-canes, yams, indigo, maize, the betel, and other peppers. The branches of trees are occupied with parasitical *loranthi*. Tobacco arrives in some places at great excellence. The flora of this country is so vast that no general description can give an idea of its richness and variety.

Among the most remarkable features in the flora of India is the banyan tree, the branches of which emit roots which descend to the earth, where they fix themselves, and become in time large trunks. When a banyan tree becomes old, and acquires a great number of such trunks, one individual will have the appearance of a grove. Many cases are cited of trees of this sort arriving at a prodigious size.

Ceylon may be referred to the Indian region, notwithstanding its insular position. It produces cinnamon forests, nutmegs, and coffee; satinwood and ebony trees; while the forests of the island abound generally in other kinds of timber valuable for naval and other purposes.

7. The last region of the Asiatic flora is that which we would call the *Equinoctial* or *Malayan*. Spread over islands lying under the line—their centres usually occupied by mountains, and their coasts washed by the waters of a vast ocean—the features of this flora are essentially different from those of the continent of India. Many of the islands are little better than a mass of jungle, or at all events these dense and pestilential woods occupy a considerable portion of the surface. These woods are so dense that the sun never penetrates them; so entangled with climbers, coarse grasses, bamboos, and cane-palms, that no human being can penetrate them without a company of pioneers; and so damp that the parasites actually struggle with the leaves of the trees on which they grow for mastery over the branches; spice-trees, nutmegs, and cinnamon, camphor-trees (*dipterocarpus*), and tree-ferns, here find their home; and in the depths of their recesses is sometimes nourished the fungus-like form of the huge Rafflesia flower. On the mountains are many species of oak, dammar pines, rhododendrons, and magnolias; and at the summits are found crowsfoot, valerians, bilberries, berberries, brambles, honeysuckles, gentians, and other well-known European forms.

Zoology.—We need scarcely say that the climate of this vast portion of the globe ranges from that of regions high within the arctic circle, to that of lands beneath the torrid sun of the intertropics. Nor is this diversity of climate less remarkable than that of the characters or features which extensive tracts present; and by which, irrespective of latitude, the degrees of heat or cold, dryness or humidity, are influenced. Enormous mountain chains giving rise to mighty rivers; extensive plains and lowlands watered by those rivers; deep jungles and swampy forests, elevated plateaux or steppes, saline and sandy deserts, great lakes or internal seas—all in turn call upon the attention of the geographer, and the consideration of the zoologist. With such diversities of climate and geographical features, we may be assured that the

productions, both vegetable and animal, of Asia, must be equally varied, and such is the case. In the arctic regions, the reindeer feeds upon lichen; in Ceylon, the elephant browses on the foliage of the ancient forest.

If we take the orders of the mammalia seriatim, it will be found that the number of species *peculiar* to Asia and its dependent islands is very considerable; but these are restricted to the central and southern regions, for in the more northern latitudes, the mammalia are mostly common both to this portion of the globe and that of Europe, the geographical division being arbitrary. For example, along the shores of the Icy Sea, from Lapland to the country of the Tchuktchi, the reindeer, the white bear, the polar fox, the ermine, the wolf, and others, are characteristic of the latitude. Passing thence into the northern regions of America, we find the wolf and the reindeer in the lands of the Esquimaux, and the polar bear and arctic fox in Greenland. The Arctic Sea abounds with seals of various species, common alike to the northern coast of Europe, Asia, and America. The sea-otter (*Enhydra marina*), so valued for its fur, is found on the north-west coast of America from California to lat. 60°, and thence through the islands to the opposite coast of Asia, from Corea to the north of Kamtchatka.

South of the arctic circle, in the vast deserts of Siberia, the bear, the wolf, the glutton, and several species of musteline animals, as the sable, the ermine, the zibeline, and others, with the fox, chased by the hunters for their valued fur, abound in vast multitudes. The *antilope saiga*, or the colus antelope, is found on the elevated steppes, and along the Altaic chain, below which in the deserts of Mongolia, and the great desert of Gobi, an allied species, the Dzeren, is numerous, living in herds on the arid plains. The elevated steppes of Siberia, the Altai mountains, those of Persia, the Himalayan chain, the mountains of Nepaul Bootan, and Tibet, and those also of Kamtchatka, are tenanted by various species of wild goats (Ibex), and various species of wild sheep, as mouflons and argalis; several climbing antelopes, as the chiru (*Antilope Hodgsonii*), the thar, the jharal, and others, are found more particularly in Nepaul and the Himalayas.

The wild horse is said to exist in the deserts of Mongolia; and the dziggetai, the wild ass, and other equine animals, wander at will in Bucharia, Persia, Caubul, Beloochistan, Sinde, Cutch, and among the Ghauts, and the hills of Katmandoo, and Lower Tibet. The Yak (*Bos grunniens*) is found wild in Tibet, where it is kept also in a domesticated state; it is also found in the high mountains of Nepaul. In all this region several large carnivorous animals of the feline tribe exist. The lion is found in Persia and Arabia, and along the banks of the Euphrates; it thence extends through Beloochistan, Sinde, and Cutch, to Guzerat. In Guzerat the lion is maneless.

Passing from the Himalayan and Nepaul ranges into Hindostan, the ape tribes make their appearance: they belong to two genera, *Semnopithecus* and *Macacus*, for it is not until we arrive at Malacca, Sumatra, Java, Borneo, and the adjacent

islands, that we meet with the gibbons (*Hylobates*). The orang outan (*Pithecus*) is found, as far as is known, only in Borneo and Sumatra. In many parts of India monkeys are exceedingly numerous, and being protected become bold and mischievous. Besides the lion, panthers, leopards, chetahs, and other feline animals abound; and among them the tiger. This fierce animal frequents deep jungles, and makes terrible destruction in some districts. The tiger is found in Tonquin, Siam, the Malay peninsula, and the adjacent islands, as Sumatra, &c. The striped hyæna is common in India; and exists in Persia, Syria, &c., and also in Africa.

Of bears there are several species, of which the sloth bear (*Ursus labiatus*) is the most formidable. Capt. Williamson, in the 'Oriental Field Sports,' gives several instances of their ferocity. We may here add, that the common brown bear is found in Siberia, and a closely allied species, the *Ursus collaris*, is found in the same country. In the mountains of Sylhet and Nepaul the *Ursus Thibetanus* resides, and another species, termed by Dr. Horsfield *Ursus isabellinus*, of a pale buff yellow. In the mountains of Palestine the Syrian bear exists. The Malayan bear is found in Sumatra; it is the bruang of the Malays; and Borneo possesses a distinct species (*Ursus euryspilus*). We have already said that the polar bear resides within the arctic circle. Foxes, of various species, and wolves are common. Several distinct species of true wild dogs are found in India, in the Himalayan and Nepaul mountains, and in the Indian Islands, as well as in other parts of Asia. Smaller ferocious animals are numerous.

Of wild cattle there are several species, as the wild buffalo, or arni, the gour, and the jungly gau. The domestic cattle of India are of the humped or Brahmin breed. The camel is used in a domestic state in India; but the two-humped, or Bactrian camel, is spread through central Asia, Tibet, and China.

India and the island of Ceylon possess the elephant, which is employed, as it was in the most ancient times, as a beast of labour. This species is distinct from the African. The finest elephants are those of Ceylon, but the ordinary ones usually employed are obtained from the great saul forest which skirts the lower ridges of the Himalayan chain. This animal is found in the Malay peninsula, Cochin China, Siam, and Pegu. In the same regions (Ceylon excepted) the Indian rhinoceros exists; but there is a distinct species in Java, and another in Sumatra. A species of tapir inhabits the Malay peninsula and Sumatra. The wild hog is common in India, and other parts of Asia. The babiroussa inhabits Java and the Molucca islands.

Deer and antelopes are numerous in India and the islands, and are spread over other parts of Asia, both to the east and west. The musk deer inhabits Tibet. There are few species of Edentate animals in India, and these belong to the genus *Manis*, a genus which is found also in Africa. Small animals of the Rodent order, as squirrels, rats and mice, jerboas, &c., are very numerous. Bats abound, and fruit-eating bats (*Pteropus*), of huge size, inhabit Java and the Moluccas, as does

also the colugo, or *Galeopithecus*. Various breeds of domestic sheep are kept in India, and throughout Asia generally, but the long-tailed and the fat-rumped races prevail. The goat of Cashmire is noted for the fineness of its wool.

With respect to birds Asia is very rich. We derive the pheasant from the banks of the Phasis; the fowl from the jungle fowls of India and the islands: there also the peafowl is found in a state of nature. The brilliant Impeyan pheasant, and various tragopans, or horned pheasants, are natives of the Himalayas. The gold and the silver pheasant, Reeve's pheasant, and others of extraordinary beauty are indigenous in China. Birds of prey, insectivorous birds, and those of the aquatic races, as well as of the gallinaceous order, are abundant. The cassowary is found in Java, Sumatra, Banda, and the Moluccas. Bustards abound in the plains of India. Numbers of the birds of Asia are identical with those of Europe. To attempt to enumerate the principal reptiles of Asia is utterly impossible. India and the islands present us with huge pythons, and snakes more deadly though of a smaller size, as the cobra and the hamadryas, besides beautiful tree snakes. Sea snakes are found swimming in the Indian seas. That terrible species of crocodile, called the gavial, inhabits the waters and banks of the Ganges.

The seas and rivers and lakes teem with fish; many of them remarkable for their habits, as the tree-climbers [ANABAS], others for their marvellous forms and beauty. The fishes of Ceylon are celebrated for the splendour of their colours.

We may observe, in conclusion, that Asia may be divided into several zoological provinces, according to elevation and latitude; each of which exhibits its characteristic zoological features: and we may add, that elevation in low latitudes approximates the climate and the productions to those of northern regions, especially if we look to *genera* rather than *species*. If we have said nothing of the insects, crustacea, and mollusks of Asia, it is because it would be impossible, within reasonable limits, to give even an outline of the subject; and this is the less needful, as they are more or less assimilated to those of other continents, showing themselves in their most curious forms and striking colours in the warmer latitudes. The corals of the Indian seas are varied beyond enumeration; and the waters are replete with Acalephæ, and the countless strange creatures of the lower classes which are the peculiar tenants of the deep.

ASIA MINOR. [ANATOLIA.]

ASIATIC SOCIETIES are learned bodies formed for the purpose of instituting and encouraging inquiries into the geography, history, religions, languages, literature, &c., of the East. The earliest institution of this kind was the Asiatic Society of Bengal, founded at Calcutta by Sir William Jones, in January, 1784.

At Paris an Asiatic Society was formed, in the year 1822, by the well-known French orientalists, Silvestre de Sacy, Abel Rémusat, Saint-Martin, Chézy, &c., under the patronage of the Duke of Orleans (now King of the French). Through the careful management of its limited funds, the Asiatic Society of Paris has been enabled to encourage the publication of several important works connected with oriental literature.

A similar institution was formed at London in March 1823, and was incorporated under the denomination of the Royal Asiatic Society of Great Britain and Ireland. The society possesses a library and museum. The library contains some most valuable and scarce books and MSS. Intimately connected with the Royal Asiatic Society is the Oriental Translation Committee, instituted in 1828, which has for its object 'to superintend the publication of translations of works in the oriental languages, and also occasionally of original texts.' ('Regulations,' &c., 1832.)

The literary societies of Madras and of Bombay deserve to be noticed here. The Madras Literary Society owed its origin to the late Sir John Newbolt, aided by Dr. B. G. Babington. The society has since been combined with that of London, under the denomination of the Madras branch of the Royal Asiatic Society. In 1829 the Literary Society of Bombay joined the Royal Asiatic Society, and is now designated as the Bombay branch of that institution.

ASKEATON. [LIMERICK.]

ASKEW, ANNE, a lady of an honourable family in Lincolnshire, whose name is otherwise spelt Ascough or Ascue, was one of those sufferers, who, before the final completion of the Reformation, abjured in part the doctrines of the Romish church. She was more highly educated than was ordinary in that day, and by study of the Scriptures became a convert to the opinions of the reformers, at which her husband, one Kyme, a violent papist, was so much displeased that he turned her out of doors. She came up to London to sue for a separation, but was soon accused of holding heretical doctrines concerning the sacrament: and on this charge she was committed to prison. Being examined before the chancellor, the Bishop of London, and others, she is said to have replied boldly to the lord mayor's question, 'Whether the priests cannot make the body of Christ?' 'I have read that God made man; but that man can make God I never yet read.' (Strype, 'Memorials,' i. p. 387.) Yet it is said by Burnet, that, 'after much pains, she set her hand to a recantation;' this, however, was not satisfactory, or at least not effectual, for she was soon apprehended again, examined closely as to her belief and doctrines, and committed to Newgate, where she was again strictly questioned as to what ladies at court had shown her favour and encouragement. Not being able to extract any information on this point, she was placed on the rack and cruelly tortured. But her patience and fortitude could not be shaken, nor does it appear that she had any disclosures to make. She was burnt with four others at the stake in Smithfield, July 16, 1546. (Fox's *Martyrs*; Burnet's *History of the Reformation*.)

ASKRIG. [YORKSHIRE.]

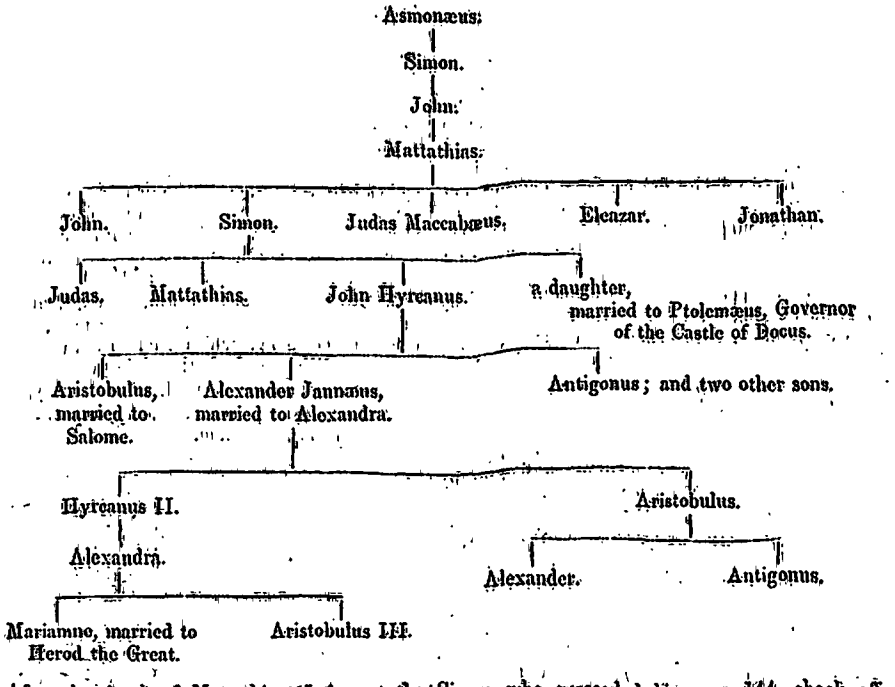
ASMONÆANS. The Asmonæan family derived their name, according to Josephus ('Antiq.' xii. cap. 6), from Asamonæus. The son of Asamonæus was Symeon or Simon, whose son Johan-

nes was the father of Mattathias, the father of the Maccabees.

The Jews had for many years been subject to the arbitrary rule of the Syrian kings, when Mattathias and his five heroic sons, John, Simon, Judas, Eleazar, and Jonathan, commenced their victorious resistance to the attempt of Antiochus Epiphanes to compel the Jews to exchange their religion for the idolatry of their Syro-Macedonian oppressors. This struggle is described in the books of the Maccabees, which are included among the books of the Apocrypha. It is also detailed in the 'Antiquities' of Josephus, from book xii. cap. 6, to the end of book xvi. [Maccabees.]

The power of the Asmonæan dynasty lasted from the year B.C. 166 to B.C. 37; but the family survived the dynasty. It arose from the pious heroism of the Maccabees. Their first descendants ruled without the title of king: they possessed the functions of the high-priest, the chief civil magistrate, and the chief commander of the army. Their power was based upon the grateful esteem of the Jewish nation, which they had restored to independence. The later Asmonæan princes adopted the title of king, but they lost, with the pious virtue of their ancestors, the love of the nation, and subsequently, by family discord, the kingdom itself.

The genealogy of the Asmonæan family is as follows:—



After the death of Mattathias, Judas, at the head of those Jews who had fled into the wilderness, made war (B.C. 166) against Antiochus Epiphanes, and became chief of his people. He purified the temple, and restored the former worship. Antiochus, having heard of the defeat of his troops, swore that he would destroy the whole nation, but as he was hastening to Jerusalem he died miserably, B.C. 165 or 164. [Antiochus Epiphanes.] Antiochus Eupator, his son, made peace with the Jews, but the war was soon renewed, and Eleazar lost his life in battle. Demetrius Soter, having put to death Antiochus, usurped his kingdom, B.C. 162, and conferred the high-priesthood on Alcimus. In a battle against Bacchides, one of the generals of Demetrius, Judas was killed. Jonathan succeeded his brother, and after some years of commotion, was made high-priest B.C. 153.

Jonathan was treacherously murdered; but Simon, who succeeded him, B.C. 144, shook off the yoke of the kings of Syria, and took Gaza and the fortress of Jerusalem. Ptolemæus, the son-in-law of Simon, aspiring to reign in his stead, invited his father and brothers-in-law to a feast, at which both Simon and his sons were assassinated, B.C. 135. John Hyrcanus, the third son of Simon, was not with him when he was murdered, and Ptolemæus called Antiochus Sidetes to his assistance. They besieged Jerusalem, which being reduced to a state of famine, John was obliged to capitulate. John went afterwards with Antiochus in an expedition against the Parthians; and by his exploits acquired the surname Hyrcanus. [Hyrcanus, John.]

Aristobulus, the son of Hyrcanus, became high-priest after the death of his father, and, contrary to former custom, assumed both the diadem and regal title, B.C. 106. Aristobulus died at the close of the first year of his reign. Three of his bro-

thers whom he had kept in prison were set at liberty on his death. The eldest, Alexander Jannæus, succeeded him in the royal dignity, title, and office, B.C. 105. [ALEXANDER JANNÆUS.] Alexander Jannæus reigned twenty-seven years, and was succeeded by his wife Alexandra, B.C. 79. His son Hyrcanus became high-priest. Alexandra reigned nine years. Upon her death, B.C. 70, the government devolved upon Hyrcanus II., but his brother Aristobulus usurped the royal power, though he allowed Hyrcanus to retain the office of high-priest, with an ample revenue. After some time, being assisted by Aretas, an Arab, Hyrcanus attempted to resume his former rank. Aretas besieged Jerusalem, and Aristobulus was reduced to great straits; but Aretas was obliged by the Romans under one of the officers of Pompeius to raise the siege and to return to his own dominions. Thus commenced the Roman power in Judæa. The authority of Aristobulus had not yet been sanctioned by the Romans; and on the appeal of Hyrcanus, Pompeius decided in favour of Hyrcanus, whom he reinstated under Roman protection. Upon this Aristobulus shut himself up in Jerusalem. Pompeius besieged the city during three months, and took it on the Sabbath, B.C. 63. Aristobulus appeared at Rome on the triumph of Pompeius, B.C. 61. The remaining events of his life are unimportant.

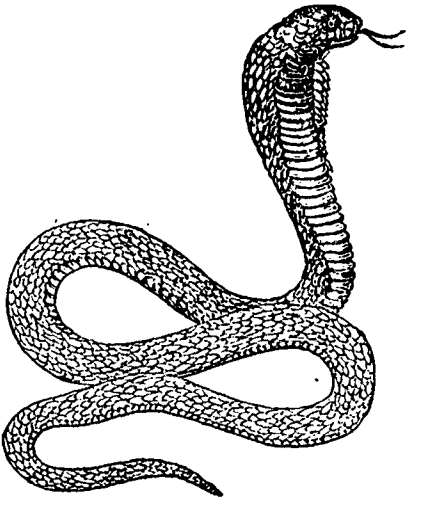
The government of Hyrcanus was disturbed by continual commotions. C. Julius Cæsar gave him many of the neighbouring towns, and allowed him to rebuild the walls of Jerusalem; but Antipater, the Idumæan, wrested from him all except the name of ruler. Antigonus, the son of Aristobulus, took Hyrcanus prisoner, and, to disable him for exercising the sacerdotal functions, cut off his ears. Hyrcanus was put to death, B.C. 30, by Herod, the son of Antipater the Idumæan. On the death of Hyrcanus, Antigonus became king; but, being soon after besieged by M. Antonius, at the expiration of three years from the commencement of his reign he was put to death by the Romans, B.C. 37, to make way for Herod, with whom commenced a new dynasty, A.D. 37. To confirm his authority, Herod married Mariamne, grand-daughter of Hyrcanus II., and made her brother Aristobulus III. high-priest. [HEROD.] Aristobulus III. was put to death by Herod, B.C. 35. The historian Josephus was descended from the Asmonæan family. In the commencement of his autobiography he says, 'By my mother I am of the royal blood; for the children of Asmonæus, from whom that family was derived, had both the office of the high-priesthood and the dignity of a king for a long time together. I will accordingly set down my progenitors in order.'

(*The Five Books of the Maccabees, with Notes and Illustrations*, by Henry Cotton, D.C.L., Archdeacon of Cashel, Oxford, 1832; Josephus, *Antiq.* xii. 6—xvi. end.)

ASP. (*Naja Haje; Vipera Haje*, Daudin.) The genus *Naja* is common alike to Africa and the warmer portions of Asia, and several species are well known. In India these snakes are called Hooded Snakes, or Cobras. All are deadly, being armed with poison fangs, and their bite is quickly fatal. Throughout the East there are snake charmers, who 'dally with the crested worm, and stroke his azure neck;' these men either have really, as they assert, the power of taming the Cobra without danger to themselves, or, as is more probable, are deceivers, and as soon as the snake is caught deprive it of its venom fangs. Be this as it may, they are dexterous in catching these reptiles, in discovering their haunts, and in showing them to advantage as they wreathe themselves to the tune of some simple modulation, or appear to do so. There are several allusions to the charming of serpents, by music or incantations, in the Scriptures. (Psalms lviii. 4, 5.)

The Asp, or El Haje, is a native of Egypt and Arabia, and was well known to the ancients. The Egyptians sculptured it on their temples as the emblem of divinity, which they supposed to protect the world.

Like all the rest of the genus, the Asp has the power of expanding the skin of the neck into a hood, on which, when thus stretched, the scales appear as dots with intervals between them. These snakes live in pairs, taking up their abode in ruins, the cavities of old walls, and similar places of concealment, and defend each other with indomitable resolution. If one happens to be killed, the survivor darts upon the destroyer, and will follow him with great perseverance, seeking revenge, and he must either save himself by a speedy flight, or by a well-timed blow, which shall lay the reptile prostrate. When excited, the Haje raises itself up on its tail, expands its hood, hisses loudly, and darts with a spring upon its enemy, repeating the attack if it misses its aim.



The Asp.

The Haje is from 3 to 5 feet in length; it is of a dark green colour, marked with bands of blackish brown.

According to Dr. A. Smith, varieties of this snake,

or, at least, two or three very nearly allied species, inhabit South Africa. He says that they climb trees with great facility in search of birds and their eggs, and sometimes take to the water, but swim slowly with the head raised above the surface.

ASPA'RAGIN, a peculiar substance obtained from asparagus, and also from marshmallow root; it is also contained in the potato, liquorice-root, and beet-root. It crystallizes in transparent limpid colourless prisms. It is inodorous, has a nauseous disagreeable taste, and is rather hard; it dissolves more plentifully in hot water than in cold, and is dissolved by dilute alcohol, but is insoluble in absolute alcohol, æther, and in oils, both volatile and fixed. Acids, as well as the alkalies, decompose it when heated, but not when cold: the results are aspartic acid and ammonia.

It consists of 8 equivalents of carbon = 48; 8 equivalents of hydrogen = 8; 6 equivalents of oxygen = 48; 2 equivalents of azote = 28; making the equivalent of asparagin = 132.

Aspartic acid contains 3 equivalents less of hydrogen and 1 less of azote.

ASPA'RAGUS, a genus of monocotyledonous plants belonging to the natural order *asphodeleæ*.

The most remarkable species is the common cultivated asparagus, which is found in sandy and maritime places in most parts of the middle and south of Europe, the Crimea, and also of Siberia and Japan.

The asparagus plant should have a light soil which offers little resistance either to the emission of its roots or the protrusion of its stems; the soil should also be capable of both receiving and parting with water readily. To give vigour to the shoots, as much manure is added as the cultivator can afford to apply to it: when the seed is sown, or the young plants finally placed in the situation in which they are to produce a crop, an abundant supply of decayed manure, or of bones, or of parings of horses' hoofs, is buried below them; and they are also annually top-dressed with finely pulverized manure, when the beds are arranged in the winter. Attention being paid to these circumstances, asparagus is one of the easiest of all vegetables to cultivate; but no art or skill will produce precisely the soil which is most favourable for its growth. This exists naturally in some places in the fittest of all possible states, and it is there only that it is to be obtained in its greatest perfection; as in the rich alluvial soil of Battersea, Mortlake, and other places round London: in some of these villages it is produced of such extraordinary size that 110 heads in a state fit for the kitchen have been known to weigh more than 32 lbs.

In this country asparagus is frequently forced, but seldom with much success. In many parts of Europe, however, especially about Riga, a mode of forcing is adopted which causes the asparagus to be much finer than any obtained in this country by artificial means. Where it is wished to have exceedingly large heads of forced asparagus, pieces of bamboo, or any other hollow tubes, should be put over the shoots when they first make their appearance. The shoots will thus acquire a length of as much as eighteen inches without losing their tenderness.

ASPA'SIA was a native of Milétus, and the daughter of Axiochus. She gained entire possession of the affections of Pericles, who divorced his first wife with her own consent, according to Plutarch, in order to marry Aspasia. We are told little of her beauty, but much of her mental powers and cultivation. Plutarch says that Pericles resorted to her 'because she was a wise woman, and had great understanding in matters of government.' Socrates sometimes visited her in company with his friends. (Xenophon, 'Mem.' II. vi. 36; Plato, 'Menexenus.')

On this and similar authority we learn that Pericles was indebted to Aspasia for much of that mental cultivation in which he excelled all men of his age. But she is accused of having led the Athenians, by her influence with Pericles, into two wars; but as to one at least, the Samian war, B.C. 440, the evidence is not complete. Aristophanes charges Pericles with having involved the country in a quarrel with Megara, by a non-intercourse act, in revenge for the forcible abduction by some Megarians of two young attendants upon Aspasia. ('Acharn.' 523.) Hermippus, the comedian, prosecuted Aspasia on the charge of not believing in the gods, and of being instrumental in debauching free women to gratify the lust of Pericles. (Plutarch, 'Pericles,' c. 24.) We are told on the same authority, that nothing but the personal exertions, the tears, and entreaties of Pericles procured her acquittal. But these stories are not well authenticated. The fact of Aspasia's intercourse with the chief men of her age, and the acknowledgment of her great talents, is undisputed; but in this there is nothing singular. The same thing has happened from time to time in other countries.

(Plutarch, *Pericles*, c. 24, 30, 32; Bayle.)

ASPECT, an astronomical term, now entirely disused, applied to the various positions of the planets with respect to one another, as seen from the earth. The terms *conjunction* and *opposition* are the only two out of five names of aspects which have been retained; the remainder being called sextile, quartile, and trine. At *conjunction* two planets have the same longitude; when 60° apart, the aspect is *sextile;* when 90°, *quartile;* when 120°, *trine;* when 180° apart, or opposite, they are in *opposition*. The following are the characters which are used:—

Name of Aspect.	Character.	Diff. of Long.
Conjunction	☌	0°
Sextile	⚹	60°
Quartile	□	90°
Trine	△	120°
Opposition	☍	180°

ASPEN. [SALICACEÆ.]

ASPER. [MONEY.]

ASPERGI'LLUM, in zoology, a genus of tubular burrowing mollusks, furnished with a bivalve shell, incrusted, as it were, in an elongated conical testaceous sheath gradually lessening in diameter to the aperture which is farthest from the incorporated bivalve. The end nearest to the bivalve is dilated into a concave disk, with a central fis-

sure, and perforated with minute but raised holes. The disk is bordered by a tubular frill. There are but few species; and of these, *Aspergillum Javanum*, known to collectors as The Watering-Pot, is the most common. This genus is in the family *Gastrochænidæ* (Gray); *Les Tubicolées* (Lamarck).

ASPERGILLUS. [BYSSOIDEÆ.]

ASPERN, a small village in the province of Lower Austria, situated on an arm of the Danube, nearly opposite to Vienna. One of the severest contests between France and Austria, in the campaign of 1809, was fought in the neighbourhood of Aspern. This battle was fought on the 21st and 22nd of May, 1809: at its close the French were obliged to retreat, having lost 30,000 men, or, according to the Austrian account, 41,000 men in killed and wounded; Marshal Lannes and several generals were among the killed. During the engagement the village of Aspern, which has since been rebuilt, was converted into a heap of ruins, after enduring thirteen successive assaults.

ASPHALTE is a name given to various bituminous compounds, which have been much used of late for street-pavements, for the platforms of railway stations, and for flooring, roofing, and protecting buildings in various ways from damp. One of the most important of these is the Seyssel asphalte, introduced into this country by Mr. Claridge, under a patent obtained in 1837.

The principal ingredient of the asphaltic mastic of Seyssel is a dark brown bituminous limestone, found near the Jura Mountains. This stone is broken to powder and mixed with mineral tar, when intended for fine work, such as the covering of roofs and arches, the lining of tanks, and application as cement; or, when intended for the coarser purposes of pavement and flooring, with mineral tar and sea-grit; and the whole is exposed for several hours to a strong heat, in large caldrons, until the ingredients, which are continually stirred by machinery, are perfectly united. The mastic is then run into moulds so as to form it into large cakes or blocks, which are oroken up and re-melted on the spot in portable caldrons, with wood or coke fires, with the addition of a little more mineral tar; the whole being well stirred to prevent burning, and to ensure the perfect mixture of the ingredients. When ready for use the mastic emits jets of light smoke, and drops freely from the stirring instrument. It should then be carried very quickly to the spot where it is to be applied, in iron ladles, or heated iron buckets. In all cases however it is desirable to have the caldron as close to the work as possible; and in covering brick arches or arched roofs, it may be hoisted to the top of the building, proper precautions being observed to shelter the finished work from injury.

Pavements of asphalte should be laid upon a firm and dry foundation of concrete; and in laying the asphalte the surface is divided by slips of wood, which serve as gauges to regulate the thickness, into compartments of about thirty inches wide, in which the hot cement is spread and levelled with wooden instruments; after which, while the surface is yet soft, sand mixed with slate-dust, dead plaster of Paris, or powdered chalk, or, for coarser work, clean sharp grit is sifted over it, and rubbed or beaten in. Full instructions for the use of asphalte in this and other ways have been published by the Seyssel Asphalte Company. These show that, in whatever way it may be applied, the greatest care is necessary to secure a solid foundation, to ensure the dryness of the concrete or brickwork to which it is applied, to use the mastic as hot as possible, and to make the joints perfect. Wherever any part needs repair it may be softened by laying some hot mastic upon it, and then cut away with a chisel. The old mastic may be re-melted, and, the edges of the old work being cut square, the hot material will readily adhere to them, if they are carefully freed from dust and moisture. The thickness of asphalte used for pavements varies from half an inch to about an inch and a quarter; from half an inch to five-eighths is sufficient for roofs and the covering of arches to prevent the filtration of water, and for the lining of tanks and ponds; and about half that thickness is sufficient for covering the ground-line of brickwork, to prevent the rising of damp.

ASPHALTITES LACUS. [DEAD SEA.]

ASPHALTUM is one of the varieties of bitumen, arising from the decomposition of vegetable matter. [BITUMEN.] It occurs massive, of a dark brown or black colour, with a conchoidal fracture, and a resinous lustre. It is opaque, and exceedingly brittle at a low temperature, but softens and fuses by the application of heat; in density it varies from that of water to 1.6. It is insoluble in alcohol, but soluble in about five times its weight of naphtha, with which it forms a good and useful varnish. [HYDROGEN (*Carburets*).] Its combustion is rapid and brilliant, with the production of the bituminous odour.

It is found in many countries, but most abundantly on the shores, or floating on the surface, of the Dead Sea; at Hit, above Babylon, on the Euphrates; and near the Tigris. In Trinidad in the West Indies it fills a basin of three miles in circumference and of unknown depth. There is a pitch-spring in Zante, which we know to have been at work for above 2000 years. (Herodotus, iv. 195.) It is the principal colouring matter of the dark indurated marl, or shale, which is found in coal districts.

ASPHODE'LEÆ, or the asphodel tribe, are monocotyledonous plants, which form a very natural assemblage, for the most part easily recognised. They may be formed into two subdivisions.

The first, or the *alliaceous* subdivision, in which there is no true stem, and which consists entirely of bulbous species, the roots of which are emitted and perish annually. To this belong the onion, garlic, and their allies, together with the hyacinth, squill, and star of Bethlehem. A great number of this species are favourites with the horticulturist, on account of their early appearance in the spring and their easy cultivation.

The second subdivision, consisting of the true asphodels and those which resemble them, have no bulbs, but in their stead clusters of fleshy roots such as we find in the asparagus, which belongs to this

subdivision. The stems of these are frequently woody, but in that case they are branched. *Dracæna*, or the gum-dragon tree, is a most remarkable instance of this, it having almost the appearance of a dicotyledon when deprived of foliage. This subdivision also contains aloes, with their thick fleshy leaves and forked stems.

ASPHO'DELUS, comprehends some handsome hardy perennial plants. *A. luteus*, the common yellow asphodel, is a beautiful perennial. It grows wild in Barbary, Sicily, Dalmatia, the Peloponnesus, and even spreads into the Crimea. The flowers are handsome, deep yellow, with a green streak on the outside of each petal. The fruit consists of red pulpy berries. *A. albus*, or the white asphodel, found all over the southern provinces of Europe and the basin of the Mediterranean Sea, has white flowers, with a reddish streak on the outside of each petal.

ASPHY'XIA, a Greek word (*ἀσφυξία*) which signifies a cessation of the pulsation, originally expressed any state of disease in which there was a suspension or loss of the heart's action, and a consequent failure of the pulse; but the term is now used to denote a suspension or loss of the power of respiration. The state of asphyxia is that in which the respiratory actions are either temporarily suspended, or have wholly ceased; a state necessarily inducing such a change in the nature of the blood as is incompatible with the continuance of life. [Blood; Drowning.]

ASPIDIA'RIA (Presl). Several species of the Lepidodendra of Sternberg are thus named. From the coal formation.

ASPI'DIUM, a genus of Ferns. One of the most remarkable species of which is the *Aspidium Baromez*, or Tartarian Lamb. This plant, from its peculiar colour and form, was at one time really supposed to be a kind of vegetable animal. The rhizoma of the *A. Baromez* presents a rude resemblance to an animal. It is covered with a silky down, and when cut into has a soft inside with a reddish flesh-coloured appearance, sufficient to account for the origin of the fables with regard to its animal nature. The Baromez possesses the astringent property which is common to all ferns; hence it has been used as a styptic. Dried specimens have sometimes been brought to this country, but the plant has not yet been brought in a growing state.

Aspidium Filix mas, the male fern, is a native of Great Britain, and is admitted into the British Pharmacopœias on account of its anthelmintic properties. The part used in medicine is the root, or rather the rootstock. It will not keep well, and should be renewed at least every two years.

The ancients used this plant as a vermifuge. The dose of the root according to Peschier is about one drachm. *A. Filix fœmina*, Lady-Fern, is one of the most beautiful of the British ferns. The root is ometimes gathered for that of the male fern.

ASPIDORHY'NCHUS, a genus of fossil Ganoid fishes, from the lias and oolite of England. (Agassiz.)

ASPIDU'RA. A fossil species of ophiuroid Echinoderms is thus named by Agassiz. From the lias of Yorkshire.

ASPIRATE, a name given to one of the divisions of consonants. Grammarians have generally avoided any formal definition of the principle which characterizes this or the other classes of letters; they have generally deemed it sufficient to enumerate those letters which belong to each class, and to assign names to these classes without giving any reason for the selection. The subject is confessedly one of difficulty, and it is therefore with much doubt that the following system is proposed. In the pronunciation of the letters called *tenues*—viz. *k, t, p*,—the moveable organ, whether tongue or lip, comes into the minimum of contact with the organ struck, whether palate, teeth, or lip, and the stroke is rapid. In the pronunciation of the *medials*—*g* (as in *goose*), *d, b*—the surface of contact is greater, the contact itself closer, and of longer duration. Lastly, in the utterance of the aspirated letters, the organs are brought more or less closely together through the whole breadth of the mouth, so that the vibration of air passes through a long narrow fissure. If the pressure or approximation be of slight intensity, and of short duration, the series of aspirates, *y, ch* (as at the end of German or Scotch words), *th* as in *thing*, *ph*, *w* are produced. If the pressure be closer and more lasting, there result the aspirates *gh*, *th* as in *this*, and *v*. The former series might perhaps deserve to be called aspirated *tenues;* the latter, aspirated *medials*. The sibilants again seem to have a claim to be admitted under the genus aspirate. If this claim be allowed, *s* as in *such*, *sh* (or *ch* of the French *chemin*), *j* as in the French *jour*, may be called the sibilant *tenues;* and *ch* (as in the English *church*), *j* (as in the English *journey*), are the corresponding medial sibilants. The letter *h*, which has been omitted in our series, is only a faint *ch* (as pronounced by the Germans). Indeed, if the pedigree of this letter be traced upwards, it will be found to terminate in the Hebrew *cheth*. In the comparison of cognate languages, it is important to bear in mind—first, that the aspirated letters are often convertible with one another; and secondly, that they are severally interchangeable with the medials and tenues of the same organ. Thus, 1st, *ch* of the Greek language often corresponds to *h* in the Latin: *cheim* (*χειμ-ων, χειμ-ερινος*), Gr., *hiem-s*, Lat., *winter; chamai*, Gr., *humi*, Lat., *on-the-ground; cha* (*χα-σκειν*), Gr., *hia-re*, Lat., *to gape*. 2, *h* in Greek corresponds to *s* in Latin: *hepta*, Gr., *septem*, Lat., *seven; hex*, Gr., *sex*, Lat., *six; huper*, Gr., *super*, Lat., *above* (*upper*). 3, *th* in ordinary Greek to *ph* or *f* in the Æolic dialect and Latin; *ther*, ord. Gr., *pher*, Æolic Gr., *fera*, Lat., *a wild beast; thilb*, ord. Gr., *philb* in Homer, *press; thura*, Gr., *a door, fora-s*, Lat., *out-of-doors; tharsus* (or *thrasus*), Gr., *fortis*, Lat., *bold; thre*, Gr., *fle*, Lat., *bewail*. 4, *th* into *s*, as *sios, god*, in the Laconian dialect, instead of *theos*. 5, *th* in ordinary Greek to *ch* in other dialects: *ornith*, ordinary Greek, *ornich*, Doric, *a bird*. Hence in the same language *ith* (*ιθ-μα*) and *ich* (*ιχ-νος*) enter into the two forms which signify *a step; erch* and *elth* into the two forms of the

verb signifying *to go*, ἐχομαι, ἰλθων. Hence too the different forms of the Greek and Latin names for Carthage, *Carchedon*, Gr., *Carthagon*, Lat., in which the second interchange of *d* and *g* compensates for the inverse change of the aspirates *ch* and *th*. 6, *f* in Latin corresponds to *h* in Spanish, *faba*, Lat., *haba*, Sp., *a bean*; *fabula-ri*, Lat., *habla-r*, Sp., *to talk*; *fac-ere*, Lat., *hac-er*, Sp., *to do*; *fato* (*fatum*), Lat., *hado*, Sp., *fate*; *formoso* (*formosus*), Lat., *hermoso*, Sp., *beautiful*. For the relation of *sw* and *w* with *h*, see DIGAMMA.

Secondly, the several aspirates are, as above stated, interchangeable with the medials and tenues of the same organ. Examples of these changes will readily suggest themselves in every language. The most deserving of attention are perhaps those which exist between the English and German:

initial *k*,	in German,	corresponds to	*ch*, *sh*	in English.
final *g*	,,	,,	*w*, *y*,	,,
final *ch*	,,	,,	silent *gh*, *ch*, *k*.	
final *t*	,,	,,	*th*, *d*,	,,
initial *d*	,,	,,	*th* in *think*.	
final *d*	,,	,,	*th* in *the*.	
th	,,	,,	*d*,	,,
initial *z*	,,	,,	*t*,	,,
final *tz*, *ss*	,,	,,	*t*,	,,
final *b*	,,	,,	*v*, *f*,	,,
pf	,,	,,	*p*,	,,
final *f*	,,	,,	*p*,	,,
initial *v*	,,	,,	*f*	,,

(Grimm, *Deutsche Grammatik*; Becker, *German Grammar*, English edit. p. 26.)

ASPLENIO'PTERIS (Sternb): [PTEROPHYLLUM.]

ASPLE'NIUM, a genus of plants belonging to the natural order of ferns. The species are known by the name of Spleenworts.

A. Adiantum nigrum, Black Spleenwort, is a native of Europe, and is abundantly distributed throughout the United Kingdom. It is one of the ferns formerly much used in medicine, and is stated by Ray to be efficacious in cough, asthma, pleuritis, jaundice, stone, gravel, and other diseases. *A. Ruta muraria*, Wall Rue, is very common on rocks and old walls in Great Britain and throughout Europe, and is also a native of North America. It was at one time used as a remedy in coughs and asthmas, obstructions of the liver, and in cutaneous diseases; but has now fallen into disuse. *A. trichomanes*, Common Spleenwort, has been also used in medicine, and for the same diseases as the previous species, but it has fallen now entirely into disuse. The other British species of Asplenium are *A. alternifolium*, *A. septentrionale*, *A. marinum*, *A. viride*.

These and other ferns may be easily cultivated, by placing them in situations resembling their natural habitats. They require a pure atmosphere, plenty of space, and natural shade, with a due supply of water. They may be planted on decayed wood, in holes of rocks and brick, with almost any soil.

ASPRE'DO, in zoology, a genus of abdominal malacopterygious fishes, characterized by the horizontal flatness of the head, and the enlargement of the anterior part of the trunk, arising from an unusual development of the bones of the shoulder. They are distinguished from the *Silures* of Linnæus by the proportional length of the tail; by the eyes being placed in the upper surface of the head, and the intermaxillary bones concealed beneath the ethmoid, directed backwards, and furnished with teeth only along their posterior margin; finally, they are remarkable as being the only known fish, not being cartilaginous, which have not moveable opercula, the bones of which these organs are composed being soldered on either side to the tympanum and preoperculum. The opening of the gills is formed by a single slit in the skin immediately behind the posterior side of the head; and their membrane is composed of six branchiostegous rays. The lower jaw is transverse, and the upper projects considerably beyond it, and forms a small attenuated muzzle. There is but a single dorsal fin, which is of small extent, and situated on the fore part of the body; the anal fin, on the contrary, is very large, and occupies the entire length of the tail. This genus contains but very few species, the principal of which, the *Silúrus Aspredo* of Linnæus, inhabits the rivers and lakes of North America.

ASPROPO'TAMO. [ACHELOUS.]

ASS, a domestic animal, too well known to need description, and too much undervalued in our island to receive much attention. The ass is the patient drudge of the cottager, and its services are mostly paid by ill treatment. In the East, however, where, from the most remote times, it was kept for the service of man, it is more justly appreciated, and its use is not limited to the humbler classes. The finest asses are those of Arabia; their coat is smooth and clean; they carry the head elevated, have fine and well-formed legs, which they throw out gracefully in walking or galloping. They are used only for the saddle, and are imported in great numbers into Persia, where, according to Chardin, they are frequently sold for 400 livres; they are taught a kind of easy ambling pace, are richly caparisoned, and used only by the rich and luxurious nobles. A fine breed, of Arab lineage, used exclusively for the saddle, exists in Syria;—a small spirited and graceful kind is also found in Syria, upon which the ladies ride from preference; and besides this there is a stout breed fitted for ordinary labour. Another breed, that of Damascus, is characterized by the length of its body and of its ears; it is much employed by the bakers of Damascus in carrying flour and brushwood. The ordinary asses of Persia are strong, but in other respects not to be compared to those of Arabia. As we proceed farther eastward the ass degenerates, and in India it is very small, of inferior qualities, and used only by the people of the lowest caste.

The finest asses of Europe are those of Malta and Spain. Italy also possesses a superior breed; and the same remark applies to some parts of France, as Le Poitou and Le Mirebalais. In the north of Europe the ass is little known; and in England, although it is said to have been known and kept in the reign of Ethelred, it could not

have been common, and perhaps soon became extinct. for it was either extremely rare or not extant until after the time of Elizabeth.

The hybrid, between the male ass and mare, is termed a *mule;* that between the horse and female ass a *hinney.* The latter is seldom to be seen, and is of little value. The mules of Spain are celebrated for strength, stature, and beauty; nor are those of South America (where numbers of asses are kept for interbreeding with mares) much inferior.

There are abundant allusions both to the ass and to the mule in the Scriptures, which prove the estimation in which they were held; the highest personages riding on ordinary occasions upon them. The horse was used in war, or employed to swell the pomp of solemn processions. Although we cannot determine the time in which the mule came first to take its place among our domestic animals, we know that it must have been antecedent to the time of David, for he had saddle-mules; and from other passages it would appear that they were common. We read of the couriers of Persia and Media riding upon mules and camels. (Esth. viii. 14.) The most valuable mules in Syria, bred from mares of the Arab strain, are in great request, and celebrated for beauty and spirit.

The wild origin of the domestic ass is most probably the koulan, or onager (*Equus onager*), which exists in herds in the country of the Kirghis, the Bucharians, and Calmues, and also in northern Persia. It is evident that it once existed in northern Africa, and may yet be found in the island of Socotra, and perhaps in the region of Cape Gardafui. [Horse.]

ASSAFŒTIDA. [Ferula.]

ASSAFŒTIDA is a gum-resin, obtained from the roots of the *Férula assafœtida*, a perennial plant growing in Persia, in the province of Lar, and in Khorassan. In its recent and purest state it is white and transparent, but by exposure to the air it becomes of a clear brown colour, sometimes verging to red or violet, and of a waxy appearance. The inferior sort is dark-brown, of a dull fatty appearance, viscid, and greasy; it is called assafœtida in masses. The smell of assafœtida is penetrating, very disagreeable, and lasts some time. The taste is bitter, unpleasantly aromatic, of an alliaceous or garlic-like character.

Assafœtida acts on the human system as a stimulant, more especially of the nerves of the chest and abdomen. It also influences, like all gum-resins, the vessels distributed on the lower portion of the abdomen, or the pelvis.

It is very valuable as an antispasmodic, and in case of weak digestion, hysteria, colic, asthma, and hooping-cough. It is employed externally as a counter irritant. In cases of organic disease of the heart, especially enlargement, and in fulness or congestion of the brain or spinal chord, or in any organic disease of these, assafœtida is improper.

ASSAHAN. [Sumatra.]

ASSASSINS, a military and religious order, formed in Persia in the eleventh century. It was a ramification of the Ismaelites, who were themselves a branch of the great Mohammedan sect of the Shiites, the supporters of the claims of Ali's posterity to the caliphate. [Ali ben Abi Taleb.] But among the Ismaelites there were many who were Mussulmans only in appearance, and whose secret doctrine amounted to this, that no action was either good or bad in itself, and that all religions were the invention of men. These unbelievers were formed into a secret society by one Abdallah, a man of the old Persian race, who had been brought up in the religion of the Magi, and was a hater of the Arabs and of their faith. Under the protection of the Ismaelites a lodge of the secret doctrine was established at Cairo, and its members spread over a great part of Asia. Their ostensible object was to maintain the claims of the Fatimide caliphs to universal dominion, and to urge the destruction of the caliphs of Bagdad as usurpers. One of the adepts, Hassan ben Sabah, thought of turning these instruments to his own advantage, and after many vicissitudes and wanderings obtained possession, by the aid of his brethren, of the hill-fort of Alamoot (or 'vulture's nest,') situated to the north of Casvin, in Persia, and there (A.D. 1090) established an independent society or order, consisting of seven degrees, with himself at the head as sheikh al jebel, *i.e.* 'sheikh of the mountain.' Under him came three dai al kebir, the grand priors of the order; 3rdly, the dais, or initiated masters; 4thly, the refeeks, or companions; 5thly, the fedavees, or devoted; 6thly, the lasceks, aspirants or novices; 7thly, the profane, or common people. Hassan drew out for the dais, or initiated, a catechism consisting of seven heads, which did away effectually with all fixed rules of morality or faith. But this secret knowledge was confined to a few; the rest were bound to a strict observance of the letter of the Koran. The most effectual class in the order were the fedavees—youths often purchased or stolen from their parents when children, and brought up under a particular system of education, calculated to impress upon their minds the omnipotence of the sheikh, and the criminality as well as utter impossibility of evading his orders, which were like the mandates of Heaven itself. These fedavees were clothed in white, with red bonnets and girdles, and armed with sharp daggers; but they assumed all sorts of disguises when sent on a mission. Marco Polo gives a curious romantic account of the garden at Alamoot, to which the fedavee, designed for an important mission, was carried in a state of temporary stupor produced by powerful opiates, and where, on awakening, he found every thing that could excite and gratify his senses. He was made to believe that *this* was a foretaste of the paradise of the prophet, reserved for his faithful and devoted servants, and thus became willing to encounter death, even under the most appalling forms, in order to secure a permanent seat in the abode of bliss. Marco Polo's narrative is confirmed by Arabian writers, and Von Hammer inclines to believe it true in the main; others attribute the visions in the garden to the effects of the intoxicating preparation administered to the fedavees. The name of *hashish*, which is that of an opiate made from hemp-leaves,

is supposed to have been the origin of the word 'Assassins.' The word becoming familiar to the crusaders was by them carried to Europe, where it was used as synonymous with that of *sicarius*, or hired murderer.

The Assassins, either by force or treachery, gained possession of many other castles and hill-forts in Persia. The sultan Melek Shah attacked them, the doctors of the law excommunicated them, but the fedavees carried secret death among their enemies; the sultan's minister, Nizam ul Mulk, was stabbed, and his master soon after died suddenly, it was supposed by poison. The Assassins spread into Syria, where they acquired strongholds in the mountains near Tripoli; and the sultan of the Seljukides was glad to come to an agreement by granting them several districts. Hassan ben Sabah, having extended his order over great part of the Mohammedan world, died at Alamoot in 1124, after thirty-five years' reign. He had several successors, all of whom adopted the practice of secret assassination, and several princes fell under the daggers of their followers; among them was Raymond, count of Tripoli, in 1151. At length the great Mongol conqueror, Mangoo Khan, sent his brother Hulakoo to exterminate the murderous sect. Alamoot was taken, and their last chief, Roken-ed-deen, was made prisoner; the fortress Kirdcoo resisted for three years, but at last all the haunts of the Assassins were taken, and the inmates were massacred without distinction, A.D. 1256.

The Syrian or western branch of the Assassins, however, continued to exist for some years later under their Dai al Kebir. Massyad, not far from Beyroot, was their principal stronghold. The history of this branch is the most familiar to Europeans, being much interwoven with that of the crusaders and of the great Sultan Salah-ed-deen. The latter was several times in danger from the daggers of the Assassins, and Conrad, marquis of Tyre and Montferrat, was murdered by two fedavees in the market-place of Tyre, 1192. At last the Syrian Assassins were conquered, and their stronghold taken, by Bibars, the Mamluke Sultan of Egypt, fourteen years after the destruction of the eastern branch by the Mongols. Many, however, found refuge in the mountains of Syria, and became mixed with the Yezeed Koords; and some of the tenets of the order are believed to linger still among them.

(Hammer, *Geschichte der Assassinen;* Sir John Malcolm's *History of Persia;* Wilken's *History of the Crusades.*)

ASSAULT and BATTERY. An assault has been commonly defined 'an attempt or offer with force and violence to do a corporal hurt to another.' Thus, presenting a gun at a person within the distance to which it will carry, throwing a stone or other missile at him, drawing a sword and waving it, or even holding up a fist in a threatening manner, are instances of assault. But no words, however insolent and provoking, unaccompanied by an act of violence, amount to an assault.

A *battery*, which is said to imply an assault, consists of any kind of corporal injury, however small, designedly done to another by an actual contact with his person. The injury need not be done by the immediate hand of the party; nor is it material whether the act is wilful or not, provided it proceeds from a mischievous design. In a case where a lighted squib was thrown into a market-place, which was tossed about from hand to hand and at last struck a man in the face and put out his eye, it was holden to be an assault and battery by the first thrower.

A person who commits an assault and battery is liable to an action of trespass by the party injured, and also to a criminal prosecution for a misdemeanour and breach of the peace; but if a defendant is found guilty upon an indictment, and the court is informed that an action has been brought for the same injury, a nominal sentence is usually passed, unless the prosecutor will consent to discontinue his action.

The punishment for common assaults is fine and imprisonment at the discretion of the court. By the 9 Geo. IV. c. 31, persons convicted of assaulting magistrates, officers, or other persons concerned in preserving wrecks, are liable to be transported for seven years, or to be imprisoned, with or without hard labour, at the discretion of the court. The statute contains other provisions of a like special nature, as to assaults upon a peace or revenue officer in the execution of his duty, and the like. By 1 Vict. c. 85, s. 11, a man may be convicted of an assault under an indictment for a greater offence.

Though the 33 Henry VIII. c. 12, has been repealed by the 9 Geo. IV. c. 31, it seems that the penalty of the loss of the right hand attached by the common law to assaults committed in the actual presence of the king, or in his constructive presence in the superior courts of law, still remains.

By the 9 Geo. IV. c. 31, sec. 27, persons guilty of common assaults may be convicted summarily by two magistrates, who are empowered to impose a fine not exceeding 5*l.*, with the costs; and in case of non-payment, to commit offenders to prison for two months.

(Stephen, *New Commentaries*, iii. 469, iv. 138.)

ASSAULT is in Scotland a punishable offence, usually prosecuted by the public prosecutors attached to the sheriffs' courts, to the police courts established by statute, and to the justice of peace courts. It is seldom brought before the supreme criminal court, unless it be of a highly criminal character; and it is then generally charged as assault with some specific aggravation, as 'assault aggravated by being to the effusion of blood,' or as 'being to the danger of life,' or 'by being committed against a magistrate,' or 'by being perpetrated with a lethal weapon,' an expression applicable to a sword, hatchet, hammer, or any instrument more formidable than an ordinary walking-stick. Criminal prosecutions for assault, at the instance of private parties, are almost unknown. The party injured may pursue for civil damages before a jury; but such prosecutions are not frequent. There is no division, as in England, into 'assault,' and 'assault and battery.' Many of the statutory regulations, as to

assaults by manufacturers, &c., extend to Scotland. The later statute law on this subject, having been passed to alter laws peculiar to England, does not in general apply to Scotland. The 6 Geo. IV. c. 129, however, relative to assaults connected with combination, applies to that part of the kingdom. The respective punishments of the various kinds of assault, have thus, in Scotland, been in a great measure fixed by the practice of the several criminal courts.

ASSAYE, a small town in the province of Bahar, Hindustan, about 28 miles N.N.E. from Jaulna, in 20° 14′ N. lat., 76° 40′ E. long. This place is principally known as having been the scene of a battle fought on the 23rd of Sept. 1803, between the English army, under the present Duke of Wellington, then Major-General Wellesley, and the confederate armies of Dowlut Row Scindia and the Raja of Berar. The British army amounted to 4500, of whom 2000 were European soldiers and 2500 Sepoys. The combined army amounted to 30,000, and was commanded by the French general Péron. The victory was gained by the British, at the cost however of 428 killed and 1138 wounded. The enemy fled, leaving 1200 men dead, 98 pieces of cannon, and a large quantity of ammunition and stores.

ASSAYING, a chemical operation, which differs from analysis only in degree. When an analysis is performed, the nature and proportions of all the ingredients of a substance are determined; but in assaying, the quantity of any particular metal only which the ore or mixture under examination may contain is ascertained, without reference to the substances with which it is mixed or alloyed. Assaying is sometimes conducted entirely in what is called the *dry way*, or by heat; at other times in the *moist way*, or by acids and other re-agents; and in some cases both methods are necessarily resorted to in assaying the same ore or mixture of metals.

The assaying of silver and gold is effected by a process called *cupellation*. Cupels are small flat crucibles made by pressing bone ash, moistened with water, into circular steel moulds, and they are dried by exposure to the air. The principle upon which the operation depends is, that all metals with which gold and silver are usually alloyed, are convertible into oxides by exposure to atmospheric air at a high temperature, whereas the precious metals remain unacted upon.

To assay silver by cupellation, the silver is flattened, and wrapped up in an envelope of lead. A muffle or oven is heated in an assay furnace, and the two metals put into it. The metals melt, and the lead becomes converted into an oxide, which, as well as any baser metals before combined with the silver, is absorbed by the substance of the cupel, until at length the silver is left absolutely pure.

The assaying of gold is performed, to a certain extent, exactly in the same way as that of silver; and if the gold were alloyed only with copper, the process would be as simple as that of silver assaying. Usually, however, gold contains silver, and this cannot be got rid of by cupellation: the *parting* process is therefore had recourse to; this consists in dissolving the silver by dilute nitric acid, which leaves the gold perfectly pure.

Iron ores are chiefly of three kinds: the impure protocarbonate, commonly called the argillaceous iron ore; the peroxide, including the specular and hæmatite iron ores; and the black, or magnetic ore, which is a compound of the protoxide and peroxide. The principle of assaying these ores consists in separating the oxygen from the iron, by the greater affinity of charcoal for that element at high temperatures. The ore, some charcoal, and an alkaline flux, are heated in a crucible; and the result is that all the impurities in the ore are made to leave the iron, so that the latter is presented in a purely metallic form.

Copper ores for the most part contain sulphur; and in order to assay them, a flux is prepared of fluor spar, borax, slaked lime, argol, and nitre. The ore is pounded, calcined in a crucible at a red heat; then cooled; then heated again with some of the flux until it is brought to a liquid state. The liquid metal is poured into a mould, and quenched when solid but yet hot. There is then found a portion of metal underneath, a layer of coarse slag. The metal is separated from the slag, reduced to powder, and again heated until the sulphur is driven off from it. The copper is brought to a certain state of purity by this operation; and the process is repeated a second and a third time, until the copper is perfectly free from foreign ingredients. This complicated routine is followed when the ore contains many foreign bodies besides sulphur; if sulphur be the only one, the operation is much simpler; and if sulphur even be not present, the assaying is still easier.

Lead.—The principal ore of lead is the sulphuret, commonly called galena; but the carbonate, or white lead ore, is sometimes found in considerable quantity. The former of these is assayed by being put into a crucible with iron and flux, all in small grains; and after being covered with a layer of salt, they are heated until the lead becomes separated from all impurities. The second kind of ore is assayed in the same way, but with a different flux.

Tin.—The ores of tin are principally of two kinds, the oxide and the sulphuret. The oxide is assayed by simple fusion with a flux, which removes the oxygen. The sulphuret is assayed by being first pounded and calcined, to drive off any sulphur or arsenic; and then melted again with a flux of alkalies, fluor spar, and lime, by which the tin becomes separated from all the other impurities.

Zinc.—The ores of zinc are of two kinds, the carbonate, or calamine, and the sulphuret, or blende. The carbonate is assayed by being broken into small pieces, brought to a red heat, cooled, reduced to a fine powder, mixed with powdered charcoal, and melted in a crucible, under such conditions that the zinc may leave the ore, and combine with a thin layer of granulated copper so as to produce *brass;* and the quantity of the brass so produced tests the richness of the ore

in zinc. The sulphuret, or blende, is assayed nearly in the same way.

ASSEMANI, GIUSEPPE SIMO'NE, a learned Maronite, a native of Syria, who came to Rome towards the beginning of the eighteenth century, was made archbishop in partibus of Tyre, and librarian of the Vatican, by Clement XI. He was sent by that pontiff on a literary mission to Egypt and Syria, in the years 1715-16, and he brought back to Rome many valuable MSS. He then set about compiling his 'Bibliotheca Orientalis Clementino Vaticana,' 4 vols. folio, Rome, 1719-28, which is a biographical account of the Syrian writers, divided into three classes, Orthodox, Jacobites, and Nestorians, with copious extracts in the Syriac text, and a Latin version, lists of their works, and comments on the same. The fourth volume of the 'Bibliotheca' is engrossed by a learned dissertation on the Syrian Nestorians. Assemani also completed in six volumes folio, Rome, 1732-46, the edition of the works of St. Ephraem, one of the old Syrian fathers, containing the Syriac text and a Latin translation, which was begun by Ambarach, another learned Maronite living at Rome, and better known as Father Benedetti. Assemani was also the author of other learned works and dissertations. He died at Rome in 1768, at the age of eighty.

ASSEMANI, STE'FANO EVODIO, nephew of Giuseppe, was made Bishop of Apamea, and succeeded his uncle as librarian of the Vatican. He published, among other works, 'Bibliothecæ Mediceo-Laurentianæ et Palatinæ Codicum MSS. Orientalium Catalogus,' 2 vols. folio, 1742, with notes by Gori; and 'Acta Sanctorum Martyrum Orientalium et Occidentalium,' 2 vols. folio, Rome, 1748. Another member of the same family, called Giuseppe Luigi Assemani, published the 'Alexandrine Missal,' with the liturgy of the various churches of Egypt, old and modern, 'Missale Alexandrinum S. Marci,' quarto, Rome, 1734; and also a chronology of the patriarchs of Chaldæa. The Assemani had a rich collection of Arabic and Syriac MSS., which Clement XIII. purchased for the Vatican Library, and of which Mai has made a catalogue. The Syriac MSS. alone are above 200 in number.

ASSEMANI, SIMO'NE, grand-nephew of Giuseppe Simone, and like him born in Syria, came to Italy, and was many years professor of Oriental languages in the university of Padua. He published several works in Italian and in Latin on Arabian literature and history. Assemani exposed the imposture of the Maltese, Vella, who pretended to have found, in an Arabic MS. in the convent of S. Martino at Palermo, a diplomatic code of the Sicilian Saracens. Vella made a translation of it, and published it at Palermo in 1789. ('Codice Diplomatico di Sicilia sotto il Governo degli Arabi,' 5 vols. 4to. Palermo, 1789-92.) The work was dedicated to the King of Naples. Assemani, to whom some of the proof sheets had been sent, pronounced the text to be unintelligible, except some lines which were Maltese instead of Arabic. At last Joseph Hager was sent for from Vienna to Palermo, and he having examined the MS. found it contained a narrative of the life of Mohammed, much interpolated with Maltese words, apparently with the intention of rendering the original text unintelligible. Vella's imposture was now made clear, and he was sentenced to imprisonment. (Cesarotti, *Opere*, vol. xviii.; *Fundgruben des Orients*, vol. i.; *Allgemeine Literarische Anzeigen* for 1795.)

ASSEMBLY, GENERAL, OF SCOTLAND. [GENERAL ASSEMBLY.]

ASSEMBLY, NATIONAL. [NATIONAL ASSEMBLY.]

ASSEMBLY OF DIVINES. [WESTMINSTER ASSEMBLY.]

ASSENT, ROYAL. When a bill has passed through all its stages in both houses of parliament, if it is a money bill it is sent back to the House of Commons, in which it had of course originated; but if not a bill of supply, it remains in the custody of the clerk of the enrolments in the House of Lords. The royal assent is always given in the House of Lords, but the Commons are also present at the bar, to which they are summoned by the Black Rod. The king may either be present in person, or may signify his assent by letters patent under the great seal, signed with his hand, and communicated to the two houses by commissioners. Power to do this is given by 33 Henry VIII. chap. 21. The commissioners are usually three or four of the great officers of state. The royal assent is rarely given in person, except at the end of a session; but bills for making provision for the honour and dignity of the crown, such as settling the civil list, have generally been assented to by the king in person immediately after they have passed both houses. The bills that have been left in the House of Lords lie on the table; the bills of supply are brought up from the Commons by the Speaker, who, in presenting them, especially at the end of a session, is accustomed to accompany the act with a short speech. The royal assent to each bill, when given in person, is announced by the clerk of the parliament. After the title of the bills is read by the clerk of the crown, the clerk of the parliament says, if it is a bill of supply, which receives the royal assent before all other bills, 'Le roi (or la reyne) remercie ses bons sujets, accepte leur benevolence, et ainsi le veult;' if any other public bill, 'Le roi le veult;' if a private bill, 'Soit fait comme il est desiré.'

When the royal assent is refused to a bill, the form of announcement is 'Le roi s'avisera.' There has been no instance of the rejection by the crown of any bill, certainly not of any public bill, which had passed through parliament, for many years. It is commonly stated, that the last instance was the rejection of the bill for triennial parliaments by William III. in 1693. But another instance of the rejection of a bill occurred towards the end of the same year, the rejection of the bill commonly called the Place Bill, the object of which was to exclude holders of offices of trust and profit under the crown from the House of Commons. It was presented to the king with the Land-tax Bill; and he assented to the one and rejected the other.

Mr. Hatsell, in the second volume of his Precedents, states that the latest instance which he dis-

covered was the rejection of a Scotch militia bill by Queen Anne in 1707; and this is also the latest mentioned in Mr. May's work. In former times the refusal of the royal assent was a common occurrence. Queen Elizabeth once at the end of a session, out of ninety-one bills which were presented to her, rejected forty-eight.

The royal assent makes a bill an act of parliament, or a law. As by a legal fiction the laws passed during a session of parliament are considered only one statute (of which what are popularly called the separate acts are only so many chapters), it used to be a matter of doubt whether the royal assent, at whatever time in the session it might be given, did not make the act operative from the beginning of the session, when no day was mentioned in the body of it as that on which it should come into effect. To settle this point, it was ordered by 33 George III. c. 13, that the clerk of parliament should for the future endorse on every bill the day on which it received the royal assent, and that from that day, if there was nothing in it to the contrary, its operation should commence.

During the Commonwealth, an English form was substituted for those in Norman-French which had been previously and are now in use. On the 1st of October, 1656, the House of Commons resolved 'that when the Lord Protector shall pass a bill, the form of words to be used shall be these, *The Lord Protector doth consent.*' In 1706 also a bill passed the House of Lords, and was read a second time in the House of Commons, for abolishing the use of the French tongue in all proceedings in parliament and courts of justice, in which it was directed, 'that instead of *Le roy le veult*, these words be used, *The king answers, Be it so;* instead of *Soit fait comme il est desiré*, these words be substituted, *Be it as is prayed;* where these words, *Le roi remercie ses bons sujets, accepte leur benevolence, et ainsi le veult*, have been used, it shall hereafter be, *The king thanks his good subjects, accepts their benevolence, and answers, Be it so;* instead of *Le roi s'avisera*, these words, *The king will consider of it*, be used.' This bill was rejected by the Commons; notwithstanding which an act passed in 1731, which enacted that all proceedings in courts of justice should be in English.

(Hatsell's *Precedents*, especially vol. ii. pp. 338-351 (edition of 1818); May's *Treatise upon the Law, Privileges, Proceedings, and Usage of Parliament*, 1844.)

ASSER, properly ASHI, is erroneously written by English and French writers Asser. Ashi was the principal author of the Babylonian Talmud, so called from the place of his residence. He was born at Babylon A.D. 353. His Jewish biographers relate that he was appointed head of the college of Sora, in Babylon, at the age of fourteen; which, if this account be true, is an unparalleled instance of mental precocity. But whether or not full credit may be attached to this statement, Ashi was undoubtedly distinguished very early in life by intellectual powers and acquirements. He died A.D. 426, aged seventy-four. The expositions of the Mishna delivered by Ashi in his lectures to the students under his care were collected, and form the basis of the Babylonian Talmud. It was continued by his disciples, the number of whom amounted to many thousands. (Wolf, *Bibliotheca Hebræa*, tom. i. p. 224.)

ASSER, or ASSERIUS MENEVENSIS, called *Asker* by Ingulphus, and *John Asser* by Bale and Pits, was a learned monk of St. David's, whence (the name of that place in Latin being written Menapia or Menevia) he obtained the appellation of Menevensis. Leland ('Comment. de Script.' i. p. 155) states him to have been of British extraction, and Bale (edit. Basil, 1557, p. 125) says that his instructor in learning at St. David's was John Erigena. We have his own authority ('De Reb. Gest. Ælfr.' ed. Wise, p. 49) for his being related to an archbishop of St. David's of the name of Novis.

Asser was invited to the court of Alfred the Great, as is generally believed, in or about the year 880, but probably earlier, merely from the reputation of his learning. He was promoted to the bishopric of Sherburn, which he quitted however about 883, though he always retained the title. He appears to have continued at court during the rest of the reign of Alfred, and probably several years after; but where or when he died is doubtful. The Saxon Chronicle positively fixes the time to the year 910.

The preferments and the works of Asser have both been subjects of controversy. The writer of his life in the 'Biographia Britannica' asserts him to have been Archbishop of St. David's (Kippis's edit. i. 410), which is much disputed. It seems clear, however, that Asser the monk, who is spoken of as a reader in the public schools at Oxford (Harpsfield, 'Hist. Eccles.' 161), if such a person did exist, was a different person from the Bishop of Sherburn.

Bale and Pits give the titles of six works ascribed to our Asser. One is, of course, the 'Life of Alfred,' the best known, but the authenticity of which has been lately disputed; the others are, 1, a 'Commentary on Boethius;' 2, 'Annales Britanniæ;' 3, 'Aurearum Sententiarum Enchiridion;' 4, a Book of Homilies; 5, a Volume of Letters. The Commentary on Boethius probably means nothing more than his explanation of that author to King Alfred when the king made his Saxon translation. The Annales were published by Gale in his 'Script. XV.' at Oxford in 1691, but are believed to be the work of a pseudo-Asser. The Enchiridion is, beyond question, Alfred's Manual already noticed. The existence of the last two works, the Homilies and Letters, is unsupported by any other authority. Many other works (but without specification) are said by Bale and Pits to have been translated into English by Asser.

The 'Annales Rerum Gestarum Ælfredi Magni' were first published by Archbishop Parker, at the end of Walsingham's 'History,' fol. Lond. 1574, and reprinted by Camden in his 'Anglia, Normannica,' &c. fol. Francfort, 1603. They were again reprinted in an elegant octavo volume at Oxford, by Francis Wise, in 1772: the best edition. The celebrated manuscript of Asser, formerly

in the Cottonian Library, marked Otho A. xii., was burnt in the fire at Westminster in 1731.

(*Annales*, published by Wise; Tanner's *Bibliotheca Britannico-Hibern.* p. 53; *Biogr. Brit.* art. Asserius; Chalmers's *Biogr. Dict.*)

ASSESSED TAXES. [TAXES.]

ASSESSMENT OF TAXES. [TAX, TAXATION.]

ASSESSMENT OF DAMAGES takes place on a writ of inquiry before the sheriff or his deputy, and a jury of the county where an action is laid, in cases where the defendant suffers judgment by default, instead of pleading and joining issue in the action. In such cases, the defendant having admitted a liability to some extent, the only question is as to the amount; and the jury are summoned merely to inquire into and assess the damages, and not as on trials where issue is joined to try the issue as well as to assess the damages. Such assessment is subject to be set aside on motion before the court where the action is brought, in case the jury are improperly returned, or the sheriff has misdirected them in point of law, or the damages are excessive.

ASSESSOR. The word assessor is Latin (adsessor), and signifies one who sits by the side of another. An assessor was one who was learned in the law, and sat by a magistrate or other functionary, such as the governor of a province (Præses), to aid him in the discharge of the judicial duties of his office. A work of the Jurist Sabinus is referred to by Ulpian ('Dig.' 47, tit. 10, i. 5), which appears from the title to have treated of the duties of assessors. The Emperor Alexander Severus gave the assessors a salary. (Lampridius, 'Alex. Severus,' 46.) In the later empire assessors were also called Consiliarii, Juris studiosi, and Comites. It is conjectured by Savigny ('Geschichte des Röm. Rechts im Mittelalter,' i. 79) that as the old forms of procedure gradually fell into disuse, the assessors took the place of the judices; or in other words, became judices. Originally the assessor did not pronounce a sentence; this was done by the magistrate or person who presided.

Two assessors are elected by the burgesses in all municipal boroughs, annually, on the first of March. The qualifications are the same as those of a councillor; but actual members of the council, the town-clerk and treasurer, are ineligible. In corporate towns divided into wards, two assessors are elected for each ward. The duty of the assessors is to revise the burgess lists in conjunction with the mayor, to be present at the election of councillors, and to ascertain the result of elections. (5 & 6 Will. IV. c. 76.) The word assessor is not usually applied in this country to those whose duty it is to assess the value of property for local or public taxation. This is usually done by a 'surveyor,' who adds this duty incidentally to his general private business.

ASSESSOR. In Scotland the magistrates of corporate burghs who exercise judicial powers, generally employ some professional lawyer to act as their assessor. It is his duty to see that the proper judicial control is exercised over the preparation of the pleadings, and to make out drafts of the judgments.

ASSETS (from the Norman French *assetz*, 'sufficient') is the real and personal property of a party deceased, which, either in the hands of his heir or devisee, or of his executor or administrator, is chargeable with the payment of his debts and legacies. Assets are either *personal* or *real*. Personal assets comprehend goods, chattels, debts, and devolve on the executor or administrator; and assets (including all real estate) descend to the heir-at-law, or are devised to the devisee of the testator. Assets are also distinguishable into *legal*, or such as render the executor or heir liable to a suit at common law on the part of a creditor, and *equitable*, or such as can only be rendered available by a suit in a court of equity, and are subject to distribution and marshalling among creditors and legatees, according to the equitable rules of that court.

ASSIDIANS, was a name given to the zealous defenders of the unity of the Deity and the belief of their ancestors, against the attempts of Antiochus Epiphanes and his successors to force the Jews into idolatry. The Assidians, or Chasidim, of those days, found a leader in Mattathias, who gave the signal for armed resistance against the Syrian tyrants, by killing the commander of the king's troops at the idolatrous altar in Modeim, near Joppa. Mattathias headed the Chasidim during four years against the Græcomania of those days. These four years are not included by Josephus in the hundred and twenty-six years of the Asmonæan dynasty, which he commences from the time at which Judas Maccabæus assumed the chief command.

Later Jews called those persons Chasidim who secluded themselves from worldly occupations and pleasures to devote their life solely to religious exercises and bodily chastisements, in the hope either of expiating their own sins or those of others, or of hastening the coming of the Messiah. These Chasidim studied the kabalah, and endeavoured by their mortification of the flesh to abstract the spirit from the body, and thus have liberty to enter into communion with God and angels. They fasted frequently, and asserted that they had visions.

About the middle of the eighteenth century a new sect of Chasidim arose, who invented a more comfortable method of ascetic practice. They taught that the union of man with God was effected by contemplation, and that in order to fix the mind on God it is necessary to quicken sensation by the enjoyment of permitted indulgences. They asserted that mortification of the flesh disturbs that mental tranquillity which is necessary for the contemplation of God. These Chasidim considered that union with God subsists in common religionists only during seasons of prayer, and they taught that prayer should be performed with the greatest exertion and concentration of the mental faculties, in order to unite the praying spirit so intimately with God as to obtain power over all sublunary and celestial beings, and thus to realize all desires.

After this sect became numerous, some of its

members were considered representatives of God, and their words regarded as oracles. The influence of these representatives was based solely upon their appearance of sanctity, and not upon their mental superiority. They therefore endeavoured to bring science into disrepute.

ASSIENTO TREATY, in Spanish, *El Asiento de los Negros*, and *El Pacto* or *Tratado del Asiento*, that is, the compact for the farming, or supply, of negroes. Spain, having little intercourse with those parts of Africa from which slaves were obtained, used to contract with some other nation that had establishments on the western coast of that continent for the supply of its South American possessions with negroes. Such treaties were made first with Portugal, and afterwards with France, each of which countries, in consideration of enjoying a monopoly of the supply of negroes to the South American dominions of Spain, agreed to pay to that crown a certain sum for each negro imported. In both cases the Assiento was taken by a commercial association in France—by the Guinea Company, which thereupon took the name of the Assiento Company (Compagnie de l'Assiente.) Both the Portuguese company and the French were ruined by their contract. At the peace of Utrecht, in 1713, the Assiento, which the French had held since 1702, was transferred to the English for a period of thirty years. The war which broke out in 1739 stopped the further performance of this contract; and at the peace of Aix-la-Chapelle, in 1748, the claim of England to the remainder of the privilege was given up. Spain indeed complained that the greatest frauds had been committed under that provision of the treaty which allowed the contractors to send a shipload of goods every year to South America. It was alleged that the single ship was made the means of introducing into the American markets a quantity of goods amounting to several times her own cargo.

ASSIGNAT. One of the earliest financial measures of the Constituent Assembly, in the French Revolution, was to appropriate to national purposes the landed property of the clergy. Shortly afterwards, the Assembly decreed the sale of lands belonging to the crown and the clergy to the amount of 400 millions of francs, or about sixteen millions sterling. It was first proposed that the lands should be transferred to the municipalities, which might give the state a security for the price, and the state would pay its creditors with these securities, which could be realised, as the municipalities were able to sell, at an advantageous price, the lands thus made over to them. The holders of the securities would thus have a claim on the municipal bodies, which would be compellable by process of law to pay; and the creditor might moreover buy the lands when put up to sale, and offer the security in payment. But it might happen that the holder of such securities would be unable to realise them, and might not be willing to purchase any of the lands of the state: and to obviate this objection to the securities, it was proposed that they should be transferable and be made a legal tender. Under these circumstances it was determined to issue a paper-money, based on the security of the unsold lands belonging to the state. The notes thus issued (each of which was for 100 francs, equal to 4*l.*) were called *assignats*, as representing land which might be transferred or *assigned* to the holder; and all notes which came back in this manner to the government in payment for national lands were to be cancelled. They bore an interest by the day, like English Exchequer-bills. The object of this measure was to obtain the full value of the confiscated lands (which in the actual state of France was impossible), and to supply the deficiency of coin in the circulation (arising from a feeling of insecurity) by a forced issue of inconvertible paper-money. The first issue of assignats was to the amount of 400 millions, bearing interest; shortly afterwards 800 millions in addition were issued, but without the liability to pay interest. The last of these two issues was made in September 1790. In the beginning of the following year, the Legislative Assembly sequestered for the benefit of the state the property of all the emigrants; and in September 1792, although 2500 millions had been already issued, a fresh issue of 200 millions was ordered by the Convention. Towards the end of this year, the double effects of the general insecurity of property and person, and of the depreciation of assignats caused by their over-issue, was felt in the high price of corn, and the unwillingness of the farmers to supply the markets with provisions. Prices still continued to rise; and although corn and other necessaries of life were to be had, their value, as represented in the depreciated paper currency, had been nearly doubled: the wages of labour had not risen in a corresponding degree. Great distress, clamours for a fixed maximum of prices, and pillage of the shops, were the consequence.

In June, 1793, one franc in silver was worth three francs in paper; in August it was worth six. Prices rose still higher; all creditors, annuitants, and mortgagees, were defrauded of five-sixths of their legal rights; and the wages of the labourers were equal in value only to a part of their former earnings. The Convention, in May 1793, passed a decree which compelled all farmers to declare the quantity of corn in their possession, to take it to the markets, and sell it there only, at a price to be fixed by each commune, according to the prices of the first four months of 1793. No one was to buy more corn than would suffice for a month's consumption, and an infraction of the law was punished by forfeiture of the property bought and a fine of 300 to 1000 francs. The commune of Paris regulated the selling of bread. No person could receive bread at a baker's shop without a certificate obtained from a revolutionary committee, and the quantity was proportioned to the number of the family. A rope was moreover fixed to the door of each baker's shop, so that as the purchasers successively came, they might lay hold of it, and be served in their just order. A similar maximum of prices was soon established for meat, wine, vegetables, wood, salt, leather, linen, woollen, and cotton goods, &c.; and other measures were added to lower the prices of commodities.

In August 1793, there were in circulation 3776 millions of assignats; but by a forced loan of 1000 millions, and by the collection of a year's taxes, this amount was reduced to less than two-thirds. The confidence moreover inspired by the recent successes of the republic against its foreign and domestic enemies, tended to increase the value of the securities on which the paper-money ultimately reposed; and towards the end of 1793 the assignats are stated to have been at par. This restoration of the paper-currency, whether real or apparent, was of very short duration. The wants of the government led to a fresh issue of assignats, and in June 1794 the quantity in circulation was 6536 millions. After the fall of Robespierre, the Thermidorian party (as it was called), which then gained the ascendancy, induced the Convention to relax a little of its former policy, and succeeded in first excepting all foreign imports from the maximum of price, and afterwards abolishing it. The consequence of the change was a sudden rise of the avowed prices; and trade, having been so long prevented from acting for itself, did not at once resume its former habits. As at this time the power of the revolutionary government to retain possession of the lands which it had confiscated, and to give a permanently good title to purchasers, was not doubted, the fear that the national lands might not ultimately prove a valuable security did not now discredit the assignats: their depreciation was solely owing to their over-issue, as compared with the wants of the country, and their inconvertibility with the precious metals. The government began now to find that, although it might for some time gain by issuing inconvertible paper in payment of its own obligations, yet when the depreciated paper was returned in the shape of taxes, it obtained in fact a very small portion of the sum nominally paid, and accordingly it was considered expedient to require a larger sum to be paid for taxes according to the amount of paper in circulation. It was therefore decreed that, taking a currency of 2000 millions as the standard, a fourth should be added for every 500 millions added to the circulation. Thus, if a sum of 2000 francs was due to the government, it would become 2500 francs when the currency was 2500 millions, 3000 francs when it was 3000 millions, and so on. This rule, however, was only applied to the taxes and arrears of taxes due to the government, and was not extended to payments made by the government, as to public creditors or public functionaries. Nor did it comprehend any private dealings between individuals. Iniquitous as this regulation was, as employed solely in favour of the government, it would nevertheless have been ineffective if its operation had been more widely extended; for the assignats, instead of being depreciated only a fifth, had now fallen to the 150th part of their nominal value. The taxes being levied in part only in commodities, and being chiefly paid in paper, produced scarcely anything to the government. When the five directors went to the Luxembourg, in October, 1795, and thence announced to the two Councils of State that the Directory was established, there was not a single piece of coin in the treasury. The assignats necessary for the ensuing day were printed in the night, and issued in the morning wet from the press. Before the entry of the directors into office the sum in circulation amounted to 19,000 millions. One of their first measures to procure silver was to issue 3000 millions in addition, which produced not much more than 100 million francs.

In this state of things, a forced loan of 600 millions was raised from the richest classes, to be paid either in coin, or in assignats, at the *hundredth* part of their nominal value. So that, if the current paper was 20,000 millions, a payment of 200 millions would be sufficient to extinguish the whole. The government, however, refused to sanction this principle as against itself; for, in paying the public creditor, it gave the assignat the *tenth* part of its nominal value. The land-tax and the duties in farm were required to be paid half in kind and half in assignats; the custom-duties, half in corn and half in assignats; In the meantime, until the funds produced by this loan could be at the disposition of the state, the government went on issuing assignats till they had lost all value. It therefore anticipated its resources by issuing promissory notes payable in specie, when the forced loan should be collected, and with difficulty prevailed on bankers to discount them to the amount of 60 millions. The payment of the loan went on slowly, the produce of the government bills was exhausted, and fresh funds were required. Again the resource of assignats was resorted to, and in two months the currency had been raised to 36,000 millions by the issue of 20,000 millions, which even to the government were not worth the two hundredth part of their nominal value.

By this time some new financial expedient became necessary. It was expected that, by payments of taxes and of the forced loan to the government, the paper in circulation would soon be reduced to 24,000 millions. It was therefore determined to make a new issue of paper, under the name of *mandats*, to the amount of 2400 millions. Of this sum 800 millions were to be employed in extinguishing 34,000 millions of assignats, which were to be taken at a thirtieth part of their legal value: 600 millions were to be allotted to the public service, and the other 1200 millions retained in the public coffers. These mandats were to enable any person who was willing to pay the estimated value of any of the national lands to enter into possession; and therefore they furnished a somewhat better security than the assignats, as these could only be offered in payment at sales by auction; and consequently the price of the lands rose in proportion to the depreciation of the paper. The estimate of the lands having been made in 1790, was not true in 1795, at which time they had in some cases lost a half, in others two-thirds or three-fourths of their former value. The mandat of 100 francs, however, at its first issue, was worth only fifteen francs in silver; and the new paper was soon so much discredited, that it never got into general

circulation, and was not able to drive out the coined money, which was now almost universally employed in transactions between individuals. The only holders of mandats were speculators, who took them from the government and sold them to purchasers of national lands. By this entire discredit of the government-paper, the prosperity of individuals had been in some measure restored, and trade revived a little. The government was destitute of all resource; its agents received nothing but worthless paper, and refused any longer to do their duties. The government was soon forced to abandon the mandats, as they had abandoned the assignats, and to declare that they should be received in payment of taxes and national lands only at their real value. Having fallen to nearly a seventieth of their ostensible value, they were, in the course of 1796, returned to the government in payment of taxes and for the purchase of lands; and with them ended the revolutionary system of paper-money, which produced more misery than can be calculated.

From the extinction of the mandats to the present time the legal currency of France has been exclusively metallic.

(Thiers, vol. viii. pp. 85-9, 103-19, 153-62, 177, 183-91, 334-44, 423-4; Storch, *Cours d'Econ. Pol*, vol. iv. p. 164.)

ASSIGNATION. [ASSIGNMENT (Scotland).]

ASSIGNEE *of a Bankrupt.* [BANKRUPT.]

ASSIGNEE *of an Insolvent Debtor's Estate.* [INSOLVENT.]

ASSIGNEE *of a Bill of Lading.* [BILL OF LADING.]

ASSIGNEE *of a Lease* is the party to whom the whole interest of the lessee in lands is transferred by assignment, which assignment may be made without the privity or consent of the lessor, unless the lessee is restrained by the lease from assigning over. The assignee becomes liable to the lessor, from the date of the assignment, for the payment of the rent and performance of the covenants in the lease; but such liability is limited to breaches of covenant during the existence of the assignee's interest, and may be got rid of by assigings over all his interest, even to an insolvent. The assignee may acquire his interest by operation of law, as well as by an actual assignment from the lessee, and therefore a tenant by *elegit*, who has purchased a lease under an execution, is liable as assignee to the lessor. [LEASE.]

ASSIGNEE. In the long leases peculiar to the agricultural system of Scotland, the law affecting the right of transference to assignees has been held to be of peculiar importance. In an agricultural lease of ordinary length, *assignees* are excluded without stipulation; a lease beyond the ordinary length may be assigned where there is no stipulation to the contrary. It is usual to divide such leases into periods of nineteen or twenty-one years, a lease of one such period being considered an ordinary lease, and a lease of two or more such periods being an improving lease, and in its nature assignable. A lease specially excluding assignees cannot be conducted for the benefit of the lessee's creditors if he should become bankrupt, unless under the administration of the lessee himself. In leases of houses, gardens, or other premises not let for agricultural purposes, the right to assign is assumed, if not excepted by stipulation; but where the lease is for a particular purpose, the lessee cannot assign it for a totally different purpose: thus one who became tenant of a shop as a silk-mercer, was not allowed to assign his lease to an exhibiter of wax figures.

ASSIGNMENT, a deed or instrument of transfer, the operative words of which are to 'assign, transfer, and set over,' and which transfers both real and personal property. Estates for life and estates for years are the principal interests in land which are passed by an assignment; and by the statute of Frauds and Perjuries (29 Charles II.) the assignment of such estates is required to be in writing. An assignment differs from a lease, in being a transfer of the entire interest of the lessor; whereas a lease is an estate for years taken out of a greater estate, creates the relation of landlord and tenant, and reserves to the lessor a reversion. In all under-leases, therefore, it is necessary that part of the original term should remain in the lessor: a day is sufficient. (Sheppard's 'Touchstone,' 266; Blackstone, 'Comm.' v. ii. 326; Bacon, 'Ab.' 7th edit. tit. 'Assignment.')

An Assignment of Goods, Chattels, &c. in possession, is frequently made by bill of sale. [BILL OF SALE.] With respect to things *in action, choses in action* (as debts, for instance), they are not, with some exceptions, assignable at common law. Thus, if the obligee in a bond assign over the bond to a third party, the assignee cannot sue on the bond at common law in his own name; but such an assignment generally contains (and ought always to do so) a power of attorney from the obligee to the assignee, to sue in the obligee's name. Courts of equity regard the assignee, for valuable consideration, as the actual owner of the bond; and the courts of common law so far recognize the right of the assignee, that if the obligor, after notice of the assignment, pay the money on the bond to the obligee, the courts will not permit him to plead such payment to an action brought by the assignee in the obligee's name on the bond. There are various things that are not assignable even in equity. A husband is entitled to sue for his wife's choses in action, and he can assign them, that is, sell them, to another person; but as his right to assign is founded on his power to obtain the wife's choses in action by legal means, it follows that, if at the time of the assignment the husband has not the power to obtain possession of his wife's choses in action, the assignment has no immediate effect. The exceptions to the rule that choses in action are not assignable at law are many. Bills of exchange are assignable by indorsement [BILL OF EXCHANGE]; and promissory notes, by virtue of the 3 & 4 Anne, c. 9. Bail bonds are assignable by the sheriff to plaintiff in the suit under 4 Anne, c. 16, s. 20; replevin bonds, by the 11 Geo. II. c. 19; the petitioning creditor's bond under a fiat of bankruptcy, by 6 Geo. IV. c. 16.

ASSIGNMENT. The term Assignment is in colloquial use in Scotland, but the word which supplies its place in legal nomenclature is *Assignation*. In some instances, however, where statutes employing the phraseology of the English law have been extended to Scotland, the word Assignment has necessarily obtained a partial technical use, as in the transference of property in copyright, patents, and registered vessels. The definition of an assignation, as distinguished from any other species of conveyance, is, that it conveys not a thing, but a title to a thing. Thus a bill of exchange comes within the character of an assignation, because it is, or professes to be, a conveyance in favour of the payee of a right in the person of the drawer to a sum due to him by the drawee. There is no rule known in the law of Scotland equivalent to that which affects the assignment of a chose in action in England; and, except in certain cases, a right exigible by one person is capable of being made over by assignation to another.

Assignations are of great importance in the conveyance of heritable or real property. The old system of subinfeudation being still in operation in Scotland, a proprietor of heritable subjects, whose right is indisputable, is frequently not in the position of having received feudal investiture from his superior. He is said in such a case to have a mere personal right, as holding in his hands the authority for making his title real by investiture. This authority he transfers by assignation, and property is thus frequently passed through several hands by assignation before it is found expedient or necessary to complete the investiture. In conveyances of landed property such title-deeds as the party conveying has agreed to give to the party receiving, are transferred by assignation. For assignations to leases see ASSIGNEE (Scotland).

As the transfer of movable property is completed by delivery, the person who has the possession cannot convey (as in the case of land) his right to the thing as separate from the thing itself, and thus an assignation affecting movable property can only take place when it is in the hands of a third party. The simple act of assignation may be effectual in all questions between the cedent and the assignee, but to make the third party who holds the property in his hands responsible, as holding it for the latter and not for the former, the further ceremony of a formal intimation is necessary; and until such intimation be made the cedent's creditors may attach the property in the hands of the holder. Presentment is the proper form of intimation in the case of a bill of exchange. In its most formal shape, an intimation of an assignation is made by the reading of the document to the debtor in presence of a notary and witnesses, and the evidence of the ceremony is the notarial; but, in the general case, other circumstances which put the fact of intimation beyond doubt, such as the debtor's admission of his liability to the assignee, are held as equivalents.

ASSI'SI, an episcopal town of the Papal States, in the province of Umbria, and in the delegation of Perugia. It is built on a hill, and near though not upon the high road from Perugia to Foligno, in 43° 5′ N. lat., and 12° 33′ E. long.; population 4000. Assisi was the birthplace of St. Francis, the founder of the mendicant order of Franciscan friars, of which it is considered as the metropolis. The Sacro Convento, or church and monastery in which St. Francis was buried, is a large and splendid building. Two miles from Assisi, by the side of the high road, stood the noble church of Santa Maria degli Angeli, raised by the architect Vignola, in the centre of which was the rustic oratory where St. Francis first began his ascetic course of life: it has lately been destroyed by an earthquake. Assisium was a Roman municipium, and a place of considerable importance, as may be inferred from the remains of the forum, the thermæ, the aqueducts, and other ruins which are still seen. But the finest piece of antiquity which it contains is the Temple of Minerva, now transformed into a church dedicated to the Virgin; the portico, which has remained entire and in good preservation, is considered to be the finest specimen of the kind in Italy, next to the Pantheon. The country round about Assisi abounds with olive trees, and there are mineral waters in the neighbourhood.

ASSIZE. This word has been introduced into our legal language from the French *assis*, and is ultimately derived from the Latin verb *assideo*, to sit by. The word *assido* is also found in legal records, and has a different meaning from *assideo*: *assido* means to assess, fix, or ordain. Thus in the *postea*, or formal record of a verdict in a civil action, it is said that the jury find for the plaintiff, *et assidunt damna ad decem solida*—' and they assess the damages at ten shillings.' It is possible that the word assize, in cases where it signifies an ordinance, decree, or assessment, may be derived from this word. The word assize has various significations.

1. Assize signified an ordinance or decree made either immediately by the king or by virtue of some delegation of the royal authority. Thus the Assizes of Jerusalem were a code of feudal laws for the new kingdom of Jerusalem, formed in 1099, by an assembly of the Latin barons, and of the clergy and laity, under Godfrey of Bouillon. (Gibbon's 'Decline and Fall,' vol. xi. p. 93.) The ordinances made by the great council of nobles and prelates assembled by Henry II. in 1164, and commonly known as the 'Constitutions of Clarendon,' are called by Hoveden 'Assisæ Henrici Regis factæ apud Clarendonum.'

2. There were the assizes or ordinances regulating the price of bread, ale, fuel, and other common necessaries of life, called in Latin *assisæ venalium*. The earliest express notice of any regulation of this kind in England is in the reign of King John (1203), when a proclamation was made throughout the kingdom enforcing the observance of the legal assize of bread: many statutes were passed regulating the assize of articles of common consumption; the earliest of these is the assize of bread and ale, 'assisa panis et cervisiæ,' commonly called the stat. of 51 Henry III.,

though its precise date is doubtful. The stat. 8 Anne, c. 19, repealed the 51 Henry III., and imposed a new assize of bread, and made various other regulations respecting it. Several subsequent acts have been passed on the subject; but by the 55 George III. c. 99, the practice was expressly abolished in London and its neighbourhood, and in other places it has fallen into disuse.

3. The word assize also denoted the peculiar kind of jury by whom the writ of right was formerly tried, who were called the grand assize. The 3 & 4 Will. IV. c. 27, has now abolished this mode of trial. By the law of Scotland, the jury, in criminal cases, are still technically called the assize.

4. The common use of the term assize at the present day is to denote the sessions of the judges of the superior courts, holden periodically in each county. These assemblies no doubt originally derived their denomination from the business which was at first exclusively imposed upon them, namely, the trial of writs of assize. According to the common law, assizes could only be taken (*i. e.* writs of assize could only be tried) by the judges sitting in term at Westminster, or before the justices in eyre at their septennial circuits. To remedy this grievance, it was provided by Magna Charta, in 1215, that the judges should visit each county to take assizes of novel disseisin and mort d'ancestor. (Arts. 22 and 23, Magna Charta.) From this provision the name of justices of assize was derived, and by several later acts of parliament various authorities have been given to them by that denomination. By the 13 Edward I. c. 3 (commonly called the statute of Westminster 2), it was enacted, that the justices of assize for each shire should be two sworn judges, associating to themselves one or two discreet knights of the county; and they are directed to take the assizes not more than three times in every year. By the same statute, authority is given them to determine inquisitions of trespass and other pleas pleaded in the courts of King's Bench and Common Pleas. From this important act of parliament the jurisdiction of the judges of assizes to try civil causes, other than the writs of assize above mentioned, originally arose. Besides the general authority to determine civil issues, it was provided by the statute of Westminster 2, that no inquest in a civil action should be taken by the judges of the superior courts when sitting at Westminster, unless the writ which summoned the jury for such inquest appointed a certain day and place for hearing the parties in the county where the cause of action arose. Thus, if a suit arose in Cornwall, the writ from the superior court must direct the sheriff of that county to return a jury at Westminster for the trial of the inquest in the next term, *unless before* (*nisi prius*) the term, namely, on a certain day specified in the writ, the justices of assize came into Cornwall. This was sure to happen under the directions of a previous clause in the statute of Westminster 2, in the course of the vacation before the ensuing term, and the jury were then summoned before the justices of assize in Cornwall, where the trial took place, and the parties avoided all the trouble and expense of conveying their witnesses and juries to London. The jurisdiction of the judges of *nisi prius* is therefore an addition to their office of justices of assize; and thus, from the alteration in the state of society since the above laws were made, the principal or substantial part of their jurisdiction has, by the discontinuance of writs of assize, become merely nominal, while their annexed or incidental authority has grown into an institution of great practical importance.

Since the passing of 1 William IV. c. 70, the assizes throughout the whole of England and Wales (excepting London and the parts adjoining) have been holden twice a year in each county upon a uniform system. [CIRCUITS.]

The judges upon the several circuits derive their civil jurisdiction ultimately from the ancient statutes of assize and *nisi prius;* but they have also a commission of assize which is issued for each circuit by the crown under the great seal. This commission pursues the authority originally given by Magna Charta and the statutes of *nisi prius*, and seems to have been nearly in the same form ever since the passing of those statutes. It is directed to two of the judges and several serjeants, and commands them 'to take all the assizes, juries, and certificates, before whatever justices arraigned.'

In certain cases, the justices of assize, as such, have by a statute a criminal jurisdiction; but the most important part of their criminal authority is derived from other commissions. The first of these is a general commission of oyer and terminer for each circuit. [OYER AND TERMINER.]

The judges of assize have also commissions of gaol delivery. [GAOL DELIVERY.]

In addition to the above authorities, the judges of the superior courts on the circuits are also in the commission of the peace. The judges of the King's Bench, Common Pleas, and Exchequer, for the time being, are always inserted in the commissions of the peace periodically issued for each English county; and consequently they may exercise all the powers and functions communicated by the commissions of the particular counties which compose their respective circuits.

In practice, the judges of the courts at Westminster choose their circuits by arrangement among themselves on each separate occasion. They are then formally appointed by the king under the sign manual; and the several commissions are afterwards made out in the Crown Office of the Court of Chancery from a fiat of the lord chancellor.

ASSIZE. In the practice of the criminal courts of Scotland, the fifteen men who decide on the conviction or acquittal of an accused person are called the Assize, though in popular language, and even in statute, they are called the Jury. [JURY.]

ASSOCIATION. The office which association performs is to connect and arrange ideas, to regulate the succession of the thoughts. When one thought is suggested by another, or when a train of past images is summoned by something

present, whether spontaneously or by an exertion of memory, the process by which this effort is made is called association. Hume was the first writer who traced the influences of our associations to certain principles, which he denominated 'resemblance, contiguity in time or place, and cause or effect.' 'Contrast' has since been added to these.

There may, however, be large classes of our associations not referable to any of these principles, such as the names of things, the terms of art, the words by which we designate moral and intellectual qualities and operations; in short, the whole vocabulary of language, in which there is little or no connexion either in the way of resemblance, contiguity, cause, effect, or contrast, with the objects or ideas represented, although none of them ever fail to summon up the images of the things for which they stand. Anomalies like this, when reducible to certain limits, establish rather than invalidate the laws to which they form an exception. Even the terms of a language, when once connected with their representative objects, offer one of the most remarkable illustrations of simple association. In the word *flower*, for instance, there is nothing to stamp upon the mind any particular image. To one who was ignorant of language it would convey no idea; but, if the word be explained, if it be associated with certain kinds of objects, it calls up the picture of some plant in blossom whenever the name is seen or pronounced.

Mr. Hume has annexed to his enunciation of the three principles an example illustrative of each. 'That these principles,' he observes, 'serve to connect ideas will not, I believe, be much doubted. A picture naturally leads our thoughts to the original. The mention of one apartment in a building naturally introduces an inquiry or discourse concerning the others. And if we think of a wound, we can scarce forbear reflecting on the pain which follows it.' The first of these illustrations is founded upon the law of resemblance; the second, upon the law of contiguity; the third, upon the law of causation. 'But,' continues he, 'that this enumeration is complete, and that there are no other principles of association except these, may be difficult to prove to the satisfaction of the reader, or even to a man's own satisfaction.'

To whatever principles or laws we ascribe the association of ideas, it is evident that there is not only a bond of connexion amongst them, but a bond of order. The greatest confusion would prevail in our mental operations, without some regulating principle. That principle is association.

Sometimes trains of associations involuntarily convey the thoughts to subjects foreign to our wishes. They run away, as it were, with our ideas, and awaken images and recollections which not only startle us by their abruptness, but occasion us at times no little trouble to account for their presence. This mental phenomenon admits of easy explanation. While the volitions of thought are intensely directed to a particular subject, the associations act in subordination to that which is for the time 'the ruling idea of the mind;' when this mental intensity subsides, and the attention ceases to concentrate the faculties of thought, the mind relapses into its ordinary mood in the absence of excitement. Hence the attention which fixes the thoughts controls the associations; the relaxation of attention which allows the thoughts to wander grants the same licence to the associations. In sleep this emancipation from mental direction is most complete; in consequence of which the order and perspicuity of thought are deranged. Strange contradictions and anomalies present themselves, announcing the suspension of that faculty whose office it is to restrain the involuntary action of the associating power.

But, notwithstanding these anomalies, our associations are capable of being controlled to a very high degree. A habit of attention is the governing power. Attention implies abstraction from desultory thoughts, and the act of mental direction to a particular subject. The influence of this habit keeps the associations under control; the want of it renders our waking thoughts little less incongruous than the dreams of sleep. Association acts upon the moral as strongly as upon the intellectual part of our nature. Not to speak of its influence upon the generous and noble dispositions of the mind, the passions are perverted by an uncontrolled association of ideas.

To avoid this and other errors to which the mind is exposed by an undisciplined use of the associating faculty, the greatest pains ought to be taken to place it under the guard of attention, and to fill the intellectual storehouse with such ideas as shall only awaken pure and pleasing associations.

Locke, in one of the later editions of his 'Essay on the Human Understanding,' added a new chapter entitled 'Of the Association of Ideas,' in which the laws of this power are noticed, and some of its phenomena explained. Soon after, Dr. Hartley, in his 'Observations on Man,' investigated the principle more thoroughly, carried its application from simple ideas to the actions and affections, and traced all the intellectual and moral phenomena to this source. Mr. Hume, in one of his 'Essays' published almost contemporaneously, showed that the three connecting principles of all ideas are the relations of resemblance, contiguity, and causation, to which some subsequent writer appended a fourth, contrast.

ASSONANCE, *asonancia*, in Spanish romantic and dramatic poetry and in several species of lyric poetry, is a peculiar correspondence in sound in the termination of verses, less complete than that of rhyme. In rhyme (called in Spanish *con*sonancia) the vowel in the last accented syllable and all the subsequent consonants and vowels are required to be the same as in the co-rhyming verse; but in assonance, though the vowels of the last accented syllable and in all subsequent syllables are the same, the consonants may and ought to be different. Thus *bárbaro* is assonant with *cálamo* and *plátano*; *búscas* with *cúran* and *súya*; *gallárdos* with *hermáno*. Assonants are not, like rhymes, exhibited in insulated pairs, but are continued through the whole poem, or, in dramatic compositions, through an entire act,

without any other change than the alternation of blank verse with the assonants. Thus, the first, third, fifth, seventh lines, &c. of the act are blank verse, and the second, fourth, sixth, and eighth lines, &c. are all assonants to each other. The following extract contains lines alternately blank and assonanted, as is always the case in romantic and in dramatic poetry: the accent is on the last syllable but one in the assonant lines:—

Salió el gallardo Aliatar
Con cien Moriscos gallardos
En defensa de Motril
Y socorro de su hermano.
A caballo salió el Moro,
Y otro dia desdichado
En negras andas le vuelven
Por donde salió á caballo.

ASSOUAN. [SYENE.]

ASSUMPSIT is the name of one of the English forms of action. It is so called from the past tense of the Latin word *assumo*, barbarously applied to signify 'I undertake'; and is taken from the use of this word which described the defendant's undertaking, in the old Latin pleadings. Thus, the form would be 'that in consideration that the plaintiff had furnished goods to the defendant, the defendant took upon himself (*super se assumpsit*) to pay the plaintiff so much money.' The action of assumpsit is exclusively used for the recovery of damages occasioned by the breach of a simple contract; and is now more generally adopted than any other form of action in such cases. But it cannot be sustained, unless there has been an express promise to pay money (as in the case of a promissory note), or to do some other act; or unless there is a legal implication of a promise from the circumstances of the case, as when a tradesman delivers goods to a purchaser, in which case a promise to pay is implied, and accordingly the plaintiff's declaration, or formal statement of his cause of action would state the debt generally, and also an *actual* promise to pay it. The character and relative situations of parties will often raise a legal liability, from which an *assumpsit* or undertaking will be implied. Thus, an innkeeeper is bound to secure the goods of his guests, while they are in his house; in consequence of this liability, the law supposes him to promise to do so; and if the goods are lost or injured, he is liable to an action of assumpsit for the damage which the owner may have sustained. If the undertaking, whether express or implied, is founded upon an existing debt of an ascertained amount, the action is called *indebitatus assumpsit*. This form of action is of comparatively modern invention, being introduced for the purpose of enabling plaintiffs to evade the *wager of law*, which was allowed in actions of debt on simple contract until the 8 & 4 William IV. c. 42.

ASSURANCE. Of late years it has become usual with writers on life contingencies to speak of *assurances* upon lives, instead of *insurances*, reserving the latter term for contingencies not depending on life, as against fire, losses at sea, &c. [INSURANCE; ANNUITIES.]

ASSYRIA, an ancient empire in western Asia. Greek and Roman historians commonly employ the name Assyria as a general designation for Babylonia, Mesopotamia, Aturia, and Adiabéne; but they frequently make it comprehend part of Asia Minor. The Greeks were accustomed to use the name Syria and Syrians in a vague sense: Herodotus applies the term Syrians to the Cappadocians (i. 6, and i. 72), and he remarks that the Assyrians in the army of Xerxes were by the Greeks called Syrians, while the Eastern nations named them Assyrians (vii. 63).

Ptolemæus (vi. 1) and the Roman historians confine the name Assyria to the country east of Mesopotamia and the Tigris, which is separated on the north by the Niphátes mountains from Armenia, and on the east by the chain of the Zagros from Media; Susiana and Babylonia constitute its southern frontiers. This portion of the ancient Assyrian empire comprehends part of the modern Kurdistan. The country is divided into three parts by two rivers which rise in the Zagros mountains, and, after traversing Kurdistan, fall into the Tigris. The first is the Lycus, the Zabatus of Xenophon, and the modern Greater Zab. (Xen. 'Anab.' ii. c. 5.) The second river, the Caprus, is also named Zabas, or Anzabas, by the later Greek and Roman writers. The country to the north-west of the Lycus, or Zabatus, is by the ancients called Aturia; that to the south-east of that river, as far as the Caprus, is named Adiabene; to the south of the Caprus we find the province of Apolloniátis, farther to the east Chalonítis, and Sittacéne towards the confines of Susiana. The Arabian name of Adiabene is Zawabiah, which, like the term Adiabene, is a derivation of the word Zab. The name Aturia, as is observed by Dion Cassius (lxviii. c. 28), is a mere dialectic variety of pronunciation instead of Assyria. After the dissolution of the Assyrian monarchy through the revolt of the Medes, the name Assyria was again restricted to this northern province, while the southern parts were designated either Babylonia, from the name of the principal town, or Chaldæa, from the name of its inhabitants. Through the conquest of Cyrus, both parts were re-united, and formed one of the most important satrapies of the Persian empire, which was sometimes named Babylonia and sometimes Assyria. This apparent confusion of the names Babylonia and Assyria is observable even in the later history of these regions, during the wars between the Romans and Parthians.

The ancient capital, Ninus, founded by the king of the same name, was situated, according to Strabo, in the plains of Aturia, on the river Tigris. Its ruins are conjectured to be those discovered on the eastern side of the Tigris opposite Mosul; others think that the site of Ninus must be further south. [NINEVEH.]

The town of Babylon stood, according to Herodotus (i. 180), on both sides of the Euphrates. The present town of Hillah is situated in the midst of the ruins. [BABYLON.]

Seleuceia was founded by Seleucus Nicátor. It was situated on a large canal (the Nahr Malcha, or Royal Water), which joined the Euphrates

and Tigris, and, according to Pliny (vi. c. 26), at the point where the canal united with the latter stream. On the opposite (the eastern) side of the Tigris stood the town of Ctesiphon, and a little farther to the south that of Oche or Choche. Ctesiphon was founded by the Macedonians; but it did not rise to importance till the time of the Parthian kings, who chose it for their summer residence. The ruins of Takht-i-Kesra, on the eastern side of the Tigris, are supposed to mark the situation.

The principal town of the province of Adiabene was Arbela. [ARBELA.] The surrounding country abounds in mineral oil and asphaltum.

The province of Appolloniatis derives its name from that of its principal town, Apollonia.

History of Assyria.—In the book of Genesis (c. x. v. 10) the state of Assyria is represented as having sprung from that of Babylonia founded by Nimrod. The Hebrew chronicles leave us in the dark with reference to the history of Assyria till the earlier part of the eighth century B.C. From this time the names of several kings of Assyria are mentioned. The earliest of them is Phul, the contemporary (2 Kings xv. 19) of Menahem the king of Israel (died B.C. 761). Tiglath-Pileser ruled over Assyria while Pekah (died B.C. 740) was king of Israel, and Ahaz (died B.C. 728) king of Juda. (2 Kings xvi. 8, 9; xv. 29). Salmanassar, the contemporary of Hosea the king of Israel, and Hiskia (Hezekiah) the king of Juda, put an end to the kingdom of Israel by taking its capital Samaria (B.C. 722), and leading away the remaining inhabitants of the country as captives. (2 Kings xvii. 5, 6; xviii. 9—11.) The immediate successor of Salmanassar seems to have been Sanherib (Sennacherib), who undertook an expedition against Egypt (B.C. 714), in which he invaded Judæa and unsuccessfully besieged Jerusalem. (2 Kings xviii. 13; xix. 36; 2 Chron. xxxii. 1—21.) After his return to Nineveh, his capital, Sanherib was killed by two of his own sons. Esarhaddon, another son of Sanherib, succeeded him.

Besides Sennacherib, Herodotus only notices Ninus, the founder of the empire (i. 178), and the last king, Sardanapálus (ii. 150). Diodorus, who chiefly follows Ctesias as his authority, Julius Africanus, Eusebius ('Chron. Armen.' p. 44, &c. ed. Mai and Zohrab, Milan 1818), and Syncellus ('Chronogr.' p. 73, 77, ed. Goar. Venet. 1729, fol.) commence the line of Assyrian kings with Belus and Ninus, and conclude it with Sardanapalus (also named Thonosconcoleros), who, according to Eusebius, was a contemporary of Lycurgus and of Jeroboam II., the king of Israel (died B.C. 784).

The history of Ninus, as given by Diodorus, and of his warlike wife Semiramis, who succeeded him, does not belong to the period of authentic history. She is said by Diodorus to have founded Babylon, and Herodotus (i. 184) attributes to her the embankments made to protect the country from inundations. The exploits of this conquering queen are minutely recorded by Diodorus. Ninyas, an inactive king, succeeded his restless mother Semiramis. The last of these Assyrian kings was Sardanapalus, the thirtieth in succession after Ninus, who even surpassed his predecessors in indolence and voluptuousness. This encouraged the revolt of the Mede A'rbaces, who succeeded in putting an end to the dominion of the Assyrians in western Asia.

According to the statement of Herodotus regarding the duration of the subsequent Median empire, as elucidated by Volney in his 'Chronologie d'Hérodote' (p. 83, &c., Paris, 1809), the revolt of the Medes (under Arbaces) took place (B.C. 717); and as Herodotus (i. 95) assigns to the empire of the Assyrians a duration of 520 years, it follows that he conceived their dominion to have lasted from the year 1237 till B.C. 717.

Ctesias gives to the Assyrian monarchy a duration of upwards of 1300 years, and differs, moreover, from Herodotus with regard to the period of its overthrow by the revolt of Arbaces; for he makes the dominion of the Medes last 282 years, and, as it may be considered as almost certain that the dissolution of the Median kingdom by Cyrus took place in or about B.C. 561, it follows that its commencement, and the end of the Assyrian empire, are, by the statements of Ctesias, thrown back to the year B.C. 843. Syncellus assigns to the Assyrian empire a duration of 1460 years, from A.M. 3216 to 4675, and states the number of its kings at forty-one. (Syncell. 'Chronogr.' p. 77 and 132, ed. Goar.) According to the 'Armenian Chronicle' of Eusebius, p. 37, &c. ed. Mai and Zohrab), the Assyrian kingdom lasted 1280 years.

AST, GEORG ANTON FRIEDRICH, was born in 1778 at Gotha, at the gymnasium of which place he was educated. In 1798 he entered the University of Jena, where he gave himself up to philological and philosophical studies. In 1802 he began his career as an academical lecturer in the University of Jena; and in 1805 he was appointed professor of ancient literature in the University of Landshut, where he remained until the transfer of that institution to Munich, in 1812. He spent the remainder of his life at Munich, where he died on the 30th of December, 1841.

Ast was one of the best and most industrious of modern scholars, and a very excellent teacher. He occupied himself not only with philology, in the strict sense of the word, but also with several departments of philosophy and its history. During the latter part of his life he devoted himself almost exclusively to the study of Plato, for the understanding of whose works he has done more than any other scholar. His numerous works may be divided into two classes, philosophical and philological; of which a few only are enumerated here. 'Platon's Leben und Schriften,' Leipzig, 1816, 8vo, is one of the best works on Plato, and is a very useful introduction to the study of that philosopher. In 1809 Ast began editing separate dialogues of Plato, such as the 'Phædrus,' 'Symposium,' 'Alcibiades,' 'Leges,' and others, which were well received; and this led him to the publication of a complete edition of Plato's works (Leipzig, 1819–32), in 11 vols. 8vo, with a Latin

translation, and a commentary which occupies the last two volumes. He also published a 'Lexicon Platonicum,' Leipzig, 1834-39, 3 vols. 8vo, which is one of the best special dictionaries that we have. In a critical point of view, his edition of Plato is greatly surpassed by some more recent editions.

(*Biographical Dictionary* of the Society for the Diffusion of Useful Knowledge; Brockhaus, *Conversat.-Lexicon*, 9th edition.)

ASTACOLITES, one of the names formerly applied by geologists to the fossil remains of the long-tailed or lobster-like crustaceans.

ASTACUS, a genus of long-tailed crustaceans (order *Decapoda*, section *Macrura*, Milne Edwards), represented by the lobster (*Astacus marinus*), and the river crawfish or crayfish (*A. fluviatilis*). The Norway lobster belongs to the genus *Nephrops* of Dr. Leach; it is distinguished at once by its claws, or pincers, being narrow, prismatic, and equal in size.

The common lobster is found in abundance along most of the rocky coasts of this kingdom, where it is captured in traps or 'pots' as they are technically called, made of wicker, on the principle of a wire mouse-trap, and baited with garbage. These are lowered into the water, and marked by means of floating buoys: sometimes nets are used. We need not say that the consumption of lobsters in London alone is enormous. Great numbers are brought from the eastern parts of Scotland and the islands, as the Orkneys and Shetlands, and also from Yorkshire. We here exclude the vast supply from Norway. To calculate the annual destruction which man alone commits among these crustaceans is impossible; for could we obtain an estimate of the millions captured, we should yet have to take into the account the relative proportion of females with their ova in a state of more or less development, and which are consequently destroyed. Dr. Baster says that he counted 12,444 eggs under the tail of one female lobster, irrespective of those which remained to be excluded. The unexcluded and undeveloped ova form in boiled lobsters a red mass, in unboiled lobsters a black mass, running down the body and the tail, as it is called; a circumstance here mentioned, because persons in general, as far as our experience goes, do not know what it is.

Great as the destruction of the lobster may be, and particularly of the females laden with ova, still, by a wise provision, the survivors are enabled not only to preserve the species from annihilation, but to prevent the great harvest from failing, for the reproduction, by means of the survivors, more than counterbalances the loss. Mr. Travis, speaking of the female or hen lobster (in a letter to Pennant), says, 'When the ova first appear under her tail, they are very small and extremely black; but they become in succession almost as large as ripe elder-berries, before they be deposited, and turn of a dark brown colour, especially towards the end of the time of her depositing them. The females continue to deposit the ova, or berries, as long as any of that black substance can be found in their body, which when boiled turns of a beautiful red colour, and is called their *coral*. Hen lobsters are found in berry at all times of the year, but chiefly in winter. It is a common mistake that a berried hen is always in perfection for the table. When her berries appear large and brownish, she will be always found exhausted, watery, and poor. Though the ova be cast at all times of the year, they seem only to come to life during the warm summer months of July and August.' Great numbers of them may then be found, under the appearance of tadpoles, swimming about in the little pools left by the tides among the rocks, and many also under their proper form, from half an inch to four inches in length.' Cock lobsters, he adds, 'are in general better than the hens in winter; they are distinguished by the narrowness of their tails, and by their having a strong spine upon the centre of each of the transverse processes beneath the tail, which support the four middle plates of the tail.' The lobster is voracious, active, and vigilant; and is more alert in warm weather than in cold. These crustaceans can run nimbly upon their legs; but when alarmed, they strike the tail smartly upon the chest, and thus propel themselves, as it were backwards, with a single sweep, swift as an arrow, to the distance of thirty or forty feet.

Like all the crustacea the lobster periodically moults its shelly armour, and it is not only the plates, but the covering of the eyes, the lining membrane of the stomach, the teeth connected with it, and also the calcarea-tendinous expansions to which the muscles of the claws are attached. Released from its encasement, the soft body suddenly pushes forth its growth, and shortly acquires a new coat of armour to be again cast off at the due period. It would appear, however, that when arrived at maturity the lobster no more casts its shell (the operation being connected with its growth), for we have ourselves examined a large lobster in a living state, the carapace, or back-plate of which formed a bed upon which a multitude of muscles were firmly attached in close array, presenting a curious picture. The same observations apply to the crab.

Another curious circumstance connected with the lobster is that it possesses the power of reproducing its limbs when lost by accident. The loss of a leg is of little importance; nay, when suddenly alarmed a lobster will frequently throw off its claws with a sudden jerk, nor does it appear to suffer any pain. In a little time a new claw or leg begins to shoot, but it remains unprotected by a shell till the next general moult.

During the summer lobsters are found near the shore mostly in about six fathoms of water; they keep during the winter in deeper water, and are seldom taken in less than twelve or fifteen fathoms. They take up their abode in the crevices and holes of rocks, to which they rapidly retreat when danger threatens.

The crawfish is found in the fresh waters of Europe and Northern Asia; especially such as have a rocky or stony bed, affording it convenient lurking places. It is a lobster in miniature, with

the same general habits and structure. The crawfish is esteemed for its delicacy, and is taken in nets, or by being entangled in bundles of thorns baited with garbage; numbers are also caught by men or boys, who wade in the river, groping for them in holes and under stones.

The crawfish, like the lobster, feeds on aquatic mollusks, the larvæ of insects, small fishes, and putrescent animal matter of any kind.

Both the lobster and the crawfish turn red upon being boiled. This is owing to the action of water at 212° of Fahrenheit upon the bluish black pigment secreted by the corium, and diffused over the tegumentary armour. Alcohol, æther, and the acids, also produce the same effect. [CRUSTACEA.]

ASTARTE, a genus of bivalve mollusks, with two muscular impressions and a simple mantle-line. The hinge has two divaricated teeth in the right-hand valve; in the other, one distinct and one obsolete tooth, and the rudiment of a lateral tooth. The ligament is external.

The species consist of some of the *Veneres* of Montagu, one of which is a *Crassina*. (Lam.) Some of them are English shells, and they are generally found on the sandy mud of coasts at a depth which ranges from near the surface to ten fathoms.

The crag, the green-sand, and some of the old fossiliferous beds, afford many species.

ASTARTE, *Achtoret* or *Achtaroth*, one of the deities of Phœnicia. She is frequently mentioned in the Holy Scriptures in connexion with Baal, as seducing the Israelites from their duty. (Judges ii. 13, iii. 17; 1 Sam. vii. 4, xii. 10.) Astarte had a magnificent temple at Sidon. The rose and the lotus were sacred to her; and, among animals, the lion, the horse, the boar, the lobster, and the pigeon. (Selden, *De Diis Syriis*, p. 244; Münter, *Der Tempel der Himmlischen Göttinn zu Paphos*, Copenhagen, 1824.)

ASTER, a genus of plants belonging to the natural order Compositæ, and comprehending a great multitude of species scattered over all parts of the world, especially North America and New Holland.

ASTE'RACA'NTHUS, a genus of fossil Placoid fishes, including five British species, from the oolitic and lias formations. (Agassiz.)

ASTERA'CEÆ. [CORYMBIFERÆ.]

ASTE'RIAS (Lam.), a genus of radiated animals (class Echinodermata) widely diffused over the seas. The Linnæan genus comprised every form of radiation which appears in the tribe, but the genus *Asterias* of Lamarck includes only the starfishes properly so called. These are divided into two sections, 'the scutellated starfishes,' and 'the radiated starfishes.' The former have an angular body, the lobes or rays of which are short, their length not exceeding the diameter of the disk: the latter have a body furnished with elongated rays, whose length far exceeds the diameter of the disk.

Tiedemann has given the anatomy of these animals in a most elaborate and accurate work, and shown the adaptation of their organization to their locomotion and general habits.

Each ray is furnished with a longitudinal furrow on its lower side, and this furrow is pierced laterally with small holes, through which pass the feet or tentacula, which are membranous and cylindrical, and each is terminated with a little disk, which performs the office of a cupping glass, somewhat in the same manner as the acetabula or suckers of the cuttle-fishes. By elongating or shortening these numerous little organs, and by fixing them by means of their terminal disks, the progressive motions of the star-fish are regulated. The rest of the lower surface is furnished with small movable spines, which also assist progression. The whole surface is also pierced by pores, through which pass tubes much smaller than the feet, serving probably to absorb the water, and to introduce it into the general cavity, for the purposes of a kind of respiration. A large stomach lies close to the mouth; and two ramified cæca, each suspended to a kind of mesentery, are given off to each ray, which is also furnished with two ovaries, by means of which the animals are supposed to reproduce their species without the aid of a second individual. A fine chord, which surrounds the mouth, and sends a branch to each arm, is considered as the development of their nervous system.

Asterias tessellata may be taken as an example of the scutellated division. It is a widely diffused species. Of the radiated division, *Asterias rubens*, common starfish or five-finger, may be selected as an illustration. This is common in our seas, and is very destructive to oysters. Bishop Sprat, in his history of the Royal Society, where he treats of the common oyster, has the following passage: 'There are great penalties, by the Admiralty Court, laid upon those that fish out of those grounds which the court appoints, or that destroy the *cultch*, or that take any oysters that are not of size, or that do not tread under their feet or throw upon the shore, a fish which they call a *five-finger*, resembling a spur-rowel; because that fish gets into the oysters when they gape, and sucks them out.'

Some of the species are subject to the attacks of a parasitic testaceous mollusc (*Stylifer*, Brod.), which burrows in their integument, and there remains in a kind of cyst. [COMATULA; OPHIURA; STELLIRIDIANS.]

ASTERISM, *a collection of stars*, formerly used for *constellation*, but now appropriated to signify any small cluster, which it is either desirable to distinguish from the rest of the constellation in which it lies, or which is not a part of any particular constellation.

ASTEROIDS. The small planets have been sometimes designated by this name. [JUNO; VESTA; CERES; PALLAS.]

ASTEROPHYLLI'TES (Brongniart), a fossil genus of plants, containing many species, from the coal formations of Europe and America.

ASTEROPTY'CHIUS, a genus of fossil Placoid fishes, from the mountain limestone of Ireland. (Agassiz.)

ASTHMA. [BRONCHITIS.]

ASTI, one of the six provinces or subdivisions of the Intendencia of Alessandria, in the

continental dominions of the King of Sardinia. It is bounded W. and N. by the province of Turin, S. by that of Alba, S.E. by Alessandria Proper, and N.E. by the province of Casale. It is watered by the Tanaro and its tributaries. The ground is hilly, and well adapted for the cultivation of the vine. A sparkling fine-flavoured white white, called *vino d'Asti*, resembling champagne, is made in the neighbourhood of Villanuova. The soil is also fertile in corn and fruit-trees, especially mulberries, the leaves of which serve to feed the silkworms. The province of Asti is divided into 13 *mandamenti* and 86 *comuni*. The former, with the population of each in 1838, are—Asti 26,656: Baldicheri 7232: Canelli 7189: Castelnuovo D'Asti 9796: Cocconato 7189: Costigliole 10,832: Mombercelli 11,174: Montafia 6823: Montechiaro 6773: Portacomaro 5965: Rocca D'Arazzo 7160: San Damiano 12,059: and Villanuova 9135—giving 127,983 for the population of the whole province.

ASTI, the capital of the province of Asti, lies on the left bank of the Tanaro, on the high road from Turin to Alessandria, in 44° 57′ N. lat., and 80° 12′ E. long.; population 22,000. It is a large city, but not peopled in proportion to its size. In the quarter where the palaces of the nobility are the streets are rather wide, but little frequented. The most remarkable palaces are those of Trinco, Rovero, Bristagni, Massetti, and Alfieri, in the last of which Vittorio Alfieri was born in 1749. The rest of the town is badly built. There is some trade in silk and woollen fabrics, wines, and other agricultural produce. Of the churches, the most remarkable are the Duomo, the cathedral of S. Secondo, and the churches of San Pietro and La Consolata. Asti is a bishop's see, and the residence of the intendente of the province. It has eight parish churches, a court of justice, and a royal college, with chairs of philosophy, theology, and surgery. There is a printing-office in the town, in which business has been uninterruptedly carried on since 1479.

Asti, formerly called Asta, was a town of the ancient Ligurians: it was taken by the Gauls, about B.C. 400; it afterwards made alliance with Rome, and submitted to Hannibal on his invasion of Italy. In the subsequent war of Rome against the Ligurians, Asta submitted to the Romans, but retained its municipal rights. Asta having been again taken and destroyed, in a new irruption of the Gauls, was rebuilt by Pompeius the Great, and assumed the name of Asta Pompeia. It was devastated by the Goths, under Alaric, and restored by Narses; and taken again by Alboin, who put to death many of the inhabitants. It was erected into a duchy by the Longobards. It afterwards submitted to Charlemagne, and under his indolent successors governed itself, with its consuls, as a republic, like most Italian cities, under the influence of its bishops. Asti was taken and burnt by the Emperor Frederic I. in 1155; but it afterwards attained a great degree of prosperity, and had banking establishments in France, Flanders, and other countries. About the middle of the 13th century, the factions of the Guelphs and Ghibellines broke out in Asti, and distracted the citizens for many years after. Tired of these civil struggles, the people of Asti chose for their captain one of the princes of the house of Savoy. It afterwards fell into the hands of the Visconti of Milan, who transferred it in 1387 to the French, in whose possession it remained till 1529, when it was given up to the Emperor Charles V., by the peace of Cambrai. Charles gave Asti to his relation Beatrix of Portugal, who married Charles III., duke of Savoy; since which it has remained attached to the dominions of that house.

ASTLE, THOMAS, the author of various antiquarian publications. He was born at Yoxall, in Staffordshire, in 1734. He was sent to the office of an attorney in his native town, but, his taste inclining him more to the study of general antiquities than to his profession, he came up to London, where, about the year 1763, he became known to Mr. Grenville, then First Lord of the Treasury and Chancellor of the Exchequer, and was employed by him in the arrangement of papers, and other business which required a knowledge of ancient handwriting. In 1765 he was appointed by Mr. Grenville to the office of receiver-general of sixpence in the pound on the civil list. In 1770 Astle was appointed by the House of Lords to superintend the printing of the ancient records of Parliament, and he presided over the publication till its completion in 1775. He was then made chief clerk in the Record Office in the Tower; and some years afterwards he succeeded to the place of Keeper. He was a Fellow of the Royal and Antiquarian Societies, and one of the Trustees of the British Museum. He died on the 1st of December, 1803. Mr. Astle is the author of a number of articles in the 'Archæologia,' and also of several separate publications. The work by which he is best known is his 'Origin and Progress of Writing,' 4to, 1784. A reprint, in 4 vols. 4to, of Grose's 'Antiquarian Repertory,' was published in 1807, on the title-page of which the name of Astle is given as one of the compilers along with that of Grose. Mr. Astle's library, which was very curious, was purchased by the Royal Institution for a thousand pounds.

ASTLEY, JOHN, a portrait-painter, born at Wem, in Shropshire, in the early part of the eighteenth century, more distinguished for his good fortune than for his works, though these, according to Walpole and Edwards, were not without merit, especially those of his earlier years. He was the pupil of Sir Joshua Reynolds, and was at Rome at the same time with him, during which period he was very poor.

After his return to England he tried his fortunes in Dublin, where he practised with such success that in three years he saved 3000*l*. He considered this capital sufficient to enable him to venture his fortunes in London; and 'as he was painting his way back to London,' he met with 'Lady Daniel, a widow, who was at once so won by his appearance, that she contrived to sit to him for her portrait, and then made him the offer of her hand.' This lady was the widow of Sir William Daniel, and was possessed of a very large fortune, the

whole of which she bequeathed to Astley. She died not long after her marriage. He purchased the house in Pall Mall which had belonged to the Duke of Schomberg, fitted up a villa at Barnes, in Surrey, according to a peculiar fancy, and gave himself up to a life of pleasure. He died in November 1787. Before his death his character changed; he regretted the dissipated life he had led; but, as his biographer has said, if he owed his fortune to his form, he owed also his follies to his fortune.

(Walpole, *Letters*, vol. ii.; Edwards, *Anecdotes of Painting*, &c.)

ASTOLPHUS succeeded his brother Ratchis as king of the Longobards A.D. 750, and aimed at driving away the Greeks from Italy: he took Ravenna, expelled the Exarch, and conquered the Pentapolis, which comprised part of the present March of Ancona. In 752 he turned his arms against Rome, which still acknowledged the authority of the eastern empire. Pope Stephen II. sent ambassadors to Astolphus, and obtained a truce for forty years. Astolphus soon broke the truce, and required the Romans to swear allegiance to him, and pay a capitation tax. Pope Stephen, despairing of assistance from the indolent Byzantine court, had recourse to Pepin, king of the Franks, and bestowed on his two sons Carlomann and Charles (afterwards Charlemagne) the title of Patricians of Rome, A.D. 753. Pepin defeated Astolphus, and besieged him in the city of Pavia, and after concluding a treaty with Astolphus returned into France. This was the first interference of the French in the affairs of Italy.

Astolphus, however, in 755 marched against Rome, and laid siege to it. Pepin then crossed the Alps a second time, and again besieged Astolphus in Pavia. Astolphus now sued for peace; and gave up the Exarchate, including Comacchio, as well as the Pentapolis, which were not restored by Pepin to the empire, but bestowed by him on the see of St. Peter. This was the origin of the temporal power of the popes, as independent sovereigns. The territory thus given up, however, included the country of Ravenna and the province since called Romagna. The duchy of Rome was not included in it. Astolphus died in 756, owing to a fall from his horse.

(Muratori, *Annali d'Italia;* Mosheim's *Ecclesiastical History.*)

ASTORGA, the *Astúrica Augusta* of the Romans, once the capital of the Astures, and now a small episcopal town with about 4000 inhabitants, in the Spanish province of Leon. Pliny (iii. 3) calls it a magnificent city. It is situated in a fertile plain near the Tuerto, about 26 miles W. by S. of Leon, in 42° 27′ N. lat., 6° 10′ W. long. The cathedral deserves to be visited on account of its high altar, which is one of the best works of Gaspar Becerra, who was born at Baeza in 1520.

ASTRABAD. [PERSIA.]

ASTRÆA, a genus of fixed polypifers, sometimes incrusting marine bodies, sometimes collected in an hemispherical or globular mass, which is sometimes, but rarely, lobated. The upper surface is covered with orbicular or subangular starry disks, which are lamellar and sessile. Each disk is the seat of a polype, with a single row of numerous arms, in the centre of which is the mouth. Lamarck divides these corals into two sections: the first, consisting of species whose starry disks are separated from each other, leaving interstices between them; and the second, of species whose starry disks are contiguous. Of the first section, *Astræa rotulosa*, an inhabitant of the West Indian seas, is an example: of the second, *Astræa favosa*, common in the seas of the East Indies, affords a good illustration. The species are numerous.

ASTRAGAL, a moulding used in architecture, and applied principally to the upper ends of the shafts of columns and to their bases. It is also used in the entablatures of the Roman Doric, the Ionic, Corinthian, and Composite orders. The term is derived from the Greek ἀστράγαλος, which signifies the bone on which the tibia rests, and sometimes a vertebra. The form of this moulding is semicircular, projecting from a vertical diameter.

The apparent use of the astragal is, to bind the parts of columns and entablatures together, for which purpose it is employed both at the top of the shaft where the capital commences, and at the bottom where the base terminates.

In Egyptian architecture, bands curved after the manner of astragals seem to bind the reeds of which the shaft of the column often appears to be formed. The most remarkable example of the use of the astragal in Grecian architecture is in the base employed in the Ionic temple of Minerva Polias at Priene. [COLUMN.]

ASTRA'GALUS, an extensive genus of leguminous plants, the most remarkable species of which is the *Astragalus verus*, from which the substance called gum tragacanth is obtained. Although the principal part of the tragacanth of commerce is said to be furnished by this species, it is certain that it is also procured from several others.

ASTRAKHAN, formerly called Astorokan, a khannate or government in the western part of the Asiatic possessions of the Russian crown, extends northward from the banks of the Terek to the sources of the Ufa in the Yekaterinburg chain of the Ural range, and eastward from the mountains of the Volga to the south-western limits of Siberia. It lies therefore between 43° and 54° N. lat., and 44° and 60° E. long. It formed part of the Mogul empire of Gengis-Khan in the thirteenth century; but was made into a separate sovereignty by his grandson Batu. In 1554 Ivan, the Czar of Muscovy, took possession of Astrakhan, and added it to the Muscovite dominions. The present province or government of Astrakhan forms only part of the khannate formerly known by that name: the remaining portions having been formed in 1801 into the governments of Saratoff and Orenburg.

The present government of Astrakhan extends in a northerly direction from the banks of the lower Kuma and Manysh to the frontiers of the government of Orenburg, and eastward from the borders of that of Saratoff to the line of the Ural,

next to the steppes of the Kirghish-Cossacks; it is comprised between 45° and 52° N. lat., and 44½ and 52° E. long., and has an area of about 84,000 square miles. The land is, with little exception, an enormous plain, lying below the level of the ocean and the Black Sea. It is divided into two parts or steppes, by the Volga. The soil is saturated in almost every direction with salt; the very atmosphere, the rain, and dew, are charged with it; and briny lakes are of frequent occurrence. This immense plain lies so low on the eastern side of the river, that the Caspian often overflows it; and vessels have even been driven 40 miles inland over the steppe itself, when a S.E. wind blew from the Caspian. Neither wood nor forest are found throughout the whole province, nor a tree on any spot, except a few groups of oaks, poplars, birches, elms, and wild mulberry-trees, along the banks of some of the rivers. When, however, the snows dissolve, the dry and arid steppes put on, in many parts, a gay and verdant appearance; many flowers and species of grass appear; and, in the summer season, herbs and vegetables are found, though agriculture properly so called is but little favoured. Rocks, either of limestone or sandstone, rarely occur; but the province is full of extensive moors, the soil of which consists of a deep spongy saline loam, which bears no vegetation whatever on its surface; its edges only are skirted with saline plants. It is supposed that the Caspian once covered this province; and hence the beds of salt and saltpetre are immensely abundant. There are only a few fertile spots, situated near the rivers, where fruit, vegetables, grain, and vines are reared; as well as a little tobacco and cotton.

The climate of Astrakhan is a climate of extremes; it is generally warm, and unhealthy for those not inured to it from their childhood, in consequence of the vapours constantly exhaling from the greater part of its surface. A dry and parching heat prevails in summer, when the thermometer frequently stands, even in the shade, at 100° of Fahrenheit: yet the nights are in general nipping, and the winds deposit the saline particles with which the air is charged in such profusion, that every object appears veiled in the morning with hoar-frost. Autumn is of short duration: the winter cold, when the north wind blows, sinks the temperature to 30° below zero, and the principal arm of the Volga, with a breadth of 750 yards, becomes covered with ice capable of sustaining loaded sledges.

The Volga is scarcely equalled by any other stream in the world for abundance of fish. This noble river flows through the province with a winding course; and before its fall into the Caspian, about 30 miles below Astrakhan, it branches into eight principal arms and sixty-five subsidiary outlets, forming this quarter of the province into a delta of seventy islands. In the spring of the year its fishing grounds, particularly between the sea and the capital, are so abundantly stocked with fish, as to employ upwards of five thousand vessels, and twice that number of persons, who are brought by the fisheries from remote places. Isinglass and caviar are brought from this region.

The river Ural forms the eastern boundary of Astrakhan, and between it and the Volga is a dreary expanse of sand and swamps. There is a winter fishery on the Ural, which gives employment to the poor Cossack inhabitants of the neighbouring shores. The other rivers of the province are the Akhtuba, and the Greater and Lesser Uzeen. The lakes of Bogdo, Bashuskatskoi, and Kamysh-Samara, afford large quantities of salt.

In the lowlands on the banks of the Volga fossil elephant bones are occasionally found. Among other existing animals, there are in Astrakhan the wild ass, camel, and antelope-saiga, whose horns are semi-transparent; there are also the bustard, kite, falcon, pheasant, and snipe; and the tarantula, scorpion, and locust also occur. The natives are herdsmen and graziers as well as fishers; droves of horned cattle are kept wherever there is pasture, and are turned out half-starved from their wretched winter quarters as soon as the snow has disappeared. Goats are also reared, not so much for the sake of their milk or flesh, as of their hides, with which the Russians prepare morocco-leather: there is a fine species of hair too, which either falls from the animal's back, or is combed from it, out of which a stuff of beautiful texture is occasionally woven. But the greatest resource possessed by the rural population and nomadic tribes of the province is their flocks of sheep, which are valuable both for their wool and for their fat. The horses of the province are diminutive and ill-conditioned; but they are suited to the climate, and are very valuable to the Kalmucks, who, when the services of the living animal are over, use the flesh and milk for food, the skin for clothing, the sinews for ropes and tackle.

The population of Astrakhan is composed of a motley group of Russians, Cossacks, Tartars, Kalmucks, Armenians, Indians, and other settlers from various parts of Europe and Asia, estimated at about 260,000 individuals. The most numerous of these are the Kalmucks, who occupy large tracts to the east of the Volga. Another considerable portion of the population is composed of the Cossacks of the Ural, who are esteemed the finest, the wealthiest, and the bravest Cossack corps in the Russian service, whence they have acquired the appellation of 'the Eye of the Army,' and garrison the small forts along the line of their native river. The Tartars and other inhabitants are fewer in number.

To the principal branches of industry already enumerated we may add the manufacturing of magnesia, tallow, and soap, in considerable quantities, distilleries of brandy and spirits, and manufactories of leather, cotton, and silk. Astrakhan soap is in much request among the Russians on account of its firm substance and fragrant scent. The Volga, which secures a ready access to the eastern shores of the Caspian Sea, has hitherto rendered the capital of this province the principal seat of the traffic carried on between Asia and the Russian dominions.

Astrakhan is politically divided into four circles: Astrakhan, Krasno-yarsk, Yenotayewsk, and Tsherno-yarsk; but there are no spots in it deserving of any distinct notice, excepting the

capital, from which the whole province derives its name, and Uralskoi, the chief town of the Cossacks of the Ural. The town of Kalmüzkoi-Basar, about five miles from Astrakhan, is a place of sale and barter between the citizens and the country people. Krasnoi-yar, the capital of the circle of that name, is a small town 19 miles from Astrakhan. Yenotayewsk and Tsherno-yar, are in like manner small but chief towns of circles.

ASTRAKHAN, the capital of the government of Astrakhan which is become the principal seat of Russian intercourse with Asia and the storehouse of fish for the whole empire, stands on the island of Zaietchy Bugor, or 'the Hare's Mound,' which lies between the small river Kutum and the Volga, about 50 miles from the mouth of the Volga, and 820 miles south-east of Moscow, in 46° 26' N. lat., 48° E. long. It has a navigable communication also with St. Petersburg, from which it is upwards of 1200 miles distant. Astrakhan ranks as the eighth town in the Russian dominions; its stationary population being about 50,000, and its whole circumference rather more than three miles. The uneven ground on which it stands, its half-decayed battlements, and a multitude of steeples, minarets, and cupolas, give it a handsome appearance at a distance; and the effect is heightened by contrast with the flat marshy ground which surrounds it. The climate of such a site cannot rank among the healthiest; and it is liable, moreover, to very sudden changes of temperature. A long canal traverses Astrakhan from E. to W., the direction of its greatest length. The town is irregularly built, and the houses present a singular medley of European and Asiatic taste; they are constructed principally of wood, and are in number between 4000 and 5000. Astrakhan is the seat of an Armenian as well as Greek archbishopric, under the former of whom there are four, and under the latter twenty-five, churches; besides these, the Roman Catholics, Lutherans, and Hindoos, have each their separate place of worship, and the Mohammedans have nineteen mescheds or mosques. There are schools, missions, and printing houses in the town. The chief architectural ornaments of Astrakhan are—the 'Kreml' or citadel, which contains the cathedral and barracks; the 'new' or 'white' town, so called from its being embellished with the principal government buildings and the three factory halls, one for the use of the Russian, another for the Asiatic, and a third for the Hindoo dealers; the beautiful street inhabited by the Persian merchants, on each side of which runs an arcade, supported by handsome columns; and the cathedral, which was erected in 1696, and, like most ecclesiastical edifices in Russia, consists of a massive parallelogram with four small cupolas on the roof, and a large one in the centre, from which the building receives its light. The remainder of the town comprises sixteen 'slobods' or suburbs, beyond which the progress of modern improvement has transformed moor and swamp into places of public resort and agreeable promenades. Warazi, a Greek of large property, has been the great reformer of Astrakhan in every thing concerning the improvements outside of the town; which are not only extensive, but judiciously planned and executed.

It has been calculated that, in the fishing season, the population of Astrakhan is increased by at least 30,000 souls; a motley concourse, collected from almost every quarter of Asia and Europe, of whom nearly one-third are Russians. The latter, with the exception of a few noblemen, and the military and civilians, are exclusively traders, and many of them in affluent circumstances. The Tartar inhabitants of the town are stated by Gamba at 10,000; they are of three distinct races, and many of them are highly commended for their unswerving integrity. The Armenians are among the richest traders in the town: a considerable proportion of them have laid aside their robes, caftans, broad trowsers, small boots, and high fur caps, and adopted the European costume; but their wives and daughters still move about, covered from head to foot with an enormous white veil, which conceals the whole person except a small part of the face. The Georgians of Astrakhan are mostly mechanics, and the better class of them are very cleanly, and show much taste in their household arrangements. The Hindoo residents are money-brokers, few in number; the Bokharans are only temporary residents.

The establishments for weaving silks and cottons at Astrakhan are nearly one hundred in number; it manufactures also considerable quantities of leather, particularly a superior description of morocco and shagreen, as well as tallow and soap. The business of buying and selling, more than one-half of which has been engrossed by the Armenians, is conducted in twenty-eight khans or bazaars, which contain 1500 stores built of stone, and 560 wooden stalls. Raw silk and silk goods, cotton and cotton-yarn, drugs, dye-stuffs, carpets, oil, rice, and other eastern productions, form the chief importations: the exportations are principally woollen cloth, linens, cochineal, velvet, iron, salt, fruits, fish, wine, liquorice, soda, hides, skins, and grain.

The fisheries of the Volga centre principally at Astrakhan, or rather on the branches of the river some distance below it. Every weir has its group of huts, with a little church attached to it, in which from two to three score fishermen reside; they are divided into divers, catchers, saltingmen, and makers of caviar and isinglass. Each little colony is provided with spacious ice-cellars, which contain compartments for storing away the fish when salted, with intervals between the compartments which are filled with ice.

Antiquarian vestiges of a former Tartar dominion are met with in many spots in and near Astrakhan.

ASTRINGENTS (from *astringo*, to constringe, or bring closer together,) are agents which contract the fibres of the muscles and blood-vessels, and lessen the flow of fluids, whether it be the secretions of the glands proceeding from their natural orifices in excessive quantity, or the contents of the blood-vessels escaping by their exhalant extremities, or by an unnatural opening (or rupture). They produce this effect generally by a vital action, but sometimes by a chemical action.

Their power is manifested first, and often solely, on the part to which they are applied; yet in many instances it is extended by sympathy very rapidly over the whole body, as is observed when the austere juice of the sloe is brought in contact with the tongue. The sensation then experienced may be considered the best general test of the presence of astringency, which cannot be ascribed to any one principle, but is owing to tannin, gallic acid, and hæmatine, in vegetable astringents, and is possessed by acids, and many metallic salts among mineral agents: it is also one of the effects of the application of cold to the body.

When tannin exists in plants, its presence may be proved by an insoluble precipitate taking place on the addition of a concentrated solution of gelatin. The precipitate is a compound in definite proportions of tannin and gelatin, being forty-six of tannin and fifty-four of gelatin. Tannin rarely exists alone, though it probably does so in catechu, but mostly along with gallic acid. Extractive is also a frequent accompaniment of tannin, and is of considerable service, assisting its action in the process of tanning. Gallic acid strikes a bluish-black precipitate with all the salts of iron, but a solution of the persulphate is the ordinary test. Hæmatine exists in logwood, along with tannin and extractive. It may be known by combining with oxide of lead without undergoing any change.

The effect of astringents which is due to their chemical action is nearly the same in dead as in living animal matter; their long-continued application to the skin will produce a condition similar to that of a tanned hide. They are therefore sometimes employed to effect this, when internal parts are exposed, to change them from a secreting to a non-secreting surface—such as an irreducible prolapsed uterus. Their use in this way however is very limited; while their vital action is extensive and important. The chief effects of astringents are to contract the muscular and vascular tissues, to diminish secretion, and lessen irritability; and, in many instances, to impart strength, or increased tone, to an organ or part. Their action is always greatest on the part to which they are applied. When a drop of diluted acetic or sulphuric acid is applied to the skin, whiteness of the part is observed, which soon disappears, and the natural colour, or even a more intensely red one, follows. If this is frequently repeated, the structure of the part is changed, it ceases to secrete, is no longer pliant, but becomes stiff and inflexible. The loss of colour is owing to the diminished calibre of the blood-vessels, which no longer admit the red globules. During the absence of these, the sensibility of the part is less than natural; just as cold and torpid fingers lose their fineness of touch. Nearly similar effects follow the internal administration of astringents. There is reason to believe that the astringent principle of many plants does not enter into the circulation, but passes along the whole course of the intestinal canal without being absorbed: for Sir Humphry Davy found, that when tannin is present in grasses, as it is in that of aftermath crops, it is voided in the dung of the animals which feed upon it. (Davy, 'Elements of Agricultural Chemistry,' Appendix, p. lxi.) Some astringents which lessen the action of the heart are called *sedatives;* while others, which combine with and neutralize the unhealthy or excessive secretions, as lime and its carbonate with the secreted fluids of the intestinal canal, are more properly termed *absorbents* than astringents. When astringents are applied directly to the bleeding vessels, such as to external wounds, or to the nostrils or gums, they are termed *styptics,* and in such cases they often act chemically as well as vitally.

Of vegetable astringents the chief are *barks,* as of oak and willow, the best kind of the former of which is obtained from the *quercus robur* of Linnæus (the true British oak), which is synonymous with the *quercus pedunculata* of Willdenow, while the inferior sort is obtained from the *quercus sessiflora* of Salisbury, which is synonymous with the *quercus robur* of Willdenow. The best willow-bark is procured from the *salix pentandra,* or sweet bay-leaved willow, though very excellent bark is yielded by the *salix Russeliana,* or Bedford willow. Roots, as of tormentil (*potentilla tormentilla*); bistort (*polygonum bistorta*); common avens (*geum urbanum*), which are British plants; and rhatany (*krameria triandra*); rhubarb (*rheum palmatum*); pomegranate (*punica granatum*), which are exotic plants; leaves of arctostaphylos (*uva ursi*), petals of the *rosa gallica,* fruits of *prunus spinosa,* or sloe-thorn (*punica granatum*), and secreted juices of many plants, as kino, from *pterocarpus Senegalensis,* and several others; and catechu, from *acacia catechu,* and galls, from *quercus infectoria;* in all of which the astringent principle is tannin, with more or less of gallic acid; and lastly log-wood, (*hæmatoxylon Campechianum*), in which hæmatine as well as tannin possesses an astringent property. Acetic acid must also be classed among the vegetable astringents.

The mineral astringents are—diluted sulphuric acid, and salts of iron, zinc, copper, silver, and the salts of lead. Cold, in whatever way applied, is also a valuable astringent.

In treating of the employment of astringents as curative agents, it is necessary to distinguish between their action as local, direct, and often chemical, and their action as general, influencing remote organs, their effects upon which are vital rather than chemical: also between their mere astringent power and their tonic power.

The ancient Egyptians would appear to have been acquainted with the power of astringents in preserving vegetable as well as animal substances, and they seem to have dipped the coarse cloths in which the mummies were enveloped in some astringent liquid, which tanned the skin, and rendered it less subject to change, as well as excluded the air from the interior of the body. The article employed by them with this view is supposed to have been some sort of kino. The same substance is used by the Chinese to dye cotton for their nankeens.

ASTROCA'RYUM, a genus of palms found in small groups, or in single specimens, in the tro-

pical parts of America, of middling stature, and of a very singular appearance on account of the spines with which they are armed. Their stems are covered all over, except at the places where the leaves are set on, with stiff and very numerous prickles. The leaves are pinnated. The fruit resembles cocoa-nuts.

These plants are found exclusively in South America. *Astrocaryum murimurú*, is a common inhabitant of swampy places in the neighbourhood of Para, where it is called *murimurú*; the flesh of the fruit resembles the melon in flavour and the musk in odour, and is considered a great delicacy by the Americans. Another species, *A. aïri*, has very hard wood, which is much used for bows, and similar purposes, where hardness and toughness are required. The fibres of the leaves of *A. tucuma* are much valued for fishing-nets.

(Martius, *Palms*, p. 69, &c.)

ASTROCRINITES (Austin), a fossil genus of Crinoidea, from the mountain limestone of Yorkshire.

ASTROLABE, from two Greek words signifying *to take the stars*. It has an earlier and a later meaning. As used by Ptolemæus, it may stand for any circular instrument used for observations of the stars; but in the sixteenth and seventeenth centuries it signified a projection of the sphere upon a plane, being used in the same sense as the word *Planisphere*. To this small projection, which had a graduated rim, sights were added, for the purpose of taking altitudes; and in this state it was the constant companion and badge of office of the astrologer. In later times, before the invention of Hadley's quadrant, a graduated circular rim with sights attached, called an astrolabe, was used for taking altitudes at sea.

A collection of circles, such as the *Armillary Sphere*, might, by furnishing each circle with tubes, be made a complete astrolabe. The practical difficulty consists in keeping so many circles exactly in their proper relative positions. The distinction between the astrolabe of the ancients and the circular instruments of the moderns, is as follows: First, the ancients endeavoured to form an astrolabe of two circles, so as to measure both latitude and longitude, or both right ascension and declination, by the same instrument; while the moderns, in most cases, measure only one of the two. Secondly, the ancient instruments were made to revolve to find the star, or were furnished with at least one revolving circle, moving round the pole of the equator or ecliptic, according as declination or latitude was to be measured. The moderns for the most part fix their instruments in the meridian and wait for the star. But the *equatorial*, the altitude and azimuth *circle*, and the *theodolite*, are strictly astrolabes, according to the ancient meaning of the term.

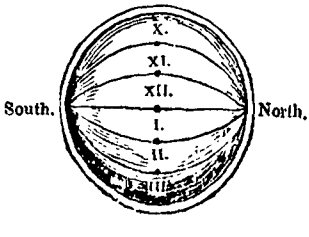
ASTRO'LOGY. If this word were used in a sense analogous with that of *geology* or *theology*, it would mean simply the *science of the stars*; while *astronomy* might mean the science of their order and arrangement. But the term, at least when coupled with the epithet *judicial*, has long signified the discovery of future events by means of the position of the heavenly bodies.

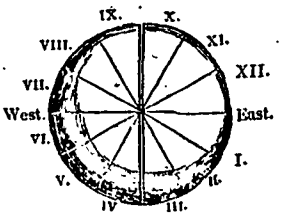
It has long been unusual to produce any arguments against this pretended science; but it may be useful to show a few of its details. Works, seriously professing to inculcate and defend the principles of astrology, are not only sold, but bought with avidity. Several of our most popular almanacks do actually give astrological predictions at the present time. This may be a mere matter of amusement with the more enlightened; but we are afraid there are some who play with edge-tools in reading these fooleries.

Our old English writers, particularly the dramatists, cannot be well understood without some information upon the leading terms and principles of this art; which, therefore, may be as lawfully studied as the history of Jupiter and the Metamorphoses of Ovid.

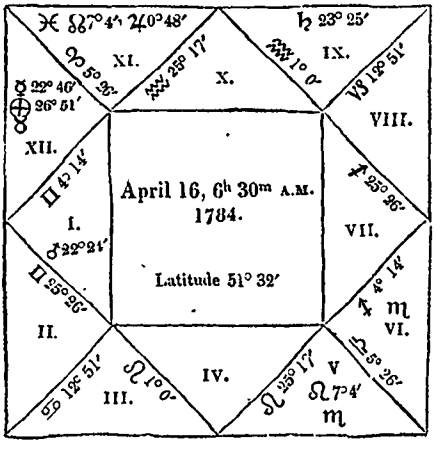
The science which, under the name of astrology or some term of equivalent meaning, found universal belief among all the nations of antiquity except the Greeks, and also prevailed through the whole world of the middle ages, is based upon the supposition that the heavenly bodies are the instruments by which the Creator regulates the course of events in this world, giving them different powers according to their different positions. This is the description of the more learned astrologers; for we need hardly say, that the ignorant have made the stars themselves the agents, just as the image of the Deity has generally come in time to be regarded by the vulgar as the Deity himself. Looking at the more credible description, it might be philosophical for a newly created being, in possession of rational powers, to suspend his opinion on such a point till he had observed facts enough to affirm or deny the connexion asserted to exist between the places of the planets and his own fortunes. That there is nothing repugnant to human nature in the basis of astrology is sufficiently proved by the number of great minds which have been led by it, when properly prepared by education. The real arguments against astrology are, first, that it is self-contradictory; secondly, that its predictions are not borne out by facts. To see the first of these, we must describe the leading principles of the art.

In the following globes, the circle projected horizontally represents the horizon, the double circle the meridian, and the other four circles are drawn at equal distances from the meridian and horizon, through the north and south points of the latter, thus dividing the whole heavens, visible and invisible, into twelve equal parts. Let these circles remain immovable, while the diurnal revolution of the globe takes place under them. The twelve divisions are called the twelve *houses* of heaven, and are numbered in the order in





which they would rise, if the circles accompanied the diurnal revolution. Every heavenly body passes through the twelve houses in twenty-four hours, but is not always in the same house with the same stars, except at the equator. For it is evident that, in order to have two bodies always in the same house, the revolution must take place round the north and south poles of the heavens, which poles are in the horizon only to a spectator on the equator itself. The principal point attended to in each house is the part of the zodiac which occupies it; and the place of any planet in the house is the distance of the body from the cusp, or boundary circle, measured on the zodiac. The following fanciful method of representing the twelve houses was in universal use, and the readers of almanacks must be familiar with it.



The twelve triangles represent the twelve houses of heaven, as marked by the Roman numerals. The time is April 16, 1784, at half past six in the morning. On the boundary of each house is written the part of the ecliptic which is to be found on it. For instance, on the cusp of the twelfth-house that is just rising is the point of the ecliptic which is in 4° 14′ of Gemini. The boundary between the ninth and tenth houses is in 1° of Aquarius. The whole sign of Scorpio is in the sixth house, the boundaries of which are therefore in Libra and Sagittarius. The planets are placed in their proper positions in the houses; thus Mercury (☿) appears to be in the twelfth house, at 22° 46′ from the boundary of the eleventh and twelfth.

The houses have different powers. The strongest of all is the first, which contains the part of the heaven about to rise: this is called the *ascendant;* and the point of the ecliptic which is just rising is called the *horoscope.* The next house in power is the tenth, which is coming on the meridian, &c. The first is the house of life; the second, of riches; the third, of brethren; the fourth, of parents; the fifth, of children; the sixth, of health; the seventh, of marriage; the eighth, of death; the ninth, of religion; the tenth, of dignities; the eleventh, of friends; the twelfth, of enemies. Each house has one of the heavenly bodies as its lord, who is stronger in his own house than in any other, as is but fit; and of two planets, equally strong in other respects, he who is in the strongest house is the stronger. Now conceive all plants, animals, minerals, countries, &c., parcelled out under the different planets, which exercise their influence in abundance of different ways, according to the houses they may happen to be in for the time, and their positions relatively to each other—the result will be as good an idea of the mysteries of astrology as it is worth any body's while to obtain.

We shall now give some examples of the application of the science; and this we do, principally because, in the mystical announcements which issue from our press, the darkness of the hints which are given throw a poetical gloom over the subject. This no doubt is interesting, and is not sporting too much with the credulity of the age, or with the chance of detection; but it is a foul libel on the powers of astrology. Thus, in 1815, instead of announcing some such prediction as the following—'Mars in the house of death portends, we are afraid, some new disasters, by war or other cause; a personage will strive against the new order of things, but, if we mistake not, the conjunction of Luna and Saturn in the twelfth house bodes him no good'—instead, we say, of such an unsatisfactory prophecy, a real believer in astrology—such as it was before it fell from its high estate—might have traced Napoleon from Elba to Waterloo; have calculated the very moment of the advance of the Prussians, and described the sword-knot of the captain of the Bellerophon. Thus we have the story of a Jew, in the time of the caliph Al Mansur, who was able to detect, by means of the heavenly bodies, that certain words just written upon a paper, which he was not allowed to see, were the names of a plant and an animal. But lest any one should imagine that perhaps the later astrologers have given up the attainment of information so minute, and have confined themselves to such general indications as those of our almanacks, which, as they mean nothing, may as reasonably be drawn from the stars as elsewhere, we take the following instances from a work published in 1817, which we will not name, and which we would willingly suppose to have been written in irony, if it were not that its size (two volumes quarto, with tables) and style are both evidences either of real belief or intentional attempt to deceive.

A man who was born June 24, 1758, at eight minutes after ten in the morning, committed a murder, and was by many supposed to be insane. Pending his trial, an astrologer was requested to

point out by the stars whether this defence would be established or not. The nativity was cast, that is, the position of the heavens at the aforesaid time was laid down, and the nativity having been *rectified* (a process amounting to giving the prophet a power of making almost any change he pleases), the result was as follows :—

'Mercury being lord of the ascendant, irradiated by a malefic quartile aspect of the planet Mars, and afflicted by an opposition with Jupiter, declares that the native shall be involved in an abyss of troubles and afflictions, even to the hazard of his life.'—'The quartile of Mercury and Mars, particularly when Mercury is constituted principal significator, hath implication of high crimes and misdemeanors.'—'Upon a further inspection of the figure, we find a baneful quartile aspect of Mars and Jupiter, with a mischievous opposition of Saturn and Mars. To the first of these we are to attribute the dissolute manners of the native.' 'Here is unquestionably a favourable trine of the Sun and Saturn; but no great good can result from it, because the Sun is lord of the twelfth house, posited in the tenth, and out of all his essential dignities: at the same time that Saturn is lord of the sixth, located therein, and both the significators are under the dominion of the *evil genii*, vitiating the mind and affections of the native.'—'At the time the unhappy native was prompted to commit this barbarous act, the Moon came to an opposition of Mars by direct direction, while she occupied the cusp of the seventh house, which represents the unfortunate woman.'—'The Sun I find to be giver of life, posited in the tenth house, the house of justice; Mercury, lord of the ascendant, being in Gemini, *an airy sign*, and the Moon likewise in an airy sign, show the manner of the native's death, *that he would die suspended in the air*; while the opposition of four planets in the radix, and the mundane quartile of the Sun and Mars from the tenth, the house of justice, show the quality of it—namely, that it should be in due course of law, by the hands of the common hangman, and not by suicide.'—'I brought up the direction of death with great nicety and precision, and found he would be plunged into eternity when the Sun came to the anaretical point of the mid-heaven, and met the noxious beams of the Moon and Mars in opposition, which thus constituted is ever productive of a violent death.'

That the ancient system of astrology contained the most contradictory assertions may be made evident in very few words. The position of the heavens at the time of birth settled every man's character of body and mind, the various fortunes he would meet with, and his relative positions with regard to friends and enemies. Thus, every one who was born at or very near the same time as Alexander the Great, in the same country, would have a right to expect a somewhat similar career; and twin brothers could never fail to have the same horoscope, and therefore the same success in life; and though the subject of a particular horoscope should travel over the whole world, and thereby come under the influence of positions of the heavens which never could have occurred at his birthplace, yet these would be always ready to tell him (when properly looked at) whether the present moment was favourable or unfavourable to any pursuit he had in view. To take a case that might have occurred: suppose two men had engaged to throw dice against each other for their whole fortunes, and that each went the night before to consult different astrologers in the same town. To them it would not be necessary to tell their names, or exhibit their horoscopes; the present position of the heavens would be sufficient for pointing out a favourable hour, and if both astrologers worked by the same rules, as they ought to do, they would both arrive at the same result: that is, the same would be recommended to both inquirers, though one of them must certainly lose.

The astrologers never made any allowance for the precession of the equinoxes. Thus, though the *constellation* Aries is now in the sign Taurus, and the influences of its stars ought to have moved with them, we find that the *astronomical* Aries, or the first thirty degrees of the ecliptic, is used for the constellation. Under the circumstances, this is of little consequence; but such a practice would be fatal to *astronomy*.

The art is, at present, under the ban of the law, in order that designing persons may have at least one access stopped to the pockets of the credulous. By the statute of the first of James I. c. 12, sorcery of all species was prohibited, though it does not appear certain that this term included astrology; but by the vagrant act, 5 Geo. IV. c. 8, sec. 4, all 'persons pretending to tell fortunes, or using any subtle craft, means, or device, by palmistry or otherwise to deceive and impose upon any of his Majesty's subjects,' are rogues and vagabonds—that is, punishable by any magistrate, with three months' imprisonment and hard labour.

The history of judicial astrology, at least up to the middle of the fifteenth century, is very nearly that of astronomy, since the latter branch of the science, except among the Greeks, was mostly cultivated for the sake of the former. Hence to it, as to alchemy, we owe many really useful discoveries. There is no question that the necessity which the astrologer lay under, of being ready, at any moment, to lay down the positions of the heavenly bodies, produced great numbers of useful tables and observations; and the Greek works which have been preserved by the Arabs were valued principally for the use to which their mathematics could be turned in astrology. The origin of the science is beyond the reach of history, nor is it much worth while to collect all that is known on this point. It certainly came into Europe from the east, where it is mentioned in the earliest records of every nation. The Chinese are said to have placed it on the same footing with agriculture and medicine; the Chaldæans cultivated it sedulously, and the invention is attributed to them by Suidas. The Hindoos have long regulated the most important actions of their lives by the stars; but Mr. Colebrooke has shown that several of their fundamental terms are not Sanscrit, from which he apparently leaves us to con-

elude that he thinks the science neither ancient nor indigenous in India. Among the Egyptians, it was of great antiquity; but it is not mentioned in the books of Moses, unless included in magic or sorcery, which is most probable. The books of Isaiah and Jeremiah allude directly to it in several places, as also that of Daniel. During the captivity, the Jews appear to have learnt the art, and from that time probably, but certainly in the earlier centuries of the Christian æra, became much addicted to it.

In Greece, at least during the classical ages, judicial astrology found no reception; nor do we trace any marks of it even in the earlier astronomical writers of that country. The system was little in harmony with the allegorical mythology which prevailed there; and the oracles afforded perhaps sufficient nourishment to the appetite for the marvellous. But among the Romans astrology was cultivated with avidity from the time of the conquest of Egypt, in spite of several edicts of the senate. In the second century, the whole world was astrological; and even Ptolemæus was infected. There is a work entitled 'Tetrabiblos' attributed to him, which is entirely devoted to astrology; and though its genuineness has been doubted by some, merely because it is astrological, there appears no sufficient reason to reject it.

All the followers of Mohammed are and have been astrologers. The predestinarian doctrines of their system render the transition easy and natural; for, as we have seen, the science of astrology is based upon the notion of the necessity of human actions. The establishment of the Moors in Spain, and the crusades, caused the introduction or the increased cultivation of the art among the descendants of the barbarians who destroyed the Roman empire; probably the former, for we have no distinct traces either of astronomy or astrology among the northern nations. But the predestinarian principle assumed a modified form, more consistent with the belief of the Roman Catholic church. It was said that the stars only incline, but cannot compel; which position, while it left the will free, was a convenient explanation of any failure in the predictions. The Greek and Roman Christians of the earlier centuries had in many instances received the whole of astrology; in others, the modified belief above mentioned. Origen, though he recognises the stars as rational beings, yet, in his 'Philocalia,' contends that the stars neither incline nor compel, but only prophesy or point out what men will do without exerting any influence. He then gives a long and curious argument against their compelling power, without explaining how it does not hold equally against their predicting faculty. St. Augustin argues against astrology altogether. The church, in its public capacity, condemned the art in the first councils of Braga and Toledo, and in the Decretals. The doctrine of astrology was among the errors imputed to the Priscillianists. But many Roman Catholics in later times adopted the same opinions, and among them churchmen of the highest rank, such as the Cardinal d'Ailly (died in 1425), who calculated the horoscope of Jesus Christ. The astrology of comets, which is hardly yet out of date, has even been recognised by a Pope: in the fifteenth century Calixtus III. directed prayers and anathemas against a comet which had either assisted in or predicted the success of the Turks against the Christians.

The establishment of the Copernican system was the death of astrology; and that upon an argument not one bit stronger against it than preceding systems for it. When it was found that the earth was only one among other planets, it soon came to be reckoned absurd by many that our little globe should be of such consequence as to be the peculiar care of the whole system. But why should the principle of non-interference have been preferred to that of the balance of power? We have lost a charming opportunity of discovering what goes on in other planets.

ASTRONOMY signifies the *laws of the stars*, and is applied generally to all that relates to the motions and theory of the heavenly bodies, as well as of the earth. If we except general terms, such as *science*, there is perhaps no single word which implies so many and different employments of the human intellect.

The work of the astronomer begins in the observatory, where means are provided for noting the positions of the stars. Of the instruments by which this is done, see the principle and details in the articles mentioned under the head INSTRUMENTS, ASTRONOMICAL. There are two classes of observations: the first, of known bodies, of which the places are so nearly determined that no question remains except about quantities less than a second of time, or its corresponding quantity, fifteen seconds of space; and for this class the consideration what phenomena shall be observed is made to rest entirely upon the instruments, those phenomena being preferred for the observation of which the steadiest instruments can be made. These move only in the meridian, and the star is waited for. The second class of observations, such as those of comets, double stars, and all mere appearances, which require an instrument that can be pointed to any part of the heavens, or can be made to follow a star, is performed by telescopes, which are made to revolve with the heavens.

The second division of astronomical labour is the department of the mathematician only. The observations as they come from the instruments are subject to all the errors of the latter; and no perfect instruments can be constructed. The best circle that can be made is slightly oval; the best pivot that can be turned will not be truly cylindrical. The question now comes, in what manner to compare different species or sets of observations, so that the discordances themselves shall point out the quantity and quality of the instrumental errors; and how from thence to derive the corrections necessary for future observations. Also, how to choose the time and manner of observation, so that any particular error, whether of instruments or theory, shall be least, if the observer be desirous of avoiding it, or greatest, if he wish to detect and measure it. Every-day experience shows that there is no better test of the progress of observation than the discovery of new instrumental errors, provided only the quantities in

question become less and less. The angular error which now sets an observer to work to correct his result is less than the six hundredth part of that which would have been sufficient to annoy Ptolemæus or Hipparchus. And, in speaking of an instrument, we may consider the observer himself as a most material part, on the combined power of whose eye, ear, and judgment, the correctness of the observation depends. It is hardly to be expected that, even under precisely the same circumstances, two observers should note the same phenomenon so as to agree within a small fraction of a second; and recent experiments on phenomena noted with both the eye and hand have demonstrated the existence of small differences between different observers, attributable only to their different habits of perception or physical constitution.

When observations have been as nearly as possible freed from instrumental errors, the next step would be, if we could imagine a system of astronomy only in its infancy, with instruments as near perfection as our own, to deduce, by combination of mathematical reasoning and calculation, the real places of the stars for some one moment, and the magnitudes and laws of the various motions to which they are subject, whether periodical or permanent, and whether arising out of the motion of the earth or out of a proper motion of the stars themselves; and for the solar system, to determine the relative motions and positions of the planets and their satellites, which can only be done by the previous measurement of the earth and subsequent comparison of the results of one observatory with those of another. But these primitive determinations have always been in progress with the instruments, and results have increased in accuracy with the power of observing; so that instead of working afresh for the determination of *elements*, as they are called, almost the whole of modern astronomy is a process of correction of those which have been previously obtained. This greatly facilitates operations. The measurement of the earth itself, and the determination of its figure, which is the basis of planetary astronomy, so far as ascertaining the actual dimensions of our system is concerned, is treated as a separate science under the name of GEODESY, though it is a constituent part of astronomy, both as to the methods by which it is carried on, and some of the objects for which it is undertaken.

The third department of astronomy, being that which requires the most extended knowledge of mathematics, and the highest exercise of thought, is that which often goes under the name of *physical astronomy*, and consists in the combination of the various phenomena as actually observed, in order to find out what are their physical causes, and according to what laws those causes act. It is evident that, without some success in this branch of the science, there can be no power of *prediction*, except what arises from the presumption that preceding phenomena have run their whole possible round, so that nothing can happen except a repetition of what has happened. To a rough view this seems to be the case, and is so in a great measure; but to the instruments of an observatory there appears no such complete *periodicity*. To this head we should refer such questions as those of *refraction*, *aberration*, and *gravitation*. The term physical astronomy is usually applied to investigations connected with the latter only; but both etymology and analogy warrant its extension to the former. Under this also we must place all questions connected with the physical constitution of the various planets, so far as that can become known. Of the great increase which the predicting power of astronomy has received since Newton deduced the motions of our system from the simple law of attraction, there is no need to speak; but we shall notice one peculiar use of that principle, by which the results of observation are anticipated, and the first and second of our divisions of astronomy advanced, while at the same time the *experimentum crucis* of the truth of the principle is furnished. There are many small inequalities of the solar system, which, though not likely to show themselves, mixed up as they are with so many others, are yet certain to be found, if looked for at the time when their effects are most sensible. The results of theory point out that a certain inequality, whose law and approximate magnitude it gives, should be found in the motion of a certain body, if the Newtonian principle be correct. On being looked for in the manner which the nature of the inequality itself shows to be most advantageous, it is found accordingly, and its *exact* magnitude, as ascertained by observation, is often of use in correcting that obtained from theory. For example, had it not been for methods of this kind, our knowledge of the motions of Jupiter's satellites, which is yet far from mature, would have been in a state of the merest infancy.

If the theory had arrived at a degree of completeness, towards which it has been and is rapidly tending, nothing more would be necessary for the determination of the motions of the solar system than the knowledge of the actual positions, velocities, and directions of the velocities of the bodies composing it, at some one moment, or of any other quantities in which the above were mixed up, and from which they could be obtained by calculation. But up to the present time it has been necessary to use more data of observation than the preceding, and it is only within the last twenty years that tables of the moon, from the first-mentioned data alone, have been published.

The real history of *written* astronomy, that is, of actually recorded and moderately correct observations, in sufficient number to constitute a body of science, commences with Hipparchus, about 160 years before our æra. Prior to his time, it is difficult to do more than speculate upon the few facts which are left to us. That astronomical observation of a certain description began in the very earliest ages, there can be no doubt; but here there could be but one instrument, the horizon, and but one theory, the actual motion of the heavenly bodies round the earth. The earliest observations mentioned are those of the rising and setting of stars, which led to the registration of the different appearances presented by the

heavens in the course of a year, to which may be added lunar and solar eclipses, and comets. The rapid motion of the moon in the heavens would probably have caused the lunar zodiac to be first marked out, though it is clear that the solar zodiac was of a very early date. Astronomical observation has always been one of the accompaniments of civilization, both in modern and ancient times; and however much we may conceive ourselves entitled to look down upon the notions of our predecessors, we must not forget that in speaking of any country which possessed an astronomical theory worth so much as laughing at in modern times, we place that country in the list of exceptions to the rule which prevailed through the greater number. If the Chaldæan system appear insufficient, or the Ptolemaic complicated, these are yet real results of thought, and, to a certain extent, actual representations of fact. Mungo Park mentions an African tribe, whose opinion it was that the inhabitants of the west fried the sun when he got down to them, and, after heating him sufficiently for next day's service, took him round by a private passage to the east. If we could collect the astronomy of the whole ancient world, there can be little doubt that the comparatively humble efforts to which we are coming would appear miracles of sense and reflection, among theories not much superior to those of Park's Africans.

The nations who are known to have cultivated astronomy before the Christian æra are the Chinese, Indians, Chaldæans, Egyptians, and Greeks. The first made it a matter of politics, the next three of religious observance, and all four applied it to astrology. Among the Greeks only, the science had no reference either to politics, religion, or soothsaying; and here it throve with a vigour which permits us to make the astronomy of Hipparchus and Ptolemæus a part of the chain which ends with Newton and Laplace. What we know of the four first-mentioned nations is not sufficiently certain or definite to warrant our drawing very positive conclusions as to the time when they began to study the science; and the question is rendered the more difficult by the pretensions to antiquity which have been advanced in favour of each by well-informed men of modern times. Each nation has its advocates, who maintain that the Chinese, the Indians, the Chaldæans, or the Egyptians, were the first astronomers; which is of itself sufficient to prove that the question is doubtful.

The Chinese have some annals which claim to go back to the year B.C. 2857, but of astronomical phenomena they record hardly anything, except eclipses of the sun and the appearance of comets, and of the former nothing but the fact and the day of their happening. Gaubil, who recalculated their asserted eclipses, could not verify more than one of a date anterior to the time of Ptolemæus; and even that one is doubtful. The fact of the motions of the planets was known to the Chinese, but not the precession of the equinoxes, till about A.D. 400. They had also the Metonic and Calippic periods.

The question with regard to the Hindoos is not whether their astronomy is sufficiently high in its pretensions to make it worth while to inquire into its antiquity, but whether an astronomical system of a very advanced character, which certainly was found among them, is or is not as old as they assert it to be. The epoch claimed by the tables is B.C. 3102, the beginning of the Cali-yug, or iron age of Hindoo mythology, at which time a conjunction of all the planets is asserted. But this has too figurative a character; and moreover the elements of the tables are hardly such as would have been derived from observations actually made at that period. That the epoch is fictitious may be readily believed; but the question is, was this fictitious epoch formed by Hindoos from their own observations before the Christian æra, or was their system introduced by the Arabs, or by direct communication with the Greeks? Those who are curious may consult Bailly or Delambre; but this question has unfortunately been treated with considerable spirit of system on both sides.

The Chaldæans had long observed the risings and settings of the heavenly bodies, as well as eclipses. They had the celebrated Metonic period of nineteen years, and it is supposed that Meton obtained it from them, though this point is doubtful. They had also other periods, the meaning of which has caused discussion. [SAROS, NEROS, SOSOS.] Simplicius, a commentator on Aristotle, relates that a series of eclipses preserved at Babylon was transmitted by Alexander to Aristotle, and contained the observations of 1903 years preceding the conquest of Babylon by the Macedonians. But Ptolemæus gives only a few of them, the earliest of these not reaching higher than B.C. 720. They are of the roughest kind, the times being given only in hours, and the part of the diameter eclipsed within a quarter; but nevertheless they are the earliest trustworthy observations we possess, and led, in the hands of Halley, to the discovery of the acceleration of the moon's mean motion. We find also among the Chaldæans the use of the clepsydra as a clock, of the gnomon as an instrument for measuring solstices, and of the hemispherical dial called by the Greeks σκαφη, for ascertaining the positions of the sun. By the clepsydra they were enabled to divide the ecliptic nearly into twelve equal parts, and are thus said to have invented the zodiac.

The Egyptians have left us no observations, and few astronomical relics the meaning of which can be made very clear: the fame of this ancient nation in astronomy appears to have had no solid foundation whatever.

With regard to the astronomy of the Greeks previously to the earliest extant works, there is little to be said. The Ionian school, founded by Thales B.C. 600, followed in succession by Anaximander, Anaximenes, and Anaxagoras, added little or nothing to practical astronomy. If Thales announced the eclipse of B.C. 610, it was the year only; and the opinion of the earth's motion, attributed to Anaximander, rests on slender foundation. The school of Croton founded by Pythagoras, about B.C. 500, and sustained by Philolaus, produced no observers, though it certainly adopted the opinion of the earth's motion. Meton, B.C. 432, introduced the cycle of nineteen years;

Calippus, B.C. 330, introduced the improvement on the former known by his name. Eudoxus of Cnidos, B.C. 370, brought into Greece, according to Pliny, the year of 365¼ days, and wrote some works, one of which exists in the poetical version of Aratus. Timocharis and Aristyllus, B.C. 300 (?) made the observations which afterwards enabled Hipparchus to discover the precession. Pytheas, about the time of Alexander, measured the latitude of Marseille with tolerable accuracy. The work of Aristotle on astronomy is lost; and, what is still more to be regretted, that of his disciple Eudemus on the history of astronomy. The poem on the Sphere, attributed to Empedocles, B.C. 450, is probably much more modern.

We pass over *Autolycus*, B.C. 300; *Euclid* of Alexandria, B.C. 300; *Aratus* of Cilicia, B.C. 281; *Aristarchus* of Samos, B.C. 280; *Manetho* the Egyptian, B.C. 260; and come to *Eratosthenes* of Cyrene, B.C. 240, who observed the obliquity of the ecliptic, and the latitude of Alexandria; and from the latter, and the fact that at Syene the sun was vertical at the summer solstice, deduced an approximation to the earth's magnitude. His approximation makes a degree to be 700 stadia. His stadium is unknown. His value of the obliquity of the ecliptic—11 parts out of 166 of the whole circumference—was adopted by Hipparchus and Ptolemæus.

Archimedes of Syracuse died B.C. 212. He observed solstices, and attempted to measure the sun's diameter. His writings show that trigonometry was as yet unknown.

Hipparchus (of Bithynia?) B.C. 160-125, the greatest of all the Greeks in astronomy. In his youth he wrote a commentary on Aratus. He discovered the precession of the equinoxes, by comparing his own observations with those of Aristyllus and Timocharis, or others of his predecessors. He was the first who employed processes analogous to those of plane and spherical trigonometry, for which he constructed a table of chords. He first used right ascensions and declinations, which he afterwards abandoned in favour of latitudes and longitudes. He suggested the method of referring terrestrial positions to latitude and longitude, and was probably the inventor of the stereographic projection. He determined the mean motion of the sun and of its apogee, the inequality of the sun's motion, and the length of the year, to greater exactness than his predecessors. He found the mean motion of the moon, of her nodes, and of her apogee; her parallax, eccentricity, the equation of her centre, and inclination of her orbit. His observations also led him to suspect another inequality in the moon's motion, which Ptolemæus afterwards discovered (the evection.) He calculated eclipses, and used the results in the improvement of the *elements*. He made one of the first steps towards a correct representation of phenomena, by supposing the sun to move round the earth in a circle, the earth not being at the centre. His catalogue of the longitudes and latitudes of 1081 stars was the first at all worthy of the name. If Hipparchus had possessed the pendulum and the telescope, fifty years might have enabled his successors to place astronomy in the state in which it stood at the birth of Newton. Considering his means, his observations are perhaps unequalled.

After the death of Hipparchus there is no astronomer of eminence till Ptolemæus. Between them we have *Hypsicles* of Alexandria; *Geminus* (of Rhodes?), B.C. 70; *Posidonius*. *Theodosius* of Bithynia, B.C. 50, left a work on spherical geometry, another on climates, and a third on the phenomena of day and night. *Sosigenes* of Alexandria, B.C. 50, corrected the calendar under Julius Cæsar. *Hyginus* left an astronomical description of the heavens. *Manilius*, a Roman, A.D. 10, wrote an astronomical and astrological poem. *Seneca*, A.D. 50. His book on natural philosophy contains many pieces of information on astronomical history, but is principally remarkable for his bold opinions on the nature of comets. These he declares to be planets, whose laws he predicted would one day be calculated, and that posterity would wonder how things so simple could have so long escaped notice. *Menelaus*, A.D. 80, has left three books of spherical trigonometry. *Theon* of Smyrna, A.D. 117?] wrote on astronomy, and made a collection of astronomical works. His observations are cited by Ptolemæus. *Cleomedes* wrote on astronomy. He certainly lived after Posidonius, but whether before or after Ptolemy is uncertain. He is usually considered as having lived under Augustus Cæsar.

We must suppose that there were many real observers between the epochs of Hipparchus and Ptolemæus; but from the loss of even their names, and the silence of Ptolemæus himself, it is clear that no discovery of any importance was made.

Ptolemæus of Alexandria, A.D. 130–150. We must briefly mention his works, his system, and his discoveries. The Μαθηματικὴ Σύνταξις, or 'Mathematical Collection,' afterwards called Μεγάλη Σύνταξις, and by the Arabs the 'Almagest,' is the work from which we derive most of our knowledge of the Greek astronomy. We find there a full account of the observations and discoveries of Hipparchus; those of Ptolemæus himself; the reasons and elements of his system; various mechanical arguments against the motion of the earth, which show that the first principles of dynamics were utterly unknown; a description of the heavens and the milky way, and a catalogue of stars, which we may be nearly certain was that of Hipparchus, reduced to his own time by an assumed value for the precession, but which has been asserted to have been corrected by new observations; a theory of the planetary motions; the length of the year; the instruments he employed, &c.

The Ptolemaic system was an attempt to represent the motions of the planets by supposing them to move uniformly in circles, the centres of which circles themselves moved uniformly in circles round the earth. The angular motions of the planets, as then known, were sufficiently well represented by this system; not so their changes of distance from the earth, as seen in their apparent diameters. This was the universal system of after-times till Copernicus.

The principal discovery of Ptolemæus is that of the *lunar evection*, an inequality such as would be caused by an alternate increase and diminution of the eccentricity of the moon's orbit. He also discovered the *refraction*, and made some tolerably correct experiments to determine its law. He explained the apparent enlargement of the discs of the sun and moon when near the horizon. He extended the projection of the sphere of Hipparchus. He entered into the investigation of every point which Hipparchus had touched; in some instances finding more correct values; in others, altering without amending. He was not an astronomer only, but wrote on geography, music, chronology, mechanics, and unfortunately on astrology.

With Ptolemæus the originality of the Greek school ends. We must come to the Arabs before we find anything worth particular notice.

Sextus Empiricus, A.D. 173, described and wrote against the Chaldean astrology. *Censorinus*, A.D. 238, wrote an astrological work on the day of nativity, containing historical information with regard to astronomy. *Julius Firmicus Maternus*, A.D. 370, wrote on astronomy. *Pappus* of Alexandria, A.D. 383; *Theon* of Alexandria, A.D. 385, the most celebrated commentator on Ptolemæus; *Hypatia* (his daughter), murdered A.D. 415, the first female on record celebrated for her scientific talents; *Martianus Capella*, A.D. 470; *Thius* of Athens, A.D. 500; *Simplicius*, A.D. 546; *Proclus Diadochus; Isidore*, archbishop of Hispalis (Seville), A.D. 636; *Bede*, A.D. 720; *Barlaam*, the monk, A.D. 1330; and *Michel Psellus*, A.D. 1050.

It is remarkable that, excepting his own commentators, few of the above-mentioned authors ever quote Ptolemæus. Had it not been for the Arabs, the writings of the latter must have been lost.

The Alexandrian school was destroyed by the Saracens under Omar, A.D. 640; and the rise of astronomy among the eastern Saracens dates from the building of Bagdad by the caliph Al Mansur, in the year 762. In the reign of this prince, translations of the Greek writers were begun; and with nearly the same instruments, and the same theory, as Ptolemæus, a career of four centuries of observation commenced, during which many astronomical elements, and in particular the obliquity of the ecliptic, and the precession of the equinoxes, were more accurately determined.

In the reign of Al Mamun, son of Harun al Rashid, himself a diligent observer, great encouragement was given to astronomy. A degree of the meridian was measured, but with what accuracy cannot be known, from our ignorance of the measure employed.

Albategnius, or *Al-Batani*, A.D. 880, discovered the motion of the solar apogee, corrected the value of the precession, the solar eccentricity, and the obliquity of the ecliptic; and published tables. He is the first who made use of sines (instead of chords) and versed sines. He found the length of the year more accurately. He is, beyond all doubt, the only distinguished observer

of whom we know anything between Hipparchus and Tycho Brahé.

We must also mention *Alfraganus*, or *Al-Fergani*, and *Thabet ben Korrah*, both about A.D. 950; *Ebn Yunis*, and *Abul-Wefa*, about A.D. 1000; *Alphetragius* of Morocco, A.D. 1050; *Arsachel*, a Spanish Moor, A.D. 1080; his contemporary, *Alhazen*, *Geber*, and *Abul Hassan*.

We have Persian tables (of the eleventh century?) translated by George Chrysococca, a Greek physician, in the fourteenth century; but the best known are those of Nasireddin, published A.D. 1270, under the protection of Hulagu, grandson of Genghis Khan, and conqueror of Persia.

Ulug Beg, grandson of Timur, A.D. 1433. This prince made a large number of observations at Samarcand. His catalogue of stars of the date above mentioned, was, in its day, the most correct ever published. He also gave tables of geographical latitudes and longitudes.

In China, *Cocheou-King*, A.D. 1280, patronized by Kublai, brother of Hulagu, and fifth successor of Genghis Khan in the partial conquest which that prince made of China, made a great number of good observations. He introduced spherical trigonometry, and rejected the ancient chronology.

Since the fifteenth century, astronomy has declined throughout the East. The Chinese received many methods from the Jesuits, but to little purpose. Among the Hindoos, there are very few who can understand the ancient writings. The Turks and Persians have little besides astrology. We now proceed with the chain of European astronomy.

Astronomy was introduced again into Europe by means of the Greek writers, mostly through translations from the Arabic. The first translation of the 'Almagest' was made under the auspices of the Emperor Frederic II., about A.D. 1230.

Sacrobosco (an Englishman named *Holywood*), A.D. 1220, wrote a work on the sphere taken from Ptolemæus, &c. It continued for a long time in great repute. He also wrote on the Calendar. We can do no more than name his contemporary *Jordanus*. *Alonso* X., King of Castile, A.D. 1252; *Roger Bacon*, A.D. 1255; the Cardinal *Cusa*, A.D. 1440; and *George Purbach*, A.D. 1460.

John Müller, called *Regiomontanus* (died A.D. 1476), made an abridgment of the 'Almagest,' published more extensive trigonometrical tables, extended various parts of trigonometry, and was an observer, though not, in this respect, superior to some of the Arabs. His almanacs were the first which were worthy of the name, and were in great repute.

We may now name *George of Trebizond*, called *Trapezuntius*, who died A.D. 1486; *Bianchini*, A.D. 1495; *Walther*us, died A.D. 1504.

The following names are inserted that the reader may know to what names to refer for the astronomy of the time immediately preceding the promulgation of the system of Copernicus. Except in this point of view there is but little interest attached to their labours:—*Riccius*, A.D.

1521; *Werner*, died A.D. 1528; *Stöffler*, died about A.D. 1531; *Munster*, died A.D. 1552; *Fracastorius*, died A.D. 1543; and *Fernel*, who died in 1558.

Copernicus, born 1473, died 1543. He applied himself to astronomy from A.D. 1500. In 1530, he had finished his tables of the planets, and his work 'On the Revolutions of the Heavenly Bodies' containing an explanation of the *Copernican System*, which, it is almost unnecessary to say, was a revival of the opinions of the Pythagorean school on the motion of the earth. It was published in 1543, and its author died immediately afterwards. Copernicus improved the lunar tables, and gave, to a considerable extent, an explanation of celestial phenomena upon his own system. His book is a mixture of his own original and sagacious notions and of the old philosophy; and he was far from being able to answer the mechanical objections of his time. What might have struck so bold a thinker, had he lived to face opposition, cannot be told; but, as the history stands, we shall come to the time of Galileo before we find all objections satisfactorily answered.

From this period, at which the preservation of printed works commences, our limits will not permit our giving even the names of many astronomers.

We may mention, however, *Reinhold*, the friend of Copernicus, and advocate of his doctrines, who formed the 'Prutenic Tables;' *Recorde*, who wrote the first English treatise on the celestial phenomena; *Nonius*, inventor of an ingenious method of division of the circle, which has often caused it to be supposed that he anticipated the invention of Vernier; *Mercator* (*Gerard*), who gave the first idea of the projection known by his name.

Up to this time, the means of observation had been undergoing gradual improvement, more by attention to the construction of the older instruments, than by the introduction of any new principle. The Copernican theory had its advocates, but was not yet adopted by many. Algebra had been introduced into most parts of Europe, but was not yet in a state to furnish much assistance in trigonometry. Logarithms were not yet invented, nor do we find the *instruments* fixed in the *meridian*, the *telescope*, or the *pendulum clock*. The first observer, who made any important additions to the phenomena of the heavens as received from the Arabs, was Tycho Brahé, to whom we now come.

Tycho Brahé, born 1546, began to study astronomy 1560; commenced his observations at Hvene, an island near Copenhagen, 1582; was driven from thence, 1597; died 1601. He made a catalogue of the fixed stars, more accurate than any which preceded, gave the first table of refractions, discovered the *variations* and *annual equation* of the moon, the variation of the motion of her nodes, and of the inclination of her orbit, and that of the obliquity of the ecliptic. He also ascertained that comets (those of his day, of course) were further removed from the earth than the moon; in fact, that they had no parallax which his instruments could discover, thus refuting the notion that they were atmospheric bodies. He greatly improved and extended the instruments in use, as well as all the methods of observation.

Tycho Brahé did not admit the Copernican theory; but substituted for it one of his own, usually known by the name of the *Tychonic System*. This consisted in supposing the sun to move round the earth, but all the other planets to move round the sun, being also carried with it round the earth. This system explains all the appearances as well as that of Copernicus; and we must say (though it is always usual to reproach Tycho for refusing to admit the simple system of Copernicus) that by this means the *then* unanswerable arguments against the Copernican system were avoided.

The reformation of the calendar took place in 1582, under Pope Gregory XIII.

From the time of the death of Tycho Brahé, to that of Newton, is the next great epoch in the history of astronomy.

The following are the dates of the remarkable points for which a reader is likely to consult such a work as the present.

1581, or thereabouts, Galileo remarks the isochronism of the pendulum.

1603. Bayer's maps, in which the stars are first denoted by letters.

1609. Galileo made a telescope from a general description of a magnifying instrument made by one Jansen, in Holland. Kepler publishes his work on Mars, in which he establishes, from Tycho Brahé's observations, the elliptic form of the orbit, and the proportionality of the areas to the times. These are called *Kepler's first and second laws*.

1610. Galileo announces the discoveries of Jupiter's satellites—of spots on the moon—of nebulæ—of some new appearances in Saturn, afterwards found to proceed from the ring—phases of Venus.

1611. Galileo observes the spots on the sun.

1616. Prohibition of the theory of Copernicus by the Roman court.

1618. *Kepler* announces *his third law*, that the squares of the periodic times of the planets are in proportion to the cubes of their distances from the sun.

1627. The 'Rudolphine Tables' published by Kepler, from the observations of Tycho Brahé.

1631. Gassendi first observed the transit of Mercury over the sun's disc—measured the diameter of Mercury, and predicted that of Venus with success. Vernier published his invention of the instrument which bears his name.

1633. Norwood measured the meridian from York to London, and gave a more accurate value of the degree than his predecessors. Descartes produced his system of vortices. Galileo is obliged to recant his Copernican opinions by the Inquisition of Rome.

1639. Horrox and Crabtree first observed a transit of Venus over the sun's disc. The former ascertained the diameter of Venus. They were the only two who saw this particular transit.

1640. Gascoyne applied the telescope to the quadrant, and a micrometer to the telescope.

1654. Huyghens completes the discovery of Saturn's ring.

1655. Huyghens discovers Saturn's fourth satellite.

1663. Gregory makes his reflecting telescope.

1665. Cassini determines the time of rotation of Jupiter.

1666. Cassini determines the rotation of Mars, and makes a first approximation to that of Venus. Academy of Sciences founded at Paris, and observatory first thought of and commenced in the following year. Auzout applied the micrometer to the telescope without any knowledge of Gascoyne. Newton first turned his attention to gravitation.

1669. Newton made his first reflecting telescope.

1671. Richer, in a voyage to Cayenne, observes the shortening of the seconds' pendulum in approaching the equator. Cassini discovers Saturn's fifth satellite.

1672. Cassini discovers Saturn's third satellite.

1673. Huyghens publishes his 'Horologium Oscillatorium,' in which are found the first theorems on central forces and centrifugal force.

1675. Roemer announces his discovery of the velocity of light by means of Jupiter's satellites. Greenwich observatory founded.

1682. Newton, who had laid aside his theory of gravitation when he found it not capable of verification by taking the best measures of the earth in use, hears of Picard's more accurate measurement, tries it, and finds a remarkable degree of nearness to the result deduced from his celebrated law.

1684. Cassini discovers Saturn's first and second satellite.

1687. Newton publishes the 'Principia.'

1689. Roemer first used the transit instrument; that is, fixed a telescope in the meridian for the purpose of observing transits.

1693. Halley discovers the acceleration of the moon's mean motion.

1705. Halley first predicted the return of a comet, viz. that of 1758.

1715. J. Cassini discovers the divisions of Saturn's ring.

1725. Flamsteed's 'Historia Cœlestis.'

1727. Bradley discovers aberration. Death of Newton.

We have now brought the history to a most remarkable epoch. The great comparative perfection of instruments, the invention of the telescope, of the micrometer, of the clock, of logarithms, the introduction of algebra, the invention of fluxions, and the establishment of the theory of gravitation, in England at least, were so many steps each of magnitude unequalled in former times. But the most meritorious labours are not those which make most show. It takes as much space to say that Cassini discovered a satellite of Saturn as that Flamsteed published the 'Historia Cœlestis;' but the first might have been left to the present day without much loss, whereas the latter was a new era in sidereal astronomy. It would have done more for astronomy than the mathematical Syntaxis of Ptolemæus, had it been similarly circumstanced: that is, the work of Ptolemæus contained only a simple account of what had been done before, with no material improvements either in methods or instruments; whereas that of Flamsteed contained both, and gave a catalogue of stars such as had not been published before.

The distinct part of Newton's great discovery, which is seldom well understood by any who have not studied it, is—*not the notion of attraction*, which had occurred to many among the ancients, and to Borelli, it is stated, and Hook among the moderns—*not the law*, which had been suggested by Bouillaud or Bullialdus—but the proof that the mechanical deductions from this law of attraction really do represent the celestial phenomena; a combination of improvements in mechanics and mathematics which none but the inventor of fluxions could have made, and a specimen of sagacity which it needed the author of the optics to display. Still less is it true, as many believe, that the Newtonian theory is the Copernican, when they speak of Newton as the establisher of the latter. After what we have said, it is unnecessary to discuss this further than to observe, that it was Galileo who destroyed the mechanical objections to the notions of Copernicus, by the sound system of dynamics of which he was the inventor, and who re-enforced the notions of Copernicus by arguments of the most forcible character drawn from probability. But it was Bradley who, by his discovery *of aberration*, furnished the direct and unanswerable proof of the earth's motion; and it is a coincidence worth remembering, that the year of the death of Newton was that of this remarkable accession as well to physics as to practical astronomy.

The interval between the death of Newton and the present time may be divided into two parts: the first reaching to the end of the century, abounding in magnificent discoveries both of analysis and observation; the remainder more distinguished by efforts to extend, correct, and methodize the results of the first.

1731. Hadley's quadrant invented.

1732. The introduction, by Maupertuis, of the Newtonian Theory into France. Wright's Lunar Tables.

1745. Bradley discovers the nutation.

1749. Euler's and D'Alembert's researches on the precession, D'Alembert's on the nutation, Clairaut's on the motion of the Lunar Apogee. Halley's Tables.

1751. Lacaille goes to observe at the Cape of Good Hope.

1752. Lacaille measures an arc at the Cape.

1758. Dollond's achromatic object-glass. Clairaut and Lalande's researches on Halley's comet.

1761. Transit of Venus.

1763. Lacaille's catalogue of southern stars.

1765. Harrison gains the parliamentary reward for his chronometer.

1767. First 'Nautical Almanac.'

1769. Transit of Venus.

1774. Maskelyne's observations on local attraction at Schehallien.

1781. Herschel discovers the new planet now called Uranus.

1784. Laplace's researches on the stability of the solar system, on the relation between the longitudes of Jupiter's first three satellites, and on the great inequality of Jupiter and Saturn. General Roy measures a base on Hounslow Heath for the connexion of the observatories of Paris and Greenwich. Herschel's catalogue of Nebulæ.

1787. Laplace's theory of Saturn's ring, and explanation of the acceleration of the moon's mean motion. Herschel discovers two satellites of Uranus. Legendre and General Roy finish the connexion of the observatories of Paris and Greenwich. Beginning of the trigonometrical survey in England. Herschel's first observations with his forty-foot telescope.

1789. Herschel measures the rotation of Saturn, and discovers the first and second satellites of Saturn.

1790. Herschel determines the rotation of Saturn's ring, and discovers two more satellites of Uranus.

1792. Beginning of the French survey.

1794. Herschel discovers the fifth and sixth satellites of Uranus.

1795. Herschel's observations on variable stars, and separation of the milky way into stars.

1796. Establishment of the French Institute. Herschel gives strong presumptions that the rotations of Jupiter's satellites are of the same duration as their orbital revolutions.

1797. Laplace's theory of tides.

1798. Cavendish demonstrates and measures the mutual attraction of metal balls, and finds the earth's density.

1799. Commencement of the 'Mécanique Céleste.'

1801. Piazzi discovers the planet Ceres.

1802. Olbers discovers the planet Pallas.

1803. Herschel observes the changes in the position of double stars.

1804. Harding discovers the planet Juno.

1806. Completion of the French survey by Méchain and Delambre. Herschel suspects the motion of the whole solar system towards the constellation Hercules.

1807. Olbers discovers the planet Vesta.

1814. Piazzi's catalogue of 7646 stars.

1818. Pons discovers a comet of short period, now called by the name of Encke.

1823. Encke infers a resisting medium of very little density, from observations of the comet of 1818.

1826. Biela discovers the comet of short period known by his name.

It is impossible to speak of the astronomy of the current time in so short an article as the present. The last twenty years have been much distinguished by those discoveries which the public can understand. The predicted returns of the comets of short period, the discovery of new ones, the predicted return of Halley's comet, the assignment of the orbits of double stars, the prediction of phenomena connected with them, the actual determination of the distance of a fixed star, the strong suspicion that the discovery of the central point of our system of stars is close at hand, the many observations of nebular phenomena, the discovery of the planet Astrea, and the extraordinary discovery of the existence of the planet Neptune by calculation of its effects on Uranus, show the world at large that the astronomers of our day are not degenerate. But, in the meanwhile, there are many other things which astronomers can cite to one another in proof of the same thing. Such are the now confirmed habit of publishing *reduced* observations, the masses of them which have been newly obtained, the reduction of vast masses of old ones which had lain useless, particularly those of the observatory of Greenwich, and the corrections of the lunar theory which have already resulted from them. The tenth part of a second added to the average accuracy of the moon's predicted arrival on the meridian is a feat for which struggle must be made, sagacity exerted, labour gone through, and combination formed, to an extent of which none but the mathematical astronomer can form an idea.

ASTRUC, JOHN, a French physician of great eminence, was born at Sauve, in Languedoc, in the year 1684: he studied in the University of Montpelier, and took the degree of doctor in medicine in 1703. In 1706, being then only twenty-two years of age, he began to teach medicine in the same university, acting as substitute to Chirac, one of its professors, who had been forced to attend the French army. In 1710 Astruc obtained the chair of anatomy and medicine in the University of Toulouse. He was afterwards recalled to Montpelier, where he occupied a medical chair from 1715 to 1728, when he resorted to Paris, and was induced to accept the situation of first physician to the King of Poland and Elector of Saxony. In 1730 he was appointed a consulting physician to the King of France, and in 1731, professor of medicine in the College of France. He became a member of the medical faculty of Paris in 1743, and died in 1766, at the advanced age of 82.

Astruc does not seem to have been endowed with an intellect of a very superior cast, and no great discovery is attached to his name; nevertheless, he acquired great celebrity among his contemporaries, both as a teacher and as an author; and the integrity of his character was justly appreciated. A simple and happy method in treating the subjects which he taught, in easy, clear, and eloquent language, recommended him as a lecturer. His writings displayed a solid and extensive acquaintance with the history of literature and science, unusual among his countrymen even at that time,—the result of the unvaried assiduity with which from his early youth, and during the whole of his long career, he applied himself to bibliographical learning. Astruc has left a considerable number of works on medicine, on the topography of Languedoc, his native country, on metaphysics, and even on sacred history.

He wrote a treatise on 'Tumours and Ulcers,' which appeared in 1759, and which being merely an abstract of Astruc's lectures, contains nothing new, and was, in 1761, followed by a treatise on the 'Diseases of Women,' in which the author

displayed his usual erudition. Astruc's most extensive work, however, and that which has more than all others served to establish his high reputation, is the book 'De Morbis Venereis,' first published in one vol. 4to, Paris, 1736, and afterwards enlarged to two vols. 4to, in the second edition, 1740. The practical part of this work is of little value, but the literary history of the disease will always be referred to as a valuable document of bibliographical research.

(Astruc's *Autobiography*, in *Mémoires de la Faculté de Médecine de Montpellier*, 4to, Paris, 1767.)

ASTUR, in zoology, a genus of hawks formed by Bechstein, and characterized by a short beak bent downwards from the base and convex above, with somewhat oval nostrils. The feet are rather short, and the toes (of which the exterior are united at the base by a membrane) are long.

Numerous species of this genus are diffused over all parts of the world; but Europe only contains one, *Astur palumbarius*, the Goshawk, so highly prized by the falconers of old, and famous for its flights at cranes, geese, pheasants, and partridges.

ASTURIAS, Principality of, a province of Spain, situated between 42° 58′ and 43° 40′ N. lat., 4° 30′ and 7° 8′ W. long.: it is bounded E. by the Montañas de Santander, W. by Galicia, S. by the kingdom of Leon, and N. by the Bay of Biscay. The southern boundary is formed by a mountain chain, which takes the different names of Sierra de Sejos, which acquires an elevation of 5700 feet above the level of the sea; Sierra de Alba, 6960; Sierra de Pajares, 8628; Sierra de Peñaranda, 11,031; Sierra de Peñamellera, 9465. To this last point, the range bears the name of Montañas de Asturias. It then branches out in different directions, and crossing the provinces of Leon, Galicia, and the north of Portugal, abuts on the ocean at Cape Ortegal, Finisterre, and Silleiro, north of the Minho. The southern slope of this range is very abrupt; but on the north it gradually diminishes in height as it approaches the sea. The main mass is composed of calcareous rocks, little inferior in height to the Aquitanian Pyrenees, and covered with snow the greater part of the year. Marble, stone used for grind-stones, copper, mineral amber, cinnabar, iron, zinc, lead, antimony, jet, coals, and turf, are found. The mountainous parts of the province are covered with forests of oak, beech, chestnut, and other trees. These forests abound with bears, wolves, foxes, and other species of wild animals. There are likewise several medicinal plants, among which is the hellebore; six species of the erica or heath, two of the angelica, the sarsaparilla, and the dulcamara. The hills are covered with brushwood, cistus, and furze.

The offsets of the great range form numerous lateral valleys, drained by rivers which flow generally in a direction from S. to N. The principal rivers are the Sella, the Nalon, and the Navia. The Nalon has its source on the northern slope of the Asturian mountains, flows W.N.W. by Oviedo, and falls into the sea a little W. of Cape de Peñas. Its affluents are the Caudal, the Trubia, and the Narcea, all on the left bank. The Navia rises in Galicia, enters Asturias on the west, and flowing almost due north forms the port of Navia. The coast of Asturias is so exceedingly bold and rocky, that its ports can only receive small trading vessels and fishing boats. The principal harbours are—Ribadesella and Cudillero, which are safe and commodious; and the former has good docks capable of receiving ships of forty guns.

The valleys are exceedingly fertile, and afford pasture for numerous horned cattle, pigs, and horses. The horses are of small size, but distinguished for their strength and swiftness. The rocks on the sea-shore are covered with sea-weeds, polypi, and zoophytes, which the farmers use as manure. On some of these rocks orchil is found. Fruit is very plentiful in this province. Chestnuts, hazle-nuts, apples, and pears, are the chief kinds. The vine is cultivated in a few districts, and a small quantity of good light wine is made. Cider, however, is the common beverage, and is abundant. The best species of common wheat is raised in great perfection; but *escanda*, or spelt-wheat, is better adapted to the climate, and is so much esteemed by the natives, that in many districts the leases, which provide for the payment of rent in kind, contain a stipulation that no sort of corn shall be offered in payment except escanda. Indian corn is also extensively cultivated. The climate of Asturias is damp and cold in the mountainous parts; but in the valleys, and on the sea-coast, it is so mild and temperate, that orange and lemon trees grow in the open air. Among the other vegetable productions, the parsnip may be mentioned as indigenous in Asturias. Both the seas and rivers of this province produce the most delicate fish in the peninsula, which is sent to the market of Madrid both fresh and pickled.

Asturias is divided into *concejos*, or communes, of which there are 118. The superintendence of these concejos is distributed among fifty-six towns: they contain 668 parishes, and 3665 villages. The surface contains about 2148 English square miles; in 1834 the population was 434,635. Asturias is included in the jurisdiction of the captain-general of Old Castille, and of the Audicenia Real of Oviedo. For the education of youth there is a university at the capital, Oviedo, several seminaries, and the Instituto Asturiano at Gijon, on the coast, provided with professors of mathematics, mineralogy, and navigation. The chief town is OVIEDO. Gijon has a fort, a harbour, and some trade. The population is 3200. The only manufactories of Asturias are—a royal manufactory of fire-arms at Trubia, a few others belonging to private individuals for the fabrication of copper, earthenware, and jet trinkets, some tanneries, and looms for common woollen and linen stuffs, principally for home consumption.

According to the historian Garibay, a Celtic tribe called Astixos, or Astiros, at a very early period passed from Gaul into Spain, and settled in the north and north-west districts. They inhabited a territory much more extensive than the

modern Asturias, for it reached to the banks of the Duero. Their chief town was Asturica, now Astorga, in Leon. They were imperfectly known by the Romans. Augustus Cæsar partly subdued them. When the Moorish generals, Tarik and Muza, overthrew the Gothic monarchy in the Peninsula, those who escaped the sword of the invaders sought an asylum in the fastnesses of the Asturian mountains, and headed by Pelayo, defied the power of the victorious Crescent. Alxaman Suleyman, and Munuza, or Manuza, who successively attempted to penetrate into this province, remained with their hosts buried in the deep ravines of Cobadonga. Twelve kings reigned successively in Asturias, from 718, in which Pelayo was proclaimed, until 914, when, having extended their conquests, they assumed the title of kings of Leon. In 1388, the Infante Don Enrique, the eldest son of Juan I., was styled Principe de Asturias, from which period the eldest sons and daughters of the kings of Spain have taken that title. The Asturians speak the Castilian language.

A'STYAGES. [MEDIA.]

ASTY'LAR, one of the numerous compound architectural terms, from the Greek *stylos* (στύλος), column; which, having the Greek privative α prefixed to it, signifies without columns. Thus, we speak of Astylar Italian in contradistinction from the columnar class of buildings in that style, or such as are decorated with the orders. In this country we had no examples of the *astylar* class of design, until it was introduced by Mr. Barry, in the Travellers' Clubhouse and Reform Clubhouse, London.

ASUNCION. [PARAGUAY.]

ASY'LUM, the Latin and English form of the Greek Ἄσυλον, a word of doubtful etymology, which signifies a place of refuge. The tradition was, that Romulus made an asylum on the Palatine Hill. Plutarch tells us that he dedicated the place to the god Asylæus ('Romulus,' 9).

In the Grecian states, the temples, or at least some of them, gave protection to all who fled to them, even although they had committed the worst crimes. The practice seems to have been, that they could not be dragged from these sanctuaries; but they might be forced to come out by being prevented from receiving food. (Thucydides, i. 126, 134.) Eventually these places of refuge became great nuisances, especially in the Greek cities. In the time of the Emperor Tiberius an attempt was made to repress this evil by an order of the senate, directed to all the pretended asylums, to produce legal proofs of the privilege which they claimed. (Tacitus, 'Annal.' iii. 60, &c.)

The complaint of the abuse of asyla, which is recorded by Tacitus, refers only to Greek temples. If the practice existed in Roman temples, it may be inferrred that it was not so extensive. Under the Empire, however, it became a practice to fly for asylum to the statues or busts of the emperors. ('Dig.' 48, tit. 19, s. 28, § 7.) A constitution of Antoninus Pius declared, that if a slave in the provinces fled to the temples or the statues of the emperors, to escape the ill usage of his master, the governor of the province might compel the master to sell him. (Gaius, i. 53.)

After the decline and fall of paganism, the privilege of serving as asylums for malefactors was obtained by the Christian temples. The practice of churches being used as asyla is said to date from the conversion of Constantine the Great (A.D. 323). The asylums thus established eventually grew throughout all Christendom to be an intolerable abuse. Not only churches and convents, with their precincts, but even the houses of the bishops, obtained the privilege of sanctuary. Though criminals were thus frequently rescued from justice, protection was also sometimes afforded to the innocent, who would not otherwise have been enabled to escape the oppression or private enmity which pursued them under the perverted forms of law. The institution was one of the many then existing which had the effect of throwing the regulating power of society into the hands of the clergy. The church maintained a long and hard struggle in defence of this privilege. In England it was not till the year 1487, in the reign of Henry VII., that by a bull of Pope Innocent VIII. it was declared, that if thieves, robbers, and murderers, having taken refuge in sanctuaries, should sally out and commit fresh offences, and then return to their place of shelter, they might be taken out by the king's officers. By an act of parliament passed in 1534, persons accused of treason were debarred of the privilege of sanctuary. After the complete establishment of the Reformation, in the reign of Elizabeth, neither the churches nor any other sanctuaries were allowed to become places of refuge for either murderers or other criminals. But various buildings and precincts in and near London continued for a long time afterwards to afford shelter to debtors. In 1697, all such sanctuaries, or pretended sanctuaries, were finally suppressed by 8 & 9 Will. III. c. 26.

In Scotland, the precincts of the palace of Holyrood in Edinburgh still remain a sanctuary for debtors. The debtors find lodgings in a short street, the privileged part of which is divided from the remainder by a kennel running across it.

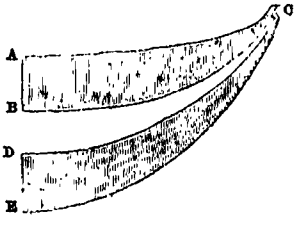
In England, a legal asylum, or privileged place, is called a sanctuary; and this use of the word sanctuary appears to be peculiar to the English language. Both in this country and in America, the name of asylum is commonly given to benevolent institutions intended to afford shelter to some particular description of the merely unfortunate or destitute.

The Jewish Cities of Refuge, established by Moses and Joshua, are the most remarkable instance on record of a system of asylum founded and protected by the state itself for the shelter of persons who had violated the law. These cities, as we are informed in the twentieth chapter of the Book of Joshua, were six in number, three on each side of the Jordan. They only, however, protected the person who had killed another unwittingly.

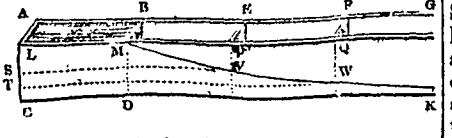
A'SYMPTOTE (ἀσύμπτωτος), a compound Greek word signifying 'which does not fall with;' if taken literally with respect to two lines, it

would mean that they do not meet one another. But it is used only in speaking of two lines (one of which at least must be curved) which continually approach each other, but never meet; so that the distance between them diminishes without limit, or they may be brought to any degree of nearness, without ever actually meeting.

This appears a paradox to beginners in geometry, who are generally unable to imagine it possible that two lines should continue to approach one another for ever, without absolute contact. But this arises from their confounding the thing called a straight line in practice (which is not a straight line, but a thin stroke of black lead or ink, as the case may be) with the straight line of geometry, which has neither breadth nor thickness, but only length. And they also imagine that, if two lines might be asymptotic, the fact might be made visible; which is impossible,



unless the eye could be made to distinguish any distance, however small. But if the unassisted eye cannot detect a white space between two black lines, unless that space be a thousandth of an inch in breadth, which is about the truth, it is evident that two geometrical surfaces with asymptotic boundaries, such as A B C, D E C would appear to coincide from the point where the distance between them is about the thousandth part of an inch. The idea of a geometrical asymptote is therefore an effort of pure reason, and the possibility of it must be made manifest to the mind, not to the senses. A L M B C D is a vessel of



water, of which the sides and bottom are extended indefinitely towards G and R; the end A L is fixed, but the end B M is moveable parallel to its first position, so as always to form a water-tight obstacle; by which means the length of the vessel may be increased to any extent, while its breadth and height remain the same. Let the water be a perfect fluid, without any adhesion to the sides of the vessel (which is mathematically possible, though not physically), and let the bottom of the vessel be geometrically horizontal. Then, as the end M B changes its position and moves towards G R, it is manifest that the vessel will grow larger, and the level of the water will fall. Suppose the side L K to be of glass. Thus when the vessel ends at E P, the water may stand at S V; when the end is at F Q, the water may stand at T W, and so on. But the level of the water never can fall absolutely to the bottom C K; for so long as the preceding mathematical suppositions hold good, and there is some water in the vessel, it must stand at some determinate height above the bottom. As the end B M moves to the right, let the curve M V W, &c., mark out the positions of the level upon the edge of the moving end, as is done in the diagram. Then, for the reason above given, this curve never can meet the line C K, though obviously in a state of continual approach towards it. Hence the curve M V W and the line C K are asymptotes.

ASZOD, a market-town of Lower Hungary, about 23 miles N.E. of Pesth. The inhabitants are industrious, and carry on considerable trade in sheepskin cloaks, and in corn and wine, the produce of the delightful valley in which the town is situated. Aszod contains two churches, a synagogue, and 4170 inhabitants.

A'TABEKS are the rulers of several of the small principalities into which the empire of the Seljuk Turks, soon after its establishment, became divided, during the eleventh, twelfth, and thirteenth centuries. The word Atabek is of Turkish origin, and properly signifies 'The Father of the Prince,' or, as Abulfeda explains it ('Ann. Mosl.' t. iii. p. 226, ed. Reiske), 'a faithful Parent.' Four dynasties of Atabeks are particularly noticed in eastern history; those of Syria (and Irak), those of Azerbijan, those of Persia, and those of Laristan. None of them were of sufficient importance to require a separate notice.

ATACA'MA, one of the 5 provinces into which the department of Potosi in Bolivia, in South America, is divided; it comprehends all the country of that republic which lies to the west of the Andes along the Pacific Ocean: its northern boundary being formed by the river Loa, and its southern by the river Salado, so that it extends along the coast upwards of 210 miles, with a breadth of from 25 to 40 miles. It is divided into the Upper (Sierra) and Lower country. The Sierra comprehends that part of its surface which lies on the N.E. within the chain of the Andes, and contains some fertile valleys, in which the common fruits and seeds of the South American sierras are cultivated. The surrounding mountains contain mines of gold and silver, but they are not worked, and are inhabited by numerous herds of vicuñas, which the Indians hunt, selling their skins and eating their flesh, which is tender and of excellent taste. The lower country presents over nearly all its surface nothing but an uninhabited and uninhabitable desert, consisting of wide plains covered with a dark brown sand, in some places quite black, with here and there a streak of white. The southern part of it is known under the name of the desert of Atacama. Towards the boundary of Peru, a few rivers descend from the Andes, and along their courses valleys extend, in which a rich vegetation is displayed, the soil producing bananas, cotton, figs, vines, and other fruits and vegetables. The most considerable of these rivers is the Cobija, at the

mouth of which is a good harbour and a town formerly called Cobija, now Puerto-de-la-Mar. From this town, the only port in Bolivia, roads have been opened into the interior; and Puerto-de-la-Mar being a free port, a considerable trade has sprung up in the produce named above and in fish. It has been proposed to bore Artesian wells here, in order to remedy the want of fresh water, which is a serious bar to the prosperity, and even to the existence of the town. The interior districts contain veins of crystal of various colours, of jasper, talc, copper, blue vitriol, and alum. No rain ever falls on this coast, but in a few places the soil is occasionally refreshed by mists and dews. In the desert, sand-spouts are of frequent occurrence.

ATACAMITE (*Oxychloride of Copper, Muriate of Copper*) occurs massive, pulverulent, and crystallized. Primary form a right rhombic prism. Colour green of various shades, but chiefly emerald green. Streak lighter. Fracture uneven. Hardness 3.0 to 3.5. Lustre vitreous. Transparent to opaque. Specific gravity 4.4. Found at Remolenos in Chile; the pulverulent variety at Atacama in Peru. Massive variety reniform, with a fibrous structure. Analysis, by Proust: Muriatic acid, 10.6; oxide of copper, 76.6; water, 12.8.

ATAHUALLPA, called by some historians ATABALIPA, was the son of Huayna Capac, the eleventh Inca of Peru, by a princess of Quitu, or Quito. According to the laws of Peru the incas were only allowed to marry their sisters, or some other female of their own family; every other union was considered unlawful, and the fruit of such a union illegitimate. Atahuallpa could not, on this account, succeed his father. Huayna Capac, however, was desirous that Atahuallpa should succeed him on the throne of Quito, and the hereditary prince Huascar acquiesced in the will of his father. At the death of the inca, which, according to Garcilaso, took place in 1523, Atahuallpa ascended the throne of Quito, and immediately commenced a course of treachery against his brother, whom he took prisoner and ultimately murdered, while an immense number of Huascar's adherents were most cruelly put to death as soon as they could be seized.

In the midst of these civil discords the Spaniards arrived in Peru. Atahuallpa, who was at Cassamarca, or Caxamarca, knowing that the unfortunate Huascar had sought their assistance, sent an embassy, accompanied by a rich present, with a view to gain the favour of the invaders. The ambassador was civilly received by Francisco Pizarro, who, on his part, sent his brother Hernando to visit Atahuallpa, to offer him his friendship. On the following day, Atahuallpa, accompanied by 8000 men unarmed, went to visit Pizarro. On his arrival, Father Valverde, in a long harangue, endeavoured to acquaint the inca with the doctrines of the Catholic religion, and declared to him that his kingdom had been given by the pope, the vicar of God, to the mighty Emperor Carlos, and that consequently he was bound to surrender it, otherwise both he and his subjects would be destroyed with fire and sword. The inca answered by his interpreter, that, comparing the tenor of their former with their present discourse, he could infer nothing else but that both they and their king were either tyrants, who went about the world plundering and usurping the kingdoms of others, or a scourge sent by God to punish mankind. The Spaniards did not suffer the inca to finish his discourse. The cavalry fell upon the unarmed multitude, sabring and trampling under the feet of their horses old men, women, and children, and Atahuallpa was seized and made prisoner.

Atahuallpa offered Pizarro, for his ransom, to fill the room in which he was up to a certain height with gold and silver and precious metals. Pizarro agreed to this proposal, and the inca gave the necessary orders for procuring the ransom. Atahuallpa, though imprisoned, was in communication with his generals, and ordered them to remove his brother to Jauja. Here Huascar saw two officers of Pizzaro, and again implored their interference in his behalf. This circumstance having reached the ears of Atahuallpa, he ordered him to be put to death.

On a subsequent accusation of having secretly given orders to his subjects to arm against the Spaniards, the inca was brought to trial. Some of the Spanish officers, whose names are mentioned by Garcilaso, remonstrated against the injustice of such proceedings, but they were overruled, and he was tried and condemned to be burned alive on several false and ridiculous charges, the chief of which were the one above-mentioned, and the murder of his brother. On his way to the place of execution, he desired to be baptized, in consequence of which he was strangled only. It is said that he exhibited great courage and firmness in his last moments.

(Vega (El Inca Garcilaso), *Comentarios Reales de los Incas*, part i. book 9, chap. 2 to the end; part ii. book 10, chap. 17, folio edition, Madrid, 1723.)

ATA-MELIK, or with his complete name, *Ala-eddin-ata-Melik al-Jowaini*, was born (probably A.D. 1226 or 1227) in the district of Jowain near Nishabur in Khorasan, in which country his father Boha-eddin successively filled several offices of importance under the Mogol government. Ata-Melik received a careful education; but at an early age political employments withdrew his attention from literary pursuits. He became the confidant of Mangu Khan, and afterwards of Hulaku, by whom he was made (A.D. 1258) prefect of Bagdad. But in consequence of a charge of peculation brought against him, he was thrown into prison by Abaka Khan, the successor of Hulaku, and his wife and children were sold as slaves. Sultan Ahmed, the successor of Abaka Khan, relieved him from this distressing situation, and prevailed upon him to resume his former office. Soon after this Argun, the son of Abaka Khan, defeated Ahmed and made himself master of Bagdad; and the apprehension of a renewal of the former proceedings against himself accelerated the death of Ata-Melik, which took place a few days after Argun's entry into Bagdad (A.D. 1282). His work on the history of the

Mogols, entitled 'Jehan-kushaï' ('the conquest of the world'), is by some of the most esteemed oriental writers (such as Abulfaraj, Mirkhond, &c.) referred to as the principal authority on that subject. A manuscript, said to contain the greater part of it, is preserved in the Royal Library at Paris. (Quatremère, *Mines de l'Orient*, vol. i. p. 220, &c.)

ATAULPHUS, brother-in law of Alaric, the first king of the Visigoths, assisted him in his invasion of Italy. After Alaric's death, near Cosenza, Ataulphus was elected his successor, A.D. 411. In the following year he supported Honorius against Jovinus, and married Placidia, the sister of Honorius, at the beginning of the year A.D. 414. Ataulphus afterwards passed into Spain, where he was treacherously killed at Barcelona by one of his equerries, A.D. 417. Vallia, the successor of Ataulphus, restored Placidia to her brother Honorius, who gave her in marriage to the consul Constantius. (Jornandes, Zosimus, Orosius, and Gibbon.)

ATCHAFALAYA. [LOUISIANA.]

ATCHEEN. [SUMATRA.]

ATCHUJEFF, ATCHUK, or ATCHU, an island on the eastern shore of the Sea of Azof, one side of it being formed by the Sea of Azof, and the other three sides by branches of the Kuban. It lies to the N.E. of Taman, or Phanagoria, but is more mountainous and as full of swamps as that island. The places of note are Atchujeff, a port and fortress; Kirman, on the main branch of the Kuban, formerly an important town; and Cozadji on the Kumli-Kuban. The inhabitants of the island are Cossacks, and live chiefly by fishing.

A'TELES, a genus of South American monkeys, comprehended by the French naturalists under the term *Sapajou*, with several other genera. The American monkeys differ from those of the old world in the following particulars. The thumb of the fore-hands is never opposable to the fingers. The dentition, except in the marmozets, is as follows:—

$$\text{Incisors } \frac{4}{4}, \text{ Canines } \frac{1-1}{1-1}, \text{ Bicuspid Molars } \frac{3-3}{3-3},$$

$$\text{True Molars } \frac{3-3}{3-3} = 36, \text{ instead of } 32.$$

Ischiatic callosities always wanting. No cheek-pouches. Nostrils lateral with elevated margins, and separated from each other by a wide septum. Tail often prehensile, never wanting or rudimentary.

In the genus Ateles, which includes the spider-monkeys, the head is round, the face moderately developed, the limbs are very long and slender. The tail is longer than the body, thick at the base, strongly prehensile, and naked for a considerable space along the under surface at its extremity. The ears are moderate and naked, with reflected margins. The fur is long, crisp, or harsh, sometimes silky, and the prevailing colour is black. The spider monkeys are staid, gentle, timid, and exhibit an air of listlessness, which is thrown off only under excitement. The fore-hands are either destitute of a thumb, externally apparent, or the thumb is a mere tubercle, hence the generic name ('Ατελὴς, imperfect).

On the ground, which is not their proper place, the spider-monkeys, from the length and slenderness of the limbs and the flexibility of the joints, display but little address. Their motions on all fours are crawling and indeterminate. They tread on the inner edge of the fore-paws, and to a great degree on the inner edge of the hind paws, and endeavour to assist themselves by attaching the tail to every object within reach. In captivity however they often assume the erect attitude, and walk thus better than any other of the long-tailed monkeys. When proceeding in this manner, the tail is elevated as high as the shoulders, and then bent down at its extremity, and is so managed as to act as a balancer, while the animal moves steadily along. But the proper place of these monkeys is among the branches of the forest; there their movements are rapid, easy, and unconstrained; their progression is by a series of swinging evolutions, in the performance of which the limbs and tail take an equal share. The strength and prehensile powers of the latter organ are very great, and enable these animals to assume the most varied attitudes. In ascending or descending trees, or in traversing the branches, the tail is in continual requisition; they coil it round branch after branch, in their passage, turning it in various directions, and applying it with no less strength than precision. They often suspend themselves by it exclusively, and swinging until a sufficient impetus be gained, launch themselves to a distant branch, or stretching out their arms seize it as they vibrate towards it. They are, in fact, essentially swingers and not leapers among the branches. The advantages of this additional instrument of prehension are palpable; its sense of touch is finger-like; and it is capable, like the proboscis of the elephant, of seizing small objects with great address. They are said to introduce the extremity of the tail, as a feeler and hook, into the fissures and hollows of trees, for the purpose of obtaining eggs, young birds, and large insects; they are reported also to fish for crabs or other crustacea along the borders of rivers, by means of this organ; but with respect to this latter part of the story we are somewhat sceptical. Leaves, wild fruits, insects, eggs, and young birds, constitute the diet of the spider-monkeys.

These essentially arboreal beings are natives of Guiana, Surinam, Peru, and Brazil, and abound in the mighty forests which skirt the great rivers and their tributaries for hundreds of miles in one unbroken continuance.

Like the other American monkeys they are killed by the natives for food. They are skinned, and roasted over a wood fire; and though relished by the Indians, few Europeans, unless constrained by necessity, can force themselves to partake of such a revolting dish. The flesh is dry and lean.

Like the monkey tribes in general, these spider-monkeys live in troops, and act in concert either in retreating from danger or in opposing

an enemy. When one is wounded it becomes an object of solicitude, and is assisted by all its companions. As examples of this genus we may select the following species by way of illustration:—

1. The Quata, or Coaïta (*Ateles paniscus*, Geoffr.).—No thumb on the fore-hands; fur long, coarse, and of a glossy black colour; face and ears of a flesh colour, with a coppery tinge. Native country, Surinam, Guiana, and Brazil. This species associates in very large troops, and is active and inquisitive. When taken young it becomes very familiar, and exhibits considerable intelligence.

The Quata.

2. The Marimonda (*Ateles Belzebuth*, Desm.).—Fur smooth and glossy; general colour brownish black, deeper on the hands and feet, but fading on the loins and sides of the haunches to a glossy greyish brown. The long hairs at the angle of the jaw, those of the throat, of the under parts, and inside of the limbs, dirty straw yellow. This species is a native of the borders of the Orinoko, Cassiquiare, &c. It is gregarious, slow in its movements, gentle, melancholy, and timid.

3. The Mono or Miriki (*Ateles hypoxanthus*, Prince de Wied Neuwied, but not Desmarest.—*Eriodes tubifer*, Isid. Geoffr.). The Miriki and one or two more species have been recently separated from the genus *Ateles*, and formed into a distinct group. There are indeed several differences between these and the ordinary spider-monkeys, which if taken together justify the adoption of the genus *Eriodes*. The nostrils are rounded; the interval between them is comparatively narrow, and their aspect is rather downwards than lateral. The fore-hands are furnished with a small rudimentary thumb, in the form of a nailless tubercle; and the molar teeth, instead of being small, are large and quadrangular.

The fur of the Miriki is soft and woolly, of a yellowish grey, tinged about the base of the tail with rufous. Native country, Brazil. This monkey lives principally on fruits, and frequents the remote forests, associating in large troops which make the air resound with their loud cries uttered incessantly during the day. At the sight of the hunter they ascend with extraordinary rapidity to the topmost branches of the trees, and passing from one to another are soon lost in the recesses of the forest. The Brazilians call this monkey Miriki, and Mouriki; the Botacudas term it Koupo.

We might here enumerate other species, but we refer to Spix and Martin's *Travels in the Brazils*; Humboldt, Cuvier, and others.

ATELLA'NÆ FA'BULÆ, a species of comedy which was common among the people of Campania, and was thence introduced at Rome. The name of Atellanæ was derived from Atella, an ancient town of Campania, the site of which is about two miles S.E. of the modern town of Aversa. The Atellanæ were also called 'Ludi Osci,' on account of the name of the people among whom they originated. The Atellanæ had Oscan characters, or actors speaking their own dialect, who were the representatives of some peculiar class of people of that country, much in the same manner as the Brighella, Arlecchino, and Polecinella of the Italian stage, who are caricatures of the peculiarities of certain classes in their respective provinces, and speak their several dialects. Indeed these *maschere*, as the Italians call them, may be considered as the descendants of the old Oscan characters in the Atellanæ. One of these Oscan characters was Macchus, a sort of clown or fool. There were others called Buccones, babblers, empty talkers. The Atellanæ were a mixture of high and low, pathetic and burlesque. They were distinct from the performances of the *mimi*, who indulged in scurrilities and in obscene jokes and gestures. Their humour dealt chiefly in ingenious allusions and equivocations clothed in decent words. The Atellanæ were performed by Roman citizens. In course of time however the Atellanæ degenerated; common mercenary players appeared in them, and they became as loose in their language as the performances of the mimi. This may explain the different judgments given of the Atellanæ by different writers.

The Atellanæ were written in verse, chiefly iambic. Lucius Sulla, the dictator, is said to have written Atellanæ. Quintus Novius, who flourished soon after Sulla's abdication, wrote about fifty plays of this kind; the titles of some of them have come down to us; as 'Macchus Exul,' or 'Macchus in Exile;' 'Vindemiatores,' or 'The Vintagers.' Lucius Pomponius of Bononia, who lived about the same time, wrote 'Macchus Miles,' or 'Macchus the Soldier;' and others.

(Scaliger, *Poetice*, lib. i.; Pitiscus, *Lexicon Antiquitatum Romanarum*, &c.)

A TEMPO, in music (Ital. *in time*), signifies, that after any change in motion, by retardation or acceleration, the original movement is to be restored.

ATFI'H, a province of middle Egypt, on the right bank of the Nile. It is bounded N. by the province of Cairo, W. by the Nile, S. by the province of Minieh, and E. by the desert and mountains which extend to the Red Sea. There are quarries of marble of different colours in the province, but they are not now worked. Atfih,

the capital of the province, is a small town of about 4000 inhabitants, near the site of the ancient Aphroditopolis, or city of Venus, 40 miles S. of Cairo, in 29° 23′ N. lat., and 31° 28′ E. long.

ATH, or AATH, a flourishing manufacturing town in the Belgian province of Hainault, on the Dender, in 50° 36′ N. lat., 3° 46′ E. long., and 32 miles W.S.W. of Brussels. It was strongly fortified by Vauban in 1667, and great additions have been made to its defences lately. The Hôtel-de-Ville is a handsome building, and the spire of the church of St. Julian is also much admired. It has also a college, a school of design, a school for poor children of both sexes, and eight private schools: it has also an hospital, a theatre, and an establishment for orphans. The manufactures are caps, hats, gloves, cotton and linen cloth, bleaching, and asbestus cloth. It carries on also some trade in grain, and in the products of the neighbouring country, among which are tobacco, poppies, and rape. The mulberry is extensively cultivated in the neighbourhood for the growth of silk. The population is 8500.

ATHABASCA, the name of a river and lake in British North America. The Athabasca river has its sources in the Rocky Mountains. It flows generally N., but sometimes E., and in its windings receives the waters of the Lesser Slave Lake by its outlet the Lesser Slave River; it is also joined by the Pembina, S.W. end of the Red-Deer, Clear-Water, and Red Willow Rivers. Athabasca River falls into the Athabasca Lake, nearly opposite to Fort Chipewayan, a trading station established by the Hudson's Bay Company. In the upper part of its course the Athabasca is called La Biche Rivière.

Athabasca Lake is situated about 170 miles S.S.W. of the Great Slave Lake. It is of an elongated shape, lying in a direction nearly E. and W. It is nearly 200 miles long, but its general width, which gradually decreases towards its eastern extremity, does not exceed 14 or 15 miles. Fort Chipewayan was observed by Franklin to be situated in 58° 42′ N. lat., and 111° 18′ W. long.

(Franklin's *Journey to the Shores of the Polar Sea.*)

ATHALIAH, whose name means *whom the Eternal remembered*, is considered to be the daughter of Ahab, king of Samaria, and of his wife Jezebel, the daughter of Ethbaal, king of the Zidonians. She is also called the daughter of Omri, who was the father of Ahab; but by comparing the various passages, it seems that she was the daughter of Ahab, and grand-daughter of Omri.

Athaliah became the wife of Jehoram, king of Judah. Jehoram died in the year B.C. 885, and the kingdom devolved upon Ahaziah, his youngest son. Ahaziah reigned one year. Athaliah, who possessed much influence in the government of her son, used it for bad purposes. On the untimely death of Ahaziah, Athaliah conceived and executed the horrid purpose of a general massacre of all the male branches of the royal family. 'She arose and slew all the seed-royal of the house of Judah;' thus, by imbruing her hands in the blood of her grand-children, she completed the work of devastation which Jehu had begun.

Athaliah ascended the throne which she had thus rendered vacant B.C. 884, and reigned during six years, when Joash, who had been concealed, was produced to the people by Jehoiada, the high-priest, and by him anointed king. Athaliah endeavoured to excite a reaction in her own favour, but in vain, for Jehoiada gave orders that she should be removed from the sacred inclosure and slain. The command was immediately obeyed, B.C. 878. (See 2 Kings ix. 25; xi.; 2 Chron. xxi. 5, 7—12; xxii. 2—10; xxiii.)

ATHANAGILDE, a captain of the Spanish Goths, revolted against his king, Agila, and being joined by a Roman force from Gaul, sent by the Emperor Justinian, defeated and killed Agila, near Seville, A.D. 554. Athanagilde was then proclaimed king of the Goths in Spain. He afterwards quarrelled with his Roman allies, whom he endeavoured, but not successfully, to drive out of Spain. He reigned, however, fourteen years over that part of the country which was occupied by the Visigoths. He had two daughters, one of whom was Brunehaut, who married Siegbert, king of Metz, who became famous in French history. [BRUNEHAUT.] Athanagilde died at Toledo in 567.

ATHA'NARIC, a chief of the Goths who had settled themselves on the borders of the Roman empire, north of the Danube, about the middle of the fourth century. Having aided Procopius in his rebellion, the Goths were attacked and defeated by the Emperor Valens in 369. They then sued for peace, and an interview took place on this occasion between Valens and Athanaric, in a boat in the middle of the Danube. Some years afterwards the Huns threatened the territory of the Goths, and Athanaric opposed the barbarians at the passage of the river Dniester, but he was obliged to retire with a part of his followers into the Carpathian Mountains. The rest of the Goths, under Fritigern, threw themselves on the empire for protection, and were allowed to cross the Danube and settle in Thrace. They afterwards quarrelled with the Emperor Valens, whom they defeated and killed in the battle of Adrianople, in August, A.D. 378. After the death of Fritigern, and the elevation of Theodosius to the empire, Athanaric was elected king of the Goths. He concluded a peace with Theodosius, and went to Constantinople, where he was received with great pomp, in January, A.D. 381; but, having surfeited himself at the emperor's table, he soon after died, and was buried with great magnificence by order of Theodosius. (Gibbon, c. xxv.)

ATHANAS (Leach), a *genus* of the long-tailed crustaceans, bearing much resemblance to *Lysmata* (Risso), from which it differs in having the first pair of feet of larger size than the rest; while the second pair of *Lysmata* are the largest. It is small in size, and has been taken on the south coast of England and on the shores of France.

ATHANASIAN CREED is an exposition of Christian faith, the date of the composition of

which has given rise to much controversy. Baronius states that it was written by St. Athanasius whilst at Rome, but others conclude from internal evidence that it was composed about the middle of the fifth century.

Before the close of the sixth century the Athanasian Creed had become so well known that comments were written upon it; it was not, however, then styled the Athanasian Creed, but simply the Catholic Faith. Before the expiration of another century it had obtained the appellation which it has since preserved. It is supposed to have received the epithet 'Athanasian,' on account of its reference to the subjects of the controversy between the orthodox and the Arians.

From the seventh century we find that the Athanasian creed has been considered in the western churches to be the most genuine document regarding the doctrine of the Trinity. It is remarkable that the Athanasian Creed was not introduced by the authority of ecclesiastical councils, nor by any external compulsion, but was generally received by the free conviction of the churches that it contained a correct exposition of Christian doctrine.

This creed was used in France about the year 850; was received in Spain about a hundred years later, and in Germany about the same time. It was both said and sung in England in the tenth century; was commonly used in Italy at the expiration of that century, and at Rome a little later.

ATHANASIUS, SAINT, one of the most eminent divines of the fourth century, was born at Alexandria, in Egypt, A.D. 296. His writings prove that he had received a learned education, and that he was acquainted with both the theological and the profane literature of his age. During his earlier life, attracted by the reputation of St. Anthony, he led for a time an ascetic life with that holy hermit. Athanasius early gained the favour of Alexander, bishop of Alexandria, by whom he was ordained deacon, and employed as secretary. In 325 he was archdeacon, and represented his bishop at the Council of Nicæa, where he laid the foundation of his fame by his powerful refutation of Arianism. On the death of Alexander, in April 326, Athanasius was unanimously chosen to succeed him in the bishopric by the orthodox prelates and the citizens. He thus, as the twentieth metropolitan of Alexandria and patriarch of eastern Africa, obtained the first rank in the church after the Bishop of Rome, and the highest ecclesiastical dignity in the east.

In the leaders of the Arian heresy Athanasius had many opponents. Among the most formidable of these was Eusebius, bishop of Nicomedia, who had obtained considerable influence at the court of Constantine. On the return of Arius from exile in 327, Athanasius declined to comply with the proposal of Eusebius, backed by an imperial mandate, to re-admit Arius to church communion. From this time the Meletians and Eusebians sought the ruin of Athanasius. In 332 they laid before the emperor several charges against him, which he triumphantly refuted. Imperial letters were issued pronouncing his innocence, but these were insufficient to protect him against new attacks. He was cited in 334 before a synod at Cæsarea, but refused to appear before judges who were also his accusers. Again in 335 he was summoned before a synod at Tyre, the old charges renewed, and fresh accusations, which in the very utterance were seen to be false, were laid against him. In this state of things, seeing that his former acquittal had but whetted the malice of his enemies, he retired from Tyre to Constantinople. The synod of Tyre decreed that Athanasius should be deposed, excommunicated, and exiled from Alexandria, grounding their sentence on his disobedience to the emperor in not receiving Arius to church communion, want of respect to the synods, and the alleged desecration of certain sacred vessels. Soon after, in 336, by means of new accusations, the emperor was induced to banish Athanasius to Trèves, where he was well received by Constans. Whilst here he wrote his famous letter to Serapion on the death of Arius. The Alexandrians petitioned Constantine to restore their revered bishop, and their appeal was seconded by the hermit Anthony. Athanasius was accordingly recalled, and restored to his see in 338. The Alexandrians received him with unbounded joy, but their grateful affection could not induce him to relax the reins of discipline or compromise the cause he had espoused. He deposed the Arian bishops, and put orthodox prelates in their place. The Eusebians, who had protested against his return, revived the old accusations, and added the charge of having sold, for his own benefit, the corn belonging to the church and the poor. Athanasius summoned a synod in 340, which was attended by about a hundred bishops, who refuted in a synodal letter the accusations of the Eusebians. After this both the contending parties sent messengers to Julius, bishop of Rome, and thus the western churches became involved in the contest. Julius declared in favour of Athanasius, but, in compliance with the request of the Eusebian delegates, appointed a synod to be held at Rome, whither Athanasius repaired, attended by a few monks. It is maintained that on this occasion he transplanted the monastic institutions from Egypt into Italy. Before this synod could be assembled at Rome, the Eusebians held another at Antioch, in 341, which excluded Athanasius for ever from the see of Alexandria. The vacant see was given to Gregory of Cappadocia, who, assisted by Philagrius the Roman governor and the imperial troops, violently expelled Athanasius (who had meanwhile returned) from Alexandria about Easter, 341. Athanasius fled for refuge to Rome, whither Julius summoned a synod, which rejected all the charges against him. Julius, moreover, wrote to the Eusebian bishops in behalf of Athanasius, but to no purpose. Athanasius while resident at Rome applied for protection to Constans, now emperor of the west, who several times granted him a private audience. His cause was espoused also by most of the western bishops, and the endeavours of the Arian prelates to obtain a compromising peace were defeated. Athanasius would

agree to no peace which was not based on the acknowledgment of the Nicene Homoousios: he dreaded compromise more than schism. On the demand of Constans, a synod was held in 346 at Sardica, on the confines of the two empires. The friends of Athanasius claimed that he should sit and vote as a member of the synod; this was opposed by the Arian party, and the contest ran so high that the latter retired to Philippópolis. The orthodox bishops then acquitted Athanasius of the charges brought against him. It was by this synod of Sardica that the canons were first established, which recognised the right of the Bishop of Rome to act as arbitrator in all cases of the deposition of bishops. By means of strong threats Constans induced his brother Constantius to reinstate the orthodox bishops who had been exiled by the Eusebians. Athanasius, after a thrice-repeated invitation from the emperor, repaired to Constantinople, where he was received with seeming pleasure by Constantius, who, however, could not prevail on him to make any concession in favour of the Arians. On his way to Alexandria he passed through Jerusalem, and was re-admitted to church communion by sixteen bishops. In his progress he deposed the Arian bishops, and gave the secs to prelates of the orthodox faith. Arrived at Alexandria (349), he was welcomed with the most joyful enthusiasm, and soon after convened a synod, by which the decrees of Sardica were confirmed. In the year 351 Constans died. As long after this event as the pretensions of Magnentius to the empire of the west gave cause of fear, Constantius was the friend of Athanasius; but after the defeat and death of Magnentius in Gaul, the Bishop of Alexandria found himself held as the personal and theological enemy of the emperor. Constantius, anxious for the consent of the western church to his proceedings against Athanasius, summoned a synod at Arles in 353, and in 355 another at Milan, which consisted of three hundred bishops. By means the most unworthy (Gibbon, chap. xxi.) a majority of votes was obtained, and notwithstanding the fearless defence of his friends, Athanasius was condemned and deposed by both synods, and all bishops who refused to acknowledge the justice of the sentence were immediately banished by the emperor. Among the exiled prelates were Liberius of Rome and Osius of Cordova. The next step was to remove Athanasius himself; but even when sanctioned by the synodal decrees, Constantius did not dare to put his signature to the order for the deposition of the patriarch. Alexandria was surrounded and entered by the imperial troops. During four months, under the guise of zeal for religion, ravages the most horrible were carried on within the walls of the city. Athanasius saved his life by a rapid and secret flight. A man named George, regardless alike of religion and humanity, was placed in the see, and caused the scenes of bloodshed and crime which had been enacted at Alexandria to be repeated in ninety of the episcopal cities of Egypt. During six years Athanasius eluded the imperial emissaries. He lived chiefly among the monks of the Egyptian desert; and it was during this period he composed several of his controversial works, and circulated his letters against the Arians, which were addressed to the bishops of Egypt and Libya. At last, recalled from his seclusion by Julian, the successor of Constantius, Athanasius immediately applied himself to the task of restoring peace and orthodoxy to the church. He held a synod in 362, which condemned the Arians and other heretics, and offered church communion to all the bishops who, during the reign of Constantius, had renounced the orthodox faith, on condition that they should subscribe and thenceforward adhere to the words of the Nicene Creed. Vigorous and uncompromising in his support of the Christian faith, he was not less opposed to the emperor's paganism than he had been to Arianism. Julian, therefore, repenting of having recalled him, condemned the proceedings of Athanasius, and pronounced sentence of exile against him. Julian died in 363, and was succeeded by Jovian, who favoured the orthodox views. He revoked Julian's decree, and treated Athanasius with great distinction. Jovian's reign, however, was short; he died in February, 364, and was succeeded in the eastern empire by Valens, a zealous Arian. Banished by this emperor also, Athanasius lived concealed for several months in his father's tomb. This persecution of the venerated patriarch excited a rebellion, to put an end to which Athanasius was allowed to resume his episcopal rank and functions. During the short remainder of his life he lived in peace, and in the possession of his see. His death took place in May 372 or 373.

The opinions entertained of Athanasius have been most contradictory. Most extol him for his sanctity; some blame him for obstinacy; but every impartial man must admire the greatness of his soul, the purity of his intentions, the firmness of his purpose, and the unwearied activity by which he finally triumphed over apparently insurmountable obstacles. By his courage an obstacle was set up against imperial tyranny, a limit was found which it could not pass over: the weight of spiritual influence was beginning to mitigate and to balance the temporal despotism. He was small of stature, and did not at first impress beholders with the idea of internal greatness; but he was made for profound thinking, powerful speaking, and energetic action. His style is unadorned but appropriate, and bears the stamp of genius and true eloquence. A splendid edition of his writings, most of which relate to the heresies that agitated the church in his time, and to his own persevering struggles for the Christian faith, was published in 3 vols. folio, by the Benedictine monks of St. Maur, Paris, 1698. This edition contains the Greek text and a Latin translation. An edition in 4 vols. folio was published at Padua in 1777. In the 'Collectio Nova Patrum Græcorum,' by Bernard de Montfaucon, Paris, 1706, 2 vols. fol., the Works of Athanasius are given, with a Latin version and notes. His 'Four Orations against the Arians' were Englished by Samuel Parker, 2 vols. 8vo, Oxford, 1713.

ATHANASIUS, surnamed Herniosus, was Bishop of Alexandria from about 490 to 497. He

was deemed a good biblical scholar, an active bishop, and a devout man. He is supposed to be the author of some works usually ascribed to St. Athanasius.

ATHANASIUS, the *Rhetorician*, was a native of Constantinople. He was the author of several works on Moral Philosophy, which he wrote at Paris, where he died in 1663 in his ninety-second year. One of his works, entitled Τερφὴ Ψυχῆς, 'Delight of the Soul,' was printed at Paris in 1639, 4to; he also published at Paris, 1641, 4to, three tracts on moral philosophy, one of which relates to Aristotle's treatise 'On the Soul.' In both of these the Greek text is accompanied with a Latin version.

ATHELING, or ÆTHELING. When the word Atheling has been found following a Saxon name, it has been supposed by some persons to be of the nature of a surname; and especially in the instance in which it is united with Edgar, in him who was the last male in that family of Saxon kings. But Selden shows that Edgar Atheling is the same as Edgar the Atheling, or the noble, and that while some of our earlier chroniclers, as Henry of Huntingdon and Matthew Paris, so designate him, others, as Hoveden and Florence, call him Edgarus Clyto. *Clyto* is the Greek term answering to *eminent, illustrious*. The Saxon kings of England and their families affected titles and denominations of Greek origin, as Clyto, Basileus (king), and Adelphe (sister); the last appears on the seal of the royal abbess of Wilton.

ATHELNEY, ISLE OF. This appellation, though it has ceased to be applicable, is retained by a rising ground in the parish of Lyng, and hundred of Andersfield, in the county of Somerset. The whole 'island' contains about 100 acres, and in 1841 contained one farm-house with 9 inhabitants.

This spot was anciently surrounded by almost impassable marshes, and has acquired celebrity as the place in which Alfred the Great found temporary shelter while the Danes overran Wessex. It is thus described by William of Malmesbury: 'Athelney is not an island of the sea, but is so inaccessible on account of bogs and the inundations of the lakes, that it cannot be got to but in a boat. It has a very large wood of alders, which harbours stags, wild goats, and many beasts of that kind. The firm land, which is only two acres in breadth, contains a little monastery and dwellings for monks. Its founder was King Alfred, who, being driven from the district by the Danes, had kept himself for some time in that secure lurking-place.'

ATHELSTAN, an illustrious prince in the line of the Saxon sovereigns of England, scarcely less illustrious than Alfred, his renowned grandfather. He was the first who called himself King of the English; his father and grandfather having been content to call themselves Kings of the Anglo-Saxons, while Egbert and the sovereigns between him and Alfred were only styled Kings of Wessex.

Athelstan was born six years before the death of Alfred. It is a question whether he was, strictly speaking, a legitimate son of his father. It is admitted on all hands that his mother was a person of lowly birth, the daughter of a Saxon husbandman. His father succeeded to the throne of Alfred, and is known as Edward the Elder, to distinguish him from the two later Edwards of that royal house, Edward the Martyr and Edward the Confessor.

The eldest son of Edward, and the only son who had arrived at years of maturity except Athelstan, died a few days after his father. This opened the way to Athelstan's succession, who, it is said, was nominated in his father's will, and who had certainly with him the voice of a large party in the kingdom. The Wittenagemote sanctioned his assumption of the sceptre, and he was crowned at Kingston-upon-Thames. His reign began in A.D. 925. It was, however, much disturbed by wars, particularly against the chiefs of Cornwall and of Wales, and against the King of Northumbria, and his confederates the King of Scotland and Anlaff the Dane. He marched against these confederated chiefs; and the armies engaged at a place called by the early chroniclers who mention the fact Brunenburgh; but where Brunenburgh is no one now knows, except that it was in some part of the ancient kingdom of Northumbria. There Athelstan gained a complete victory.

The victory at Brunenburgh is celebrated alike in Saxon history and Saxon song. More was said and thought of it than of any battle in which the Saxons had been engaged. It was called the Great Battle. One effect of this victory was to extend the name and reputation of Athelstan beyond his own shores. He had from that time great influence in the affairs of neighbouring kingdoms. His sisters were given in marriage to the King of France, to the Emperor of Germany, and a king of the north. His influence in the general politics of Europe, and the high respect in which he was held, have been very fully shown by Mr. Sharon Turner, in his 'History of the Anglo-Saxons.'

His reign was of short duration; he died A.D. 940, being only in his 47th year. He had no family, and was succeeded by Edmund, his brother.

Athelstan did not labour more to secure his throne and to extend his power and political influence, than to give security and legal government to his people. Alfred had left a code of laws to which Athelstan made additions, the principle on which he proceeded being to bring all classes, the ecclesiastics as well as others, within the scope of certain great principles. He encouraged the translation of the Holy Scriptures into the vernacular tongue. The monks of the Abbey of Bath, even to the time of the Reformation, were accustomed to show to visitors certain manuscripts which they affirmed to be the gifts of King Athelstan. Athelstan was buried in the Abbey of Malmesbury.

ATHENA'IS. [EUDOCIA.]

ATHENÆUS, a Greek writer, probably contemporary with Archimedes. A work by him on Engines of War (Περὶ Μηχανημάτων) is extant, and printed in the collection of Thevenot. This

work is addressed to M. Marcellus, supposed to be the conqueror of Syracuse.

ATHENÆ'US of Attalia, a physician who flourished in Rome about the middle of the first century of our æra, and established the Pneumatic school in medicine. A few fragments of his writings are preserved by Oribasius and Aetius, and allusions are made to his opinions in the writings of Galen. The theory, which originated with Athenæus, and was adopted by several other distinguished physicians [ARETÆUS], derived its name from the *pneuma*, or spirit, a notion of which these physicians made frequent use in their explanations of life and disease. This *pneuma* formed an important principle in the physical science of the Stoic philosophers, from whom the pneumatic physicians seemed to have derived it. The very scanty remains of the pneumatic doctrine do not enable us to judge whether its *spirit* resembled the *vital principle* of some modern physiologists; nor can we appreciate in what manner the Pneumatics conceived the efficacy of this *spirit* as connected with those principles which they admitted in common with other ancient schools, the elementary qualities, heat and cold, which they called active principles, and dryness and moisture, which they termed passive principles. (Leclerc and Sprengel's *Histories of Medicine.*)

ATHENÆ'US, a Greek, and a native of Naúcratis in Lower Egypt, was probably born in the reign of Marcus Aurelius, and was the contemporary of his son Commodus (Athenæus, p. 537, ed. Casaub.). He lived at Alexandria, and afterwards at Rome. This is all that can with certainty be said of him.

Athenæus is the author of a curious work entitled 'Deipnosophistæ' (Δειπνοσοφισταί), or the 'Banquet of the Learned,' or, perhaps, 'Contrivers of Feasts,' in 15 books, which is probably nearly complete, with the exception of the first two books, and the beginning of the third. The parts which are not complete appear to be a kind of copious extract or epitome of the original. Athenæus represents himself as describing to his friend Timócrates an entertainment given by a learned and wealthy Roman, Larensius (Laurentius), to the most accomplished men of the day. Among the company we find Ulpian the lawyer, Galen the physician, Rufinus of Nicæa, and many others. As far as regards dramatic effect, the 'Deipnosophists' has very little merit. The long quotations destroy all the form of dialogue, which is very imperfectly kept up by the occasional introduction of one of the guests' names, and his propounding some point of inquiry (vi. 228, &c.), which invariably leads to a long dissertation and numerous quotations from the Greek comic writers and other poets. The subjects discussed are chiefly those which concern the pleasures of the table and of the senses, but the whole is intermingled with so many interesting facts and copious extracts from lost writers, that the work is one of the most valuable books that has been preserved for the illustration of ancient manners. Athenæus, who must have been a prodigious reader, apparently intended to make his work a receptacle for all the curious facts that he had found in the course of his studies, and for such extracts from ancient writers as either bore upon some particular point or had given him pleasure. It is, however, in a great degree a treatise on the ancient gastronomy, and must supply the place of the complete work of Archestratus on that science. (Athenæus, p. 29, 111, &c.)

The work of Athenæus is of great value as incidentally giving information on many dubious points of history, and also the means of illustrating the history of ancient art. The general accuracy of the quotations of Athenæus, as far as we can check him by existing works, is an argument in favour of the value of those extracts from works that are now lost.

The first edition of Athenæus is that of Aldus, Venice, 1514, folio, which was got up with the assistance of M. Musurus. That of Casaubon was first published at Geneva, 1597, fol. The commentary was not published till 1600, at Lyon. This edition was afterwards reprinted. The edition of J. Schweighäuser, Strassburg, 1801–1807, 14 vols. 8vo, was founded on a collation of two new MSS. There are corrections of numerous passages in Athenæus in Porson's 'Adversaria,' Meineke's 'Curæ Criticæ,' and Dobree's 'Adversaria.' The last and best edition of Athenæus is by W. Dindorf, Leipzig, 1827, 3 vols. 8vo. There is a French translation of Athenæus by the Abbé Marolles, Paris, 1680, 4to; and another by Lefebvre de Villebrune, Paris, 1785–91, 5 vols. 4to, said ('Biographie Universelle') to be very bad.

ATHENA'GORAS, of Athens, a Christian philosopher, who addressed an 'Apology' for the Christians to the Emperor Marcus Aurelius and his son Commodus. Accordingly Athenagoras lived in the latter half of the second century, and he composed his 'Apology' about A.D. 177. This 'Apology' is a well-digested and eloquently written treatise. Athenagoras demands toleration for the Christians, and defends their doctrine and their lives against the then usual accusations of atheism, incest, eating of the flesh of slaughtered children, and the like. He proves the unity of God by assuming the diffusion of his essence through space; but he distinguishes God from matter. His explanation of the Trinity is based upon the doctrine of emanation. He says that the Holy Ghost proceeds from God like a ray from the sun, and returns to him. He declares second marriage to be adultery. Athenagoras, in his book on the Resurrection, shows the necessity of having the mind freed from prejudice in order to arrive at truth, refutes the objections made against the resurrection, and confirms it by argument. 'Those who deny the resurrection should prove either that God *cannot* bring it to pass, or that he *will* not. If he cannot do it, it must be either because he lacks skill to plan, or power to effect it; but his formation of the human body refutes these suppositions. If he have power but will not do it, then it must be because it would be unjust in itself, or unworthy of the divine nature; but neither of these can ever be proved.'

The best edition of Athenagoras is that of the

Benedictines, folio, Paris, 1742, which contains Justin Martyr, &c. His two treatises were translated into English by David Humphreys, London, 8vo, 1714. Several extracts of both pieces are translated in Dr. Lardner's 'Credibility of the Gospel History.'

ATHE'NE, or ATHENA, the Goddess of Wisdom, of Arts, and of Sciences, among the Greeks; the Minerva of the Romans.

According to Homer she was the daughter of Zeus; but there is no allusion in either the 'Iliad' or 'Odyssey' to the fable of her having sprung forth completely armed from the brain of that god. Athene was one of the three goddesses who submitted their beauty to the decision of Paris, and she disputed with Neptune the honour of giving name to the new city of Cecrops. [ATHENS.] The contest was decided in her favour by the production of an olive-tree, and the city was hence called Athenæ. (Apollodor. 'Biblioth.' iii. 14.) She was called Glaucopis (blue-eyed). The serpent, the owl, and the cock, were sacred to her; and, among plants, the olive. She was worshipped in all parts of Greece, but the most celebrated temple was at Athens [PARTHENON], in which there was a statue overlaid with ivory, of colossal size, by Phidias.

The ancient statues of the goddess exhibited her with upraised shield and poised spear, ready to engage in battle; sometimes, as symbols of her peaceful character, she had in her left hand the spindle and distaff. A stiffly-folded peplum was thrown over her chiton (tunic), and she was armed with an immense ægis. The outline of the body exhibits none of the fulness of woman in the hips and breasts, while the form of the bones, arms and back, resembles that of man. But the age of Phidias changed considerably the ancient characteristic marks of the different gods and goddesses, and from that time Athene was distinguished by her serene forehead, her long and well-formed nose, by the somewhat firm compression of the mouth and cheeks, the strongly marked and almost angular chin, the half-closed eyes, and by the hair streaming carelessly over her neck. There are many representations of the goddess in sculpture, and on coins still extant. [MINERVA.]

ATHE'NION, a Sicilian slave, but by birth a Cilician. Athenion was overseer to two wealthy brothers, and after the insurrection of the slaves in Sicily, which is called the Second Servile War, had commenced (B.C. 102), he began his career by gaining over the slaves under his own charge. Other slaves flocked to his standard, and he assumed the title and state of a king; his measures showed a reflecting mind, well adapted to command. He selected for soldiers those who were best suited to bear arms, and made all others labour at their respective callings. He assured his followers that he was destined to reign over Sicily, and that it was wise to preserve uninjured the land and its produce, as part of their own future wealth. He soon collected 10,000 followers, with whom he laid siege to Lilybæum; but, though he failed in this attempt, he maintained his influence by his supposed powers of divination. Another slave-leader, named Salvius, at the head of a superior force, now assumed the title of king, and summoned Athenion to serve under him. Athenion wisely joined Salvius, who had assumed the name of Tryphon. When L. Licinius Lucullus, with an army of 17,000 men, was sent by the Roman senate to bring the war to a conclusion, a battle was risked by Athenion's advice, but the insurgents were defeated, and Lucullus then laid siege to Triocala, but without success. He was superseded by C. Servilius, who did no better. On the death of Tryphon, Athenion succeeded him and extended his ravages over great part of Sicily.

In B.C. 101, the consul Manius Aquilius gained a decisive victory over the insurgents, in which Athenion fell. The war was ended by Aquilius, B.C. 99. In this insurrection six Roman armies suffered defeat.

(Diodorus, *Eclogæ*, lib. xxxvi. 1; Florus, iii. 19.)

ATHENION, son of a Peripatetic philosopher of the same name, by an Egyptian slave. He was manumitted, kept a school in Athens, where he was naturalized, assumed the name of Aristion, and ultimately became tyrant of Athens. He espoused the interests of Mithridates, and in in concert with Archelaus, the king of Pontus's general, held out the city against Sulla, who finally put him to death. [SULLA.]

ATHENION, a painter, born at Maronea in Thrace, and pupil of Glaucion of Corinth. Pliny gives him the extraordinary praise, that 'if he had lived to maturity, no one would have been worthy to be compared to him.' (*Hist. Nat.* xxxv. 40.)

ATHENION, a comic poet. Athenæus gives a long extract from his 'Samothracians,' lib. xxiv. c. 80.

ATHENRY. [GALWAY.]

ATHENS, or ATHE'NÆ (Ἀθῆναι), the chief city of Attica, and the capital of the modern kingdom of Greece.

Athens is situated about 5 miles from the sea coast, 37° 58′ N. lat., 23°. 43′ E. long., occupying part of the central plain of Attica and some heights which run down into the plain, but are detached from the mountains on the north frontier of the province. Of these eminences the most conspicuous are—Mount Lycabettus, with its peaked summit, on the north-east of the city, and beyond the ancient walls (Colonel Leake calls this hill Anchesmus, but Forchhammer proves it to be Lycabettus); the Acropolis, which was entirely included within the old walls; the Areopagus, opposite to the west end of the Acropolis; and the hill of the Museum, also included within the ancient walls, the highest eminence on the south. On the east side of the city, the little river Ilissus, which rises a few miles north-east of Ambelókipo, runs in a south-west direction past the city, separating the heights of Athens on the west from the higher and more continuous range of Hymettus on the east. This little river, which in its natural state might have reached the marshy lands near the coast, is reduced by the heats of summer and the channels for artificial irrigation to an inconsiderable stream. The Cephisus, which runs due

south past the west side of the city, at the distance of about a mile and a half from the walls, is also nearly exhausted by the cuts for irrigation before it reaches the neighbourhood of Peiræus.

Athens was connected with its ports, Peiræus, Munychia, and Phalérum, by Long Walls (*μακρὰ τείχη*), which abutted on the city, respectively at the hill of the Museum, and the Gate of Peiræus. The direction of the Long Walls from the Peiræus is E. by N. by compass, as appears from their existing foundations. The southern wall, which ran from the city to the Phalerum, was called the Phaleric Wall; the northern, which ran from the Peiraic Gate to the Peiræus, and was a double wall, was sometimes called the Long Walls and sometimes the Peiraic Wall.* That part of the city walls which is included between the two points where the Phaleric and Peiraic walls respectively abut on them is not included by Thucydides (ii. 13) in his estimate of the extent of the city walls which required defence; and we must, in like manner, deduct from the circuit of the wall inclosing the Peiræus and the Munychia, the space on the land side between the western extremities of the Phaleric and the Peiraic walls. The circumference of the city, then, according to Thucydides, in B.C. 431, was—

	Stadia.
The City, deducting the part between the Peiraic and Phaleric Walls . .	43
The Phaleric Wall	35
The Peiraic Wall	40
The Maritime City, deducting the space between the Phaleric and Peiraic Wall	56½
	174½

This result will give a total circuit of about nineteen or twenty miles. (Leake's 'Topography of Athens,' p. 368.)

The cemeteries surrounded the city, but were most conspicuous on the north and north-west, where they commenced immediately on the outside of the walls. The road from the Gate Dipylum to the Academy was lined with the tombs of illustrious men, such as Pericles, Thrasybúlus, Chabrias, and Phormion. Here too were the monuments of those who fell in their country's service: a slab of stone, with the name and township (*δῆμος*) of each individual, was the honour paid by the state to its citizens who died in battle. (Pausanias, i. 29.) The Academy was surrounded with a wall, planted with trees, and ornamented with fountains of water. Near it was the tomb of Plato.

The city wall was strengthened with towers: there were also square towers on the long walls which connected the city with the ports. These walls (the Peiraic and Phaleric) were about four miles in length, and at a distance of 550 feet from one another: when the city was in its highest state of prosperity, the open space between them contained a considerable number of houses, which formed a kind of intermediate town between the Asty, or Upper City, and the Peiræus.

The three ports of Athens, going from west to east, were the Peiræus, now Port Dhrako, which contained three natural bays; the Munychia, now Stratiotiki, separated from the Peiræus by the peninsula of Munychia; and Phalerum, now Port Phanári. These three ports, with the buildings attached to them, once formed a separate city larger than Athens. A sea wall, sixty Greek feet high, and constructed of wrought stone, extended from the Bay of Phalerum all round the rocky peninsula of Munychia, terminating about Cape Alcimus: the north-west and west side of the Peiræus was also inclosed by a wall running down to the sea; a wall ran from the Phaleric Port across the high ground to the head of the middle bay of the Peiræus; and a third wall ran across the narrow isthmus of the Munychia. The importance and strength of the fortifications of the maritime city, and especially of the Munychia, appear from the siege of this place by Demetrius Poliorcétes, and by Sulla.

The Peiræus was the great dock-yard of the Athenians, and the chief harbour for the vessels engaged in the corn and other foreign trade. It contained large warehouses, public arsenals, the armoury of Philon, several temples, a theatre, of which some traces remain, a long portico or arcade like the bazaars of Eastern cities, and other buildings. Of all the edifices of the Peiræus, nothing now remains but some traces of foundations and broken pieces of sculptured marble. The port, though its entrance is very narrow, is still a safe one: 'the ground inside is very good, and rather to the southward of the centre a ship may drop her anchor in about seven fathoms stiff mud, and moor with open hawse towards any point of the compass, for she will ride so secure that neither wind nor sea can hurt her.' (Capt. W. H. Smyth.) The peninsula of the Munychia contains the foundation of a temple, the remains of a small theatre, and clear indications that it was extensively built upon. The line of the extensive system of walls which defended the maritime towns can still be traced; and in the Munychia, on the side towards the sea, courses of masonry, both of walls and towers, still exist, formed in some parts of large squared stones cramped with iron. (Thucyd. i. 93.)

The most striking object is the Acropolis, or Citadel, a rock which rises abruptly from the plain, and is crowned with the Parthenon. Opposite to the west end of the Acropolis, and separated from it by a depression, is the Areopagus, or Hill of Mars, on the eastern and highest extremity of which was the court of the Areopagus. [AREOPAGUS.] Adjacent to the Areopagus on the west was the Pnyx, where the public meetings were held in the more ancient period of the state, and where a *béma*, or pulpit of stone, still marks the place from which the assembly was addressed. (On this béma compare Leake, p. 42, and art. *Attica*, in Ersch and Gruber.)

North of the Areopagus is the Temple of Theseus, built of Pentelic marble, one of the best-

* Much has been written on the passage of Thucyd. ii. 13; and we are aware of the difference of opinion as to these Long Walls. We have given in the text what we believe to be the true interpretation with reference to the time when Thucydides wrote.

preserved buildings of ancient Athens. (THESEIUM; and Stuart's 'Athens,' vol. iii.) Nearly due east of the Temple of Theseus are the remains of what is probably the Stoa or Portico of Hadrian, one of the monuments with which he embellished the city of Athens. South of the Stoa is the Tower of the Winds, called also the Tower of Andronicus Cyrrhestes. (ANDRONICUS; and Stuart, vol. i. p. 42.)

The south-east quarter of the city, which is entered by the Arch of Hadrian, was one of the oldest parts. This building, of Pentelic marble, consists of a circular arch with Corinthian columns, the entablature of which supports another ordinance of Corinthian columns, surmounted by an entablature, with a pediment in the centre. (Stuart, iii. 90.) An inscription upon the frieze on the south-east side of the arch shows that the emperor gave his name to the part of the city between this edifice and the Ilissus. Here stood the magnificent temple of Jupiter Olympius, which being re-commenced about B.C. 175–165, on the site of an older temple, and worked upon at intervals, was finished by the liberality of Hadrian. Sixteen columns of Pentelic marble, 60 feet high, and above 6½ in diameter, are all that now remain of the 128 which once adorned this magnificent building. (Stuart, iii. p. 83.) The fountain called Callírrhoe, or Enneacrúnus (the nine springs), the only source of fresh water in the neighbourhood, was only a short distance from the south-east angle of the great temple. An aqueduct from Cephisia on the Cephisus was constructed for the use of the city by Hadrian and Antoninus Pius his successor.

Beyond the quarter called Hadrian's City, on the east side of the Ilissus, is the Panathenaic Stadium, first constructed by Lycurgus the orator, B.C. 350, and adorned with Pentelic marble by Heródes Atticus, in the reign of Hadrian. Part of the masonry at the south-east or circular end, and the *cavea*, or part used for the exhibition of the Panathenaic games, remains. Its length in the interior is 675 feet.

The small choragic monument of Lysicrates, erected about B.C. 334, vulgarly called the Lantern of Demosthenes, stands between the south-east angle of the Acropolis and the great Temple of Jupiter. Other particulars of the localities of Athens can only be understood by means of a plan; and several points are still disputed.

The Acropolis, or the old Cecropian fortress of Athens, is a rock which rises abruptly from the plain, with its sides naturally scarped, except at the west end; its greatest length may be about 1200 feet, and its greatest breadth about 550. The great Dionysiac Theatre, the place for dramatic exhibitions, was on the south-east side of the Acropolis; the inner curve was excavated in the rock, and the part which projected into the plain was formed of masonry. In the recess of this excavation, and above the theatre, Pausanias (i. 21) describes a cavern, which was converted by Thrasyllus (B.C. 320), a victorious chorágus, into a small temple. A noble seated figure, of colossal size, now generally called the statue of Bacchus, which originally was placed on the entablature of the small temple, is in the Elgin Room in the British Museum. On the south-west side of the Acropolis is the site of the Odeium, or Musical Theatre of Herodes Atticus, named by him the Theatre of Regilla, in memory of his deceased wife. This splendid monument of the munificence of a private individual was erected in the second century A.D., and was the finest building of the kind in Greece.

At the west end of the Acropolis, where alone the approach is practicable, the open space was filled up with the Propylæa, a magnificent work of Pentelic marble, which served both as an approach and a military defence to the citadel. A great part of the eastern side of the Propylæa was destroyed, about 1656, by an explosion of gunpowder (Spon, ii. 107), that took place in the part between the five doors and the west front, which had been formed into a powder-magazine. Spon (ii. 106) describes the west front, with its pediment and the Ionic columns of the vestibule, as existing in 1676; but the upper part of the west front is now entirely gone. (Stuart, iii. 104; and CIVIL ARCHITECTURE.)

The chief ornament of the Acropolis was the Parthenon (erected about B.C. 450–440), or Temple of the Virgin Goddess Minerva, which stood on the highest level of the Acropolis, and was built of the hard white marble of Pentelicus. [PARTHENON.] This temple is in 37° 58′ 2″ N. lat., 23° 43′ 37″ E. long. (Captain W. H. Smyth.)

Of the other remains on the Acropolis, the most interesting is the building which, consisting of various parts, is now commonly known by the general name of the Erechtheium. [ERECHTHEIUM.] The bronze colossal statue of Minerva the Defender, the work of Phidias, stood on the Acropolis. The spear and helmet of this colossal figure (Pausan. i. 28) were visible towering above the Acropolis to those who approached Athens by sea, as soon as they had rounded Cape Sunium.

The authorities for the topography of Athens are—Strabo, book ix.; Pausanias, book i.; with the scattered passages of other Greek and Latin writers; Spon and Wheler; Chandler's 'Travels,' of which there is a French translation, with notes, by B. du Bocage; Stuart's 'Athens,' 4 vols. folio, republished by Priestley and Weale, London, 1827; Leake's 'Topography of Athens;' Wilkins's 'Atheniensia;' and 'Elgin Marbles,' 2 vols. 12mo., in the 'Library of Entertaining Knowledge,' published by the Society for the Diffusion of Useful Knowledge, in which these and other authorities are more particularly referred to.

The topography of Athens has been improved and corrected by the recent investigations of the Germans. We shall add only a brief account of the most important discoveries that have been made at Athens. Operations were commenced on the Acropolis in 1833 by a private society of antiquaries. The year after, when Athens was made the capital of the kingdom of Greece, the government took the work into its own hands. The excavations were conducted by the German architect L. von Klenze, and afterwards by Pro-

fessor Ross, assisted by the architects Schaubert and Cleanthes, whose place was soon after supplied by Hansen. Ross was succeeded in 1836 by Pittakis. The results of these excavations down to 1843 are briefly described by Curtius, 'Die Akropolis von Athen,' Berlin, 1844, 8vo.

The operations in the Propylæa began in 1834. The first thing that was done was to remove the modern constructions which blocked up the entrance to the Acropolis. The great or upper battery which extended from the pedestal of the statue of Agrippa in the north to the corner of the Cimonian wall in the south, was next taken down. The discoveries there made were most unexpected. The fragments of the ruined temple of Victory unwinged (Nike Apteros) were found almost complete, and very little injured. Many fragments of the Propylæa, consisting of sculpture and pieces of architecture of every kind, and some highly important inscriptions, were brought to light. A considerable part of the marble flight of steps leading to the Propylæa was laid open at a somewhat later time.

In the winter of 1836-37 operations were commenced in the Propylæa itself; the central part and the northern wing were cleared from the modern constructions built in them, and from the battlements which had been erected upon the walls in the middle ages. In the central part, the six Ionic columns of the vestibule are still standing, though only about two-thirds of their original height, except one which is shorter than the rest. The parts of these columns, however, which had fallen down, were found among the ruins, but the capitals are much damaged. The northern wing is in perfect preservation up to the cornice; and the tower of the southern wing is still standing. Out of all that remained, the attempt was made to restore this beautiful edifice, and in 1836 the restoration was nearly completed. The work was conducted by Ross, Schaubert, and Hansen, but after the withdrawal of Ross in 1836 the progress was somewhat delayed. At present, however, the restoration is complete, and the Temple of Nike once more exists in its full beauty; it serves as a temporary Museum in which some of the newly discovered relics of antiquity are deposited. Excavations were also made in and around the Parthenon. Here were found most valuable fragments of the metopes, the frieze, and of the statues in the pediments, which are deposited in the museums of Athens. In 1842 the mosque which had been built within the cella of the Parthenon was cleared away, and the place where the temple-statue had stood was found. The area on the eastern side was then cleared, and the columns of the north side, which had fallen down, were erected again. In 1837 workmen were actively employed in removing the rubbish from within and without the Erechtheium, and all that could be restored out of the ruins has been restored, especially along the southern side, where the wall of the cella is now raised to half its original height. The flight of stairs in the eastern front has likewise been laid open.

In 1839 the pedestal of the statue of Athena Hygiea (Paus. i. 23, 5) was found close by the Propylæa, and in the south of the same building remnants of the inclosure (peribolos) of the temple of the Brauronian Artemis were laid open. (Paus. i. 23, 7.) A little to the east the pedestal of the Trojan horse (Paus. i. 23, 10) and that of Epicharinus (Paus. i. 23, 11) were found. Besides these things, which are mentioned by Pausanias, a number of substructions and fragments of works of art have been discovered, which are yet unexplained. The Cimonian wall along the southern side of the Parthenon is also now laid open.

For the more recent discoveries the reader is referred to the second *edition* of Leake's 'Topography of Athens,' *London*, 1841; his paper 'On some disputed Positions in the Topography of Athens,' in the Transact. of the Soc. of Lit. for 1839, p. 183, &c.; and his paper 'On the Demi of Attica;' Forchhammer, 'Topographie von Athen,' Kiel, 1841, which contains a detailed Plan of Ancient Athens, together with one of the Modern city, showing the relation between the two; Ross, Schaubert, and Hansen, 'Der Tempel der Nike Apteros,' Berlin, 1839; Welcker, in the 'Rhein-Museum,' for 1843; Quast, 'Das Erechtheion zu Athen,' &c., Berlin, 1840; Müller, 'De Foro Athenarum,' Götting. 1839. A complete and critical survey of all that has been done in modern times for the topography and antiquities of Athens, is given by A. Westermann, in the 'Neue Jahrbücher für Philologie und Pädagogik,' vol. xli. p. 230-248.

With regard to the modern city, dating from the commencement of King Otho's government, it can be considered at present as only in a state of formation. It is said that houses were allowed to be erected too precipitately, with regard only to immediate convenience, with scarcely any regard to the future growth, regularity, and beauty of the city. Sites that ought to have been reserved by the government, or else laid out according to some well-arranged general plan, were left to be built upon just as people pleased, whereby houses of a very inferior class have got possession of some of the best—or what ought to have been rendered the best—parts of the town. However, as they are not of very durable or costly construction, they will probably in a few years begin to give place to others.

Among the public edifices which have been erected are the Mint, the Military Hospital, two Barracks, the Royal Stables, and the Royal Palace. It was at first proposed that the palace should be erected on the Acropolis, at its east end, and along the south side there, nearly as far as the Parthenon, and designs for the purpose were made by Schinkel, who afterwards published them in his 'Höhere Baukunst;' but the idea was abandoned, probably on account of the difficulty of forming a sufficiently commodious ascent for carriages. Accordingly, other designs for a different situation were prepared by Von Klenze, but they also were laid aside; and a third set were made by Gärtner, another very eminent Munich architect. Gärtner's designs were finally adopted, and the first stone of the new structure

was laid in March 1836, on quite a different site from either of those at first proposed, namely, on the east of the city, and at that extremity of the new Hermes Street. This, which may be considered the main street, extends through the city from east to west, and two other principal new streets, Æolus and Athene streets, run into it on its north side. The new street called Stadion Street is to the north-east of the old town.

ATHENS, a town in the State of Georgia, North-America, on the Oconee, a tributary to the Alatamaha; it is 92 miles W.N.W. of Augusta, in 33° 55′ N. lat., 83° 20′ W. long. It contains Franklin College, otherwise called the University of Georgia, which was established in 1802. The college possesses 50,000 acres of land, and a fund of 110,000 dollars in bank stock. It has a president, 9 professors or other instructors, 528 alumni, 116 students, libraries containing 19,000 volumes, a good philosophical and chemical apparatus, a cabinet of minerals, and a botanical garden. Athens is in a healthy situation, in the upper country of Georgia. It contained in 1840 a population of 3000. (*Gazetteer of the United States*, by Haskel and Smith; *American Almanac for* 1847.)

ATHENS, a small town in the State of Ohio, North America, is situated on a high peninsula formed by a bend of the Hockhocking river, a tributary to the Ohio, in 39° 21′ N. lat., 82° 4′ W. long. It is the seat of the university of Ohio, which was established in 1821. The college has funds which yield about 5000 dollars a-year. It has a president, 5 professors or other instructors, 149 alumni, 166 students, and libraries containing 2500 volumes. (*Gazetteer of the United States*, by Haskel and Smith; *American Almanac*, 1847.)

ATHERSTONE. [WARWICKSHIRE.]

ATHIAS. Rabbi Joseph Athias was a famous printer at Amsterdam, who died of the plague, A.D. 1700. Assisted by the most distinguished scholars of Amsterdam, he compared the old editions and manuscripts of the Hebrew Bible, and published A.D. 1661 a new edition, for which John Leusden wrote the summaries and a preface. The second edition of this Bible, published A.D. 1667, in two volumes octavo, received considerable corrections. The editions of the Bible published by Athias were more correct than any former editions: they nevertheless contain many inaccuracies, especially in the vowel points, and still more in the accents.

Athias printed the Bible also in Spanish, Jewish German (or that jargon mixed with Hebrew which is spoken by the Russian and Polish and some German Jews), and English. Of the English Bible he kept the types standing, and asserted that he printed and sold more than a million of copies; but this is scarcely credible, because the English Bible of Athias is rather scarce.

ATHLONE is a parliamentary borough in Ireland, situated on the Shannon, partly in the county of Westmeath and partly in that of Roscommon, 76 miles W. from Dublin, in 53° 25′ N. lat., 7° 56′ W. long. Athlone is the ordnance depôt for the west of Ireland, and is strongly fortified on the Roscommon side, has barracks for 1500 men, and contains 15,000 stand of arms. The old bridge having been too narrow to allow carriages to pass each other, a new bridge was constructed, and was opened November 9, 1844; it is a magnificent structure. The navigation of the Shannon is interrupted at Athlone by rapids, but a canal, a mile long, removes the difficulty, and the Shannon is navigable 71 miles higher up. The town is inconveniently and irregularly built, but the houses are of stone and strong. It contains 2 churches, 4 Roman Catholic chapels, a chapel belonging to the Franciscan Friary, and another belonging to the Augustinian Friary, a Presbyterian meeting-house, 2 Methodist meeting-houses, a sessions court-house, and a bridewell. A union-workhouse was opened November 22, 1841. The castle, which was erected in the reign of King John, and extended and strengthened in that of Elizabeth, forms a part of the military defences, which command the approaches to the town in all directions. The manufacture of coarse hats, formerly considerable, has declined; but a brisk trade is carried on with Limerick by steamers, and with Dublin by the Grand Canal and Royal Canal. The population in 1841 was 6393. The borough returns one member to parliament, constituency 388. (Thom's *Irish Almanac for* 1846; Fraser's *Hand-book for Ireland*.)

ATHLONE, EARL OF. [GINKELL.]

ATHOL, a district in the northern part of Perthshire, in Scotland, formerly one of the hereditary jurisdictions into which many parts of Scotland were divided. It is bounded on the N. by Badenoch in Inverness-shire; on the N.W. and W. by Lochabar, also in that county; on the S. by Breadalbane and Strathmore in Perthshire; on the E. by Forfarshire; and on the N.E. by Mar in Aberdeenshire. Its precise limits are not known, and its dimensions are variously given. In the Appendix to Sir John Sinclair's 'General Report, &c., of Scotland,' it is estimated at 450 square miles. The face of the country is very mountainous, and contains a part of the great Grampian chain; some of the mountains are of considerable height—Cairn Gowr, 3690 feet, and Scarsoch, between Athol and Badenoch, 3390. The mountains are intersected by narrow glens, watered by rapid rivulets. These, by their junction, form the rivers Edendon, Bruar, and Tilt, which fall, in the order in which their names occur, into the river Garry. This, in turn, becomes a tributary of the Tumel, which flows along the south part of the district into the Tay. The whole district of Athol is included in the basin of the Tay. [PERTHSHIRE.]

ATHOS, a mountain at the extremity of the long peninsula which projects from Chalcidice, and separates the gulfs of Contessa and Monte Santo, on the coast of Macedonia. The name Athos was given to the whole mountainous peninsula, which is joined to the mainland by the low isthmus near the site of Acanthus. (Herod. vii. 22.) The Franks now call it Monte Santo, and the Greeks call it Ayion-oros, both implying 'holy mountain,' This appellation it has obtained from the numerous monasteries, convents, chapels,

and other sacred spots scattered round its sides. The number of monks in these establishments is supposed to exceed 8000, exclusive of lay brethren, artificers, and labourers. Ayia Laura contains upwards of 600 monks. Herodotus (vii. 22) enumerates five towns within the peninsula of Athos.

Documents are still extant which show the existence of these monastic establishments in the time of Nicéphorus Phocas, A.D. 961. According to their oath, the monks devote themselves to meditation, celibacy, retirement, and poverty. Though individually poor, the fraternities are by no means so; but it is their interest to conceal their riches, in order to avert the grasping avarice of the Porte. Their wealth is chiefly derived from the oblations of pilgrims, and from the trade which is carried on with Salonica and Smyrna. This trade consists almost exclusively of fruits. The gardens of the monasteries produce both fruits and vegetables of all kinds, and are kept in the highest order, as well as the farms, called *metochi*, attached to the several monasteries.

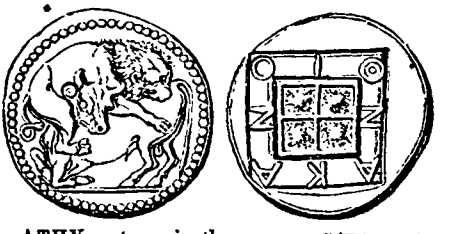
The Russians, Bulgarians, and Servians have each their respective monasteries; and caravans of from two to five hundred pilgrims arrive periodically from those countries.

On the sides of the mountain are vast forests of pines, oaks, and chestnuts. The appearance of the mountain is very magnificent, standing in lonely majesty at the termination of ridges of considerable elevation, and rising abruptly from the sea to a height of 6349 feet. The shores at its base are so steep that there is no anchorage for vessels: within a quarter of a mile of the coast there are from 80 to 100 fathoms water. The dangers of the shores of Athos were experienced by the Persian fleet under Mardonius, B.C. 492 (Herod. vi. 44), which was completely destroyed by a storm on this coast.

Although the monks are ignorant, the monasteries contain libraries among which there are said to be valuable manuscripts.

The peak of Athos is in 40° 9½′ N. lat., 24° 20′ E. long. The canal of Xerxes can still be traced across the isthmus from the Gulf of Monte Santo to the Bay of Erso in the Gulf of Contessa, with the exception of about 200 yards in the middle where the ground has no appearance of having been touched. But as the whole canal was excavated by Xerxes, B.C. 481 (Herod. vii. 37, 122, and Thucyd. iv. 109), it is probable that the central part was afterwards filled up to allow a more ready passage into and out of the peninsula. The distance across is 2500 yards, which agrees very well with the breadth of twelve stadia assigned by Herodotus. The width of the canal appears to have been about 18 or 20 feet; the level of the earth nowhere exceeds 15 feet above the sea; the soil is a light clay.

About 1½ mile to the westward of the north end of the canal is the village of Erso, which gives name to the bay, situated on an eminence overhanging the beach; this is crowned by a remarkable mound forming a small natural citadel. On the side facing the sea there is part of an ancient Hellenic wall, about 150 yards in length, and from 20 to 25 feet in height, which is probably the site of Acanthus. The great mound may be that mentioned in Herodotus (vii. 117), who says, that the Persian Artachaies, the superintendent of the canal, died while Xerxes was at Acanthus, and 'the whole army raised a mound for him.' Herodotus also says (vii. 125) that the army of Xerxes, on its march from Acanthus to Therme, was annoyed by lions, who seized the camels which carried provisions. The lion killing a bull appears on the reverse of the coin of Acanthus.



ATHY, a town in the county of Kildare in Ireland, about 40 miles S.W. of Dublin. It is on both banks of the river Barrow, which is navigable for barges from Athy downwards to Ross and Waterford. It also communicates with Dublin by a branch from the Grand Canal. Athy is alternately with Naas the assize-town for the county of Kildare. The court-house is a small building, and the county gaol is a little way out of the town. There are a church, a Roman Catholic chapel, a Methodist chapel, and several schools. The chief trade is in corn, of which a good deal is ground and used in the neighbourhood, but the greater part is sent by canal to Dublin. The population in 1841 was 4698. (Fraser's *Hand-book for Ireland.*)

ATKYNS, SIR ROBERT, a judge of the Court of Common Pleas during the reign of Charles II., and Lord Chief Baron after the revolution, was an eminent and learned lawyer, much distinguished for his attachment to popular rights, and for the uprightness and independence of his conduct during a period of judicial profligacy and subserviency. He was descended from an ancient and opulent family in Gloucestershire; and it has been remarked as a singular circumstance, that for more than 300 years consecutively some member of this family always presided in one of the superior courts of law. Sir Robert Atkyns was born in the year 1621. He received the rudiments of his education at his father's house in Gloucestershire, and was afterwards entered at Balliol College, Oxford. After spending several years at the university, he removed for the completion of his professional duties to Lincoln's Inn. He was returned to the first parliament of Charles II. for the borough of East Looe, and retained his seat till he was raised to the bench. Long before his appointment to the bench he had acquired extensive practice and a high reputation at the bar. In 1661 he was chosen recorder of Bristol, but resigned the office in 1682; and in the early part of the year 1672 he was made a judge of the Court of Common Pleas, having been

for some time before Solicitor-General to the queen. In his judicial station he maintained his general character for learning and independence, though, from his language and conduct on the trials of the Jesuit priests and other persons charged with the Popish Plot in 1679, he appears to have partaken of the delusion which pervaded the country respecting that transaction, and to have played his part in the disgraceful tragedies at that time enacted in Westminster Hall. In the year 1680, however, the conduct of the court party, who were then preparing the way by the corruption of the judges for the introduction of arbitrary measures, drove him from the bench.

On leaving the bench in the early part of the year 1680, Sir Robert Atkyns withdrew from all public occupation to his seat in Gloucestershire. It is clear, however, from his writings, that during his retirement he viewed with deep interest the political transactions of the time.

In 1683, when the memorable trial of Lord William Russell took place, some friends and relations of that unfortunate gentleman applied to Sir Robert Atkyns for his advice and direction respecting the management of his defence. With this requisition he readily complied, and furnished the accused with a detailed note of such points of law and fact as he might legally and prudently insist upon on his trial. After the revolution he published consecutively two pamphlets, entitled 'A Defence of Lord Russell's Innocency,' in which he argues against the sufficiency of the indictment and the evidence, and justifies the reversal of the attainder, with great force of language and solidity of reasoning. In the year 1689 he published a tract entitled 'The Power, Jurisdiction, and Privilege of Parliament, and the Antiquity of the House of Commons, asserted.' The occasion of this tract was the prosecution of Sir William Williams by the attorney-general, for having, as Speaker of the House of Commons, and by express order of the House, directed Dangerfield's 'Narrative' to be printed. The object of Atkyns's argument, which displays much research and great legal and historical learning, was to show that this was entirely a question of parliamentary jurisdiction, of which the Court of King's Bench ought not to take cognizance.

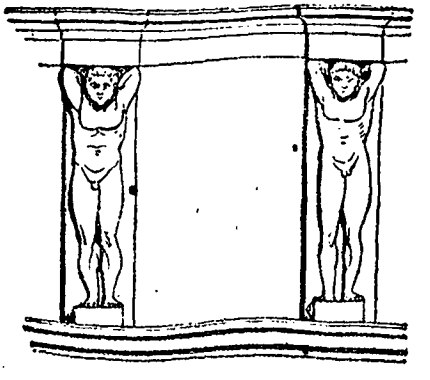
Sir Robert Atkyns was returned to the only parliament called by James II., as representative of the county of Gloucester. In the reign of James II. he composed another legal argument, the subject of which was the king's power to dispense with penal statutes, and which was suggested by the well-known case of Sir Edward Hales. In this treatise he considers at large the doctrine of the king's dispensing power. It is clearly and candidly written, and the truth of the reasoning against the royal prerogative contended for by the judges in Hales's case will hardly be denied at the present day.

Sir Robert was appointed chief baron of the Exchequer in April, 1689, Sir John Holt being at the same time made chief justice of the King's Bench, and Sir Henry Pollexfen chief justice of the Common Pleas. In the latter part of the same year he was chosen Speaker of the House of Lords, and continued to hold that office until the great seal was given to Lord Somers in 1693. During the long vacation in the following year, Sir Robert Atkyns, being then seventy-four years of age, signified his intention of finally retiring from public life, and withdrew to his seat at Saperton Hall, near Cirencester, in Gloucestershire, where he spent the remainder of his life. He died early in the year 1709, at the advanced age of eighty-eight years. In 1784 his published writings were collected into one volume, under the title of 'Parliamentary and Political Tracts.' Early in life he married Anne, daughter of Sir Thomas Dacres, of Cheshunt, in Hertfordshire, by whom he had a son, Robert, who was knighted upon a visit of Charles II. to Bristol soon after the Restoration, and who was the author of the 'History of Gloucestershire.'

ATLANTA, a genus of the *heteropodous mollusca* of Lamarack, which Cuvier places next to *carinaria*. The animal is very small, and the shell very delicate. Lamanon thought that he had discovered, in one of these shells, the original of the fossil ammonites, or *cornua Ammonis*, which, however, must have belonged to the class of *cephalopodous mollusks*, or cuttle-like animals. Atlanta inhabits the Indian seas. [GASTEROPODA.]

Lesueur describes another marine genus, *Atlas*, which must not be confounded with the above. Atlas has no shell; and Cuvier confesses his inability to class it, 'so confused,' says he, 'is the description.' De Blainville thinks that it belongs to the same family as *Gasteroptera*, and places it accordingly under *Akera*, though he confesses that it is not entirely known.

ATLANTES, is a term applied to figures or half figures of men used in the place of columns or pilasters, to sustain an entablature: they are called also Telamónes, a word of doubtful derivation. In the temple of Jupiter Olympius, at Agrigentum, restored by Mr. Cockerell, and described in Stuart's 'Athens,' vol. 4, Atlantes are represented standing upon a plinth placed on the entablature above the pilasters of the cella of the temple, and supporting with their heads and arms the entablature on which the beams of the roof were to have been placed. The Atlantes of this temple were twenty-five feet high, built in courses of stone, corresponding with the walls of the cella, and partly attached to it. The annexed cut shows the front elevation of the figures.



In the architecture of the modern Italians, Atlantes are often found supporting the entablature over an entrance to a palace or a garden. At Milan there is a colossal example of the former; and the rustic gate to the Farnese Gardens at Rome, the design of Vignola, may be adduced as an example of the latter.

ATLANTIC OCEAN is the name given to that part of the ocean which separates the old world from N. and S. America, washing the eastern shores of the Americas and the western shores of Europe and Africa. The two continents which form its shores approach nearest one another between 69° and 71° N. lat., where the coasts of Greenland are only 800 geographical miles from those of Norway. Its greatest breadth is under 30° N. lat., where the peninsula of Florida and the western coast of Morocco in Africa are separated by upwards of 3600 geographical miles. Humboldt compares the form of the Atlantic Ocean to that of a longitudinal valley, whose projecting and retiring angles correspond to one another. He supposes it to be formed by a very violent rush of the waters from the south, which, being repulsed by the mountains along the coast of Brazil, took a direction towards the coast of Africa, and formed the Gulf of Guinea; here being stopped by the high coast of Upper Guinea, and obliged to run again to the west, the stream gave origin to the Caribbean Sea and the Gulf of Mexico, and issuing thence ran between the mountains of western Europe and those of North America, until it gradually diminished in velocity and force, and at length subsided.

A remarkable and important feature of the North Atlantic is its connexion with mediterranean or interior seas of great extent. Such are the Baltic, the Mediterranean, Hudson's Bay, the Gulf of Mexico, and the Caribbean Sea. These seas doubtless form part of the Atlantic Ocean; but they cannot be considered as bays or gulfs, the connexion between them and the Atlantic being effected by narrow straits, and not by an open sea; and, besides, they extend so far into the continents, that one of them, the Mediterranean Sea, affords by itself a navigation of 3000 geographical miles. This peculiarity in its form brings the Atlantic Ocean and its appendages into immediate contact with a much greater extent of country than the other seas that wash both continents. We accordingly find that the continental shores of the Atlantic exceed in extent those of the Pacific Ocean and the Indian Sea, the two other great divisions of the ocean, taken together, though the latter cover at least three times the surface of the former. The Atlantic and its seas together wash nearly 50,000 miles of coast.

No first-class river flows into the Atlantic from Europe or Africa, the Rhine, the Danube, the Dnieper, and the Nile being of the second class. Of Africa, about one-half the surface is supposed to be drained by rivers which, directly or indirectly, flow into the Atlantic. But, on the American side, the Atlantic rivers are on the grandest scale; including the Amazon, the Plata, the Orinoco, the Mississippi, the St. Lawrence, and their numerous tributaries. It is calculated that the areas of country drained by rivers which flow into the Atlantic and its seas are six millions in America, six millions in Africa, three millions in Europe, and half a million in Asia.

If we except the chain of islands which separates the Gulf of Mexico and the Caribbean Sea from the Atlantic, and which therefore are to be considered as forming part of its shores, the Atlantic can hardly be said to contain any large group of islands between 50° N. lat. and 50° S. lat. The groups of the Azores, Canaries, and Cape de Verde Islands, as well as those of Guinea and the Bermudas, are small, and present few difficulties to navigators.

With respect to the *winds*, the whole surface of the Atlantic Ocean may be divided into three regions, in one of which the winds maintain a constant course from east to west, and have obtained the name of *trade-winds*. This region extends to about 30° of lat. on both sides of the equator. The other two regions, to the north and south of the thirtieth parallel in both hemispheres, are subject to a continual change of the winds, and are therefore called the regions of variable winds.

In the eastern part of the region of the trade-winds, these winds blow, on the north side of the equator, from north-east; and on the south, from south or south-west. If they continued in these directions, they would of course meet one another, but this is not the case: both trade winds are separated from one another by the *region of calms*. This region is not always of the same extent, and does not occupy the same part of the ocean, though it always extends over the whole of it from the coasts of Africa to those of America. It sometimes occupies not much more than two, and at other seasons up to ten degrees of latitude, and it is always wider on the north than on the south side of the equator. This calm would oppose an insuperable obstacle to the progress of vessels, if the water was not daily agitated by a squall. At noon, a black and well-defined cloud appears towards the east, which seems to announce a violent thunder-storm; suddenly a wind rises, blows with great violence for a few minutes, sends down a few drops of rain, and immediately the calm returns. It is only by means of these daily squalls that the region of calms can be passed by vessels, but it always proves a very disagreeable navigation.

The trade-winds extend on the American coast to an average latitude of about 30°; while on the African coast the average is about 28°. The direction of the trade-winds changes with their progress from east to west. Near the old continent, and north of the equator, the direction is from north-east, or nearly so, but farther off it declines more to the east, so that in the middle of the ocean it is east a quarter north, and on the coasts of America it blows from due east. No navigation is more pleasant than that with the trade-winds. They are rather a breeze than a wind, and their blowing is uniform, constant, and not interrupted by squalls. The waves raised by them are low, and their swell is gentle. Between the twentieth and thirtieth degrees of north latitude, sometimes

violent north-western winds prevail. For that reason, vessels bound for the West Indies or South America sail along the old continent till they attain the twenty-first parallel, when they turn to the west. The southern trade-wind is more regular, and always preserves its direction, and it is also less boisterous towards its southern boundary.

The trade-winds do not begin to blow on the coast of the continents, but only at a considerable distance from them. Thus between Africa and the Canaries, and Cape de Verde Islands, there is a west wind, owing to the heat of the continent near the Sahara Desert; while in the region of calms the winds near the shore have the periodical character of the monsoons. On the American side the trade-winds north of the equator do not undergo any change along the coast; but along the coast of Brazil they partake of the character of monsoons.

These are the winds which blow on both sides of the equator to 30° lat. To the north and south of this region the winds are variable; but it is observed that westerly winds prevail in both hemispheres; and, according to the computation of Major Rennell, the proportion between those that blow from the west to those from the east, is as 9 to 5½ in the northern hemisphere. Besides being variable in direction, they vary likewise extremely in the degree of force with which they blow.

The *currents* of the Atlantic are less important than the winds; but still they contribute considerably to accelerate or retard navigation, and on that account deserve the greatest attention. Besides the tides, two kinds of motion are to be distinguished in the sea, which we shall name with Major Rennell the *drift-currents* and the *stream-currents*.

The *drift-currents* owe their origin to the effects produced on the surface of the sea by the perpetual or prevailing winds; the former, even where they do not blow with great force, by their uninterrupted continuance displace and push forward the upper strata of the water, and thus produce a motion towards the region to which they blow. These drift-currents are constant, and run always in the same direction and commonly with pretty equal velocity. The drift-currents produced by the prevalent winds are not so constant and do not always run in the same direction nor with the same velocity. Where the calms prevail, the drift-current is hardly observable; where the trade-winds prevail, the drift-current has a mean velocity of 9 or 10 miles a day; and where the prevalent westerly winds act, the current is slightly perceptible.

It is easy to conceive that the drift-currents, especially the permanent, are very favourable to navigation, by rendering the voyages to some countries more easy, more certain, and less dangerous. But the *stream-currents* are much less so. Up to the present time they have commonly proved adverse, causing great loss of life and property, and forcing vessels out of their course. The causes to which they owe their origin are still involved in obscurity. There are some facts which lead to the opinion that the stream-currents are of great depth, and in many parts, if not in all, extend to the bottom of the sea.

Two large stream-currents traverse the Atlantic Ocean; the *Equatorial Current*, running from the coast of Africa to that of South America, and the *Gulf Stream*, flowing from North America to the shores of Europe.

The *Equatorial Current* may be supposed to be formed in the Bay of Benin. Hence it proceeds to the west on both sides of the equator, as far as 22° W. long., where it sends off a branch to the north-west. Soon afterwards it declines somewhat to the south, and runs in this direction towards the two capes of St. Augustin and St. Roque, on the Brazilian coast. At the distance of about 300 sea miles from these capes, it divides into two currents; the northern, running along the shores of Guiana, and hence deriving the name of *Guiana Current*, enters the Caribbean Sea by the straits which separate the Leeward Islands, lying to the south of Martinique, from each other and from the continent of South America; and in some measure in this sea it may be supposed to terminate its course. The *Brazil Current*, or the other branch of the equatorial current, runs to the south-west along the shores of Brazil, to the mouth of the Plata River, and may even be traced to the Straits of Magalhaens and of Le Maire. The breadth of the current is different in different parts, varying from 160 to 450 miles. The velocity also varies, both as to places and to seasons; it is greater in summer than in winter, and sometimes reaches 80 miles a day. The temperature of the water is less than that of the ocean generally, varying from 73° to 76° Fahr. This current greatly affects the course of vessels which are obliged to cross it, and creates great delays to those who, passing from the north to the south, traverse the equator west of the 23° of long., carrying them forcibly to the west beyond Cape St. Roque, where they are driven towards the northern shores of Brazil, and are not able to regain their course till after weeks, and even months, of toilsome labour.

That branch of the equatorial current which separates from it between 22° and 23° W. long., and at about 2½° N. lat., is rather favourable to navigation, by forwarding the course of vessels returning from the southern hemisphere. Its general direction is north-west: its breadth varies from 180 to 240 miles; and its velocity reaches in some places 24 miles a day. The *Guiana Current* is of considerable breadth; and its velocity is much increased by the Amazon and the Orinoco, whose waters flow into it. The *Brazil Current* has a velocity of 15 to 30 miles a day; it seldom approaches nearer than 200 miles from the shores of America; and between it and the shore are variable currents.

The most remarkable, and at the same time the best known of the Atlantic currents, is the *Gulf Stream*, which traverses the sea between 36° and 44° N. lat. Its origin is in the Gulf of Mexico, where the warm water which enters it from the Caribbean Sea, between Cape Catoche and Cape St. Antonio, by being subjected to a nearly cir-

cular rotation, and influenced probably by other causes still unknown, is raised to a high degree of temperature, the thermometer indicating 86°, while under the same parallel (25° *N.* lat.) the ocean only shows 78°. Two currents, which put in motion perhaps three-fourths of the waters of the Gulf of Mexico, unite about 60 nautical miles to the westward of Havanna, between the bank of Isabella on the side of Cuba, and the Tortugas on that of Florida Reefs; and this union gives rise to the Gulf Stream. The stream passes along the shores of Cuba; through the Straits of Florida; along the shores of Georgia and Carolina; bends round gradually to the north-east, almost touching the Bank of Newfoundland; and, after assuming an eastern and a south-eastern direction, loses itself in the ocean near the Azores. The current itself does not much exceed 100 miles in breadth; but the warmth of the water in some places extends 300 miles. At the commencement its velocity is very small; but in some places it reaches the amount of 120 miles per day, or 5 miles per hour. The temperature, throughout its whole course, is from 8° to 12° Fahr. above that of the ocean in corresponding latitudes.

The whole course of the Gulf Stream amounts to upwards of 3000 nautical miles; and the water traverses this distance in about eleven weeks. The stream forms a vast expanse of warm water in the centre of the North Atlantic; and it cannot be questioned that it must have a great effect on the surrounding sea and the adjacent countries. This point, however, has not yet been fully elucidated. It is only ascertained that the region of the Gulf Stream, more than any other part of the ocean, is subject to very violent storms. Farther, it is not improbable that the mild climate by which the countries along the coast of the Atlantic Ocean are so favourably distinguished from those farther inland, is mainly due to the vicinity of this warm current.

The Gulf Stream greatly affects the navigation of the Atlantic Ocean. Vessels bound from Europe to North America avoid it as much as possible, because it would create a delay of at least a fortnight if they were to stem it. They therefore either sail to the south or to the north of it, commonly the latter, their course being accelerated as soon as they approach the continent of North America by the counter-currents which run between the Gulf Stream and the coast. The Gulf Stream is now avoided even by vessels returning from the West Indies and the Gulf of Mexico, though by following its course they arrive four or five days sooner in Europe than those which avoid it. But it has been found by experience that such vessels suffer a damage in wear and tear which is greater than can be compensated by the gain of a few days.

Besides the Gulf Stream, two other currents in the North Atlantic deserve notice, the Arctic Current, and the North African or Guinea Current. The *Arctic Current*, which seems to originate in the extensive masses of ice which surround the North Pole, runs down along the eastern shores of Greenland, whence it carries numerous ice-fields to the south-westward. These masses, along the coast of Greenland, are found extending from 250 to 300 miles from the shore into the open sea, and mark, as it were, the breadth of the current, which fills with them the strait that divides Iceland from Greenland, and carries them to Cape Farewell, the most southern extremity of Greenland. The current then passes along the Labrador coast, and joins the Gulf Stream near Newfoundland. Its velocity is from 8 to 16 miles a day; and its temperature is 12° or 16° Fahr. below that of the ocean generally.

The *North African* or *Guinea Current* has its origin in the sea between the southern coast of Ireland and Cape Finisterre in Spain; and from thence to the coast of Africa the water has a direction of movement varying from S. to S.E. and sometimes almost due E. This current along the coasts of the Sahara, united to the westerly wind which continually blows in this sea, renders it extremely dangerous to the unwary navigator, and has been the cause of numerous shipwrecks. At the Cape Verde Islands it turns slowly round towards the S., and afterwards towards the S.E. and E.S.E., influenced by the form of the coast of Africa. Between Cape Verde and Cape Mesurado, the distance of the current from the shore is about 200 nautical miles, and this space is occupied by periodical currents. Having passed Cape Mesurado, the current sets due E., and becomes finally dissipated in the Gulf of Guinea. One branch of the Guinea Current, which separates from * near its origin, sweeps completely round the portion of sea between Spain, France, and England, and renders the Bay of Biscay very dangerous to mariners.

The temperature of the Atlantic is a good deal influenced by the masses of ice which float from the Polar regions towards the equator. These masses, split up by the short summer heat, travel in smaller portions (in the northern hemisphere) as far south as Newfoundland; and when the next winter's cold freezes them together they form a sort of icy ridge or reef, extending in a waving but almost unbroken line from Newfoundland, past Greenland and Iceland, to Spitzbergen and Nova Zembla. There are very few pervious passages across this icy reef until the month of June; but when the passage is made, open sea is met with beyond; and the whale-fishers and seal-fishers call the season an 'open' or a 'close' one, according to the ease with which they can break across this barrier. The ice met with in the sea between Greenland and Spitzbergen consists commonly of *ice-fields*, or pieces of a single sheet, with its surface raised in general four or six feet above the level of the sea, and its base depressed to the depth of from ten to twenty feet beneath. But the deficiency in elevation is sufficiently compensated by the amazing extent in surface, some of these ice-fields being many leagues in length, and covering an area of several hundred square miles. *Ice-islands*, or *ice-bergs*, are also found; but they are neither so numerous nor so bulky as those of Baffin's Bay, where they attain an immense size: one which was measured by Parry was aground in sixty-one fathoms: it was 4169 yards long, 3689 yards broad, and

51 feet high; its weight was calculated to amount to upwards of 1000 million tons!

In the southern hemisphere the ice does not advance to such low latitudes in any part of the sea. But the recent discoveries in that quarter will come more fittingly for notice under POLAR REGIONS, SOUTH.

It may be considered as a peculiarity of the Atlantic Ocean, that a considerable part of its surface is covered with *sargasso*, or gulf-weed, *fucus natans*. The region of this weed extends nearly across the whole ocean, beginning on the east at the 30th meridian, and extending on the west to the Bahama Islands. Its northern limit may be placed at 36° N. lat., and its southern at 19° N. lat. The whole region, however, is not equally crowded with weed, the greatest quantities being met with at the eastern and western extremities. The quantity of the weed is really astonishing. It covers, like a mantle, the surface of the sea, and extends for more than 1200 miles from north to south. It is observed that the greatest mass of this weed is found at that part of the Atlantic where the Gulf Stream terminates. Much of this weed is brought down by the Gulf Stream from the Sea of Mexico; but the quantity is so great, that it is reasonably supposed that most of it must be produced in the Atlantic itself at the bottom of the sea.

It is a known fact that the water of the Atlantic Ocean, in different parts, contains different quantities of salt; and that the specific gravity is less near the poles than near the equator. There is a considerable difference between the specific gravity of the water of the Baltic and Mediterranean seas and the ocean. That of the Baltic contains only one-sixth of the salt which is found dissolved in the ocean, its specific gravity being on an average not more than 1·0049. The Mediterranean Sea contains somewhat more salt than the ocean; to the east of the Straits of Gibraltar, the specific gravity of the sea-water is 1·0338; whilst between Cape St. Vincent and Cape Cantin it was only found to be 1·0294.

(Humboldt's *Travels;* Rennell's *Investigation of the Currents in the Atlantic Ocean; Account of the Arctic Regions by* Scoresby; *Voyages of* Cook, Parry, Scoresby, Weddell, Back, Fitzroy, Biscoe, John and James Ross, &c.)

ATLAS is the historical and geographical name of an extensive mountain-system, which covers, with its ranges, branches, and table-lands, the north-western part of Africa. Its southern boundary lies between 27° and 32° N. lat., from Cape Nun on the Atlantic Ocean to the Gulf of Cabes, or the Little Syrtis, opposite the island of Jerbi; the northern is formed by the southern coast of the Mediterranean Sea, between Cape Spartel at the Straits of Gibraltar and Cape Bon, lying E.N.E. of the town of Tunis. The coast formed by its offsets and terraces along the Atlantic Ocean extends upwards of 600 geographical miles, and is partly low and sandy, and partly rocky, but does not rise to a great height, except at Cape Geer and a few isolated places of small extent. The coast along the Mediterranean between Cape Spartel and Cape Bon is generally rocky and high; in many places the elevation is very great, and it continues for a considerable extent. The southern boundary is separated by low sandy hills from the great Sahara Desert.

The Atlas system covering half a million of square miles, and inclosing the countries of Fez, Marocco, Algiers, and Tunis, consists of mountain-ranges, valleys, and plains. The chief range has a general direction of W.S.W. to E.N.E.; it contains the highest of the Atlas summits, and gives origin to many large rivers. Up to the boundary between Marocco and Algiers, this principal range is often called the Greater Atlas; while further eastward it is known as the Little or Lesser Atlas. Various portions of the range are distinguished as the Wannashreese, the Jurjura, the Wannougah, the I-aite, the Aturess, and the Tipara Mountains. It is supposed that some of these mountains attain an elevation of 14,000 or 15,000 feet.

The best known of the lateral chains is that which may be considered as the western continuation of the Lesser Atlas: it probably separates from the principal range where it enters the Desert of Angad, and runs along the shores of the Mediterranean Sea at a distance of about thirty miles, and even less. It terminates opposite to Gibraltar in the bold Cape of Ceuta, called by the natives Jebel d'Azute ('mountain of monkeys'), and in Cape Spartel. The other lateral branches are very numerous; and among them the rivers Shellif, Seibouse, and Mejerda take their rise; while the Morbeya, the Mulüia, the Draha, and the Tafilelt, rise in the main range.

The Atlas does not exhibit pointed peaks, or narrow and sharp edges, but its form every where shows a decided tendency to extensive table-lands, broad ridges, and rounded summits. On each side of its declivity the range supports two, three, or more table-lands, at different elevations above the level of the sea, and separated from one another by rather steep slopes. The summit of the range, however, is formed by great masses of rock which are generally inaccessible, or nearly so; in many places they rise perpendicularly. In a few places these masses are rent asunder by long and narrow crevices, through which the mountain-passes lead from one side to the other.

As the Atlas Mountains, in some places, rise above the line of perpetual congelation, and in many others approach this line; and as, at the same time, the southern declivity is turned towards, and is as it were contiguous to, the Great African Desert, where the greatest quantity of heat is developed on the surface of the globe, it is of course to be presumed that on the sides of the Atlas the greatest extremes and variations of temperature occur. On the low plains at the southern foot of the mountains, and within its lower ranges, the date palms cover extensive tracts; the higher lands abound in gum trees, almonds, olives, and other productions of the hotter countries; the lower table-lands produce apples, pears, cherries, walnuts, apricots, and other fruits, common to the southern countries of Europe; and, proceeding higher up the ranges, the plains are covered with vines of an immense size, with a species of oak,

called the *belute*, with ferns, elms, mountain-ash, and several species of juniper. Higher up, large forests of firs form the principal vegetation.

Rich mines of different kinds exist in that lateral range which separates the province of Suse from the countries on the river Draha; it abounds especially in iron, copper, and lead. Ketewa, a district east of Tarudant, contains rich mines of lead and brimstone; and saltpetre of a superior quality abounds in the neighbourhood of Tarudant itself. Other mines of iron, copper, antimony, lead, and a little silver and gold, are met with in various parts. Salt and sulphur are also found.

The countries to the south of the principal range, and west of the meridian of London, may be divided into two regions, one of which contains the provinces of Tafilelt and Draha, and the other Suse. The first belongs to that region which is called Biledulgerid, or, with more propriety, Beled el Jereed ('land of dates') and extends along the southern declivity of the whole system. It consists of gently inclined plains, which spread to the foot of the mountains, but do not produce anything adapted to the maintenance of human life: it is only on the banks of the few rivers, whose water is strongly impregnated with salt, and which lose themselves in the sands of the Sahara, that large groves of date-palms are planted; the fruit of the date, with camels, horses, and cattle, are the sole wealth of the few inhabitants of this region. The province of Suse is divided from that of Draha by a range of mountains, and displays quite a different character. It is well watered, and abounds in every sort of agricultural produce, and especially in different kinds of fruits. The country at the north-west extremity of Africa is mostly a plain or elevated table-land.

The countries to the east of the principal chain display a much greater diversity in their nature. They may be divided into two parts, the Tell, and the Beled el Jereed. The Tell comprehends all the countries which are watered by the rivers falling into the Mediterranean. Its northern half is occupied by the high lands of the Lesser Atlas, and presents only a succession of mountains, declivities, and narrow valleys, with few plains of any considerable extent; but to the south of the Lesser Atlas, and between it and the mountains in which the large rivers take their origin, the country extends in large level plains along both sides of the rivers; these plains abound in every produce of agriculture and horticulture. The Beled el Jereed consists of a succession of completely closed valleys, with a temporary or permanent lake in their hollows—the receptacle of the waters that flow down from the adjacent mountains. One of these, the Sabkhat al Audinh, is twenty miles long, and six broad; yet it is not altogether a collection of water, there being several dry tracts interspersed all over it, which look like so many islands. In the dry season the water entirely disappears, and the bottom of the lake is passed by the caravans, for the direction of which palm-trunks are planted at certain distances, because the ground contains many dangerous pits and numerous quicksands. A second closed valley, the Melgigg, is filled by an extensive sheet of water in the rainy season; but in the dry season it is a plain covered with salt, and containing many pits and quicksands. A third valley, that of Shatt, is very like the second; and there are others of a somewhat similar character. Southward of these lies a long valley near the foot of the Greater Atlas; no river traverses it; but by digging wells to the depth of a hundred, and sometimes two hundred fathoms, a plentiful stream is always found.

The name *Atlas* first appears in the writings of the early Greeks, who were acquainted with the general fact of the existence of a mountainous region in the north-west portion of the African continent. In these western regions the fables of the Greeks placed Atlas, the brother of Prometheus, bearing the heavens on his shoulders. (Æsch. 'Prom.' 348.) From the name of this mountain-region came the name of the adjoining or Atlantic Ocean. The native name of these mountains, according to Pliny (v. i.) and Strabo, was Duris. The Romans probably knew more about the country than we yet do, for they colonized many parts of it which these mountains and their branches occupy. As far as we can collect, it was only the highest and western part, in the kingdom of Marocco, to which they applied the term Atlas; and they do not seem to have extended the name to the high lands to the east so far as we now do.

(*Travels* by Shaw and Jackson; *Geographical Notice of the Empire of Marocco*, by Washington, in Jour. Geog. Soc. vol. i.)

ATLAS, the first vertebra of the neck, so named because it sustains the globe of the head. It differs in several important circumstances from all the other vertebræ that enter into the composition of the spinal column, because it has distinct and peculiar offices to perform. It has to support the head, and to allow it the power of exercising two different kinds of motion, viz. a motion forwards and backwards, or that of flexion and extension; and a rotatory motion, or the power of describing a certain portion of a circle, as it does when it turns from side to side. These motions are accomplished by the peculiar mode in which the head is connected to the atlas, and the atlas to the second vertebra of the neck, the *vertebra dentata* or *axis*. The head is so united with the atlas as to form a perfect hinge joint, that is, a joint which admits of flexion and extension, or a motion forwards and backwards. The second vertebra, the dentata, forming a pivot on which the atlas turns, and therefore called axis, is united with the atlas in such a manner as to constitute a perfect rotation joint, or a joint which admits of a rotatory motion. The head being firmly connected with the atlas and carried round with it whenever the latter turns upon its axis, it is plain that by the combination of the two joints, namely, the hinge joint and the rotation joint, the head can be moved in every direction, forwards, backwards, and from side to side.

ATLAS, a collection of maps in a volume or volumes. The derivation of the term is doubtful. Johnson says that it is supposed to be so called from a figure of Atlas supporting the globe

prefixed to some such collection. Boucher, in his 'Glossary,' is disposed to derive the word from the German *atlass*, 'satin,' the paper on which maps are printed being smooth and satin-like; and a large kind of paper, commonly used as drawing paper, is still called atlas paper.

ATMOMETER, an instrument employed to measure the quantity of exhalation from a humid surface in a given time. The instrument to which the name is usually applied is one invented by Professor Leslie, consisting of a very thin ball of porous earthenware, two or three inches in diameter, to which is cemented a long tube of glass, marked by a diamond with divisions, each of which is capable of containing as much liquid as would, if spread over the outer surface of the ball, cover it with a film equal in thickness to the $\frac{1}{1000}$th part of an inch. The open end of the tube is fitted with a brass cap and a leather collar; and when in use the instrument is filled with distilled or boiled water, and suspended vertically with the ball downwards, the end of the tube being perfectly closed with the cap and collar. The water then percolates through the porous ball precisely in proportion to the evaporation from its outer surface, of which its waste in the tube forms an accurate indication. The vacuous space above the water in the tube becomes, during the operation, gradually filled with air which enters through the porous ball. When the tube becomes empty, the cap is removed to refill it. This instrument is not only useful in meteorological observations, but is also capable of being applied with advantage in chemical operations, and in the application of science to agriculture.

ATMOSPHERE, from the Greek, *ἀτμὸς*, and *σφαῖρα*, *sphere of vapour*, is the whole body of air or other mixture of gases which envelopes a planet. We shall here devote ourselves exclusively to that which surrounds the earth, merely observing, that we have more or less reason to suppose that there are atmospheres, in density comparable to that of the earth, which envelop the Sun, Venus, Mars, Jupiter, and Saturn; and none for the Moon.

The subject of the atmosphere, treated in all its extent, would lead us much too far; we shall therefore confine ourselves to the description of its average state.

The atmosphere, in its average state, must be considered as a body of air revolving with the earth. This gives its several strata an increasing velocity as we recede from the earth's axis. For instance, at the equator, the air (if any) which is twice as distant from the centre of the earth as the surface, must revolve with twice the actual velocity of the air at the surface. This consideration shows positively that the atmosphere which really accompanies and revolves with the earth cannot certainly extend, in the smallest quantity, above 20,000 miles from the surface. For at that height the tendency to recede from the centre, known by the name of centrifugal force, would counterbalance the weight, or tendency of particles towards the earth, and at higher distances would overcome it entirely.

But we are not therefore to conclude that there must be air, more or less, *revolving with the earth*, up to so great a height. Forty or fifty miles is supposed to be the limit which it attains.

If there be air throughout the universe, we are obliged to suppose that every planet would collect an atmosphere around itself, proportionate to its attracting power. In this case, we know that Jupiter, at whose surface the force of gravity must be much greater than at that of our earth, would collect a powerful atmosphere around him. The effect of the refraction of light through this atmosphere would become visible in the approach of the satellites to the planet, when they disappear behind his disc, and would cause a sensible retardation in their rate of approach. No such retardation can be observed in the smallest degree, and therefore Jupiter has no such atmosphere; consequently, air, such as we have at the earth, is not diffused in any degree of rarefaction through the whole solar system. Dr. Wollaston argues that this finite character of the atmosphere is more conformable to the atomic theory than to that of the infinite divisibility of matter, since, in the first case, a boundary is possible, and will exist at the point where the weight of a single atom is as great as the repulsive force of the medium; while in the latter case it is difficult to see the possibility of any boundary.

There is no inconsistency in the supposition of a finite atmosphere. But a very strong presumption in favour of such an hypothesis is derived from the rapid decrease of temperature which takes place as we recede from the surface of the earth. The law of this decrease is entirely unknown to us; at least we cannot even guess at the form it assumes in the higher regions of the mass of air. To this circumstance it is owing that all we can say upon those regions must be little more than speculation. Near the earth, even at great elevations above the level of the sea, we cannot say that observed temperatures correctly represent the law of the atmosphere; for example, we cannot say that the average temperature of Quito, which is more than 9000 feet above the sea-level, is the average temperature of the air 9000 feet above *and over* the sea. The only observation worthy of any confidence is that of Gay-Lussac, taken during his celebrated ascent, at a height of 6980 metres, or 7634 yards above the sea-level. The difference of temperature between air at the surface and at the height just mentioned was 40¼° of the centigrade thermometer, or nearly 72½° of Fahrenheit. This, if the decrease of temperature be uniform, gives a diminution of 1° of Fahrenheit for every 105 yards, or of 1° centigrade for every 173 metres of elevation.

The following table was deduced by Humboldt from various observations. It will serve to show how far the temperatures of elevated regions on the earth agree with those of the same height in the atmosphere, as deduced from the preceding. The first column is the height of the land above the level of the sea (in metres); the second, the mean temperature (centigrade) at and near the equator; the third, the same in about 45° of latitude. The thermometer used is the centigrade;

(+) means above, and (—) below, the freezing point:

Elevation in Metres.	Equator. Mean Temp. Centig.	Lat. 45°. Mean Temp. Centig.
0	+ 27° .5	+ 12° .0
974	+ 21° .8	+ 5° .0
1949	+ 18° .4	— 0° .2
2923	+ 14° .3	— 4° .8
3900	+ 7° .0	
4872	+ 1° .5	

From the preceding table, it appears that at the equator, on the average of 4872 metres, a rise of 187 metres gives a fall of 1° centigrade. But the fall is more rapid in the higher regions than in the lower. From 0 to 1949 metres of elevation, an elevation of 214^m produces a fall of 1°; but from 2923^m to 4872^m, an elevation of 152^m does the same.

The argument in favour of the finite extent of the atmosphere, derived from the preceding, is as follows. If we suppose an elevation of 200 yards to produce a fall of 1° of Fahrenheit's thermometer (which, as we have seen, is likely to fall short of the truth, that is, to give the higher regions of the atmosphere a higher temperature than they really have), it follows that, at a height of forty miles above the level of the sea, the temperature of the air must be 350° of Fahrenheit below that of the sea, or certainly more than 300° below the freezing point. There is the strongest reason to suppose that no gas we know of would preserve its gaseous state at this low temperature, but would become liquid.

The average pressure of the atmosphere is found to be the same, or very nearly so, at any one place from year to year, notwithstanding the various temporary alterations arising from meteorological causes. But it is not yet accurately determined in a sufficient number of places to settle the question, whether it is the same at the level of the sea throughout the globe or not. Indeed, it is obvious that it must always be difficult to decide whether an observed difference in the mean height of the barometer at two places on land arises from difference of level, or from the atmosphere itself. The mean height of the barometer in London is stated at 29.88 inches; at Paris, where it has been determined with great accuracy, it is 756 millimetres, or 29.77 inches.

As we advance higher in the atmosphere, the barometer falls; and the quantity of the fall is used to ascertain the height ascended. In order to construct the formula, it is necessary to take into account the diminution of the weight of the air, not only from its rarefaction, but also from its increasing distance from the earth,—the variation of elastic force, as well from rarefaction as from change of temperature,—the alteration of density in the mercury itself, arising from the alteration of temperature,—and to use the formula in different latitudes, the variation of the force of gravity on the earth's surface. In our ignorance of the variation of the temperature, it is usual to allow to the whole column of air contained between the points of observation, the average temperature of its upper and lower extremities. This is the most doubtful part of the process; and, as a verification, recourse is had to the comparison of heights measured by the barometer, and also by the processes of trigonometry. It is thus found that a co-efficient which, when deduced from theory alone, is 18337.46, appears from a number of heights measured trigonometrically to be 18336, differing from the former only by about its 18,000th part. This shows the effect of temperature to be sufficiently well taken into account, for such heights as we can measure, by the preceding supposition.

In the article AIR it is stated that its component parts are not united chemically, but only mixed. A law is found to prevail in the mixture of gases and vapours, that two gases in a state of mixture exercise no influence one upon the other, except communication of temperature, but that each is disposed in exactly the same manner as it would be if the other were not present. Thus it is found, entirely contrary to all previous notions, that no pressure of dry air upon water exerts the least influence in preventing the formation of steam, which goes on exactly as if the space above were a vacuum, and continues until further evaporation is stopped by the pressure of the *steam already created*. It is found that no pressure of one gas can confine another in water; but that supposing a bottle partly full of water, the gas confined in the water will escape to the surface and distribute itself in precisely the same way as if the other gas were not present. By this it is not meant that the action commonly called mechanical cannot take place, or that a stream of hydrogen would not trouble the air; but only that the permanent settlement of one gas is not affected in any way by the presence of another, so long as no *chemical* action is excited. From this principle, Mr. Dalton ('Phil. Trans.' 1826), taking into consideration the presumptions which exist against the *chemical* union of the ingredients of the atmosphere, infers that the atmosphere does not consist altogether of the compound called air, but that the nitrogen atmosphere is higher than the oxygen atmosphere. In fact, if there be no chemical union, the above law of the mixture of gases requires us to allow that each is an atmosphere independent of the other, and that the two are most probably of unequal heights. From some considerations, into which we cannot here enter, Mr. Dalton thinks that the actual pressures exerted by the oxygen and nitrogen are in the proportions of the *volumes* occupied by them, that is as 1 to 4; and concludes that the oxygen atmosphere extends to 38 miles in height, that of nitrogen to 54 miles, that of carbonic acid to 10 miles, and that of aqueous vapour to 50 miles. It must, however, be observed, that the state of the carbonic acid of the atmosphere is very variable; that there is not the same quantity by night as by day, in moist weather as in dry; and that the higher strata of the atmosphere contain more of it than the lower, which may arise from rapid absorption by the earth.

Against the hypothesis just described, it might perhaps be asserted that the air which Gay-Lussac brought down from a height of more than four miles was not found to differ from that of the

earth's surface in the proportion of its oxygen to its nitrogen, which would be the case if the oxygen atmosphere diminished in density more than in proportion to the diminution of that of the nitrogen, or *vice versâ*. We do not know whether the experiment of M. Gay-Lussac was made, or even intended to be made, with that degree of accuracy which would justify its being considered a test of Mr. Dalton's theory; but in any case it is an experiment which it is very desirable to repeat.

The total quantity of the atmosphere (if the mean height of the barometer at Paris holds good for all other places) is a little less than the millionth part of the whole mass of the earth, supposing the mean density of the latter to be five and a half times that of water.

ATMOSPHERIC RAILWAY. [RAILWAY.]

ATOLL is a name given by the natives of the Maldive Islands to the detached coral formations of which their Archipelago is composed. [ARCHIPELAGO, MALDIVE.]

ATOM, or ATOMS (*ἄτομοι*), the ultimate and indivisible particles of matter, from a Greek compound, signifying *indivisible*. Anaxagoras taught that the elements of matter are infinite in number and minuteness. He did not therefore adopt an atomic theory, which supposes the ultimate atoms of every compound to be of a definite size, however small.

Leucippus, a philosopher of Abdera, who flourished soon after Anaxagoras, is generally regarded as the original propounder of what has been called the atomic philosophy. It was adopted by Democritus, in his 'Cosmogony;' and afterwards by Epicurus, to whom its celebrity is chiefly owing. The general bearings of this theory, as illustrated in Dr. Good's 'Book of Nature,' are as follow:—Matter and space existed from eternity. Matter is formed of minute atoms, solid and indivisible, the shape of the atoms varying in different species of matter, and each species having certain intrinsic powers of motion which produced the phenomena of the universe. Infinite groups of these atoms, flying through space by virtue of their intrinsic motions, and meeting each other, have, by their varied forces and qualities, combined to form the various solids, liquids, and vapours of which the world consists. No physical substances are permanent, for there are fresh tides of atoms always approaching to replace those which fly off. 'Space is infinite, material atoms are infinite, but the world is not infinite. This, then, is not the only world, nor the only material system that exists. The cause that has produced this visible system is competent to produce others: it has been acting perpetually from all eternity; and there are other worlds, and other systems of worlds, existing around us.' [ANAXAGORAS; LEUCIPPUS.]

During the most flourishing periods of the Greek philosophy, this doctrine of matter consisting of an assemblage of indivisible particles seems to have kept its ground under various modifications. Newton's opinions were as follow:—'All things considered, it seems probable that God in the beginning formed matter in solid, massy, hard, impenetrable, movable particles, of such sizes, figures, and with such other properties, and in such proportion to space, as most conduced to the end for which he formed them; and that these primitive particles, being solids, are incomparably harder than any porous bodies compounded of them; even so very hard as never to wear or break to pieces; no ordinary power being able to divide what God himself made one in the first creation.'

ATOMIC THEORY, in chemistry, sometimes termed the *doctrine of definite proportions*. This very important theory, founded on well-ascertained facts, has bestowed on modern chemistry an almost mathematical degree of precision. The theory, which is to be distinguished from the experimental part of the subject, supposes that chemical compounds result from the combination of the ultimate atoms of their constituent parts. 'It has been determined by experiment, and the fact serves as the basis of the theory, that a compound body, when pure, always contains the same proportions of its constituents: thus calcareous spar, and the pure part of marble, chalk, and limestone, consist of carbonate of lime, composed of uniform proportions of carbonic acid and lime; the carbonic acid always contains uniform quantities of carbon and oxygen, and the lime uniform proportions of calcium and oxygen. The same law also exists with regard to all similarly-constituted oxides, sulphurets, and salts, and indeed as to all chemical compounds whatever, whether presented to us by nature or formed by art. This is a simple statement of the fundamental facts upon which the superstructure of the atomic theory has been raised.

The earliest experiments which could have served as a basis for the atomic theory are those of Wenzel, a German chemist, who published, in 1777, a work 'On the Affinities of Bodies;' the experiments detailed in it, though neglected at the time, are now acknowledged to possess a very considerable degree of accuracy. The author showed that, when any two neutral salts decomposed each other, the resulting new compounds were exactly neutral. In 1786 Dr. Bryan Higgins published a 'Treatise on Acids and Air,' in which he contended that elastic fluids unite with each other in limited proportions only, that their atoms are surrounded by an atmosphere of fire, which makes them repulsive of each other. A relation of this writer, Mr. William Higgins, published in 1790 a 'Comparative View of the Phlogistic and Antiphlogistic Theories,' in which he speaks of several definite compounds of azote with oxygen; and threw out a suggestion that water was probably formed of definite proportions of two gases, which are now known to be oxygen and hydrogen.

In 1792, Richter, a Prussian chemist, published a work called 'Elements of Stochiometrie, or the Mathematics of the Chemical Elements.' This author treated the subject almost in the same way as Wenzel had previously done, but extended it very considerably; he endeavoured to determine the capacity of saturation of each acid and base, and to indicate by numbers the weights which mutually saturate each other. He pub-

lished a table of these, but, though the attempt was new and exceedingly ingenious, the results were far from accurate. The discoveries of Proust, a French chemist who was professor of chemistry at Madrid, are well worthy of notice, he being the first person who attempted an accurate analysis of metallic oxides. He found that metals unite only with determinate proportions of oxygen, that the same law applied to sulphur and the metals, and that these proportions might be stated in numbers. His opinions were strenuously opposed by Berthollet, but their accuracy is now generally admitted.

In the year 1803 the late Dr. Dalton explained in the 'Manchester Memoirs' his views concerning the chemical constitution of bodies; and in 1808 he published his 'New System of Chemical Philosophy.' He introduced the doctrine of multiples, and expressed by simple numbers the combining weights of bodies. He announced it as a general rule, that 'when only one combination of two bodies can be obtained, it must be presumed to be a *binary* one, unless some cause appear to the contrary.' Consistently with this law, and correctly at the time it was written, Dalton regarded water as a binary compound of hydrogen and oxygen, and the relative weights, since corrected, are considered as one to eight. As, then, water consists of an atom of hydrogen and an atom of oxygen, either of these elements may be selected as unity. Dalton fixed on hydrogen, because it is that body which unites with others in the smallest proportion; thus, then, we have water composed of one of hydrogen by weight, or one atom; and eight of oxygen by weight, or one atom; and in all cases an atom of hydrogen being represented by 1, an atom of oxygen will be represented by 8; and these being the atomic weight of the elements, that of the compound will be obtained by adding them together, thus—

Hydrogen 1 atom = 1
Oxygen 1 atom = 8

Water 1 atom = 9

The weight, then, of a compound atom is obtained by adding together the atomic weights of its constituents. As all the other elements unite either with hydrogen or with oxygen, the hydrogen or the oxygen standard may be used according to circumstances, considering the former to be 1, and the latter 8. The compounds of any given element with many other elements must be examined, before the combining number of the former can be correctly determined; or, as Dalton expresses it, 'it is necessary not only to consider the combinations of A with B, but also those of A with C D E, &c., as well as those of B with C D, &c., before we can have good reason to be satisfied with our determination as to the number of atoms which enter into the various compounds.'

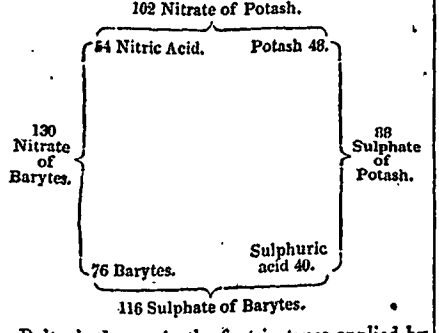
Various compounds of the same two elements may exist; and supposing an elementary body, as copper or silver, united with two proportions of oxygen, various questions may arise as to the constitution of the resulting oxides; as, whether that which contains least oxygen is a suboxide or protoxide; or whether that which contains most is a protoxide or a peroxide. These are points which can be determined only by comparison; but, as a general rule (subject to a few exceptions), it is found that the metallic oxide which contains least oxygen is the protoxide, and that that weight of the metal which combines with 8 by weight of oxygen, denotes the weight of its atom, and their united weights that of the oxide.

In the compounds of oxygen and copper the second portion of that element which unites with the same quantity of the metal, is double the first. Now upon this and numerous similar facts is founded one of the most important and beautiful peculiarities of Dalton's theory, sometimes described as the doctrine of multiples. In the case just alluded to, the second portion of oxygen is precisely double the first; but there some cases in which the greater proportions are not multiples of the less by any entire number. For example, there are two oxides of iron, the relative combining weights of which are such as to show that one, the protoxide, consists of 1 atom or combining equivalent of metal to 1 atom of oxygen; while the other, the peroxide, consists of 2 atoms of metal to 3 of oxygen. Again, there are three oxides of lead, of which the relative quantities of the elements are such as are best explained by supposing that the protoxide consists of 1 metal and 1 oxygen, the peroxide of 1 metal and 2 oxygen, and the red oxide of 2 protoxide and 1 peroxide, or 3 metal and 4 oxygen. Among the most remarkable combinations are those of manganese and oxygen, of which there are five varieties, all of which are resolvable into the protoxide and the peroxide; and those of nitrogen and oxygen, in which 1 atom of nitrogen combines, in five different substances, with 1, 2, 3, 4, and 5 atoms of oxygen respectively.

While in some cases the hydrogen and in others the oxygen standard is assumed, there are others in which they may be employed indifferently; thus, of carbon 6 parts by weight is the largest quantity which combines either with 1 part by weight of hydrogen, or 1 atom, or with 8 parts by weight of oxygen, or 1 atom; 6 is therefore the atomic weight of carbon. But in respect to sulphur, nitrogen, and a few other elements, it is found more convenient to take oxygen than hydrogen as the standard of comparison. Sometimes the two elements combine in a compound in such proportions as to lead to the supposition of *half atoms* being employed; an absurdity in terms, for the atom is presumed to be indivisible. A *sesqui*-carbonate of potash is formed, according to this view, of 1½ atoms acid, and 1 atom base; but the ½ atom is got rid of by viewing the constitution of the salt as being = 3 atoms acid + 2 atoms base, with a combining weight double of that resulting from the other mode of interpretation. These sesqui compounds are now under examination by chemists, with a view of solving the difficulty.

The following diagram will illustrate the mode in which the atomic numbers or combining weights retain their character throughout all the compositions or decompositions which may take

place. An atom of nitric acid (hydrogen being taken as 1, and oxygen as 8) weighs 54, and one of barytes 76, forming when combined 130 of neutral nitrate of barytes; an atom of neutral sulphate of potash = 88, is composed of an atom of sulphuric acid = 40, and an atom of potash = 48. Now when an atom of nitrate of barytes = 130, dissolved in water, is mixed with an atom of sulphate of potash = 88, in solution, double decomposition ensues, and two new and perfectly neutral salts are formed, viz. 1 atom of nitrate of potash = 102, consisting of an atom of nitric acid = 54, and an atom of potash = 48. This remains in solution; and there is precipitated an atom of neutral sulphate of barytes = 116, composed of 1 atom of sulphuric acid = 40, and 1 atom of barytes = 76.



Dalton's theory, in the first instance applied by him more particularly to the composition of gaseous bodies, was greatly extended by Wollaston in 1808, in respect to super-acid and sub-acid salts; and in 1814 the same distinguished philosopher published his 'Scale of Chemical Equivalents,' by which the atomic numbers of compound bodies could be roughly computed almost at a glance. About 1808 the Swedish chemist Berzelius also engaged in a series of researches respecting combining weights, in which he arrived at results bearing out, for the most part, those deduced by Dalton.

In 1809 Gay-Lussac published an important memoir on the 'Theory of Volumes,' in which the definite composition of compound gases was placed in a new and instructive light. Suspecting, from the previously ascertained fact, that 100 volumes of oxygen gas combine with 200 volumes of hydrogen gas to form water, that other gaseous bodies would be found to unite in simple proportions, he prepared muriatic, carbonic, and fluoboric acid gases, and combined them with ammoniacal gas, and he found that they united in the following proportions:—

Volumes.		Volumes.
100 muriatic acid gas	with	100 ammoniacal gas.
100 carbonic acid gas		100 "
100 carbonic acid gas		200 "
100 fluoboric acid gas		100 "
100 fluoboric acid gas		200 "

The series of compounds, however, which most remarkably illustrate the fact that gaseous substances unite in the simple ratio of 1 to 1, 1 to 2, 1 to 3, &c., are those of oxygen and nitrogen, thus:—

	By Volume.		By Weight.	
	Nitrog.	Oxygen.	Nitrog.	Oxygen.
Nitrous oxide	2	1	14	8
Nitric oxide	2	2	14	16
Hyponitrous acid	2	3	14	24
Nitrous acid	2	4	14	32
Nitric acid	2	5	14	40

The same rule was found also to apply to the combination of vapours with gases, thus:—

Volumes.		Volumes.
100 hydrogen gas	with	100 vapour of sulphur.
100 oxygen gas	with	100 "
100 hydrogen gas	with	100 vapour of iodine.

Dr. Prout and Dr. Thomson inferred, from these results, that the atomic weights of bodies are multiples of the atomic weight of hydrogen by a whole number. But this view was not acquiesced in by all chemists. Dr. Turner considered that the simple ratio in which volumes combine appears to indicate 'a close correspondence in the size of the atoms of gaseous bodies. It naturally suggests the idea that this peculiarity may arise from the atoms of elementary principles possessing the same magnitude. On this supposition, equal measures of such substances in the gaseous form, at the same temperature and pressure, would probably contain an equal number of atoms; and the specific gravity of these gases would depend on the relative weight of their atoms. The same numbers which indicate the specific gravity of elementary principles in the gaseous state would then express the relative weight of their atoms, so that the latter would be ascertained by means of the former, or the atomic weight of a solid or liquid represent the specific gravity of its vapour. The proportional numbers adopted by Sir H. Davy in his 'Elements of Chemical Philosophy,' and the atomic weights employed by Berzelius in his 'System of Chemistry,' were selected in accordance with this view. Thus, water, being formed of two measures of hydrogen and one measure of oxygen, is believed by Berzelius to consist of two atoms of the former, and one atom of the latter; and, for a similar reason, he regards protoxide of nitrogen as a compound of two atoms of nitrogen and one atom of oxygen. The atoms and volumes of the four elementary gases—oxygen, chlorine, hydrogen, and nitrogen—are thus made to coincide with each other. This method, though perhaps preferable to any other, has not hitherto been generally followed. Most chemists consider water, protoxide of chlorine, and protoxide of nitrogen, as containing each one atom of their elements; and, consequently, as those compounds consist of one measure of oxygen united with two measures of the other constituent, an atom of hydrogen, chlorine, and nitrogen, is supposed to occupy twice as much space as an atom of oxygen. An atom of oxygen is therefore represented by half a volume, and an atom of the other three gases by a whole volume.'—Turner's 'Elements of Chemistry.'

The different views which have been taken as to the adoption of a hydrogen or an oxygen

standard, the relative combining weights of each, and the name to be given to what Dalton called an *atom*, are shown in the following table:—

Dalton	*atom*,	hydrog. 1	oxyg. 7	
Wollaston,	*equivalent*,	oxy. 10	hydrog. 1·32	
Davy	*proportion*,	hydrog. 2	oxyg. 15	
Thomson	*atom*,	oxyg. 1	hydrog. 0·125	
Berzelius	*atom*,	oxy. 100	hydrog. 12·4795	
Henry	*atom*,	hydrog. 1	oxyg. 8	
Turner	*equivalent*,	hydrog. 1	oxyg. 8	
Faraday	*proportional*,	hydrog. 1	oxyg. 8	

All the four terms, *atom*, *equivalent*, *proportion*, *proportional*, have had their advocates; but it is necessary simply to bear in mind that what is meant is the relative *weights* in which chemical substances combine, without necessarily involving any theory as to the ultimate molecular state of matter.

The atomic theory of chemical elements has been the subject of some remarkable modifications in recent years. The term *Isomorphism* has been applied to a law or principle which connects certain crystals into a group: if the same number of atoms are combined together in the same way, the same form of crystals is produced, whatever may be the atomic weights or the chemical nature of the individual atoms. The term *Dimorphism* has been applied to a property assumed by some bodies of presenting two totally distinct forms under different circumstances, although no change can be detected in their atomic constitution. Again, the term *Isomerism* has been suggested to represent a similarity of atomic constitution in two or more bodies, although those bodies differ widely in appearance and in character.

If the principle be admitted that all atomic weights are multiples by whole numbers of the atomic weight of hydrogen, it follows that all atomic weights whatever will be expressed in whole numbers, the number for hydrogen being 1; and this is the system followed in most English works on chemistry. But the exactness of modern analysis has shown that this mathematical relation by no means uniformly holds its place; and it is now deemed better to state the atomic weights actually deduced by experiment, without relation to any particular hypothesis. Professor Graham, in his 'Elements of Chemistry,' gives a tabular view of the fifty-four elementary bodies, with the symbols by which they are indicated. In the third column, oxygen is supposed to be = 100; in the fourth column, hydrogen is = 1. The elements are arranged alphabetically, and the combining weights are given to two places of decimals:—

Names of Elements.	Symbols.	Equivalents.	
		O as 100.	H as 1.
Aluminum	Al	171.17	13.72
Antimony *	Sb	1612.90	129.24
Arsenic	As	940.08	75.34
Barium	Ba	856.88	68.66
Bismuth	Bi	886.92	71.07
Boron	B	136.25	10.91
Bromine	Br	978.31	78.39

Name of Elements.	Symbols.	Equivalents.	
		O as 100.	H as 1.
Cadmium	Cd	696.77	55.83
Calcium	Ca	256.02	20.52
Carbon	C	76.44	6.13
Cerium	Ce	574.70	46.05
Chlorine	Cl	442.65	35.47
Chromium	Cr	351.82	28.19
Cobalt	Co	368.99	29.57
Columbium *	Ta	2307.43	184.90
Copper *	Cu	395.70	31.71
Fluorine	F	233.80	18.74
Glucinum	G	331.26	26.54
Gold *	Au	2486.03	199.21
Hydrogen	H	1247.95	1.00
Iodine	I	1579.50	126.57
Iridium	Ir	1233.50	98.84
Iron *	Fe	339.21	27.18
Lead *	Pb	1294.50	103.73
Lithium	L	80.33	6.44
Magnesium	Mg	158.35	12.69
Manganese	Mn	345.89	27.72
Mercury *	Hg	1265.82	101.43
Molybdenum	Mo	598.52	47.96
Nickel	Ni	369.68	29.62
Nitrogen	N	177.04	14.19
Osmium	Os	1244.49	99.72
Oxygen	O	100.00	8.01
Palladium	Pd	665.90	53.36
Phosphorus	P	392.28	31.44
Platinum	Pl	1233.50	98.84
Potassium *	K	489.92	39.26
Rhodium	R	651.39	52.20
Selenium	Se	494.58	39.63
Silicon	Si	277.31	22.22
Silver *	Ag	1351.61	108.30
Sodium *	Na	290.90	23.31
Strontium	Sr	547.29	43.85
Sulphur	S	201.17	16.12
Tellurium	T	801.76	64.25
Thorium	Th	744.90	59.83
Tin *	Sn	735.29	58.92
Titanium	Ti	303.66	24.33
Tungsten *	W	1183.00	94.80
Vanadium	V	856.89	68.66
Uranium	U	2711.36	217.26
Yttrium	Y	402.51	32.25
Zinc	Zn	403.23	32.31
Zirconium	Zr	420.20	33.67

In the twelve instances marked with * the symbols have been formed from other or secondary names of those elements; viz. Stibium, Tantalum, Cuprum, Aurum, Ferrum, Plumbum, Hydrargyrum, Kalium, Argentum, Natronium, Stannum, and Wolfram. Two or three new substances are supposed to be simple metals, but they are not yet admitted to be such in all systems of chemistry.

In the chemical articles of this work, the atomic weights, where given, will generally be the nearest whole numbers to those here entered, taking hydrogen as 1, a degree of minuteness sufficient for the present object, and differing slightly from the earlier tables of Dr. Thomson.

The symbols are used as an abbreviated form of expression, and are at once understood by all chemists; but as only a few of them are familiarly known to general readers, they are used in the present work only when no ambiguity can occur. All organic compounds, derived from the animal and vegetable kingdoms, are composed almost wholly of four elements—oxygen, hydrogen, nitrogen, carbon; and it is therefore quite sufficient to indicate such by the four initial letters O, H, N, C. In some of the more complex substances, where many atoms of different elements combine to form a compound atom, the number of each is attached to its symbol, either before or after it: thus, Benzoyle consists of three kinds of elements, and the Benzoyle atom is formed of twenty-one elementary atoms—$C_{14} H_5 O_2$; or 14 C, 5 H, 2 O, implying fourteen of carbon, five of hydrogen, and two of oxygen. In such a case as this, the atomic constitution of the compound alone is given, and not the atomic weight of each element: it is only in the simpler compounds that the atomic weights need be repeated.

Sometimes greater condensation is produced by placing a dot for each atom of oxygen contained in a compound; the dot being placed over the symbol of the base with which the oxygen is combined. Thus, sulphuric acid, instead of being $O_3 S$, becomes simply $\dot{S}$, water is $\dot{H}$, and protoxide of iron is $\dot{F}e$.

These explanations will suffice for the chemical symbols and formulæ which the reader may meet with in this work. Brevity is adopted wherever it will not lead to ambiguity.

ATONEMENT, a certain mode of appeasing anger, and obtaining pardon for an offence. In the act of atonement there is commonly understood to be a substitution of something offered, or of some personal suffering, for a penalty which would otherwise be exacted. In theology, it has respect to offence committed against the Deity; it is in the theological acceptation of the term that it will be considered in the present article.

The practice of atonement is remarkable for its antiquity and universality. In the oldest books of the Hebrew Scriptures we have numerous instances of expiatory rites where atonement is the prominent feature. In some cases the atonement was made for a specific offence (Levit. iv., Numb. xvi. 46); in others it had reference to a state of transgression. (Levit. xvi.) The Hebrew records contain also notices of the practice of atonement, independent of the Mosaic institutions, and unconnected with the religious opinions of the Hebrew people. The barbarous offerings to Moloch appear in the light of atonements when interpreted by the indignant expostulation of Micah (vi. 7)—'Shall I give my first-born for my transgression, and the fruit of my body for the sin of my soul?'

At the earliest date to which we can carry our inquiries by means of the heathen records, we meet with the same notion of atonement. Agamemnon, having offended Apollo in the person of his priest, by refusing a ransom for his daughter, is not content with restitution, but proceeds to atone for his fault by an offering, the purpose of which is declared by Ulysses ('Iliad,' i. 442)—'Agamemnon sent me to sacrifice a sacred hecatomb to Apollo in behalf of the Danai, that we may appease the Sovereign God.'

If we pursue our inquiries through the accounts left us by the Greek and Roman writers of the barbarous nations with which they were acquainted, from India to Britain, we shall find the same notion and similar practices of atonement. It shows itself among the various tribes of Africa, the islanders of the South Seas, and even that most peculiar race, the natives of Australia, either in the shape of some offering, or some mutilation of the person.

It is all but universally acknowledged by the believers in revelation, that the Levitical atonements were, in part at least, typical of that one great sacrifice on which the Christian doctrine of the atonement is founded. We can do little more than state what is understood by the Christian when he speaks of the atonement: He considers man, through a sinful nature, and practices and affections conformable to that nature, to have come into a state of alienation from God; in other words he believes that God is just and holy, that man has sinned, and must therefore be punished. This being his condition, he further believes that the Divine Being, revealed to us under the title of the Son of God, interposed between the sentence and its execution, suffered in our stead, and atoned by his death for our sin; that the immediate consequences were, remission of the original sentence, and restoration to a state which is still probationary, but in which man is made capable of a permanent reunion with his Maker. The believer in the doctrine of the atonement supposes that the sacrifice was necessary according to a law fixed in the counsels of God (which law he also supposes to be revealed to us), that sin must be atoned for before it can be pardoned. He supposes the knowledge of the fact to be necessary to the formation of the Christian character, and its moral consequences to be, a deeper sense of the turpitude of sin, and also a new and powerful motive to a love of the Supreme Being, supplying a remedy for that selfish principle which might prevail, if the only motives to obedience were the hope of reward and the fear of punishment.

We have endeavoured to state the doctrine of the atonement in such terms as would be accepted by all who accepted the doctrine itself on the authority of Scripture.

To atone, according to the vulgar etymology, is to set at one, that is, to reconcile; and hence the word atonement is etymologically explained at-one-ment. In the authorized version of the New Testament the same word which in 2 Cor. v. 19 is properly rendered reconciliation, is in Rom. v. 11 rendered atonement. The word, however, soon came to bear the meaning in which it is now used; and such is in fact its ordinary meaning in the authorized version of the Old Testament.

ATOOI. [Sandwich Islands.]

ATRAGENE. [Clematis.]

ATRA'TO, a river in the western part of the republic of New Granada, in South America. It is formed by the union of three small rivers, which flow from a mountain-knot in about 5° N. lat., and 115 miles S.E. of Cape Corrientes. It falls after a course of about 250 miles from S. to N. into the bay of Choco, the most southern part of the Gulf of Darien. Just at its entrance into the sea are seventeen small islands, lying in two lines. It is navigable only for a short distance from its mouth. The country drained by the Atrato and its affluents is extremely mountainous, and does not contain a level tract of any extent, except at its mouth. The mountains are continuations of the Andes range, and are covered with forests almost inaccessible. Gold mines were formerly worked in these mountains; and gold is still found in the sands of the Atrato and its feeders.

ATRI, anciently *Hátria Picéna*, a town of the province of Teramo, or Abruzzo Ultra I., in the kingdom of Naples, situated on a hill near the river Matrina, or Piomba, and about four miles from the coast of the Adriatic. It is 12 miles S.E. of Teramo, and near the high road from Teramo to Naples. The ancient Hatria was once a place of considerable importance; it is included by the Roman geographers in the province of Picenum, and it was called Hatria Picena, to distinguish it from the Hatria or Hadria of the Veneti. [Adria.] They were both colonies of the Etruscans. Medals and coins have been found near Atri bearing effigies of fishes, anchors, and other maritime symbols, with the legend *Hat.* Hatria afterwards became a Roman colony. The family of the Emperor Hadrian was originally from this place. (Spartian. 'Hadrian.') Of the ancient town hardly any vestiges now remain. The present town of Atri is a poor place.

A'TRIPLEX, a genus of plants belonging to the natural order Chenopodiceæ and the tribe Atripliceæ. Most of the species of this genus are insignificant weeds, and are sometimes troublesome pests in corn-fields. Babington, in his 'Manual of British Botany,' enumerates ten species as inhabitants of Great Britain. The most common forms of the genus on cultivated lands are *A. angustifolia*, *A. erecta*, and *A. patula*. *A. rosea*, *A. laciniata*, *A. littoralis*, are frequent plants on the sea-shore. *A. prostrata* is a coast plant, but is rare in Great Britain, and Babington suspects that it may be a maritime form of *A. patula*.

A'TRIUM, a hall or room of audience in a Roman house. The two words, Atrium and Cavædium, if not at first synonymous, most probably became so in the course of time. It appears from a passage in Varro, that the Cavædium, or Cavum Ædium, 'the hollow of the house,' must be the whole area between the rim of the compluvium from which the rain fell, and the impluvium into which the rain fell. The Atrium, properly so called, and as at first distinguished from the Cavædium, would be the space between the open area and the walls (*parietes*) of the Atrium; thus the Cavum Ædium would be the hollow space open to the sky and rain, while the Atrium would be the covered part, and would therefore form the hall or room of audience. If our conjectures, founded on this obscure passage of Varro descriptive of the parts of a Roman house, be correct, we would suggest that the compluvium means rather the rim or gutter from which the rain fell than the whole area of the open space over the impluvium.

The Atrium was the most important and usually the most splendid apartment of a Roman house. Here the owner received his crowd of morning visitors, who were not admitted to the inner apartments. Originally the Atrium was the common room of resort for the whole family—the place of their domestic occupations; and such it probably continued in the humbler ranks of life. It consisted of a large apartment roofed over, but with an opening in the centre, called *compluvium*, towards which the roof sloped so as to throw the rain-water into a cistern in the floor called *impluvium*.

For the details of the Atria of Pompeii we must refer the reader to Mazois' 'Pompeii,' 1 vol. *folio*, and to the first and second series of Gell's 'Pompeii,' as well as to the volumes on 'Pompeii,' in the 'Library of Entertaining Knowledge,' published by the Society for the Diffusion of Useful Knowledge.

In building a marine villa, a Roman Atrium might be introduced with utility and effect; and we can conceive nothing more delightful than the enjoyment of the warm sea-breeze of summer in the cool shade of an Atrium, with a portico open to the sea. In such a design, the Atrium, with its portico, should form the centre feature, and the apartments and offices of the occupants should be arranged round the back and two sides; the Atrium, with the portico, being placed towards the sea, would give a full view of it.

A'TROPA, a genus of dicotyledonous plants belonging to the natural order Solaneæ, and consisting for the most part of poisonous species. It is distinguished from other genera of the same natural order by its regular bell-shaped corolla, its five-parted permanent calyx, which never acquires a bladdery appearance, and by its succulent fruit. The species of most common occurrence is

Atropa Belladonna, deadly night-shade, which is found not unfrequently in thickets and hedges in this country. The whole plant is of a lightish green colour, except the flowers, which are large and of a dingy brownish-purple, and the berries, which are of the rich deep black. The root is perennial, the stem grows about two feet high, and the leaves are acute, with an oblong figure, tapering to each end. The flowers are bell-shaped, larger than those of the harebell, and placed singly in the bosom of the leaves. The border of the corolla is cut into five equal lobes: there are five stamens, a tapering pistil with two cells, and many seeds in the ovary, a long slender style, and a flattened stigma slightly divided into two lobes. The odour of the whole plant is nauseous and oppressive. The active property of belladonna, though most commonly remarked in the

berries (which, from their resemblance to cherries, have been sometimes eaten by children with fatal effect), exists also in the leaves, and especially in the roots, both of which have the same acrid narcotic property.

Atropa Belladonna is employed medicinally in the form of dried leaves, or of an extract. Its action differs according to the quantity taken. If the dose be small, a quickening of the heart's action follows, and it has a stimulating effect; but if the dose be larger, a sedative effect of a very powerful kind ensues. During the first stage, excitement of the heart, the brain, and the intellectual faculties, is manifest: this is succeeded by greatly diminished sensibility, perhaps most markedly observable in the extreme dilatation of the pupil, and the insensibility of the stomach to the stimulus of emetic substances. The delirium accompanying the action of an over-dose of belladonna is always of a gay and elevated kind; a red eruption, or efflorescence, on the skin is also generally observable. The action of belladonna is due to an alkaloid, which exists in combination with malic acid. [ATROPIA.]

The cases in which belladonna may be most advantageously employed are—diseases of increased sensibility of the nerves, particularly local affections of the nerves, such as tic douloureux and other pains. Its employment in the form of extract rubbed over the eye-lids, in order to dilate the pupil previous to the operation for cataract, is an usual step, but requires caution: the same remark is applicable to its use in the form of solution dropped into the eye during inflammation of the iris. In both these cases it is liable to be absorbed in too great a degree, and to cause dangerous symptoms. It has been recommended as a useful sedative in hooping cough, and in asthma; and has also been employed in cancerous and scrofulous diseases. In case of poisoning by it, the stomach-pump should be used, and bleeding will occasionally be necessary to relieve the gorged state of the vessels of the head.

Atropa Mandragora, or mandrake, is another species still more poisonous and dangerous than the Atropa Belladonna. It is found in many parts of the south of Europe, particularly in the Grecian islands, where it is common. The whole plant is very fetid.

A'TROPHY, from the Greek word *ἀτροφία*, signifying 'want of nourishment,' 'wasting;' deficient nutrition either of a part or of the whole of the body. Wasting may be either general or local—that of the whole body, or only a part of it; and this will depend entirely on the nature of the cause that produces it, according as it be a disturbing influence affecting the system, or only some individual organ. Wasting may of course be produced without disease, by merely withholding the supply of nutritious food.

Among the diseases capable of producing wasting, the most important are those which have their primary seat in the organs of nutrition. The stomach and intestines are the organs which produce the first and the most essential changes on the aliment, by which it is converted into nutriment, and if any cause render these organs incapable of performing their functions, the ordinary waste of the body cannot be repaired, and a general atrophy must inevitably follow.

Next to the diseases of the primary organs of digestion come the diseases of the organs which co-operate with the stomach and intestines in converting the aliment into nutriment; and more especially diseases of the pancreas and liver, and of the lacteals which carry the food into the blood.

Disease of the organs of assimilation also interrupts nutrition. It is not until the digested aliment reaches the lungs that it is converted into blood. The lungs finish what the stomach begins; and the function of respiration is the completion of that of digestion. Any thing that impairs the function of respiration must therefore necessarily impair that of nutrition, and produce a proportionate degree of wasting. The consequence is, that, in certain diseases of the lungs, emaciation is carried to the utmost extent which seems to be compatible with the maintenance of life.

Diseases affecting the capillary vessels, as inflammation, and those of the nervous system also, interfere with the due nutrition of the body, and produce wasting.

A cessation of function, from whatever cause, is manifestly and invariably followed by wasting of the organ in which the function had its seat. The gland that does not secrete diminishes in bulk; the nerve that does not receive and transmit impressions, or convey its wonted stimulus, wastes; and the muscle that does not contract dwindles away; while increased exercise contributes exceedingly to the augmentation of its volume, as we see in the bulk of the blacksmith's arm, and in the leg of the opera-dancer. From the complete and long-continued cessation of action, the substance of organs is sometimes almost entirely removed; nothing remaining by which its original structure can be distinguished.

Such are the most obvious and common causes of wasting, the detection of which, it is obvious, must precede any rational treatment of the affection.

ATRO'PIA, a vegetable alkali which is found to exist in the juice of the *atropa belladonna*, and in which the well-known poisonous qualities of the plant reside. Atropia forms long transparent colourless crystals which are insoluble in cold water, and very slightly soluble by boiling water and alcohol. It forms with acids peculiar salts, which readily crystallize; and its saturating power is so great, that 107.5 parts of it neutralize 100 parts of sulphuric acid. During the evaporation of a salt of atropia, the vapour which rises occasions an enlargement of the pupil of the eyes of those exposed to its influence, which continues for several hours. According to Liebig, atropia consists of 2 atoms nitrogen, 22 carbon, 30 hydrogen, 30 oxygen.

A'TRYPA (Dalman), a subdivision of the great genus Terebratula, chiefly (if not entirely) confined to a fossil state, and to the Palæozoic strata. Many of the Spiriferæ of Sowerby (as *Sp. glabra, fimbriata*) and some of the Terebratulæ of the same author (as *T. pugnus*), have

been referred to this very ill-characterized genus. T. *psittacea* is the recent analogue.

ATSCHINSK. [SIBERIA.]

ATTAC'CA, in music (Ital. *to attack to*), denotes, that the next movement is to follow immediately, without any pause. In the language of the old contrapuntists, *attacco* signifies a short irregular subject, not liable to the severe laws of fugue.

ATTACHMENT. An attachment is a kind of criminal process which courts of record are authorized to issue. This process is granted in cases of contempts, which all courts of record may punish in a summary manner. If a contempt be done in the presence of the court, by a breach of the peace, defiance of its authority, or an interruption of its proceedings, the offender may at once be attached and committed, and afterwards punished to a reasonable extent at the discretion of the presiding judges. On the other hand, if it be suggested by a person upon oath that one not present in court has committed an action which amounts to a contempt, the court will make a rule upon the offender to show cause why an attachment should not issue against him, or, in flagrant and urgent cases, will grant an attachment on the first complaint without any previous rule to show cause. Attachments are now chiefly employed in cases of constructive contempts, such as abuses of the administration of justice by judges of inferior jurisdiction, for corruption or injustice by officers and ministers of the courts in refusing to execute lawful process, for doing it oppressively or corruptly, or for making false returns. Attorneys, who are officers of the different courts in which they are admitted, may be punished by this summary mode of proceeding for any dishonest practice. It is said by Mr. Sergeant Hawkins, that barristers, though not officers of any court, yet inasmuch as they have a special privilege to practise the law, and their misbehaviour tends to bring a disgrace upon the law itself, are punishable by attachment for any foul practice, as other ministers of justice are. (Hawkins's 'Pleas of the Crown,' book 2, c. 22, s. 30.) Jurors also may be liable to attachment for making default when lawfully summoned; for refusing to be sworn or to give any verdict; or for receiving a bribe or instructions from either of the parties in a suit to be tried by them. In early periods of the history of our law, jurors were sometimes attached for giving verdicts against evidence or the direction of the court in matter of law. Besides the contempts committed by parties and persons as above noticed, there are numerous instances in which all persons may become liable to attachment for offences of this description. Thus wilful perjury in the presence of the court, disrespectful words or conduct to the presiding judge, counterfeiting writs, refusing to pay money or perform acts according to the direction of an award entered into by rule of court, non-payment of costs taxed by the officer of the court in which a proceeding is pending, are contempts which subject the persons who commit them to the summary process of attachment.

ATTACHMENT, FOREIGN, is a proceeding by means of which a creditor may obtain the security of the goods or other personal property of his debtor, in the hands of a third person, for the purpose, in the first instance, of enforcing the appearance of the debtor to answer to an action; and afterwards, upon his continued default, of obtaining the goods or property in satisfaction of the demand. The process in England is founded entirely upon local customs, and is an exception to the general law. It exists in London, Bristol, Exeter, Lancaster, and some other towns in England; and the mode of securing the payment of a debt by a proceeding against the debtor's goods in the hands of third persons, strongly resembling the process of foreign attachment, with some modifications, and under different names, forms a part of the law of Scotland, Holland, and other European countries. In Scotland this proceeding is called ARRESTMENT. In France a process of this kind exists under the name of *saisie-arrêt;* the regulations respecting it are in the 'Code de Procédure Civile,' Partie I. livre 5, tit. 7, 557–582.

The custom of foreign attachment in London differs in no material respect from the same custom in other parts of England; it is, however, much more commonly resorted to in the lord-mayor's and the sheriffs' courts of London than in any other local courts.

A difference of opinion prevails with respect to the utility of this proceeding. On the one side, it is said to be important, in a commercial community, to be readily able to apply the property of an absent debtor, wherever it may be found, to the payment of his creditor; and this, it is contended, is particularly advantageous in a city much frequented by foreigners for the purpose of trade, who may contract debts during their abode in England, and then remove themselves to foreign parts, beyond the reach of personal process: on the other hand, it is supposed to embarrass commercial operations in consequence of the enormous power which it places in the hands of creditors—a creditor for 20*l.* being entitled, if he pleases, to attach property to the amount of 20,000*l.*, or any larger sum, which cannot be applied in discharge of any commercial engagements which the debtor may have formed, until the attachment is disposed of. The apprehension of this process is said to deter foreign merchants from consigning cargoes to London. It does not, however, appear to be likely that the existence of this custom should, under ordinary circumstances, have the effect of deterring the fair merchant from sending his goods to London; though it may well happen that a trader, who has contracted debts in London which he does not intend to pay, or who suspects that claims will be set up which he does not wish to afford the claimants any facilities in litigating, would hesitate to send a cargo to a port where, by means of this process, his creditors in that place might instantly seize it. Nor can much practical inconvenience arise from the power of attaching a large property for a small debt; for the garnishee (that is the person who holds the property of the debtor), who is generally the agent of the defendant, may dissolve the attachment, by appearing for the defendant and putting in bail to

the action; or, if satisfied of the truth of the debt upon which the attachment issues, he may pay the plaintiff's demand, and take credit for the amount in his account with the defendant. The alleged objections do not, therefore, appear to be so formidable as has been represented; but the advantage of a speedy and safe mode of recovering debts is obvious.

There are, however, many imperfections in this form of proceeding. In the first place, no costs are recoverable on either side. Secondly, the efficiency of the custom is much impeded by its limited local extent. Thus, goods in a warehouse in Thames Street may be attached; but if lying in a lighter on the river Thames within a yard of the warehouse, they are exempt. But the most serious objection to the proceeding, as universally practised in London at the present day, arises from the palpable opportunity which it affords for fraudulent collusion between the plaintiff and the garnishee to the injury of the defendant. The nature of this objection can only be understood from a detailed account of the process in attachment.

ATTAINDER, from the Latin word *attinctus*, 'attaint,' 'stained,' is a consequence which the law of England has attached to the passing of sentence of death upon a criminal. Attainder does not follow upon mere conviction of a capital offence; but as soon as sentence of death is passed, or a judgment of outlawry given in case of capital treasons or capital felonies, when the person accused flies from justice, which is equivalent to sentence of death, the prisoner becomes legally *attaint*. He loses all power over his property, and is incapable of performing any of the duties, or enjoying any of the privileges, of a freeman.

1. The principal consequences of attainder are forfeiture of the attainted person's real and personal estates, and what is called corruption of his blood. The forfeiture of the personal estate dates from the time of his conviction, and includes everything which the criminal was then in his own right entitled to legally or beneficially. Real estate is not forfeited until attainder; but the forfeiture (except in the case of attainder upon outlawry) has relation to the time when the offence was committed, so as to avoid all intermediate sales and incumbrances. ('Co. Litt.' 390 b.) Attainder for treason is followed by forfeiture to the crown of all freehold estates, whether of inheritance or otherwise, of which the person attainted was seized, or to which he was entitled at the time of the treason committed, or afterwards. Copyholds are forfeited to the lord of the manor upon the attainder of the tenant. Lands held in gavelkind are forfeited on attainder for high treason, but they are not subject to escheat for felony. (Robinson, 'Gavelkind,' 226l.) By 5 & 6 Edw. VI. cap. 11, the dower of the widow of a person attainted for treason is also forfeited. [LAW, CRIMINAL.]

In cases of attainder for murder, the forfeiture of freehold lands in fee simple to the crown is for a year and a day, with an unlimited power of committing waste upon the lands during that period, which is called in our old law-books 'the king's year, day, and waste.' After the expiration of this term, the lands escheat to the lord of whom they are holden; because by this attainder of a tenant in fee-simple his blood is corrupted, and he is disabled from inheriting lands himself, or transmitting them to his descendants. The legal consequence of this doctrine is an escheat to the lord. [ESCHEAT.]

It has been usual, where a new felony has been created by act of parliament, to make an express provision that it shall not extend to corruption of blood. By 54 Geo. III. c. 145, corruption of blood was taken away for attainder, except in cases of treason, petit-treason, which is now abolished, and other murders. By the act of 3 & 4 Wm. IV. c. 106, which relates to descent, it is enacted, s. 10, 'That when the person from whom the descent of any land is to be traced shall have had any relation, who, having been attainted, shall have died before such descent shall have taken place, then such attainder shall not prevent any person from inheriting such land who would have been capable of inheriting the same, by tracing his descent through such relation, if he had not been attainted, unless such land shall have escheated before the first day of January, 1834.' By another clause of this act, descent is always to be traced from the purchaser, that is, from the person who has acquired the land in some other way than by descent, and the last owner shall be considered to be the purchaser, unless it can be proved that he inherited the same, in which case the descent must be traced till we arrive at a person as to whom it cannot be proved that he inherited. In this act the word descent means the title to inherit land by reason of consanguinity, as well when the heir shall be an ancestor or collateral relation, as when he shall be a child or other issue. By this act, if a man's son should be attainted, and should die before lands descend to him, the son of such son would be enabled to inherit the lands, which was not the case formerly.

A dignity descendible to the heirs general is forfeited to the crown both for treason and for felony. An entailed dignity is forfeited for treason, but not for felony.

The corruption of blood produced by attainder cannot be effectually removed except by an act of parliament; for therein a third person has an interest, the lord, who claims by escheat. But it is said that the king's pardon is so far effectual after an attainder, that it imparts new inheritable blood to the person attainted, so that his children born after the pardon may inherit from him.

There have been frequent instances in the history of England of attainders by express legislative enactment, called bills of attainder.

These enactments, either in the shape of bills of attainder or bills of pains and penalties, have been made at intervals, from an early period of our history down to very recent times. They have generally occurred in times of turbulence or of arbitrary government; but the number of them is sufficiently large to form a formidable list of precedents. It was not till the reign of Henry VIII. that the proceeding by bill of attainder became so common as almost to supersede trials

according to the ordinary process of law. Scarcely a year passed without persons of the highest rank being brought to the scaffold by bill of attainder. Among them were the Earl of Surrey, Cromwell, Earl of Essex, who is said to have been the adviser of these measures, and most of those persons who suffered for denying the king's supremacy. All these persons were attainted upon mere hearsay evidence; and some not only upon no evidence at all, but without being heard in their defence. Under the Stuarts recourse was seldom had to this extraordinary mode of proceeding. It was again adopted by the Long Parliament in Lord Strafford's case, on the ground that he was an extraordinary criminal, who would have escaped with little punishment if no other penalties than those of the existing laws had been inflicted on him. But even Lord Strafford's attainder was reversed after the restoration of Charles II., and all the records of the proceedings cancelled by act of parliament. A remarkable instance of a proceeding by bill of attainder occurred in the case of Sir John Fenwick, who, in the year 1696, was attainted for a conspiracy to assassinate William III. Sir John Fenwick might have been tried by the ordinary process of law; but the excuse for resorting to a bill of attainder was, that there was no moral doubt of Fenwick's guilt; but that as two witnesses were required by the stat. 7 Will. III. cap. 3, in order to convict him, and as one of them had been removed out of the kingdom, a legal proof of an overt act of treason became impossible. The effect of this bill of attainder was, to suspend the statute of 7 Will. III. c. 3, in order to destroy an individual. This exertion of legislative power did not take place without a strong opposition. Bishop Burnet, one of its most strenuous supporters, allowed that 'this extreme way of proceeding was to be put in practice but seldom, and upon great occasions.' (Howell's 'State Trials,' vol. xii.)

Since the accession of the House of Hanover, there have been few bills of attainder or bills of pains and penalties. Bishop Atterbury was deprived of all his offices and emoluments, declared incapable of holding any for the future, and banished for ever, by a bill of pains and penalties, which received the assent of George I. on the 27th of May, 1723. He was charged with carrying on a traitorous correspondence in order to raise an insurrection in the kingdom and procure foreign power to invade it. It was by a bill of pains and penalties that proceedings were taken against Queen Caroline, the wife of George IV., in 1820.

The proceedings in parliament, in passing bills of attainder and of pains and penalties, do not vary from those adopted in regard to other bills. They may be introduced into either House. The parties who are subjected to these proceedings are admitted to defend themselves by counsel and witnesses. Bills for reversing attainders are first signed by the king, and are presented by a lord to the House of Peers, by command of the crown, after which they pass through the ordinary stages in both Houses, and receive the royal assent in the usual form.'

(May's *Law, Privileges, &c., of Parliament.*)

ATTAINT (*attincta*), a writ, which formerly lay to inquire whether a jury had given a false verdict. It at first lay only on the trial of writs of assize, and is said to have been introduced by Henry II. at the instance of Chief Justice Glanville. It was afterwards extended by Edward I. to all pleas of land or freehold, and by statutes in the reigns of Edward I. and Edward III. to all pleas whatsoever, whether real or personal, except writs of right, where the issue was joined on the *mere right*.

If the jury on the attaint, who were twenty-four in number, found that the verdict was false, the judgment against the jury who found the false verdict was very severe. But more moderate judgment was introduced by 11 Henry VII. c. 24, made perpetual by 13 Eliz. c. 25.

So ineffectual, however, was this proceeding, that it gave place, in the time of Elizabeth and James I., to the now existing practice of setting aside verdicts on motion and granting new trials. By the 6 Geo. IV. c. 50 (consolidating the laws relating to juries), the proceeding was abolished; but it is provided, by sec. 61, that any person guilty of *embracery* (corruptly influencing a juror by promises of money) may be proceeded against, and punished as before.

ATTALE'A, a genus of palms, found chiefly in the tropical parts of America, where it occupies the richest soil and the hottest forests, rarely ascending the sides of mountains, or spreading from the woods into the open country. It extends, according to Von Martius, as far south as the tropic of Capricorn. It belongs to the same division of the natural order as the cocoa-nut, from which, as well as from all its immediate allies, except *Areng*, it is distinguished by its nut containing three cells and three seeds.

Attalea funifera, called by the natives piaçaba, is found in the native forests of the maritime provinces of Brazil, where it is one of the most valuable gifts which the bountiful hand of nature has conferred on man. The best cordage in America, for naval purposes, is manufactured from the fibres of the leaf-stalks and other parts. Such ropes are of great strength, and are extremely durable in salt water. No other cables are employed in a great part of the Brazilian navy. This species does not grow more than from twenty to thirty feet high; its nuts, which are about as large as an ostrich's egg, have a hard shell like that of the cocoa-nut.

Attalea compta, another species, is equally useful, but for different purposes. This plant, the *pindova* of the old writers on Brazil, and the *indajà* of the modern Portuguese, forms delightful groves in the interior of the country, growing from twenty to fifty feet clear of its branch-like leaves. The latter are from fifteen to twenty feet long, and about three feet wide. The fruit is the size of a goose's egg, and contains an eatable kernel, of which the negroes are fond. Its leaves form an excellent thatch, and are woven into hats, mats, and baskets.

Attalea speciosa is the plant which, in the provinces of Maranhao and Para, furnishes the nuts which the Brazilians burn for the purpose of

smoking the juice of *Siphonia elastica*, or Indian rubber, until it becomes black.

ATTALUS I., king of a small but wealthy and populous country in the north-western part of Asia Minor, of which Pergamum was the capital. The name of Asia was specially applied by the Romans to this country. Attalus was the son of Attalus, youngest brother of Philetærus, and cousin to Eúmenes I., whom he succeeded B.C. 241.

Attalus assumed the regal title after a victory over the Gauls, who had taken possession of that part of the country called after them Galatia. When the Rhodians and Byzantines were preparing to make war on each other, in consequence of the Byzantines having imposed a tax on all vessels entering the Euxine (about 221 B.C.), Attalus espoused the cause of the Byzantines. He also continued the war with Achæus; and, having taken into pay a body of the Gauls called Tectósages, he recovered many of the cities of Æolis, which had submitted to Achæus. In the midst of his victorious career, an eclipse of the moon (B.C. 218) happened, which so alarmed the superstitious Gauls that they left him. (Polyb. v. 77, 78.) In B.C. 214 he was in alliance with Antiochus the Great, king of Syria, who was equally anxious with himself to get rid of Achæus. About B.C. 208, Attalus joined the Ætolians against Philip, king of Macedonia, and he was appointed joint prætor of the Ætolians with their general Pyrrhias. Towards the end of autumn he made his appearance at Ægina with his fleet, and as soon as the season permitted he landed on the continent; and having taken the city Opus, the capital of the Locri Opuntii, with the consent of the Romans, allowed it to be sacked by his soldiers. Subsequently Attalus narrowly escaped being taken prisoner by Philip, and hearing that Prusias, king of Bithynia, had passed the frontiers of his kingdom, he left the Ætolians, and returned to Asia. (Liv. xxvii. 30, 33; xxviii. 7.) Peace was soon afterwards concluded between the Ætolians and Philip. The peace however did not continue, for we find the Rhodians leagued with Attalus (B.C. 201) against Philip in the sea-fight of Chios. Attalus behaved with great bravery on this occasion. Philip afterwards besieged Attalus in Pergamum, but without being able to take the city. Philip having retired, Attalus passed over to Athens (B.C. 200), where he was received with great honour, and renewed his alliance with that people. He joined the Romans with a considerable body of troops, and the confederates captured Oreum, a strong city of Eubœa. Attalus continued to assist the Romans against Philip, and (B.C. 197) he appeared in the assembly of the Bœotians, with a view of detaching them from the cause of Philip. In the midst of an eloquent harangue he was seized with apoplexy; and though he lingered long enough to be conveyed to Pergamum, he died within a few weeks, in the seventy-first year of his age, having reigned forty-four years. (Liv. xxxi. 14, 46; xxxii. 8; xxxiii. 2, 21.) He left, by his wife Apollonis, four sons, Eumenes, who succeeded him; Attalus, who succeeded his brother Eumenes; Philetærus; and Athenæus.

ATTALUS II., named Philadelphus, from his affection to his brother, was born B.C. 220: he was the second son of Attalus I., and succeeded to the throne of Pergamum on the death of his brother Eumenes (B.C. 159). He pursued the policy of his family, in maintaining an intimate alliance with the Romans. Prusias, king of Bithynia, laid siege to Pergamum (B.C. 156), but the Romans compelled him to withdraw. This war, however, was carried on for several years. (Appian's 'Mithridatic War,' c. 3-7; also Polyb. xxxii. 25, 26; xxxiii. 1, 6, 10, 11.) Five years afterwards (B.C. 149) Attalus was assisting Nicomédes against his father Prusias. Though he lived to the advanced age of eighty-two years, nothing further is recorded of his reign.

ATTALUS III., named Philométor, from his affection towards his mother, was the son of Eumenes II. He succeeded (B.C. 138) to the throne of Pergamus on the death of his uncle, Attalus II. His reign was chiefly memorable for the murder of his friends and relations. He finally gave up all care of public business, and devoted his time to gardening, with which he became so well acquainted, that he wrote a work on the subject, which is recommended by Pliny (xviii. 4), Varro ('Re Rust.' lib. i. 1), and Columella ('Re Rust.' lib. i. 1). He died B.C. 133, and by his will bequeathed his property (bona) to the Romans. The kingdom was claimed by Aristonícus, an illegitimate son of Eumenes II., who was finally taken prisoner to Rome, and strangled in prison, B.C. 129. The kingdom of Pergamum was from this time the Roman province of Asia. (Clinton's 'Fasti Hellenici,' vol. ii.)

ATTALUS, a senator of Rome, under the reign of Honorius, was sent by the Romans to that emperor at Ravenna, to represent to him the difficult situation of the capital, threatened at that time by Alaric, and to advise him to fulfil the conditions of a treaty which he had concluded with that Gothic chief; but Honorius refused, and Alaric, being joined by his brother-in-law, Ataulphus, laid siege to Rome. Attalus, who was then prefect of Rome, was proclaimed emperor by Alaric, who required the Romans to swear allegiance to him, A.D. 409. Attalus then went with an army of Romans and Goths to besiege Honorius in Ravenna, who proposed to associate him in the empire, but Attalus refused to listen to the proposals, thinking himself possessed already of the real power. Attalus, however, having opposed Alaric in some of his views, was immediately deposed by the Gothic chief. After this, Alaric again besieged Rome, took it, and gave it up to pillage in August, 410. Upon Alaric's death, Attalus followed the fortunes of his successor, Ataulphus, whom he accompanied into Gaul. After the death of Ataulphus, his successor, Vallia, having concluded peace with Honorius, Attalus endeavoured to escape the emperor's vengeance, but was taken, and, by order of Honorius, confined in the island of Lipari, after having had the fingers of his right hand cut off, in order to prevent him from being able to write. Attalus was afterwards recalled to Rome, where he died in obscurity. (Zosimus, Orosius, and Gibbon.)

ATTAR (or OTTO) OF ROSES, an essential oil obtained in India from the petals of the *Rosa centifolia* and *R. sempervivens*, by evaporation from the steeped petals, the attar rising to the top of the water as a kind of yellowish scum. It is a very powerful perfume, and is said by Saussure to be a mixture of two oils, one solid and the other fluid at the common temperature of the air.

Attar of Roses liquefies at about 85° of Fahrenheit, and the solid oil at about 91°; the latter crystallizes by cold into brilliant white transparent laminæ of the consistence of bees' wax. The density of attar of roses rendered fluid at about 90°, compared with water at 60°, is 0.832. The concrete essence dissolves slightly in alcohol, and burns in oxygen with a sort of explosion.

Attar of Roses is composed of equal atoms of hydrogen and carbon; and is therefore isomeric with olefiant gas. [ISOMERISM.]

ATTENDANT TERM. [TERM OF YEARS.]

ATTERBURY, FRANCIS, was born March 6, 1662, at *Milton*, near Newport Pagnel, Buckinghamshire. He was educated at Westminster, and elected student of Christ Church, Oxford, in 1680. He took the degree of B.A. in 1684, and that of M.A. in 1687. In 1687 he first appeared as a controversial writer in an answer to 'Considerations on the Spirit of Martin Luther, and the Original of the Reformation.' His talents for the pulpit having soon become conspicuous, he was speedily appointed one of the royal chaplains in ordinary, and was elected preacher of Bridewell, and lecturer of St. Bride's.

In the year 1700 Atterbury engaged in a long controversy with Dr. Wake, afterwards Archbishop of Canterbury, and others, concerning the rights, powers, and privileges of convocations. His zeal for the interests of his order procured him the thanks of the Lower House of Convocation, and the degree of Doctor in Divinity, without keeping an act or paying fees, from the University of Oxford.

On the accession of Queen Anne, in 1702, Atterbury was appointed one of her chaplains in ordinary, and in 1704 was advanced to the deanery of Carlisle. In 1707 he was made canon in the cathedral of Exeter; and in 1709 was appointed preacher to the Rolls Chapel. In 1712 he was made Dean of Christ Church, Oxford. Owing to his imperious temper, the flames of discord soon broke out in the college, and his removal was thought necessary for the restoration of peace. In 1713, on Lord Oxford's recommendation, he was promoted to the bishopric of Rochester, and the deanery of Westminster. With the death of Anne his hopes of further advancement fell to the ground. He attempted to gain the good graces of George I.; but his overtures were rejected with marks of personal dislike. Atterbury commenced hostilities by refusing to sign the bishops' declaration of fidelity, during the rebellion of 1715. In the House of Lords, Atterbury drew up some of the most violent protests against the measures of the court and ministry. The report of a secret committee of the House of Commons charged him with a treasonable correspondence, for the purpose of raising an insurrection in the kingdom, and procuring invasion from abroad. The evidence against him was considered to justify his apprehension and committal to the Tower, in August 1722. In the course of the ensuing March a bill of pains and penalties against him was brought into the House of Commons. The penalty contained in the bill was, that he should be deprived of all his ecclesiastical offices, and for ever incapacitated from holding any civil employment within the king's dominions, or discharging any spiritual functions; that he should suffer perpetual exile, and, if found within the realm after a certain day, should be treated as a felon, and excluded from the benefit of the royal prerogative of pardon. His speech in his own defence was both argumentative and eloquent; his demeanour was firm and collected. After a long and warm debate, the bill was passed by a majority of 83 to 43. The dispassionate view of the case seems to be, that the bishop was really guilty of the political offence laid to his charge, but that proofs neither sufficiently strong nor strictly legal could be adduced, and that the *mode* of procedure was in its nature dangerous and unconstitutional. ('Historical Register,' and 'Debates of the House of Lords.')

In June 1723 the bishop quitted England. He settled at Paris, where he resided till his death, softening the severity of his banishment by study, conversation, and correspondence with learned men. In 1768 a correspondence which took place between the bishop and his friends in 1725 was published in Edinburgh, the authenticity of which has never been questioned. From these letters it is evident that he was deeply implicated in the abortive schemes for raising another rebellion in the Highlands of Scotland. He died at Paris on the 15th of February, 1731, and was privately buried in Westminster Abbey.

The philosophical calmness displayed by Atterbury in his letters to his friends seems altogether inconsistent with the headlong turbulence of his party zeal, and probably was assumed to cover an infirmity of which he was conscious. Stackhouse says, that 'his notions were a little singular, and his temper of mind somewhat too warm for this cold and torpid climate. His temper was chiefly made up of irascible qualities; his resentment of injuries was quick and lasting.' A striking instance of the bishop's Jacobitism is to be found in Dr. Birch's manuscript papers. 'Lord Harcourt declared that on the Queen's death the bishop came to him and Bolingbroke, and said nothing remained but to proclaim King James. He further offered, if they would give him a guard, to put on his lawn sleeves and head the procession.' (Monk's 'Life of Bentley,' ii. 257.)

His fame rests on his sermons, which are both argumentative and unaffectedly eloquent; and on his epistolary correspondence with Pope, in which his letters are distinguished for ease and elegance. It was thought, at the time, that no man understood better than he the points in dispute between the Church of England and the Church of Rome, as well as the Dissenters of all denominations.

(Stackhouse's *Memoirs of Atterbury*, published

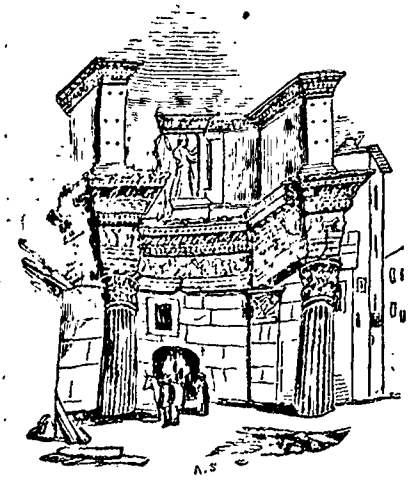
in 1723, under the signature of Philalethes, and with a new title-page bearing his own name, in 1727; Burnet's *History of his Own Times; Biographia Britannica.*)

ATTERSEE, or KAMMERSEE. [ENS, UPPER.]

ATTIC, the upper room or rooms of a house, with or without a parapet-wall in front. Possibly the parapet-wall, which corresponds with the attic-wall in architecture, may have given the name to such room or rooms.

ATTIC, a term in architecture, comprehending the whole of a plain or decorated parapet wall, which terminates the upper part of the façade of an edifice. The derivation of the word is uncertain. It appears to have been a generally received opinion that the word was derived from the circumstance of edifices in Attica being built after this manner. There is at Athens a monument, that of Thrasyllus, with an attic over the order of pilasters which form the basement. In the centre there was a colossal statue. In a note to the second edition of Stuart's 'Athens,' published in 1825, the editor is of opinion that this attic was not contemplated in the original design, but added at the date of the two upper inscriptions when Thrasycles was Agonothetes. (See note, p. 92, vol. ii., second edition of Stuart, 1825.) This example, however, may be taken as the best type of a Greek attic which is at present known.

Another example, which bears a closer resemblance to the Roman attic, exists in the upper wall of the nave of the Temple of Jupiter Olympius at Agrigentum, where there is an entire wall with short pilasters at intervals, in the front of which are figures placed above the pilasters of the nave. The cut contains a representation of a



Roman attic, the only remaining part of a superbly decorated wall inclosing the Forum of Nerva at Rome. This wall was of considerable extent, and was divided at intervals by columns projecting from the wall, over which the attic wall is continued at right angles to the wall forming the inclosure. The attic is a conspicuous feature in the triumphal arches at Rome, and a necessary one: it was not merely intended as a frame-work for the inscription, nor as a support for statues, but is essential to the proportions of the composition.

In all the best examples, and especially in the remains of antiquity at Rome, the attic is decorated with a moulded base and cornice, often with pilasters and figures, as in the arch of Constantine.

The Italian architects who had studied the remains of antiquity in Rome, and those who followed in their school, usually employed an attic in their designs, as may be seen by a reference to their works, and more especially to the designs of Palladio, entitled 'Le Fabbriche e i Disegni di Andrea Palladio raccolti ed illustrati da Ottavio Bertotti Scamozzi,' 1776. The attic is in such common use, that there are few public buildings in London without it. Somerset House, in the view towards the street, may be taken as offering a very fine example of this feature of an edifice. Opinions differ as to the attic: some consider it a deformity, and at least only to be tolerated where it is unavoidable. They would accordingly confine it nearly altogether to domestic architecture.

ATTIC DIALECT, a term which is applied to designate one of the varieties of the ancient Greek language. A close connection and relationship existed between the old inhabitants of Attica and the Ionians; and the Ionic form of the Greek language, or the Ionic dialect, 'was the same as the old Attic, for the ancient Athenians were called Ionians.' (Strabo, p. 383.) But in course of time the language of Athens acquired a distinct character, and a decided pre-eminence, owing to the excellent works which were written in it on almost every branch of literature. Most of the great works of antiquity which have been transmitted to our times are written in the Attic dialect. Some writers have made two and some three divisions of the Attic dialect, with reference to extant writers; but the general division of the Attic dialect into *old* and *new* seems to be sufficiently exact. To the old belong Æschylus, Sophocles, Euripides, Aristophanes, Antiphon, and Thucydides; to the new Demosthenes, Æschines, and the contemporary orators. The language of Xenophon, Plato, and indeed Aristophanes also, may be considered as possessing a character somewhat intermediate between the two classes, and the name of *middle* may consequently be given to it; but it would be difficult to say exactly how a writer of this middle class is to be distinguished from the writers of the *new* Attic.

After the time of Alexander the superiority of Athenian literature made the language of Athens the common language of those who wrote pure Greek. Aristotle may be considered as the earliest extant writer, not an Athenian by birth, who adopted the language of Athens. The Attic dialect, then somewhat modified under Macedo-

nian influence and by local circumstances, became the common written language of the educated Greeks. This common language of the learned Greeks was called the common dialect (ἡ κοινὴ, or ἡ Ἑλληνικὴ διάλεκτος). Polybius, a native of the Peloponnesus, Strabo, of Asia Minor, Diodorus, of Sicily, and others, belong to the writers who use the Common Dialect. Some late writers affected rather to imitate the pure old Attic standard than to use the modified Attic, or Common Dialect, as Lucian, Arrian in his 'Anabasis,' Aristides, and others.

ATTICA, one of the political divisions of ancient Greece.

Attica has the form of a triangle, two sides of which are washed by the sea, and the third is protected by mountains. The mountain-range which descends from northern Greece forms a knot close upon the Corinthian Gulf, at the huge mass of Cithæron, from which two chief branches are given out. One takes a general S.W. direction, under the ancient name of the Oneian mountains, filling up the greatest part of the narrow isthmus between the N.E. angle of the Corinthian gulf (here called the Alcyonian), and the Saronic gulf; its termination on the shore of the Saronic gulf is at the Scironian rocks (Kakiscala), which press so closely on the coast as to allow no road between their base and the sea. (Strabo, p. 391.) The other branch, which has a general eastern direction and is called the range of Parnes, separates Attica from Bœotia and the valley of the Bœotian Asopus: this range terminates abruptly to the north of Rhamnus, on the sea-coast opposite Eubœa.

According to the late survey of Capt. Copeland, the termination of the range of Parnes may be placed at Cape *Calamo*, on the Euripus, opposite to Cape Aliveri, in Eubœa: above this cape to the west rises an eminence (probably the ancient Phelleus) to the height of 2038 feet, and two other points in the range of Parnes (advancing westward from the supposed Phelleus) are respectively 2758 and 4193 feet high. A considerable part of Parnes is covered with forests of pine, oak, arbutus, and wild pear-trees.

The range of Parnes on the north and the Oneian range on the north-west completely shut in the Attic peninsula, under which term we include also the small plain of Mégaris. Megaris formed one of the four ancient divisions of Attica, and after the death of Pandion it fell to the lot of his son Nisus. When the Dorians invaded the Attic peninsula in the reign of Codrus, they were only able to get possession of the Megaris, which, however, they kept, and founded Megara, a Dorian city, on the confines of their Ionian neighbours of Attica.

A natural boundary separates Megaris from Attica properly so called. A range of high land descends from the N.W. boundary of Attica and terminates on the west side of the bay of Eleusis in two summits (Strabo, p. 395), formerly called Kérata, or the Horns, and now Kandili, in 38° 1′ 53″ N. lat., 23° 28′ 8″ E. long. (Captain Copeland.) Another mountain range, which branches out from Parnes and has a general southern direction, terminates on the east side of the bay of Eleusis, and on the narrow strait which here separates the main land from the island of Salamis. The ancient name of this range was Ægáleos, a term also applied to its southern extremity, which abuts on the coast, and under which Xerxes sat to witness the sea-fight of Salamis. (Herod. viii. 90.)

Between the range of Kerata and that of Ægaleos lies the Eleusinian Plain, one of the natural divisions of Attica.

The Athenian Plain is bounded by the range of Ægaleos on the west. The eastern boundary is formed by the mountains which run southward from Parnes, and forming two masses terminate respectively in Cape Zoster, and in the rocky promontory of Sunium, which is in 37° 39′ N. lat., 2° 0′ 58″ E. long. Thus the transverse ranges of Kerata, Ægaleos, and the mountains on the east side of the Athenian plain, mark three chief natural divisions of Attica, of which the third lies between the eastern boundary of the Athenian plain and the sea.

There is no general name for the mountains which form the eastern boundary of the Athenian plain. The most northern part appears to be the ancient Brilessus (Leake), better known at present under the name of Pentélicus. The highest part of this range, which lies N.E. of Athens, and near the eastern shore of Attica, is 3884 feet. Pentelicus consists of a mass of hard fine-grained white marble, which supplied the materials for the public buildings of Athens. The direction of this mountain mass is about S.E. towards the eastern shore, to which it approaches very close: it is separated from the range of Hymettus by a depression about two miles in length. Hymettus, the highest point of which is 3506 feet, forms the eastern boundary of the Athenian plain down to the western coast.

A hilly district runs along the coast in a S.E. direction from the southern extremity of Hymettus to the mountains of Laurium, where the silver mines were once worked, and to the promontory of Sunium. The whole of this barren district was called by the general term of Parália, or the Sea Coast District. The small extent of level or undulating country bounded by Pentelicus on the N.; Hymettus on the W., the hills of the Paralia on the S., and the sea on the E., was named Mesogaia or the Central Land, a name which is retained in the slightly corrupted form of Mesógia. That mountainous part of Attica which occupies the N.E. angle of the province, between the southern extremity of Pentelicus, the range of Parnes, and the sea, was called Diacria, a name which implies a region interspersed with rugged eminences. The only level part of this district is the small plain of Marathon, which opens to the sea.

It appears, then, that Attica Proper, with respect to its plains, is distributed into four natural divisions:—1, The Eleusinian or Thriasian Plain; 2, The Athenian Plain; 3, The Mesogaia; 4, The Plain of Marathon. The area of Attica may be roughly stated at about 700 English square miles, not including Salamis, which perhaps con-

tains about 40 square miles. Though we now know the coast-line of Attica with accuracy, we are still without that exact knowledge of the inland boundaries which would enable us to avoid considerable error in estimating the surface; but, taking it at 700 square miles, it is nearly equal to that of Worcestershire (718 square miles), and only about one-eighth of that of Yorkshire.

The plain of Peiraike or Oropia, lying between Parnes, the Asopus, and the sea, contained the town of Oropus. Though physically separated from the rest of Attica, and properly considered a part of Bœotia, this district generally belonged to the Athenians. To settle all disputes, Philip gave it to the Athenians after he had taken Thebes.

The sea-coast of Attica contains on the west side the fine bay of Eleusis, which has a great depth of water. The island of Salamis lies in front of the bay of Eleusis.

Proceeding along this coast we come to the ports of Athens, already described [ATHENS]. The extreme point of Attica, Cape Sunium, is now called Colonnes, from the fourteen remaining Doric columns of white marble, which adorned the temple of Athena of Sunium, the tutelary goddess of the land. Sunium was made a strong fort (Thucyd. viii. 4), and the walls are still traceable in all their circuit, except in some parts which, owing to the precipitous character of the rock, needed no defence. The length of the west coast of Attica from the Horns to Colonnes is about 60 miles.

The east coast of Attica from Sunium northwards is rugged and barren, rising into hills covered with trees and brushwood; the hills between Sunium and Thóricus are the silver-mine district of Laurium. Rafti, farther north, a port of considerable size, appears to have belonged to the ancient Prasiæ. On a small island in this bay there is a colossal statue of white marble in a sitting posture, to which the modern name of *Raftes*, 'the tailor,' has been given, and hence transferred to the bay. The Erasinus, the only stream that waters the Mesogaia, runs past Vraona, supposed to be Brauron, and enters the sea three miles north of Port Rafti. About ten miles north of the mouth of the Erasinus some offsets of Pentelicus come close upon the coast, forming the S. and S.W. boundary of the plain of Marathon. North of Marathon, on the coast, Ovrio Castro is on the site of the ancient Rhamnus, and of the temple of Némesis. Parts of a colossal figure found there are supposed to be the remains of the statue of Nemesis, which was the work of Phidias. (Pausan. i. 33.) The coast line from Sunium to Calamo, the extreme point of Attica, is about 60 miles.

Attica is a dry country, and where the soil is not irrigated it is generally unproductive. Two small streams water the Eleusinian plain: one of them, the Cephisus, though almost dry in the warm weather, brings down from Cithæron a prodigious quantity of water in the wet season, and in ancient times mounds were raised to protect Eleusis from those sudden inundations.

The chief river of the Athenian plain is the Cephisus. Its most north-eastern source is at Trinemii (Strab. p. 400), between the northern face of Pentelicus and Parnes. The Cephisus flows southwards on the west side of Athens, through what was called by distinction The Plain; its outlet was originally in the bay of Phalerum, and when the long walls were built it was necessary to make tunnels to carry off so much of the river as was not consumed in irrigation. Strabo remarks, 'that the Cephisus is only a torrent stream, and that in summer it fails altogether.' The accounts of this river are somewhat contradictory: that of Thiersch is as follows:—'The Cephisus is anything but a torrent; it springs from copious and beautiful springs, and is never dry. In the autumn of 1831, in the month of November, when the rains had hardly begun, and the dry weather had continued for eight months, it still flowed, and the natives all assured me that it was never without water. During the whole summer it irrigates the two hundred gardens on its banks, and in winter it supplies water for the olive-trees which are planted in these gardens. To conduct the water to the grounds, the inhabitants have made small trenches and ditches; the irrigation takes place on fixed days and hours, so that each garden is watered twice a week.' The same writer informs us, that the irrigation all through Attica is in an excellent condition, and that the valley of the Cephisus, with its noble gardens and ancient olive-trees, corresponds exactly to the beautiful description by Sophocles ('Oed. Col.' 685) of the fertility conferred on his native district by the Cephisus. The main branch of the Ilissus rises on the north face of the greater Hymettus, from which it takes a turn to the west, and then to the south, running along the east side of Athens. In summer, the Ilissus is quite dry in the neighbourhood of Athens.

The range of Parnes stands like a wall between Attica and Bœotia, but the ascent is much greater from the Athenian side; the ascent from the higher level of Bœotia is less difficult. There are several passes through this range, which were formerly of great importance for the military defence of Attica. The pass of Phyle is about N. by W. of Athens. The fortification, which still retains its name, stands on a steep rock, which can only be approached on the east side, and completely commands the narrow pass. The great eastern pass was that of Decelcia (now Tatóy), which runs past 'the solitary church of St. Mercurius, and descends into the Bœotian plain at Buyáti.' (Leake.) The highest points of Parnes lie between the passes of Decelcia and Phyle: one of the summits between these two points appears to be that to which we have assigned the height of 4193 feet.

The great mass of the mountains of Attica are calcareous, but the stone differs very much in quality and colour. The best specimens of white marble from the quarries of Mendeli (the ancient Pentelicus) are very white, hard, and fine-grained; but, owing to numerous little pieces of flint or quartz imbedded in it, this marble is exceedingly difficult to be worked by the sculptor. Between Pentelicus and Parnes the mass of rocks appears

to be mica slate, which is also the basis of the region of Pentelicus. Marble was also in former times quarried on Hymettus, and, as well as that of Pentelicus, was an article of export. Near the boundary of Megaris in the Horns, there is an immense deposit of conchiferous limestone, which did not escape the notice of Pausanias (i. 44, 6; see also Gell's 'Itinerary of Greece'). The silver-mine district of Laurium may probably still be worked to advantage with the aid of modern improvements. Salt was made in ancient times from the salt-marshes on the coast. Attica cannot produce much grain, and with the exception of some of the best lands, the husbandman cultivates more profitably the olive, fig, and grape: all kinds of leguminous vegetables can be successfully cultivated on the banks of the Cephisus in the Athenian plain. (Thiersch.) The fragrance and abundance of flowers in Attica has rendered Hymettus noted for its honey. Attica is not well adapted for breeding the horse, nor does the cow in general, succeed well either here or in any of the low hot parts of Greece. The sheep, and especially the kid, formed of old a large part of the wealth of the husbandmen; and in Greece generally, at the present day, butter and cheese are solely produced from the milk of the goat and the sheep. The seas round the coast of Attica abound in excellent fish, all the species of which were known to and highly prized by the ancient gastronomists: the red mullet caught about Cape Zoster is as much valued as it ever was. (Leake.)

As to the ancient population of Attica, it is difficult to come to any satisfactory conclusion. Mr. Clinton considers that about B.C. 317 it may have been 527,660, a large population for such a territory (being above 700 to a square mile), even if we take into account that it contained a populous city. The numbers, however, with the exception of the Metœci (who are probably exaggerated in Mr. Clinton's calculation), are fairly deduced from the census of Demetrius the Phalerean, as it is reported in Athenæus (p. 272). The reader is referred to Mr. Clinton's essay for the various arguments. (Appendix to the first volume of the 'Fasti Hellenici.')

Attica is one of the Eparchies of the actual kingdom of Greece; it contains one city, Athens, and above 100 villages. The population is not known.

For more exact information on the physical character of Attica, we must look to the Germans and others at present in the country. Colonel Leake's Essay on the Demi of Attica, in the Transactions of the Royal Society of Literature, is a valuable contribution. See also Thiersch, *De l'Etat actuel de la Grèce*, Leipzig, 1833; and the *Unedited Antiquities of Attica*.

ATTICUS, T. POMPO'NIUS, was descended from an ancient equestrian family. He was born the 9th of March, B.C. 109, being three years older than Cicero. He is sometimes called Q. Cæcilius (Cic. 'Ad Att.' iii. 20), a name which he derived, B.C. 58, from his maternal uncle Cæcilius, who left him a considerable estate.

His early years were spent under the direction of his father, whose taste for literature induced him to give his son a good education. He was successful in inspiring him with his own love of learning. Atticus lived during the most stormy period of Roman history, and yet he contrived to retain the friendship of men of opposite parties. He was on good terms with C. Julius Cæsar, Cn. Pompeius, M. Brutus, M. Antonius, and Cæsar Octavianus, afterwards the Emperor Augustus; but his most intimate friend was Cicero, with whom he kept up a constant correspondence. Pomponia, the sister of Atticus, was married to Cicero's brother Quintus. We still possess the letters of Cicero to Atticus, in sixteen books, one of the most valuable records of that important period, but there is not a single letter of Atticus to Cicero extant. Atticus spent a considerable portion of his life at Athens (from 85 to 65 B.C.); and it is not unlikely that he derived the name of Atticus from his residence in this city. Atticus had also an estate in Epirus, near Buthrotum, where he spent a considerable part of his time. He returned to Rome B.C. 65, the same year in which Horace was born. We have no materials for his life, which was spent in literary retirement, partly out of inclination, for he was a kind of Epicurean, and partly from prudence. He married (B.C. 56) Pilia, of whom we know nothing more than the name. His daughter, Pomponia (called by Cicero also Cæcilia and Attica), married M. Vipsanius Agrippa, the friend of Augustus; and his grand-daughter by this marriage, Vipsania Agrippina, was married to Tib. Claudius Nero, afterwards emperor, by whom she had Drusus. After Vipsania was divorced from Tiberius, she married Asinius Gallus, by whom she had many children.

Atticus died at the age of seventy-seven, March 31, B.C. 32, of voluntary starvation, after he found that he had an incurable disease. He was the author of several works, none of which have been preserved. He wrote Annals, in which he observed a strict chronological arrangement, and traced with much diligence the genealogy of illustrious families. He was particularly happy in the composition of short epigrammatic inscriptions to be placed under the busts of illustrious men. He wrote also a History of the Consulate of Cicero in the Greek language, in a plain unadorned style. (Cic. 'Ad Att.' ii. 1.) Atticus was an active man in looking after his own affairs. His equestrian rank enabled him to hold a share in one or more of those lucrative societies which farmed the public revenues. He had a great number of slaves, who were well educated, and served him as amanuenses and transcribers of books. Accordingly, Cicero ('Ad Att.' i. 1) begs Atticus to see that a copy of his History of his Consulship is placed in Athens, and in every town in Greece; and he also shows, on several occasions, great eagerness to purchase a library which Atticus possessed, and apparently had formed himself. The 'Life of Atticus,' attributed to Cornelius Nepos, is rather the production of a panegyrist than of an impartial writer; but it is apparently a genuine work, and is of a superior character to the other lives attributed to Nepos.

ATTICUS, HERODES. [HERODES.]

ATTILA was the nephew of Roas, a leader of the Huns, who at the beginning of the fifth century was established with his hordes in Pannonia, on the south bank of the Danube. Attila and his brother Bleda succeeded Roas A.D. 433. The first act of their reign was to conclude a peace with the Emperor Theodosius II. on terms disgraceful to the majesty of the Roman empire. Attila extended his dominions from the Danube eastward to the Volga, and northward to the Baltic. In A.D. 446, after crossing the Danube and ravaging the empire to the gates of Constantinople, he compelled Theodosius to come to terms still more humiliating; among which was the cession of the tract along the banks of the Danube extending to the breadth of fifteen days' journey, and the payment of an increased tribute. Soon after Attila procured the assassination of his brother Bleda.

In 448 the historian Priscus accompanied the Roman ambassadors sent to apologize to Attila for the non-fulfilment of some articles of this treaty; and we derive from him some account of the domestic manners of the Huns. In the plains of Upper Hungary, somewhere between the Danube, the Theiss, and the Carpathian Mountains, they came to a large village, which had grown up about the palace of Attila. They found the King of the Huns living in a style of barbarous splendour in a house constructed only of wood. They were received at a sumptuous entertainment, at which the guests were served in silver and gold: but a dish of plain meat on a wooden trencher was set before the king, of which he partook very sparingly. His beverage was equally simple and frugal. A secret agent in this embassy was charged with the disgraceful task of procuring the assassination of this formidable enemy. Attila was acquainted with the real object of the mission; but he dismissed the culprit, as well as his innocent companions, uninjured. The Emperor Theodosius was compelled to atone for his base attempt by a second embassy, loaded with magnificent presents, which the King of the Huns was prevailed on to accept. Theodosius died not long after (July, 450), and was succeeded by the more virtuous and able Marcian.

Attila at this time was collecting an enormous army, and threatened both divisions of the Roman world. He demanded of Marcian the arrears of tribute due from the late Emperor Theodosius. Marcian's reply was, 'I have gold for my friends, and steel for my enemies.' Attila determined to make war on Valentinian first, the emperor of the west. Attila wished for a pretext to enter Gaul, and he closed with a proposal from the son of Genseric, king of the Vandals, to attack Theodoric, king of the Goths. He began by craft what was to be carried on by violence and terror. Valentinian was assured that his warlike preparations were levelled against Theodoric only. Attila crossed the Rhine and committed frightful ravages in Gaul; but his progress was arrested by the combined armies of the Romans and Goths, under the command of Aetius and Theodoric. They compelled him to make a hasty retreat from the siege of Orleans, and came up with him in the extensive plains surrounding Châlons-sur-Marne. There one of the most bloody battles recorded in history was fought, in which Theodoric was slain. The issue might have been considered doubtful, but Attila found it expedient to retreat. He recrossed the Rhine and retired into Pannonia (A.D. 451).

After having reinforced his army, Attila determined to enter Italy, and to demand to wife the Princess Honoria, the sister of Valentinian, whom he had asked for before without success. He crossed the Alps in the beginning of A.D. 452, and destroyed Aquileia. [AQUILEIA.] Verona, Mantua, Cremona, Brescia, and Bergamo, underwent the same fate. While Attila was encamped on the banks of Lake Benacus, he was approached by a supplicatory embassy, led by Avienus and Pope Leo I. He received them with kindness and respect, and consented to a truce with Rome, the duration of which was to depend either on the fulfilment of his claims on the Princess Honoria, or the payment of a proportionate ransom. Jornandes states that, on the signature of this treaty, Attila retired beyond the Danube.

The death of Attila took place in 453, either from the bursting of a blood-vessel, or probably assassination. Jornandes, transcribing probably from Priscus, relates the current story, and the solemn ceremony of his funeral.

Jornandes describes Attila as low in stature, broad-chested, and of powerful frame; dark-complexioned, with a few straggling hairs in the place of beard; with a large head, flat nose, and small eyes. His carriage was fierce and haughty. His empire was overthrown and disjointed immediately upon his death, by the disputes and dissensions of his sons and chieftains.

(Jornandes, *De Rebus Geticis*, and Priscus, *Excerpta de Legationibus*, furnish the best ancient materials for the history of Attila. The account of the embassy by Priscus is translated in Guizot's *Histoire de la Civilisation en France*, tom. iii. For modern compilations, see Buat, *Histoire des Peuples de l'Europe;* De Guignes, *Hist. des Huns;* and Gibbon's *Decline and Fall of the Roman Empire.*)

ATTIRET, JEAN DENYS, called Frère Attiret, a French painter attached to the Jesuit mission at Peking, in the middle of the eighteenth century. He was born at Dôle in Franche-Comté, in 1702, and was first instructed by his father, an obscure painter of Dôle. He completed his studies at Rome. After practising a short time at Lyon, he settled in Avignon, and became a lay-brother of the Jesuits of that place; and when, in the year 1737, the French Jesuits of Peking requested their brothers at home to send them a painter, Attiret undertook to go, and set out in the same year.

In China Attiret soon obtained the favour of the emperor Kien Loong. He continued to reside in China, and was always treated with much distinction by the emperor, though he suffered for some time much annoyance from the Chinese court-painters. He conciliated them, however, by employing them as assistants in painting costumes,

animals, and other secondary portions of his works. The emperor created Attiret a mandarin, but by his position as a Jesuit it was impossible for him to assume the worldly distinction: he died at Peking in 1768, aged 66. (*Extrait d'une Lettre du Père Amiot, du 1 Mars, 1769, de Peking, contenant l'Eloge du Frère Attirel, &c.*, inserted in the *Journal des Sçavans* for June 1771.)

ATTLEBURGH. [NORFOLK.]

ATTOCK, a town and fortress on the east bank of the Indus, in the principality of Lahore, in 33° 53′ N. lat., and 72° 20′ E. long. It stands on a black slaty ridge.

The Indus, having been joined by the Cabool River a short distance above Attock, flows in a tranquil stream about 260 yards wide and 35 fathoms deep under the walls of Attock. The fortress was formerly the residence of the Afghan government, and was then a place of considerable importance; but since 1818, when it came into the possession of the Raja of Lahore, it has been fast falling to decay. It is now a place of little strength. The population of the town is about 2000. (Elphinstone's *Caubul; Journal of the Royal Geographical Society*, vol. iv. p. 295.)

ATTORNEY is a person substituted (*atourné, attornatus*), from *atourner, attornare*, to substitute, and signifies one put in the place or *turn* of another to manage his concerns. He is either a private attorney, authorized to make contracts, and do other acts for his principal, by an instrument called a letter or power of attorney; or he is an attorney at law, who practises in the several courts of common law.

An Attorney at Law answers to the *procurator*, or proctor, of the civil and canon law, and of our ecclesiastical courts. Before the statute 13 Edward I. c. 10, suitors could not appear in court by attorney without the king's special warrant, but were compelled to appear in person, as is still the practice in criminal cases. The authority given by that statute to prosecute or defend by attorney formed the attorneys into a regular body, and so greatly increased their number, that several statutes and rules of court for their regulation, and for limiting their number, were passed in the reigns of Henry IV., Henry VI., and Elizabeth.

1. *The Admission of Attorneys to practise.*—By the 6 & 7 Vict. c. 73, passed in 1843, the laws relating to attorneys and solicitors practising in England and Wales were consolidated. In the new act care is taken to prevent unqualified persons practising, and persons who seek to be admitted attorneys are subjected to an examination. The control of the profession, from the period of admission, and so long as they continue in practice, is confided to the Incorporated Law Society, which is appointed registrar of attorneys and solicitors. The Commissioners of Stamps are not to grant any certificate until the registrar has certified that the person applying is entitled thereto; and the commissioners are annually to deliver to the registrar all such certificates, with the date when they were granted. Persons who had discontinued their certificates to practise in the superior courts, but who were in the habit of practising in the inferior courts, and at the sessions and assizes, are now obliged to take out certificates, and are thus brought under the controlling power of the incorporated society. The act simplifies proceedings against members guilty of professional delinquency.

No person, unless he has taken a degree at the universities of Oxford, Cambridge, Dublin, Durham, or London, can be admitted an attorney or solicitor without serving a clerkship of five years to a practising attorney in England and Wales, and having undergone an examination; but a person who has taken the degree of Bachelor of Arts or Bachelor of Law at any of the abovementioned universities can be admitted after having served three years; but the degree in Arts must have been taken within six years after matriculation, and in Law within eight years; and the articles of clerkship must commence within four years after the degree has been taken. There is a provision which enables a clerk to serve one year of his articles with a barrister or special pleader, and one year with a London agent. An attorney cannot have more than two clerks at one time, and must make affidavit of being duly enrolled within six months after he takes a clerk. Before a clerk can be admitted an attorney he is required to make affidavit of having duly served, and he next undergoes an examination by the several masters of the courts of Queen's Bench, Common Pleas, and Exchequer, with whom are associated other examiners, who are attorneys, and are appointed annually by the Incorporated Law Society. For the above purpose eighty or ninety questions are to be answered, which are arranged under the following heads:—1, common and statute law, and practice of the courts; 2, conveyancing; 3, equity and practice of the courts; 4, bankruptcy and practice of the courts; 5, criminal law, and proceedings before justices of the peace. There are *some preliminary* questions, two of which are for the purpose of ascertaining what law-books have been read and studied, and if the person under examination has attended lectures upon the law.

The Master of the Rolls has assimilated the practice of his court regarding notices of admission and renewal of certificates to that of the common law courts. Every person not previously admitted an attorney of these courts, or one of them, before he can act as a solicitor of the Court of Chancery, must undergo an examination touching his fitness and capacity. The examiners appointed by the Master of the Rolls are twelve in number, and any five of them are competent to act. They are appointed annually. On being admitted as attorney or solicitor, the oath of allegiance is required to be taken, and an oath to the following effect:—'I, A. B., do solemnly swear (or affirm) that I will truly and honestly demean myself in the practice of an attorney (or solicitor, as the case may be) to the best of my knowledge and ability. So help me God.'

The act makes some alteration in general practice, particularly in respect to costs, by enabling a solicitor to obtain the taxation of his own bill without the expense and delay of an action. The certificate of the taxing-master is rendered final.

A bill cannot be taxed after a verdict or writ of inquiry, or after twelve months from the delivery of the bill, except under special circumstances, nor under any circumstances after twelve months' payment.

2. *The Duties, Functions, Privileges, and Disabilities of Attorneys.*—The principal duties of an attorney are care, skill, and integrity. He is not responsible for mere error or mistake. If he be deficient in proper skill or care, and a loss thereby arises to his client, he is liable to a special action on the case. When an attorney has undertaken a cause, he cannot withdraw from it; and though he is not bound to proceed if his client neglect to supply him with the necessary money, yet before an attorney can abandon the cause on the ground of want of funds, he must give a reasonable notice to the client of his intention. When deeds or writings come to an attorney's hands in the way of his business as an attorney, the court, on motion, will make a rule upon him to deliver them back to the party on payment of what is due to him on account of professional services and disbursements; but, unless they come to his hands strictly in his business as an attorney, the court will not make a rule, but leave the party to bring his action against the attorney.

An attorney duly enrolled and certificated is considered to be always personally present in court, and on that account has still some privileges. By the late act for uniformity of process, 2 Will. IV. c. 39, an attorney now sues and is sued like other persons. An attorney is exempt from offices requiring personal service, as those of sheriff, constable, overseer of the poor, and also from serving as a juror.

An attorney is subject to some disabilities and restrictions. No attorney practising in the King's Courts could formerly be under-sheriff, sheriff's clerk, receiver, or sheriff's bailiff; but that part of the act (1 Hen. V. c. 4) which related to under-sheriffs is repealed by 6 & 7 Vict. By rule of Michaelmas Term, 1654, no attorney can be a lessee in ejectment, or bail for a defendant in any action. By 5 Geo. II. c. 18, s. 2, no attorney can be a justice of the peace while in practice as an attorney; and this clause is not repealed by 6 & 7 Vict., but there is an exception in favour of justices in any city or town being a county of itself, or any city, town, cinque port, &c. having justices within their respective limits.

3. *The Consequences of an Attorney's Misbehaviour.*—The court which has admitted an attorney to practise, exercises a summary jurisdiction over him, either for the benefit of his clients or for his own punishment in case of misconduct. If he is charged on affidavit with fraud or malpractice, contrary to justice and honesty, the court will call upon him to answer the matters of the affidavit; and if he do not distinctly deny the charges imputed to him, or if he swear to an incredible story in disproof of them, the court will grant an attachment. If the misconduct of the attorney amount to an indictable offence, the courts will in general leave him to be indicted by the party complaining. If the attorney has been fraudulently admitted, or has been convicted of felony, or any other offence which renders him unfit to practise, or if he has knowingly suffered his name to be used by a person unqualified to practise, or if he has himself acted as agent for such a person, or if he has signed a fictitious name to a demurrer purporting to be the signature of a barrister, or otherwise grossly misbehaved himself, the court will order him to be struck off the roll of attorneys; but in some instances the court will permit him to be restored. An attorney may procure his name to be struck off the roll, on his own application; which is done when an attorney intends to be called to the bar. But it is necessary for him to accompany his application with an affidavit to the effect that he does not make the application in order to prevent any other person making it against him.

4. *The Attorney's Remedy for recovering his Fees.*—An attorney may recover his fees from his client in an action of debt or *indebitatus assumpsit*, which he may maintain for business done in other courts as well as in that of which he is admitted an attorney. The 2 Geo. II. c. 23, is repealed, but s. 23 is preserved in the new act, which provides that no attorney shall sue for the recovery of his fees or disbursements till the expiration of one lunar month after he has delivered to his client a bill of such fees or disbursements, written in a legible hand, and subscribed with his own hand; and on application of the party chargeable by such bill, the court, or a judge or baron of the court in which the business is done, may refer the bill to be taxed by the proper officer; and if the attorney, or party chargeable, shall refuse to attend such taxation, the officer may tax the bill *ex parte*, pending which reference and taxation no action shall be commenced for the demand; and on the taxation and settlement of the bill, the party shall pay to the attorney, or as the court shall direct, the whole sum due on the bill, or be liable to attachment or process of contempt; and if it is found that the attorney has been overpaid, then he shall forthwith refund. The statute only applies to fees and disbursements for business done in a court of law or equity. If the whole bill were for conveyancing, it could not formerly be taxed, but conveyancing costs may be taxed under 6 & 7 Vict. c. 73.

An attorney has a lien for the amount of his bill upon the deeds and papers of his client which have come to his hands in the course of his professional employment; and, till his bill be paid, the court will not order them to be delivered up, nor can an action be maintained for them. The attorney has also the same lien on any money recovered by his client which comes to his hands in the character of his attorney. His client is not permitted to discharge him and substitute another without obtaining the leave of the court or a judge's order for that purpose, which is never granted except upon the terms of paying the first attorney's bill. See Rule, 2 Will. IV. reg. 1, s. 93.

(Bac. *Abridgment*, tit. 'Attorney,' 7th edition; Tidd's *Practice*, 9th edition, chaps. iii. and xiv.)

ATTORNEY, LETTER OR POWER OF. [Letter or Power of Attorney.]

ATTORNEY-GENERAL. The attorney-general is a ministerial officer of the crown, appointed by letters-patent. He is the attorney for the king, and stands in precisely the same relation to him that every other attorney does to his employer. The addition of the term 'general' to the name of the office probably took place in order to distinguish him from attorneys appointed to act for the crown in particular courts, such as the attorney for the Court of Wards, or the master of the Crown Office, whose official name is 'coroner and attorney for the king' in the Court of King's Bench. By degrees the office has become one of great dignity and importance. The duties of the attorney-general are to exhibit informations and conduct prosecutions for such heinous misdemeanors as tend to disturb or endanger the state; to advise the heads of the various departments of government on legal questions; to conduct all suits and prosecutions relating to the collection of the public revenue of the crown; to file informations in the Exchequer, in order to obtain satisfaction for any injury committed in the lands or other possessions of the crown; to institute and conduct suits for the protection of charitable endowments, in which the king is entitled to interfere; and generally to appear in all legal proceedings and in all courts where the interests of the crown are in question.

All questions respecting the precedency of the attorney-general and the sergeants were terminated by a special warrant of King George IV., when Prince Regent, in the year 1811, by which it was arranged that the attorney-general and the solicitor-general should have place and audience at the head of the English bar.

A discussion arose during the session of parliament 1834, at the hearing of a Scotch appeal in the House of Lords, upon the question of precedency between the attorney general and the lord advocate of Scotland, which was finally decided in favour of the former.

ATTORNMENT is defined by Lord Coke to be 'an agreement of the tenant to a grant of a seigniory, rent, or manor, or of the donee or lessee to a grant of the reversion or remainder.' An attornment was necessary in all conveyances of a manor, services, remainder or reversion which operated by the common law: for in such case, if there was no attornment, the grant was void. The 27 Hen. VIII. c. 10, rendered an attornment unnecessary where the estate passed by way of use: and now, by the statutes 4 & 5 Anne, c. 16, ss. 9, 10, and 11 Geo. II. c. 19, s. 11, both the necessity and efficacy of attornments have been almost entirely taken away. An attornment may be either express or implied: an express attornment is when the tenant, after hearing the grant, expresses his agreement to it, as by using any words which show his assent to the grant; implied, when he pays rent to the grantee, or does any act acknowledging the grantee's title. (Comyn, *Digest;* Co. Litt. 309 a.; Saunders' *Rep.*, i. 234 a. note 4, ed. 5, 1845.)

ATTRACTION, from two Latin words signifying a *drawing towards*, is a name given to that quality by which the bodies of the universe, or the molecules of the same body or of different bodies, approach one another when not prevented from doing so. That tendency by which bodies when unsupported approach the earth is called Gravitation, and that by which the minute particles of bodies are held together is called Cohesion. The attraction by which particles combine together chemically is called Affinity; and those actions which exist between the particles of the electrical and magnetic fluids, or between these and the particles of bodies, are called Attractions of Electricity and Magnetism.

The meaning of the term Attraction has been obscured by the verbal disputes of a century and a half. Considering the importance of correctly understanding a word which is in such universal use, we shall endeavour to point out the various ways in which it has been misunderstood. The applications of the word to the experimental facts which it implies, such as attraction of gravitation, attraction of cohesion, electrical attraction, capillary attraction, &c., must be looked for under the heads GRAVITATION; COHESION; ATTRACTION, ELECTRICAL; AFFINITY; MAGNETISM, &c.

When a word has been the subject of dispute, especially when there have been ignorant and learned men on both sides, it generally happens that several different meanings have been affixed to it. In the present instance we are obliged to make use of more terms than one to represent the various senses in which *attraction* has been used. We shall therefore explain what we mean by *mathematical* attraction, *mathematico-physical* attraction, and *physical* attraction. The reader may supply any terms which he likes better, if he will take care to distinguish their meanings.

1. When we see the body A move towards B, we see the effect that would be produced, if B, directly or indirectly, had the power of *drawing* A *towards it*, or of *attracting* it. But if we only see the fact, and measure the law of the motion, and find thereby that A moves as it would move if B did attract it according to some simple law, we can then find what is to take place during the rest of the motion, if the same law continue. For, in the mathematical formulæ, deduced from principles which have always been admitted and appealed to by the opponents of attraction themselves, it clearly is of no importance, as to results, whether we substitute the real truth of nature, or that which is equivalent to it in its effects, or in the particular effect under consideration. Thus, if the earth move round the sun, in just the same manner as it would do *if* the sun attracted it according to the Newtonian law, then that law may be used as a means of deducing future phenomena. A person who admits so much, admits what we mean by *mathematical* attraction.

2. When A not only moves towards B, but it is plain that B is in some way or other an agent in the motion of A, there is what we will call *mathematico-physical* attraction. Place a needle so as to swim on water, and hold a magnet north of it; the needle will slowly move towards the north. But place the magnet east, and the north-

ward motion will be almost immediately destroyed by the resistance of the water, and the needle will then move east; and so on for any other point of the compass. Here then, in addition to the conclusions we might draw from the preceding paragraph, we see that the magnet is in some way or other an actor.

3. By *physical* attraction is implied a power residing in B, by which A is drawn to it without the intermediation of any other cause whatever, except the will of the Creator. If a space of the universe could be entirely cleared of matter, except only two portions (particles or atoms, if such things are), A and B, at rest; then if A would necessarily begin to move towards B by some power in B, which is as much a part of its actual existence as its figure or impenetrability, there exists what we mean by *physical* attraction. Whether there be such a power or not is not known; nor, we think, can it ever be known.

We now proceed to inquire what are the proofs that *mathematico-physical attraction* does really and universally take place between the portions of matter composing our universe. This question divides itself into the proofs of matter attracting and being attracted by matter *upon our earth;* and the matter of our earth attracting and being attracted by the *matter of other planets.*

The actual existence of the attraction of particle on particle is proved by Cavendish's experiment [WEIGHT OF THE EARTH], by the Schehallien experiment, and by the experiment of Baron Zach. [ATTRACTION OF MOUNTAINS.]

We now come to the question how the attraction of the particles of one heavenly body on those of another is established. The *resumé* of the argument is this:—The phenomena which *do* take place in the heavens are those which common and undisputed mechanical and mathematical reasoning show *would* take place if the Newtonian law be true. And every phenomenon of importance has been gradually brought under the consequences of this law by various analysts. To recount instances would be to make a summary of astronomical terms; but we will select one, which, in one sense, is the most dubious, namely, the phenomena of the tides. For, whereas the place of the moon or a planet is predicted within from half a second to a second of time, the time of high water cannot yet be predicted within some minutes, at least in a port. How much this phenomenon may be affected by winds or the nature of the coast, is not difficult to conceive; but the following result is a striking specimen of accordance between theory and fact. If the tides proceed from Newtonian gravitation, the mean *tide-day*, or interval between successive times of high water, must be equal to the time between the moon's coming on the meridian above and below the horizon, or, roughly speaking, two tide-days make a lunar day. It is found by analysis that, if the Newtonian theory be true, the average tide day must be exactly equal to half the average lunar day, though particular instances of the two may differ many minutes. This is found to be the fact: for if the tide-day were more than half the lunar day by as much as one-tenth of a second on the average, that is, if the tides lagged, one with another, by $\frac{1}{10}''$ daily, two thousand years would have seen high water at every possible part of the lunar day. But for two thousand years it has never been denied that high water takes place at every port within a certain time (usually less than four hours) of the moon's coming on the meridian. Again, a permanent retardation would, in course of time, bring high water when the moon was precisely on the meridian, for a long succession of days together: a result which never has been observed, and which, according to the Newtonian theory, is impossible.

An immense number of accordances between theory and observation, and there being no assignable discrepancy whatsoever, of any considerable amount, form the nature of the proof of the Newtonian law. And it must be observed that this has not been done in a day, or by one person, but in a century and a half, and by philosophers of several countries—not by men prejudiced in favour of Newton, but the contrary; for it was long before his doctrines found their way over to the continent, and the dispute about the invention of fluxions had laid the foundations of a strong anti-Newtonian prejudice.

We shall now give some account of the disputes upon the word attraction; but, first, we shall show how it was used by Newton. The writings of this great man may be divided into mathematical and physical: the propositions of the 'Principia' are mathematical, interspersed occasionally with scholia, in which conjectures are made upon the cause of this mathematical or at most mathematico-physical attraction. Newton was very far from supposing what we have called physical attraction, as the following extract from the 'Principia' will show:—

'Thus far I have explained the phenomena of the heavens and the sea by the force of gravity; but I have *not yet* assigned the cause of gravity. .....The reason of these properties I have *not yet* deduced from phenomena, and I do not invent hypotheses. For whatever is not deduced from phenomena is called *hypothesis;* and hypotheses, be they metaphysical, physical, of occult qualities, or mechanical, have no place in experimental philosophy.....It is enough that gravity really exists, and acts according to laws laid down by us; and suffices to explain all the motions of the heavens and the sea.'

Again, in the 'Opties,' Newton dwells upon the same distinction between a phenomenon and its cause, and says that attraction may be caused by an impulse or some other unknown cause. But once for all, both against Newton and his opponents, we must observe, that an invisible fluid leaves the difficulties of the question where it found them. If this fluid have the common properties of matter, what is there to explain the mutual repulsion of its particles? Must they have a fluid to cause that phenomenon, and so on *ad infinitum*, or must an unknown cause of repulsion take the place of an unknown cause of attraction?

Leibnitz called attraction an *occult quality*, and a *miracle*. The first term was the horror of the continental philosophers about his time. Their predecessors had attributed various properties to matter which could not be proved by experiment, which were justly called *occult* (or hidden). In their desire to be rid of all such, succeeding philosophers would not only abolish the qualities of matter which they had invented, over which of course they had absolute power, but they tried also to abolish their own ignorance of the causes of the *sensible* qualities of matter. They would not have *occult* causes, and Leibnitz plainly confounds *occult* quality with *occult* cause.

The objections made to the Newtonian attraction have been, with one or two exceptions, the work of those who had obviously not read Newton, or any geometrical work on the subject. We must take them in classes, and describe them as far as our limits will allow us to do.

1. We have those contained in axioms, which are either unproved or unmeaning, such as '*matter* cannot *act* where it *is* not.' Those who bring this forward should explain the three hard words which they have put in italics; and we should then see whether this be self-evident or not.

2. We have those who would substitute pure hypothetical causes, such as Newton declines entering into, to explain the phenomenon of attraction. One writer requires no more than that all bodies should be composed of two distinct sets of particles, the one set of water, the other of some volatile fluid from which he thinks he deduces attraction; another is satisfied with an efflux and reflux of a fluid from and to the sun, to cause what he denominates the centripetal and centrifugal forces; evidently confounding the nature of the two in a manner which could not have been done by any person who had read Newton. A third fills the whole universe with streams of matter which are always passing through every point in every direction.

3. We have those who leave out of view the main fact, that Newton explains phenomena as they really are, and who treat the *results* as hypothetical, as well as the *principle*. 'Let the idea,' says one writer, 'of particles of matter attracting each other be impressed upon the mind, and it will then dilate upon their mutual actions, calculate the density of substances composed by them, whirl them at pleasure in empty space, and show in what manner their motions will be disturbed by the actions of each upon the other.' But it is here forgotten that the 'whirls' alluded to were not made 'at pleasure,' but they were 'whirls' actually taking place which were examined, in order to see how they did whirl.

4. Another class of objectors cannot conceive how attraction can be, and therefore they reject it.

5. All the above objections have been at one time or other advanced by men of knowledge: there remains one class more, namely, that of men who, being ignorant of mechanics, deduce from wrong reasonings results which are not found in the heavens, on which they deny the truth of the principle. To this class, we are happy to say, personal aspersion, and imputations of intentionally misleading others, have been for the most part confined. The common mistake is a confusion between the words *velocity* and *force*, being much the same as if they confounded the drops which are pouring into a cistern for the time being, with the whole body of rain in the cistern itself. We quote another instance. A certain traveller remarks that it cannot be that the sun attracts a planet at the very time when the planet is flying off from it. 'What more could it do, if it were really repelled?' He does not see that the same argument applies to a stone thrown up into the air; and moreover that what it could do more, if really repelled, would be to describe a *convex* curve, instead of one always *concave* towards the centre of force.

The history of attraction, independently of that of astronomy, consists in some scattered hints upon the principle, to be found in writers of all ages, previous to the time of Newton; sometimes as a mere word expressive of an unknown cause, but more frequently upon the assumed principle that like things must always move towards like. Mention of something of the kind is found in Aristotle, Plutarch (who records it as a very ancient opinion that the moon's centrifugal tendency was balanced by her weight), Lucretius, and other ancient writers. Roberval, Kepler, Galileo, Borelli, and others, revived the idea, but without deducing any phenomena, except that of the descent of falling bodies, which was explained by Galileo. Bouillaud suggested that the law of attraction must be the inverse square of the distance; but without any substantial reason. Huygens found the law of the centrifugal and centripetal forces of a body moving in a circle; and Hook described the principal phenomena in 1674, in terms remarkably curious, but without deducing any of the heavenly motions. Newton was the first who showed that Kepler's laws were necessary, upon the supposition of an attraction inversely as the square of the distance; and impossible upon any other.

On the continent, the Cartesian doctrines generally prevailed till Maupertuis, in 1732, first broached the question, in his 'Discourse on the Figure of the Stars.'

The law of corpuscular or molecular action, as it is called, or that power by which the particles of bodies act on one another at insensible distances, is not with certainty known, but a high degree of probability now exists that the intensities of all the attractions and repulsions between the particles of bodies vary inversely as the squares of the distances. This important addition to the theory of attraction is due to M. Mossotti, who published it in a pamphlet, entitled 'Sur les Forces qui régissent la Constitution Intérieure des Corps,' &c. 4to, Turin, 1836. This pamphlet is translated in Taylor's 'Scientific Memoirs,' vol. i.; and Mr. Pratt, in the second edition of his 'Mechanical Philosophy,' has given the mathematical view which is necessary for the simple cases of molecular action.

Mossotti's theory is, that, if there exist in space molecules of matter which repel each other, in a fluid or ether of which the particles also repel

each other, while the particles of the matter attract those of the ether, it is obvious that each of the particles of matter will, by its attraction, collect about it a condensed atmosphere of ether. If the attractions and repulsions be all inversely as the squares of the distances, he finds that, in consequence of the atmospheres of ether, two molecules at a distance r (the attraction of the particles of matter for those of ether being presumed a little, and but a little, greater than the repulsion of the particles of matter from each other) will repel each other with a force represented with great approximation by the formula

$$\frac{A(1+\alpha r)\epsilon^{-\alpha r}-B}{r^2},$$

where A, α, B are certain positive constants. To make the results agree with observed facts, α must be considerable, and A much greater than B. When the formula is positive, repulsion is represented; when negative, attraction. When r is very small, the formula is positive, and represents repulsion; when r increases to a certain value, it vanishes, and afterwards becomes negative: at the value of r just mentioned there is stable equilibrium. As r still increases the attraction increases, becomes a maximum at another certain value of r, and afterwards, if α be considerable, diminishes as the inverse square of the distance, or in a ratio incomparably near to it. All this agrees with the facts of observation, and with the numerical law of the facts as far as we know it; to which it must be added that an increase of the density of the ether would increase the distance at which particles are in equilibrium, which is generally done by increase of temperature. By the above theory the principal facts of cohesion, gravitation, and caloric are made consequences of one law. This may or may not be the law of nature; but in the latter case it may still be valuable as a suggestion towards finding the right law.

ATTRACTION OF MOUNTAINS. Under WEIGHT OF THE EARTH an account is given of the experiments from which the attractions exercised by material substances, as balls of lead, on one another have been determined; and it is here intended merely to mention the occasions in which the attractions of large masses, as mountains, have been found to produce sensible effects in changing the general direction of the force of gravity at stations near such masses.

The discrepancies observed in the lengths of the degrees of latitude on the earth's surface, which were determined from some of the earliest geodetical operations in Europe, led to a suspicion that, by inequalities in the lateral attractions of the earth about the stations at which, for the purpose of obtaining the latitudes, the instruments for observing the zenith distances of the stars were set up, the plumb-lines of the instruments were caused to deviate from the direction of a normal to the earth's surface; so that the angle between the plumb-line and a line drawn from the centre of the instrument to the star might not be the correct zenith distance of the star: and the first attempt to ascertain the existence and amount of such lateral attraction was made in 1735 by Bouguer and La Condamine, in the vicinity of the high mountain Chimborazo, near Quito in Peru. Several unfavourable circumstances conspired, however, to prevent the observations from being made with sufficient accuracy, and the mathematicians were not even able to place their instruments on opposite sides of the mountain; hence the result which they obtained is considered as uncertain. Two stations were chosen, both on the south side, and one near the foot of the mountain, while the other was about 1000 yards from it; and a comparison of the observed zenith distances of stars indicated that the effect of the lateral attraction of the mountain on the plummet of the instrument was to produce a deviation amounting to 7.5″ in the direction of the suspending line.

In 1772, Dr. Maskeline, the Astronomer Royal, was appointed to make observations near Schehallien, a mountain ridge running east and west in Perthshire, for the purpose of determining the amount of the lateral attraction. In 1774, the ground having been surveyed, two stations were chosen, one on the north and the other on the south side of the mountain. The meridian distance of these stations was 4364.4 feet, and, consequently, the difference of their latitudes 42.8″ nearly. At both stations the zenith distances of stars were observed, and a mean of the differences of latitude determined from all the observations was found to be 54.6″: the difference, 11.6″ between this number and the computed difference of latitude is a consequence of the sum of the attractions exercised by the mountain, in opposite directions, on the plummet. The sum of these opposite attractions is, therefore, to the whole attraction of the earth, as tangent 0° 0′ 11.6″ is to radius; or, allowing for the centrifugal force caused by the rotation of the earth, as 1 to 17804 (Hutton's 'Tracts,' Tract 26.) Assuming the density of the matter in the mountain to be equal to the mean density of the earth, Dr. Hutton found that the sum of the opposite attractions of the mountain would be, to the whole attraction of the earth, as 1 to 9933.

In 1810 Baron Zach undertook a work similar to that of Dr. Maskeline, in which he employed a different kind of instrument and a different method of verification. He was carrying on a trigonometrical survey in the neighbourhood of Marseille, and he had three small observatories near Mount Mimet, north of that town. He obtained the latitudes of these observatories by measuring on the earth their position with respect to other stations too distant from the mountain to be sensibly affected by it. He then obtained the latitudes of his observatories by astronomical observations on the spot. All three, without exception, gave a difference of 2″ between the geodetical and astronomical latitudes, and in all the observed latitude was greater than that which was measured; being the kind of effect which would be produced by an attraction in the mountain.

(*Attraction des Montagnes*, par M. Zach, Avignon, 1814.)

ATTRACTION, ELECTRICAL. Under this designation it is intended to notice the apparent attractions and repulsions which take place when bodies are in particular states with respect to electrical power.

From a very early time it was known that amber, when excited by being briskly rubbed, seemed to draw towards it such light bodies as straws and feathers; and the phenomenon, as well as that of an apparent repulsion, is now exhibited in a more striking manner by presenting a cylinder of excited glass or of excited wax to a pith ball suspended by a silk line. [ELECTRICITY.]

In attempting to explain by what means these actions might arise, it was at one time imagined, and such was the hypothesis of Watson and Franklin, that there exists in all material substances a fluid whose particles exercise upon one another attractive or repulsive powers, while a mutual attraction takes place between the fluid particles and those of the substance with which they are combined; but the theory being open to objections, it was subsequently abandoned for one which was proposed by Symmer in England, and Du Fay, on the Continent, nearly at one time. This, which is now generally received, consists in the assumption of two fluids, of directly opposite qualities, existing at the same time in combination with the particles of all bodies in nature: the particles of each fluid are conceived to exert on one another a strong repulsive force, while the particles of the unlike fluids mutually attract each other. The phenomena of attraction or repulsion in bodies with which the electrical particles are combined, is conceived to depend in part on the pressure of the atmosphere, and in part on the conducting powers of the bodies. Thus, if by any excitement electrical particles be collected on the surfaces of two bodies (suppose two spheres) which are non-conductors, they will be retained there by the pressure of the surrounding air, and by the impermeability of the material: hence the bodies must take the motions which result from the repulsion or attraction of the fluids on them, according as those fluids are of the same or of unlike kinds. If one of the bodies be a conductor and the other a non-conductor, and they be both charged, for example, with electricity of the same kind; while that which is on the surface of the latter suffers little change of disposition, that which is on the other moves freely through its substance, and is, by the mutual repulsion of the particles, driven in abundance to the opposite side, so as to be more dense, or to form a thicker stratum there than on the side nearest to the non-conductor. But, the reaction of the electrical fluid against the surrounding atmosphere being proportional to the square of the thickness of a stratum, it follows that there is an excess of force tending to make the conducting body recede from the other; and it is easy to perceive that a like explanation may be given of the contrary movement which takes place in the conducting body when the two are charged with unlike kinds of electricity. The experiments of Coulomb with the electrical torsion balance have proved that the attractive and repulsive forces vary in intensity inversely as the squares of the distances between the particles; and that at equal distances the attractions and repulsions are exactly equal.

When a magnetized body is placed near one which is not so, a decomposition of the natural magnetism in the latter takes place, similar to that decomposition of the electrical fluids which occurs when a body in its natural state is brought near one which has been excited by friction [ELECTRICITY]; and all the phenomena exhibited by magnetized bodies on one another are capable of being explained on the hypothesis of two fluids, the particles of which repel or attract one another according as they are of the same or of unlike kinds, the intensities of the forces being inversely proportional to the squares of the distances.

The hypothesis of two fluids moving in opposite directions is also adopted in order to explain the phenomena of galvanism and electro-magnetism. Oersted, the discoverer of the electro-magnetic action, conceived that, when the circuit is completed by the wire connecting the opposite poles of a galvanic battery, the positive fluid passing from the zinc to the copper, and the negative fluid passing from the copper to the zinc, which would move in straight lines if unimpeded, by acting against each other, are compelled to move spirally about the wire; and this opinion is still generally held, it being supposed that the turns of the spiral are very near one another, so that they may be considered as circles whose planes are perpendicular to the axis of the wire. The currents thus revolving are supposed to act on the particles of a balanced magnetized needle placed in the vicinity of the wire, disposing those particles to arrange themselves parallel to the axis of the needle, so as to bring the latter in the position of a tangent to the curve described by the fluid about the wire.

The hypothesis of Ampère differs from that which has been just stated. This philosopher having formed the conducting wire into two parts which could be so connected with the opposite poles of a galvanic battery that the current of positive electricity might be made to pass along the two parts, either in the same direction or in contrary directions, found that, in the former case, the wires (which were delicately suspended in horizontal and parallel positions) seemed to attract, and in the other case to repel one another. He from thence inferred that the fluids passed in rectilinear directions, or parallel to the axes of the wires, and that the particles were so polarized as to present to each other, laterally, when they moved in the same direction, sides which had powers of attraction; and, when they moved in contrary directions, sides which had powers of repulsion: he further supposed, in order to account for the effect of the wires on a magnetized needle, that magnetic currents revolve about every particle or rather every physical point of a magnetized body, as it were in the plane of an equator to an infinitely small sphere; and he assumed that the fluid in the conducting wire of a battery exerts actions upon these revolving currents, by which the planes of the revolutions are brought into such positions that, if produced, they would pass through the

axis of the conducting wire. It is evident, however, that the effect thus produced on the needle is the same as that which was before described; for, as the planes of the revolving currents are supposed to be perpendicular to the axis of the magnetized body, that axis must tend to place itself in the direction of a tangent to a circle supposed to be perpendicular to the axis of the conducting wire of the battery.

It has been ascertained that the current of electricity produced by the electrical machine causes deviations in a magnetized needle; and it is now generally believed that the electric, galvanic, and magnetic fluids, if such there be, are identical.

ATTWOOD, GEORGE, was born in 1745, took a distinguished degree at Cambridge in 1769, and afterwards became fellow and tutor of Trinity College in that university. He gave public lectures in experimental philosophy, and died in 1807. He is known by a contrivance called 'Attwood's Machine,' the principle of which merits some notice.

Suppose weights of six and seven pounds hang over a pulley, the weight and friction of which we neglect for the present; if both weights were six pounds, the machine would not move: therefore, the moving pressure is the one pound by which the one weight exceeds the other. This weight, if it had only its own mass to move, or if it fell freely, would generate 32⅛ feet of velocity per second; but before this system can move, 6 + 7, or 13 lbs. must be stirred by 1 lb., and there will only be the 13th part of 32⅛ feet of velocity produced in one second, that is, about 2⅜ feet. Therefore, in one second, the heavier weight will fall only 1½ foot; and in five seconds, 25 times as much, or 30 feet. And the velocity acquired may be reduced in any proportion, by making the weights more nearly equal.

Attwood's machine is a pulley, the pivots of which, instead of being placed in a block, are sustained on friction wheels, to diminish the friction. Two weights are hung over this by a string, and the mass moved consists of the two weights, the pulley, and the friction wheels.

The length described in any time is measured by a vertical scale of feet, placed close to the line of motion of one of the weights. To measure the velocity acquired at any point, the moving pressure (the excess of one weight above the other) must be taken off, in order that there may be no fresh accession of velocity, or that the system may proceed only with the velocity acquired. This is effected by making the larger weight in two parts, one part equal to the smaller weight, and the other of course to the excess of moving pressure. The latter is so formed that it cannot pass through a certain ring, while the former can. By fixing this ring to any required point of the scale of feet, the moving pressure is taken off when the larger weight passes through it.

Attwood's machine is not a very satisfactory proof of the laws of uniformly accelerated motion, because the constancy of the retardation caused by the complicated motion given to the pulleys, and by the friction, is a more difficult experimental fact than the one to be proved. Of the four principles—1, the law of uniformly accelerated motion; 2, the constancy of the retardation caused by the having to communicate every acceleration also to the pulley and friction wheels; 3, the constancy of the retardation arising from friction; 4, the smallness of the resistance of the air to small velocities—this machine may be made to prove any one to a spectator who admits the other three.

ATTWOOD, THOMAS, was born in 1765, and commenced his professional education as one of the 'children of the Chapel-Royal,' under Dr. Nares, and his successor, Dr. Ayrton. On the change of his voice, and consequent retirement from the king's service, he was sent abroad, by and at the expense of his patron, the Prince of Wales, for the purpose of completing his studies in the schools of Italy. He first went to Naples, where he studied under Filippo Cinque and Gaetano Latilla; but he received far more valuable instructions from Mozart, whom he visited at Vienna. On returning to England, young Attwood was made one of the chamber-musicians to the king. Afterwards he was appointed musical preceptor to the Duchess of York and the Princess of Wales. In 1795, the dean and chapter of St. Paul's elected him as organist of that cathedral; and in the following year, on the death of Dr. Dupuis, he was appointed composer to the Chapels-Royal. For the coronation of George IV. he wrote his fine anthem, 'The king shall rejoice;' and for that of William IV. another equally fine, 'O Lord, grant the king a long life.' In 1837 he was, without solicitation, appointed, by the Bishop of London, to succeed Mr. Stafford Smith, in the office of organist of the Chapels-Royal. He died in March 1838, and his remains were deposited in St. Paul's Cathedral, under the organ.

Mr. Attwood's compositions are so numerous, in music for the church, the concert room, and the theatre, that we can only say, generally, that a more than usual proportion of them are likely to reach distant posterity. His cathedral works unite the elegance of the modern school with the becoming sobriety of English church music.

ATYA (Zoology), a genus of crustaceous animals, thus characterized by Leach:—*Antennæ, interior,* furnished with two bristles, inserted in the same horizontal line; *exterior,* inserted below the interior, about the length of the body, furnished at the base with a great scale which is unidentate, or one-toothed externally. *Pedipalpi* external, the last joint shortest. *Flagrum* elongated. *Feet:* The two anterior pairs equal, penultimate joint shortest; last joint divided. *Laciniæ* equal, furnished at the apex with long cilia; third pair large, unequal, furnished with a very short nail; two posterior pairs furnished with a moderate-sized nail. *Tail,* with the exterior *lamella* bipartite.

'It forms,' says Leach, 'a peculiar subdivision of the shrimp family, and one species only is known,' viz. *Atya scabra.*

ATYLUS (Zoology), a genus of crustaceous animals, thus characterized by Leach:—*Antennæ* composed of four joints, the last of which is formed of several minute articulations: upper ones rather

shortest, with the second longer than the third joint; under ones with the second joint rather shorter than the third. *Eyes* slightly prominent, inserted on a process between the upper and lower antennæ. *Legs* fourteen; first and second pair furnished with a small compressed hand, which has a movable thumb; the other pairs having only a simple claw. *Tail*, on each side, with a triple series of double styles; upper part on each side armed with a small spine or style. *Body* (including the head) composed of twelve joints. Example—*Atylus carinatus* (*Gammarus carinatus*, Fabr.).

AUBAGNE. [Bouches-du-Rhone.]

AUBAINE, the name of the prerogative by which the kings of France formerly claimed the property of a stranger who died within their kingdom, not having been naturalized. It also extended to the property of a foreigner who had been naturalized, if he died without a will, and had not left an heir; as likewise to the succession to any remaining property of a person who had been invested with the privileges of a native subject, but who had quitted France, and established himself in a foreign country. (Merlin, 'Répertoire de Jurisprudence,' tom. i. p. 523.) It is called, in the French law, the *Droit d'Aubaine*. Authors have varied as to its etymology. Nicot ('Thresor de la Langue Françoise, tant ancienne que moderne,' fol. Paris, 1606) says it was anciently written Hobaine, from the verb *hobar*, which signifies to remove from one place to another; Cujacius ('Opera,' fol. Neap. 1758, tom. x. col. 1719) derives the word from *advena*, a foreigner or stranger; and Du Cange ('Glossar,' v. 'Aubain') from *Albanus*, the name formerly given to the Scotch, who were great travellers. Ménage ('Dict. Etym.' fol. Paris, 1694) says, some have derived the word from the Latin *alibi natus*, a person born elsewhere, which seems the best explanation. (See also Walafridus Strabo, 'De Vitâ S. Galli,' l. ii. c. 47.)

The Droit d'Aubaine was originally a seigniorial right in the provinces of France. Brussel, in his 'Nouvel Examen de l'Usage général des Fiefs en France pendant le XI., le XII., le XIII., et le XIV. Siècle,' 4to, Paris, 1727, tom. ii. p. 944, has an express chapter, 'Des Aubains,' in which he shows that the barons of France, more particularly in the twelfth century, exercised this right upon their lands. He especially instances Raoul, Comte de Vermandois, A.D. 1151.

Subsequently, however, it was annexed to the crown only, inasmuch as the king alone could give the exemption from it, by granting letters of naturalization.

The National Assembly, by laws dated August 6, 1790, and April 13, 1791 (confirmed by a constitutional act, 3rd of September, 1791), abolished the Droit d'Aubaine entirely. It was nevertheless re-established in 1804. ('Moniteur' for 1818, p. 551.) The treaty of Paris, 30th of April, 1814, confirmed the exemptions from the Aubaine as far as they were acknowledged in existing treaties. The final abolition of the Droit d'Aubaine was proposed by the Duc de Levis, April 14, 1818, and passed into a law, July 14, 1819, which confirmed the laws of 1790 and 1791.

The most comprehensive view of the Droit d'Aubaine is in the 'Répertoire Universel et Raisonné de Jurisprudence,' par M. Merlin, 4to, Paris, 1827, tom. i. p. 523, art. 'Aubaine;' tom. vii. p. 416, art. 'Heritier.' The 'Moniteurs' of 1818 and 1819 contain abstracts of the discussions while the abolition was passing through the two Chambers at Paris. See the latter year, pp. 314, 315, 509, 510, 728, 729.

AUBE, River. [Aube, Department.]

AUBE, a department of France which consists of Basse Champagne and a small part of Burgundy. It is bounded N. by the department of Marne, E. by that of Haute-Marne, S. and S.W. by that of Yonne, and N.W. by that of Seine-et-Marne. The department lies between 47° 55′ and 48° 42′ N. lat., 3° 24′ and 4° 48′ E. long. Its length from E. to W. is 69 miles, from N. to S. 54 miles; the area of the department is 2351 square miles; the population in 1841 was 258,180, which gives 109.81 to the square mile, being 58.18 below the average per square mile for all France.

With the exception of some undulations, which increase in height towards the south and east, the department is a dead level. The soil in the north and north-west consists of a thin vegetable mould, which rests on a bed of chalk. This region is bare of trees and unfit for tillage, but abounds in sheep-pasture; the flocks, however, suffer much from want of shade in summer. As timber is dear in this district, and as building stone is not found in it, the habitations of the peasantry are very inferior to those in most other parts of France; they are commonly built of sods dried in the sun, and the roofs are covered with straw. The south-east of the department is very fertile; the soil is rich and deep, and in some places so stiff that it is not rare to see as many as a dozen horses yoked to one plough. Corn of all kinds, fruits, pulse, hemp, rape, and hay are produced in this part in great abundance; a considerable breadth of land is under vineyards, which produce excellent wine. The west of the department is marshy. There is little of mineral wealth; iron is found, but no mine is worked; limestone is abundant; building stone, potter's clay, marl, and pipe clay are found. Turf also is found in some districts, but the fuel of the department is supplied by its forests, the principal of which are those of Clairvaux, Chaource, Montmorency, Orient, and Soulaines. There are a few mineral springs. The climate is mild and healthy, except in the west.

The department contains 1,504,926 acres, and the number of proprietors is 184,680. There are 972,570 acres of arable land, 92,495 acres of pasture and meadow land, and 56,609 acres of vineyards. The bread corns chiefly cultivated are wheat, rye, buckwheat and barley, of which the annual produce is stated at 519,290 quarters; of oats 250,360 quarters are grown, and of potatoes 419,869 quarters. The annual produce of wine is 15,406,767 gallons, about one-half of which is exported; the best growths are those of Les Riceys, Bar-sur-Aube, Laines-aux-Bois, and Javernant. Horses, horned cattle, sheep and

swine are numerous, as are also geese, ducks, and turkeys. Deer and wild boars are abundant in the forests; fish is plentiful; and bees are carefully tended all through the department. The principal manufactures are broad cloth, cotton stuffs, and hosiery. Leather, coarse cloth, cambric, silk, linen, and gloves are also made. Besides these fabrics the department has numerous potteries, tile, porcelain, and glass works, paper mills, distilleries, vinegar yards, beet root sugar factories, rope-walks, starch factories, dyeing and bleaching establishments. The trade of the department is in the agricultural and manufacturing products already mentioned, together with cheese, wool, sausages, firewood, and charcoal. Large corn markets are held weekly at Troyes and Bar-sur-Aube, and about 50 fairs are held in the department annually.

The department, is crossed from S.E. to N.W. by the Seine, which passes the town of Bar-sur-Seine, where it receives the Ource, Troyes, near which the Barse falls into it, and Nogent. The Aube rises in the south of the department of Haute-Marne, and flowing N.N.W. enters that of Aube a little S. of Clairvaux, passes the towns of Bar-sur-Aube and Arcis-sur-Aube, whence it turns westward and falls into the Seine at Marcilly on the borders of Marne, after a course of about 124 miles. The Aube is navigable from Arcis-sur-Aube; its principal feeders are the Aujon, the Voire, on the right bank; the Landion, the Amance, and the Auzon, on the left. The other rivers are—the Laignes, which drains the district of Les Riceys, and flows N. into the Seine; the Armance, which rises near Chaource, at a little distance from which it turns westward, and passing Ervy falls into the Armançon, a feeder of the Yonne; and the Vannes, which rises a little north of Estissac, below which it flows westward and falls into the Yonne near Sens, in the department of Yonne. A canal is in course of construction to facilitate the navigation of the Seine above Troyes as far as Chatillon. There are 8 royal and departmental roads, the whole length of which is 232 miles.

The department is divided into 5 arrondissements, which with the number of cantons, communes, and population, in each are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Troyes . . .	9	122	92,289
Arcis-sur-Aube	4	90	36,443
Bar-sur-Seine .	5	26	52,029
Bar-sur-Aube .	4	92	42,634
Nogent-sur-Seine. . .	4	63	34,785
Total . .	26	393	258,180

In the arrondissement of Troyes the chief town is Troyes, the capital of the department. The other towns are—Aix-en-Othe, 18 miles W.S.W. of Troyes, which has manufactures of hosiery, leather, and tiles, a corn market and several wool and cattle fairs; population 1997: Auxon, 16 miles S.W. of Troyes, on the main road from Troyes to Auxerre; population 2507: Bouilly, 9 miles from Troyes on the same road, and situated in a fertile wine district: Ervy, 19 miles S.S.W. of Troyes on the right bank of the Armance; population 1711; this active little town numbers among its products linen, canvas, leather, pottery, tiles, and nails: Estissac or St. Liébault, 13 miles W. of Troyes, at the confluence of the Vanne and the Ancre; population 1629; there are tanneries, and paper and cotton factories here; iron is found near the town: Lusigny, 9 miles E. of Troyes in a fertile plain watered by the Barse, and near the forest of Larivour: and Piney, 14 miles E.N.E. of Troyes, in which there is an important manufacture of ropes and mats from the bark of the lime-tree; population 1506.

In the arrondissement of Arcis-sur-Aube the chief town is Arcis-sur-Aube, in 48° 32′ N. lat., 4° 8′ E. long., 18 miles N. of Troyes; population 2792. The town stands well for trade, being situated on the Aube, which here begins to be navigable. Wine, wood, charcoal, corn, and other agricultural produce, together with hosiery, are the chief articles of trade. There are also in the town several establishments for cotton spinning, and dyeing. The other towns are—Chavanges, 20 miles E. of Arcis, in which coarse cottons are made; population 1093: Méry-sur-Seine, 12 miles W. of Arcy; population 1328; hosiery and cotton yarn are the chief fabrics of the town, which is the centre of a great honey district containing above 3000 hives; the town was reduced to ashes at the close of an action fought here, Feb. 22, 1814, but has been since rebuilt: and Ramerupt, a small place 8 miles E. of Arcis, chiefly engaged in the hosiery manufacture.

In the arrondissement of Bar-sur-Seine the chief town is Bar-sur-Seine, 19 miles S.E. of Troyes, on the left bank of the Seine, which is here crossed by a handsome stone bridge; population 2496. This pleasant town is well built, and stands in the midst of a district covered with vineyards. Druggets, brandy, paper, and leather are made. The chief trade of the town is in corn and wine. The other towns are—Chaource, 12 miles W. by S. from Bar; population 1540; the church of this town is very ancient, and there are many Gothic inscriptions on its walls; pottery, glass, and cordage are made: Essoyes, in a good wine district, 9 miles E. of Bar; population 1727: Mussy-l'-Evêque, on the Seine, 12 miles S.S.E. of Bar, population 1706, which has a brisk trade in wine and brandy; in the neighbourhood there is a large forest: and Les Riceys, 8 miles S. of Bar; population 3455; this name includes Ricey-haut, Ricey-haute-rive, and Ricey-bas, three villages, which stand in a narrow valley watered by the Laignes and hemmed in by hills entirely covered with vines; the excellent wine of the district, brandy, cheese of good quality, and leather are the chief articles of trade; lithographic stones are found here.

In the arrondissement of Bar-sur-Aube the chief town is Bar-sur-Aube, an ancient town, 28 miles E. of Troyes; population 4169. There is a college, a tribunal of first instance, two churches and an hospital in the town, which also possesses

a fine horticultural establishment. The chief industrial products are calicoes, linen, paper, brandy, and vinegar; there is also a good trade in corn, wine, wood, hemp, and wool. The corn purchased in this market is usually sent to Gray in Haute-Saône, where it is embarked on the Saône and conveyed to Lyon and other southern markets. The other towns are—Brienne-le-Château, 14 miles N.W of Bar; population 1830; cotton yarn, hosiery, oil, and pottery are made; the famous military school of Brienne was suppressed in 1796: Clairvaux, a small place near the forest of Clairvaux, famous for the Cistercian abbey founded by St. Bernard in 1114; the abbey buildings after many vicissitudes are now become a central place of detention for the prisoners of 13 departments, the inmates of which are employed in several trades and in the manufacture of broad cloth, silk, and cotton: Lesmont, near Brienne, in the neighbourhood of which there is an ancient Roman encampment: Soulaines, 11 miles N. of Bar, at the source of the Laines, a feeder of the Voire; there is a great extent of marsh land near this place, on which above 10,000 geese are annually reared: and Vendeuvre, 16 miles W. of Bar; population 1841; the town stands near the source of the Barse, at the foot of a hill crowned with an ancient castle, and has paper-mills and potteries.

In the arrondissement of Nogent-sur-Seine the chief town is Nogent-sur-Seine, 30 miles N.W. from Troyes; population 3383. The Seine is here divided into two branches by an island on which part of the town is built. The town is well built and has several fine promenades, from which there is a good prospect of the valley of the Seine. There is a tribunal of first instance, an hospital, a theatre, a fine old church dedicated to St. Laurent, and several corn mills in the town, which has a good trade in corn, flour, wine, vinegar, charcoal, slates, hemp, &c.; hosiery and cordage are the chief fabrics. Near Nogent are the ruins of the monastery of Paraclete founded by Abelard, and in which he was buried. The other towns are—Pont-le-Roy, 6 miles N.E. of Nogent, now a small place, but formerly a town of some importance, and frequently taken in the wars of the French and English in the fourteenth and fifteenth centuries; the castle, in which Napoleon's mother used to reside, was burnt down by the Cossacks in 1814: Romilly, 10 miles E. of Nogent, on the left bank of the Seine; population 3737; hosiery is the principal manufacture of the town, in which there are 2 corn mills, 2 oil mills, 2 saw mills driven by water power, and several dyehouses; in the neighbourhood of this town stood the ancient abbey of Sellières, in which Voltaire's remains lay from 1778 till their translation to the Pantheon in 1791: Villenauxe, in a valley 8 miles N.N.E. of Nogent; population 2669; this place was formerly fortified, but the ramparts are now made into promenades; it has some trade in white wine and vinegar; ironmongery, shoe and glove leather, vinegar, and baskets are made.

The department forms the see of the Bishop of Troyes, and is under the jurisdiction of the Cour Royale and University Academy of Paris; it returns four members to the Chamber of Deputies and belongs to the 18th military division, of which Dijon is head-quarters.

(*Dictionnaire de la France;* Balbi, *Géographie.*)

AUBENAS. [ARDECHE.]

AUBIGNE', THEODORE AGRIPPA D', the Huguenot historian of his time, was born in 1550, near Pons, in the province of Saintonge. His father was a bold and turbulent Huguenot, had been engaged in the conspiracy of Amboise, and was killed at the siege of Orleans, but not before he had thoroughly instilled his principles into his young son, who was then placed for two years under the superintendence of De Beze, at Geneva. Here, and afterwards at Lyon, he pursued a singular course of study, consisting of the Rabbins, Pindar, mathematics, and magic, the last with the resolve of never making use of it. At the breaking out of the third civil war he escaped from his guardian, who had kept him close, and joined the Huguenot bands, which, in 1570, lived at free quarters in the south of France.

Soon after the massacre of St. Bartholomew he entered the service of the King of Navarre, the future Henry the Fourth. Thus installed at court, D'Aubigné rendered himself remarkable for his boldness, talent, oddity, and impertinence. He wrote a tragedy called 'Circe,' and seems to have excited some admiration, but little friendship. As a partisan, however, D'Aubigné was a most valuable follower, and as such Henry of Navarre both prized and used him. When war broke out, D'Aubigné not only accompanied the armies, but shared in the personal adventures of the prince. The King of Navarre had little wherewith to reward such services: he was very poor, and D'Aubigné had neither the disinterestedness nor devotion of Sully. He quarrelled with Henry, and quitted his service in 1577. Soon afterwards he fell in love with Mademoiselle de Lezay, married her, and rejoined the King of Navarre. But he had made many bitter enemies by his sarcastic behaviour, and their influence again drove D'Aubigné from court. In order to be avenged, he determined to turn Catholic, if possible; but the result of his efforts and studies was to render him a firmer Protestant than before. In 1587 D'Aubigné was again in the service of Henry, and was present at the battle of Coutras. In the following year he was rewarded with the government of Maillezais. In a little time he was again at variance with Henry, embracing the party of the Huguenots, and openly preferring their interests to court favour. Nevertheless, when it was necessary to confide the Cardinal of Bourbon to a trusty guardian, Henry selected D'Aubigné, notwithstanding the expostulation of his counsellors, adding, that D'Aubigné's word was a sufficient guarantee for his faith.

From the period of Henry's desertion of protestantism, D'Aubigné was one of the firmest supports of the Huguenot interests, always representing them in their assemblies, often in their controversies, and in their negotiations with the

court. Numerous controversial tracts proceeded from his pen at this period. But the chief fruit of his residence at Maillezais was 'The History of his own Times,' a valuable document for the Huguenots of France. The Catholics did their utmost, first to prevent D'Aubigné from writing it, then to suppress it when written. The last volume was printed at Maillezais in 1619, and in the following year it was condemned by the Parliament of Paris to be burned. The publication increased the hatred of the queen to D'Aubigné. The ministry had made frequent overtures to purchase the possession of his fortress; and when at last he found it no longer tenable, he gave it up, not to the court, but to the chief noble of the Huguenot party, the Duke de Rohan. Having thus closed his political career, D'Aubigné retired to Geneva. He arrived there in September 1620, and was most honourably received. He lived in exile ten years, still persecuted by the French court, and died in 1630. He was buried in the church of St. René, at Geneva: over him is a Latin epitaph written by himself.

The works of D'Aubigné are numerous and various. They consist of poems, dramas, controversial tracts, his great history, memoirs of Himself, and various satirical writings against his cotemporaries.

AUBIN, ST. [JERSEY.]

AUBREY, JOHN, an eminent antiquary, was born March 12, 1625-6, at Easton-Piers, in Wiltshire, and died in 1697. His personal history was marked by misfortunes, law-suits, and losses, in consequence of which, though born to considerable property, he was reduced in his latter years to dependence upon his friends. The only complete work published by himself was a small volume of 'Miscellanies,' called on the second title, 'A Collection of Hermetick Philosophy,' which contains much curious information on popular superstitions, and has been several times reprinted. His 'Perambulation of the County of Surrey' was published in 1719, by Dr. Rawlinson, under the title of 'The Natural History and Antiquities of the County of Surrey;' and portions of his manuscript collections on the topography and natural history of Wiltshire have been printed, as also have the greater part of his 'Lives of Eminent Men,' which were compiled for the assistance of Anthony à Wood when preparing his 'Athenæ Oxionenses' for publication, and some selections from his other works, which comprised extensive notes on British antiquities. The fullest account of Aubrey and his writings is comprised in a copious 'Memoir,' by Mr. Britton, published in 1845 by the Wiltshire Topographical Society. He was never married.

AUBURN, a town in the State of New York, North America, 170 miles W. from Albany, in 42° 55′ N. lat., 76° 28′ W. long., is situated on the north outlet of the Owasco Lake, 7 miles from the Erie Canal, which forms a communication between the river Hudson and Lake Erie. The outlet is a fine stream suitable for driving machinery. The town contains a court house, gaol, museum, 7 meeting-houses of different religious denominations, a flourishing theological seminary under the patronage of the Presbyterians with 4 professors and 70 students, 2 academies with 250 students, 4 printing-offices, 3 weekly newspapers, and 1 daily newspaper. The population in 1840 was 5626.

Auburn, however, is chiefly remarkable for its large state prison, or penitentiary, which was at first conducted on the solitary system, but this, after two years' experience of its injurious effects on the mind as well as the body, was changed for the silent system, in which the prisoners work in company, but without being allowed to speak. The earnings of the prisoners in 1839 exceeded the expenditure by 8490 dollars. The prison occupies an area of 1000 feet by 500 feet, inclosed by a stone wall 30 feet high. The outlet of the Owasco Lake passes by the south wall, and by a water-wheel and shaft through the wall drives machinery within the prison. The prison buildings form three sides of a square, of which the front is 280 feet long, and the sides 240 feet each.

(*Gazetteer of the United States*, by Haskel and Smith.)

AUBUSSON. [CREUSE.]

AUBUSSO'N, PIERRE D', was born in 1423 of a noble French family, descended from the old Viscounts of La Marche. He served while yet very young in the imperial army in Hungary against the Turks, and his hostility to them became a passion. D'Aubusson, having returned to France, became a favourite of the Dauphin, afterwards Louis XI., whom he accompanied in his expedition to Switzerland in 1444, and was present at the battle of St. Jacob, near Basle. After some years he proceeded to Rhodes, when he entered the order of St. John of Jerusalem. He obtained a commandery, was afterwards made Grand Prior, and was intrusted with the care of the fortifications of Rhodes. In 1476, on the death of the Grand Master Orsini, D'Aubusson was elected to succeed him, and successfully defended the island in 1480 against Mahomet II. The siege lasted 89 days, during which the Turks had 9000 killed and 15,000 wounded. He subsequently gave refuge to Zizim, the son of Mahomet, against his brother Bajazet, and sent him for safety to Bourgneuf, a commandery of the Order in France. Bajazet made peace with the Knights, and agreed to pay a yearly sum for his brother's maintenance. Zizim was afterwards given up to Pope Innocent VII., who in return created D'Aubusson a cardinal. Zizim died at Rome some time afterwards.

D'Aubusson was deeply grieved at the wars which Christians waged against Christians, instead of turning their arms against the Mussulmans. He fell into a deep melancholy, and died at Rhodes in July 1503, aged eighty. He was one of the most illustrious Grand Masters of his Order. There is a narrative in Latin of the siege of Rhodes, which is attributed to D'Aubusson, in the collection 'De Scriptoribus Germaniæ,' Frankfort, 1602. Father Bouhours has written a life of Pierre D'Aubusson.

AUCH, the capital formerly of Armagnac and Gascogne, now of the department of Gers in France,

It is an ancient city and takes its name from the Ausci, a Gallic tribe, whose chief town it was. It stands in 43° 38½′ N. lat., 1° 5′ W. long. at a distance of 423 miles S.S.W. from Paris. It has a population of 10,867. The city is divided by the river Gers into an Upper and Lower Town, the former of which is built on the slope of a steep hill, and one means of communication between them is by a flight of 200 steps. The streets are narrow and crooked, but well paved. There is a fine square in the highest part of the town, terminated on the west by a promenade from which there is a splendid view of the Pyrenees. The cathedral, which is very ancient, and the archbishop's palace adjoining the cathedral, are the principal public buildings. There are in the town an hospital, a public library, a college, two ecclesiastical seminaries, a drawing school, a museum, and an agricultural society, also tribunals of first instance and of commerce. The trade of the town consists in wine, brandy, wool, quills, and fruits: woollen and cotton stuffs, leather, crape, and hats, are manufactured in the town and neighbourhood. Auch is the seat of an archbishop whose see is the department of Gers, and whose province includes also the sees of Aire, Tarbes, and Bayonne.

AUCHENIA. [LLAMA.]

AUCHTERARDER. [PERTHSHIRE.]

AUCHERMUCHTY. [FIFESHIRE.]

AUCKLAND, BISHOP. [DURHAM.]

AUCTION, a method employed for the sale of property. The Romans gave it the descriptive name of *auctio*, an increase, because the property was publicly sold to him who would offer most for it. In modern times a different method of sale has been sometimes adopted, which is called a Dutch auction, thus indicating the local origin of the practice: it consists in the public offer of property at a price beyond its value, and then gradually lowering or diminishing that price until some one consents to become the purchaser. An auction is defined by 19 Geo. III. c. 56, s. 3, and 42 Geo. III. c. 93, s. 8, to be 'a sale of any estate, goods, or effects whatever, by outcry, knocking down of hammer, by candle, by lot, by parcel, or by any other mode of sale at auction, or whereby the highest bidder is deemed to be the purchaser.'

The sale by auction was used by the Romans for the disposal of military spoils, and was conducted *sub hastâ*, that is, under a spear, which was stuck into the ground. This expression was continued, and sales were said to be conducted *sub hastâ* in cases where other property was sold by auction, and probably after the spear was dispensed with. The phrase 'asta pubblica' is still used by the Italians to signify a public sale or auction: the expression is, 'vendere all' asta pubblica,' or 'vendere per subasta.' The auctio transferred to the purchaser the Quiritarian ownership of the thing that he bought.

Persons are now sometimes invited to a 'sale by the candle,' or 'by the inch of candle.' The origin of this expression arose from the employment of candles as the means of measuring time, it being declared that no one lot of goods should continue to be offered to the biddings of the persons who were present for a longer time than would suffice for the burning of one inch of candle; as soon as the candle had wasted to that extent, the then highest bidder was declared to be the purchaser.

In sales by auction, the assent of the buyer is given by his bidding, while the assent of the seller is signified by the fall of the auctioneer's hammer, and until this declaration has been made the bidder may withdraw his bidding.

It is a common practice for the owner of property offered for sale by auction to reserve to himself the privilege of bidding, and, as it is termed, buying in his goods, if the price offered by others should not suit him.

It has been laid down that the buyer of goods at an auction is not bound to perform his contract if he was the only *bonâ fide* bidder at the sale, and if public notice was not given of the intention of the owner of the goods to bid, even though his agent was authorized to bid only to a certain sum. This rule is intended to protect purchasers against the practice of employing persons to make mock biddings with the view of raising the price by their apparent competition; the persons thus employed are aptly called *puffers*. In many large towns, and more especially in London, many persons make a trade of holding auctions of inferior and ill-made goods; persons called *barkers*, are generally placed at the door to invite strangers to enter, and puffers are always employed, who bid more for the articles than they are worth, and thus entice the unwary.

The auctioneer is considered the agent of both vendor and purchaser. He can therefore bind the parties by his signature according to the requisition of the Statute of Frauds, which renders it necessary in contracts of sale of 'lands or any interest in or concerning them,' and of goods above the value of 10*l.*, and that some 'note or memorandum should be signed by the parties or their agents lawfully authorized.' Such signature is sufficient even in an action brought by the auctioneer against the vendor in his own name. It has been doubted, therefore, whether a bidder may not retract (in cases within the statute) at any time before the actual written entry. The auctioneer also stands in the situation of a stakeholder of the deposited part of the purchase-money, which he must not part with till the sale has been carried into effect; and he cannot, at least after notice, discharge himself by paying over the amount to the vendor. He is not liable for any interest on, or advantage which he may make from, the money in his hands. In this respect his situation differs from that of an agent, and also from that of the vendor, from whom 'interest is recoverable in the nature of damages for a breach of the original contract on the part of the vendor, by whose failure to make a good title the vendee has for a time lost the use of his money.' (Mr. Justice James Parke.) An auctioneer cannot buy on his own account; and when he sells without disclosing the name of his principal, an action will lie against himself for damages on the breach of contract.

The conditions of sale constitute the terms of the bargain, and purchasers are bound to take notice of them. The late Lord Ellenborough said that 'a little more fairness on the part of auctioneers in framing particulars would avoid many inconveniences. There is always either a suppression of the fair description of the premises, or something stated which does not belong to them; and in favour of justice, considering how little knowledge the parties have of the thing sold, much more particularity and fairness might be expected.' The conditions usually contain a provision that 'any error or mis-statement shall not vitiate the sale, but that an allowance shall be made for it in the purchase-money.' But this clause is held only to guard against unintentional errors, and not to compel a purchaser to complete the contract if he has been designedly misled.

The duties of excise formerly payable on sales by auction were repealed by 8 Vict. c. 15 (8th May, 1845). This act repeals 6 Geo. IV. c. 81; 43 Geo. III. c. 69; 45 Geo. III. c. 30; 54 Geo. III. c. 82; and 55 Geo. III. c. 142.

The duty on sales by auction in Great Britain was first imposed during the American war, in 1777 (17 Geo. III. c. 50), and in Ireland in 1797. In the last twenty years the amount of goods sold in the United Kingdom on which auction-duty was charged has varied from 10,148,571*l.* in 1825, to 6,326,481*l.* in 1831; and the amount of the duty has been as high as 328,833*l.* and as low as 218,084*l.* In 1840 the duty was 320,058*l.* charged on sales amounting to 8,720,985*l.* In 1841 the duty amounted to 314,067*l.*; 296,964*l.* in 1842, and 284,916*l.* in 1843.

The Romans imposed taxes on the produce of certain sales. In the time of Augustus (Dion Cassius, lv. 31), a tax of two per cent. was imposed on the produce of sales of slaves. This tax is spoken of by Tacitus ('Ann.' xiii. 31) as being at 'the time then referred to a tax of four per cent. (if the reading is right). In the time of Nero it was enacted that the seller should pay the tax, from which it may be inferred that the buyer had hitherto paid it. The buyers of slaves were generally Romans, and the sellers were foreign dealers. This change in the mode of paying the duty was called a remission of the tax, but, as Tacitus observes, it was a remission in name, not in effect, for the tax was still paid by the purchaser in the shape of a higher price. After the civil wars, and during the time of Augustus, a tax of one per cent. was imposed on the produce of sales by auction at Rome. In the time of Tiberius the tax was reduced to one-half per cent. (Tacit. 'Ann.' i. 78, ii. 42); but after the death of Sejanus it was again raised to one per cent. Caligula (Suetonius, 'Calig.' 16) first reduced the tax to one-half per cent., and then abolished it altogether. (Dion Cassius, lviii. 16, and the note of Reimarus.) The auction tax has had at last the same fate in Great Britain as at Rome, but not till its bad effects had been made very sensible.

AUCTIONEER, a person whose business it is to conduct sales by auction. It is his duty, previously to the commencement of every sale, to state the conditions under which the property is offered; to receive the respective biddings; and to declare the termination of the sale: for this purpose he commonly makes use of a hammer, upon the falling of which the biddings are closed.

Every person acting as an auctioneer in the United Kingdom is required by 8 Vict. c. 15, to take out a licence, for which the sum of 10*l.* is to be paid annually, and no separate licence is now necessary for selling plate or other articles by auction. This statute, sec. 5, does not require certain sales to be conducted by a licensed auctioneer, such as goods and chattels under a distress for less than 20*l.* for rent or tithes.

The number of auctioneers' licences issued in England in 1840 was 3101; in Scotland, 394; and in Ireland, 303: total 3828; which cost 20,080*l.* 15*s.*

The word auctioneer is the English form of the Latin 'auctionarius,' which signified anything pertaining to an auction: the 'atria auctionaria' were the rooms in which auctions took place. The 'tabulæ auctionariæ' contained the particulars of sale. Roman sales of public property were conducted by the magistrates, as the censors, ædiles, quæstors, according to circumstances. Private auctions, such as sales of a man's property, either in his lifetime or on his decease, were conducted by bankers (argentarii), or by a person who was called 'magister auctionis.' Notice of the sale and other particulars were given by notices (tabulæ, album) or by a crier (præco). The præco or crier seems to have acted the part of the modern auctioneer, so far as calling out the biddings and other matters that required bawling. The argentarius or magister entered the sales in a book. On the whole, a Roman auction was very like an English auction.

AU'CUBA, the Japanese name of a dicœcious plant, now commonly cultivated in the gardens of this country as a hardy evergreen shrub, remarkable for its shining pale-green leaves mottled with yellow. It is described by Thunberg as growing to the height of a man or higher, and as common in various places in Japan, both wild and cultivated. Its fruit, which it bears in March, is a red berry, about the size of that of a laurel, and containing a single stone, with a bitter nauseous kernel. We possess only a variegated variety of the plant; in its natural state it is said to have brownish-green leaves without any blotches.

AUCUPARIA. [PYRUS.]

AUDE, River. [AUDE, Department.]

AUDE, a department of France which is formed of a portion of Bas-Languedoc. It is bounded E. by the Mediterranean, N.E. by the department of Hérault, N. by that of Tarn, N.W. by that of Haute-Garonne, W. by that of Ariège, and S. by that of Pyrenées Orientales. The department extends between 42° 38′ and 43° 29′ N. lat., and between 1° 41′ and 3° 13′ E. long.: its greatest length from E. to W. is 79 miles, from N. to S. 52 miles. The area is 2341 square miles; the population in 1841 was 284,285, which gives an average of 121.4 to the square mile, being 46.5 below the average per square mile for all France.

The department is mountainous. The southern extremity of the Cevennes, which takes the name of Montagne-Noire, crosses the department in the north, and gradually slopes down to the valley of the Aude. A branch of the Pyrenees, leaving the main chain near Mont-Louis in the department of Pyrenées Orientales, runs N., and, entering the department of Aude, traverses it from S. to N.W., separating the affluents of the Aude from those of the Ariège. This range is connected with the Montagne-Noire by a chain of low hills near Naurouse, where is the main reservoir of the Canal du Midi, which here attains its summit level. Another projection from the Pyrenees, called collectively the Corbières mountains, runs along the right of the Aude, and, breaking off into several branches, covers a large portion of the south and south-east of the department. A great plain, into which the mountain masses above named gradually subside, crosses the department from E. to W.: its eastern part coincides with the valley of the lower Aude as far as Carcassone, and the great Languedoc Canal, or Canal du Midi, runs along its whole length. From Carcassone the valley of the Aude runs directly S., and this part of it is the best sheltered and most fertile land in the department. The other valleys of the department also generally run N. and S., and are highly productive. The department is coasted on the E. by the Mediterranean for about 28 miles; in this space there are several salt lagunes, the largest of which are those of Leucate, Sigean, and Bages. The climate is generally healthy, though cold, except along the Mediterranean where it is much warmer than in the west. Impetuous winds from the W. prevail during eight months of the year, and winds from the E. and S.E. during the other four. These last are just felt at Narbonne, but gathering force as they proceed inland, by the time they reach Carcassone and Castelnaudary they blow with such violence as sometimes to unroof the houses and tear up trees by the roots.

The department contains 1,498,469 acres, distributed among 80,845 proprietors. There are 675,000 acres under tillage, 124,000 acres of vineyards, 160,000 acres of forest land, and 453,000 acres of barren land and heaths. Wheat, maize, barley, and millet, are the chief grain crops in the valleys; buckwheat, barley, oats and rye, on the high grounds. The annual produce of wheat is set down at 313,500 quarters, about one-half of which is exported; of oats 181,500 quarters; of maize, 85,250 quarters; of other grains 108,590 quarters; and of potatoes 137,500 quarters. The wines of the department are of good quality, especially the white and red wines of Limoux, the red wines of the neighbourhood of Narbonne, and the white wines of Bages. The annual produce is stated at 17,618,740 gallons, one-third of which is consumed in the department, one-tenth is distilled, and the remainder is exported.

Of fruit-trees the chestnut and walnut are extensively cultivated in the highlands of the department; the almond flourishes on the light soils; the culture of the olive is not so much attended to as formerly, but there are still some flourishing plantations in the arrondissement of Narbonne. The trees of forest-growth are chiefly the oak, the ash, the beech, and the ever-greens. The horses of the department are small; in harvest time they are used in treading out the corn. Asses are numerous. Oxen and cows are used in ploughing; very few calves are reared, the supply of young cattle being obtained from the departments of Tarn and Ariège. The sheep of the department are of inferior breed and their wool is coarse. Poultry of all kinds, but more particularly geese, are abundant, and are exported to the neighbouring departments and to Spain. Great attention is paid to the rearing of bees, and a large quantity of honey is gathered, which is highly esteemed, especially that of the neighbourhood of Narbonne.

Mines of coal, plastic clay, and plaster of Paris are profitably worked; limestone, good building stone, and slate are found. The Corbières Mountains contain mines of antimony, manganese, copper, lead, and silver; but none of them are worked. There are several mineral and salt springs. Marble of great beauty is found among the transition limestone and the lower secondary strata in the quarries of Caunes. The chief manufacture of the department is fine broad cloth, for making which wool is imported from Spain: leather, hats, hosiery, paper, and pottery are made. There are numerous distilleries, flour-mills and saw-mills, furnaces and iron foundries. The exports of the department consist of soda, which is found abundantly on the coast of the Mediterranean; salt, of which about 90,000 tons are annually made in the salt-pans in the neighbourhood of Bages and Sigean; boxwood combs, jet ornaments, and the agricultural, mineral, and industrial products before named.

The chief river of the department is the Aude (*Atax*), which springs from the small lake of Aude near Mont-Louis in the department of Pyrenées Orientales, whence running from S. to N., and entering the department of Aude, it passes Quillan, Limoux, and Carcassone; at this last town turning eastward it passes Trèbes, about 24 miles below which it sends off a branch to the S.E., called the Robine, while the main stream, pursuing its eastward course, falls into the Mediterranean near the lagune of Vendres. The Robine has been rendered navigable, and forms part of the canal from the Canal du Midi through Narbonne to the port of Nouvelle, where the Robine enters the Mediterranean. The whole length of the Aude is about 140 miles, of which 123 miles are in the department of Aude: about 100 miles of its length, from Quillan to its mouth, are available for purposes of floatage. The feeders of the Aude are about 30 in number; the most important of these are the Orbieu on the right, the Rebenti, the Fresquel, the Clamouse, and the Cesse on the left. The south-eastern angle of the department is watered by the Bère, which falls into the lagune of Sigean. The department is traversed by 5 royal roads, the most important of which are the great road from Paris to Perpignan, and that from Montpellier to Toulouse, and by 21 departmental roads; making together a length of roadway communication amounting to 442 miles.

The department is divided into 4 arrondissements, which, with their subdivisions and population, are as follows :—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Carcassone . .	12	„	94,428
Limoux . . .	8	151	75,674
Narbonne . . .	6	70	59,847
Castelnaudary .	5	„	54,336
Total. . .	31	„	284,285

In the arrondissement of Carcassone the chief town is Carcassone, which is also the capital of the department. It stands in 43° 13′ N. lat., 2° 20′ E. long., 485 miles S. of Paris by the road through Orleans, Limoges, and Toulouse ; population 19,324. The town existed before the invasion of Gaul by Julius Cæsar, who mentions it (Bel. Gal. iii. 20), by the name of Carcaso, as one of the *civitates* or townships of Gallia Ulterior. Pliny and Tacitus mention it: in the Itinerary from Burdigala (Bourdeaux) to Hierusalem (Jerusalem) it is named *Castellum Carcassone*. The present town, which stands on the Aude and a branch of the Canal du Midi, consists of two parts, the old town and the modern town. The old town is a mass of old houses and fortifications mostly in ruins, and possesses no building worth mention except the cathedral church of St. Nizaire, which dates from the year 1096, and contains a monument to Simon de Montfort. The lower town is well built, the streets are straight, cross each other at right angles, and abut on the boulevards, which go quite round the town, occupying the site of the former ramparts. Carcassone is the seat of a bishop, has tribunals of first instance and of commerce, a college, two seminaries for the education of the clergy, and a public library. The chief public buildings are the modern cathedral of St. Vincent, the tower of which stands on the meridian of Paris, the town-hall, the barracks, and the residence of the prefect. There is a considerable commerce in mineral products, wine, corn, fruits, &c. ; but the town is principally engaged in the manufacture of fine broad cloth, blankets, hosiery, woollen yarn, and linen. There are also several brandy distilleries, soaperies, dye-houses, paper-mills, and naileries in the town. In the environs there is a trunk of a column with an inscription to M. Numerius Numerianus Cæsar, and an aqueduct bridge of three arches, by which the Canal du Midi is carried over the Fresquel. The other towns are—Alzonne, 10 miles W. of Carcassone, which has some cloth factories; population 1598 : Conques, 5 miles from Carcassone, which has woollen factories, dye-houses, and corn and fulling mills ; population 1654 : Lagrasse on the Orbieu, which owes its origin to a monastery founded here in the eighth century ; the monastic buildings are of vast extent, of different periods, and some of them of great elegance ; in the abbey church are several fine paintings by Spagnoletto : Le-Mas-Cabardès, 14 miles from Carcassone, in a valley covered with plantations of chestnut, olive, apple, and other fruit-trees ; this place has manufactures of cloth and leather : Montréal, 12 miles W. of Carcassone ; population 3062 ; this town stands on a hill which commands a fine view of the mountain ranges of the department, as well as over the plains of Carcassone and Alzonne ; the church of St. Vincent, a structure of the fourteenth century, is a fine building : Montolieu, N.W. of Carcassone, which has woollen factories, iron foundries, fulling mills, and tanneries ; population 1807 : Peyriac-Minervois, 13 miles from Carcassone, in a fertile valley planted with the vine, the olive, and other fruit-trees ; population 1309 ; hosiery, leather, and brandy are made here : Saissac, in a defile of the Montagne-Noire, 15 miles from Carcassone; population 1781 : Trèbes, on the Canal du Midi and at the meeting of the Orbiel and the Aude ; population 1773 : Tuchan on the Verdouble, at a valehead of the Corbières range ; population 1220 ; a coal mine is worked in the neighbourhood.

In the arrondissement of Limoux the chief town is Limoux, 19 miles S.W. of Carcassone ; population 7417. The town stands on the left bank of the Aude in a fertile valley coasted by vine-clad hills, behind which rise high mountains from the Pyrenean chain. The town is well built and adorned with fountains. There is a tribunal of first instance and of commerce, a college, an hospital, a theatre, and two covered market-places. Its manufactures of broad cloth are important; there are also woollen-yarn manufactories, tanneries, soaperies, and oil-mills. Limoux has a considerable trade in wine, and is the mart for the iron of the neighbouring furnaces. The other towns are—Alet on the Aude, 6 miles above Limoux ; population 1320 ; this town stands in a valley of such fertility in corn, fruits, and wine, as to be called the garden of the department ; there are four mineral springs here, one of which is cold ; gold, copper, and iron, have been found in the neighbourhood : Belcaire, 33 miles S.S.W. of Limoux, at the extremity of the plain of Sault ; population 1064 : Chalabre, a pretty town 17 miles S.W. of Limoux ; population 3416 ; it stands on the right bank of the Lers at the meeting of two valleys watered by the Blau and the Chalabreil ; about 15,000 pieces of broad cloth are annually made here : Gincla and Montfort, two small places important for their reverberatory furnaces and the manufacture of files : Quillan, 20 miles S. of Limoux, which has manufactures of cloth and ironmongery, and several iron furnaces, to one of which water is brought from the Aude by means of a tunnel : and St. Hilaire, 5 miles from Limoux ; population 1000.

In the arrondissement of Narbonne the chief town is Narbonne. The other towns are—Bages, on the lagune of Bages, near which are the salt-pans of Estarac : Coursan, on the right bank of the Aude ; population 2,022 : Durban, 21 miles from Narbonne, near which there is a coal mine ; Fitou, on the road from Narbonne to Perpignan ; population 1064 : Ginestas, in a fertile olive district, 11 miles from Narbonne, near which there is a large paper-mill : Leucate, 24 miles S. of Narbonne, on the lagune of Leucate ;

population 1215; this town is ancient, and was formerly fortified: Lezignan, 13 miles W. of Narbonne; population 2168: and Sigean, on the lagune of Sigean, which is a place of some commercial activity, owing to its proximity to the port of Nouvelle at the mouth of the Robine Canal, and has a good trade in salt, wine, brandy, wool, honey, &c.; population 3073.

In the arrondissement of Castelnaudary the chief town is Castelnaudary, on an eminence above the Canal du Midi and the Fresquel, 43° 19′ N. lat., 1° 57′ E. long., and 23 miles W. of Carcassone; population 9,993. The town is ill built; the only edifices worth mention are the church of St. Michel, and the hospital, which is richly endowed. To the south of the town is a reservoir of the canal, which is 1312 yards in circuit; it is bordered with docks, and surrounded by shops and stores, and gives the town the appearance of a port. There is a tribunal of first instance and of commerce, a college, an exchange, and a polytechnic society in the town. Coarse cloths, canal boats, pottery, and bricks are made; there are also brandy distilleries, and flour-mills. Besides the articles named, the town trades in timber, iron, and hides. The other towns are—Belpech, 20 miles from Castelnaudary, which has cloth manufactories and a population of 2525: Fanjeaux, 14 miles from Castelnaudary, which is built on the ruins of an ancient fort, that contained a temple of Jupiter (Fanum Jovis); population 1880; there is a splendid view of the Pyrenees and over the valley of the Aude from this town; it was formerly fortified, and was pillaged and burnt by the Black Prince in 1355: Salles-sur-l'Hers, 13 miles from Castelnaudary; population 1189: and St. Papoul, 5 miles N.E. of Castelnaudary; population 1295; this town owes its origin to an abbey founded here by Charlemagne; it was made the seat of a bishop in 1317.

The department forms the see of the Bishop of Carcassone, and is included in the jurisdiction of the Cour Royale and University Academy of Montpellier: it belongs to the 21st military division, which has its head-quarters at Perpignan, and returns five members to the Chamber of Deputies.

(*Dictionnaire de la France;* Balbi, *Géographie.*)

AUDEBERT, JEAN BAPTISTE, was born in 1759, at Rochefort, in France. When seventeen years of age he went to Paris to study the arts of design and painting. In 1789 M. Gigot d'Orcy, who was distinguished by his taste for natural history, employed Audebert to paint the most rare objects in his magnificent collection, and afterwards sent him to England and Holland, whence he brought back a great many drawings. These occupations gave a bias to Audebert in favour of natural history, which soon amounted to an ardent passion. No longer content to give expression to the ideas of others, he undertook various important works. The first of these was 'Histoire Naturelle des Singes, des Makis, et des Galeopithèques.' Audebert united in his own person the characters of painter, engraver, and author. Having carefully investigated the different modes of engraving, he improved upon these so much, that he may be said to have invented a new mode, and to have carried it to the highest degree of perfection. This improvement consisted in putting all the colours on one plate at once, instead of using as many plates as there were colours; he made a further improvement by using oil instead of water colours. He also succeeded in printing with gold. In his 'Histoire des Colibris, des Oiseaux-Mouches, des Jacamars, et des Promerops,' 1 vol. large folio, Paris, the expression and position of the birds are so perfect as to make them appear animated; and the descriptions, of which he is likewise the writer, are worthy of such a work.

Scarcely were these works commenced before Audebert began to plan others—the History of Birds, of the Mammiferæ, and lastly that of Man. He had thus chalked out for himself work enough to occupy a long life; but in 1800 death carried him off in the forty-second year of his age. At the time that death interrupted his career he had begun the 'Histoire des Grimpereaux et des Oiseaux de Paradis.'

Audebert was not more remarkable for his talents than beloved for his amiable manners and generosity of disposition.

(*Biographie Universelle.*)

AUDIANS, or AUDEANS, a sect of heretics, so called from their founder Audius, or Audeus, who lived in the fourth century. Having begun by attacking the manners of the clergy, and perhaps also the government of the church, he proceeded in this line till he was expelled from the body of the faithful; upon which he assumed the episcopal office, and was hereupon immediately banished by the Emperor Constantius to Scythia. Among various erroneous opinions and practices attributed to Audius and his followers are, the celebration of Easter after the usage of the Jews, the admission of all descriptions of persons indiscriminately to the Lord's Supper, the doctrine of the eternity of fire, water, and darkness, and especially that of anthropomorphism, or the resemblance of the Deity to the human form. We have no account of the tenets of Audius, either from himself or any of his followers: we are dependent for all we know of him upon the statements of the orthodox theological writers of that and the next age, Athanasius, Augustine, Epiphanius, and Theodoret.

AU'DITOR is the Latin word *Auditor*, which simply means 'a hearer.' The use of the word to signify one who examines into the accounts and evidences of expenditure has probably not been long established. The word 'audit,' as in the phrase to 'audit accounts,' and the 'audit,' in the sense of the examining of accounts and settlement of them, are also new.

The Auditors of the Imprest were ancient officers of the Exchequer, abolished in 1785, when 'commissioners for auditing the public accounts' were appointed by 25 Geo. III. c. 52. Ten of those commissioners were appointed by 46 Geo. III. c. 141: the number is now six. Two of them are empowered by 1 & 2 Geo. IV. c. 121,

s. 17, to examine persons on oath, and to do all acts concerning the audit of public accounts. The Audit-Office, at Somerset House, where this business is transacted, is immediately under the control of the Lords of the Treasury.

By the 46 Geo. III. c. 141, s. 8, all public accountants are to transmit to the commissioners, within three months after 31st December, or within three months of such day as the Lords of the Treasury shall order (2 & 3 Will. IV. c. 104), accounts duly attested, in manner pointed out by the act, of all sums received and paid by them for the public service within the preceding year, together with proper vouchers for such receipts and payments, and a schedule of the same; which schedule is to be compared with the vouchers by an officer in the audit office. The commissioners may call on all public accountants, whenever they think fit, to account to them for the receipt, expenditure, or issue of all moneys or stores entrusted to them, and on failure they are to certify the defaulters' names to the remembrancer of the Exchequer, the attorney-general of England or Ireland, and lord-advocate of Scotland, in order that proceedings may be taken to compel them to account, unless, on the defaulter's application, the Lords of the Treasury think it proper to stay the proceedings for a reasonable time. By the stat. 1 & 2 Geo. IV. c. 121, it is enacted that on the 5th day of January, 5th day of April, 5th day of July, and the 10th day of October, general imprest certificates shall be made out at the Exchequer, specifying all moneys and Exchequer bills issued at the receipt of the Exchequer within the preceding quarter, and these certificates are transmitted to the commissioners of audit within thirty days after each quarter-day; and by the 10th section of the 46 Geo. III. c. 141, the paymaster of the forces, the treasurers of the navy and ordnance, and all other public officers, who issue to any persons money for public services by way of imprest or on account, are required within three months after the 31st December in every year (or at shorter periods if ordered by the Lords of the Treasury, 1 & 2 Geo. IV. c. 121, s. 6), to transmit to the commissioners of audit a certificate of such moneys, with the names of the persons to whom paid, and the commissioners are forthwith to take them into consideration. By the 2 Will. IV. c. 26, the commissioners are authorized to audit the accounts of receipt and expenditure of the colonial revenues; and the 2 & 3 Will. IV. c. 99, transfers the powers and functions of the commissioners of public accounts in Ireland to the commissioners for auditing the public accounts of Great Britain.

The office of auditor, under the Poor-Law Amendment Act (4 & 5 Wm. IV. c. 75), is one that requires integrity, knowledge of accounts, and an exact acquaintance with the statutes and authorities by which the expenditure of the poor-rates is regulated. The appointment of auditor is vested in the board of guardians, a rule inconsistent with sound principle, as the operations of the auditor are intended as a check upon the administration of the guardians.

Under the act passed in 1844 for the further amendment of the poor law, the Poor-Law Commissioners are empowered to combine parishes and unions into districts for the audit of accounts. (7 & 8 Vict. s. 32.) The district auditor is to be elected by the chairman and vice-chairman of the different boards of the district, and his salary and duties are to be regulated by the Poor-Law Commissioners. By s. 37 the powers of justices of the peace are to cease in the district for which an auditor is appointed.

Auditors are annually elected by the burgesses, under the Municipal Corporations Act (5 & 6 Wm. IV. c. 76, s. 37), two for each borough. They audit the borough accounts half-yearly, and must not be members of the council. The mayor appoints a councillor to act with the auditors.

AUDRAN, GERARD. This eminent engraver was born at Lyon, A.D. 1640. At an early age he went to Paris, where his talents soon obtained notice, and procured him eventually the patronage of Le Brun, the king's painter, who employed him to engrave the Battle of Constantine, and the Triumph of Constantine. He went subsequently to Rome, where he improved himself in design in the school of Carlo Maratti. Among many fine plates which he executed at this period, a portrait of Pope Clement IX. excited particular admiration. On his return to France he was appointed engraver to the king, and in the year 1681 was nominated councillor of the Royal Academy. He died at Paris, A.D. 1703, aged sixty-three.

Gerard Audran was unquestionably one of the greatest historical engravers that has ever existed. His reputation perhaps rests chiefly on the celebrated series of plates after Le Brun's Battles of Alexander. His style is composed of a bold mixture of free hatchings and dots, placed together apparently without order, but rendering, with admirable effect, not merely the contours, but the mind and feeling of the painter. To feel the truth of this remark, it is only necessary to glance at the above-mentioned Battles of Alexander, after Le Brun; the Preservation of the young Pyrrhus, after Nicholas Poussin; the Plague, after Mignard; and the Martyrdom of St. Laurence, after Le Sueur.

The works of Gerard Audran may be classified under four heads, exclusive of his portraits:—

1. His slight prints or etchings. Among these may be enumerated—the Deluge, from Le Fage; the Passage through the Red Sea, from Le Fage; the Combat of Joshua against the Amalekites, from Le Fage; the Empire of Flora, from Poussin; the Preservation of Pyrrhus, from Poussin; a Ceiling, from Le Brun.

2. Those which are more finished, but in a rough and bold manner. For example:—Paul and Barnabas at Lystra, from the tapestries in the Vatican, after Raffaelle; Coriolanus appeased by his Family, from Poussin; Time supporting Truth, from Poussin; the Ceiling of the Chapel de Saulx; the Death of St. Francis, from Annibale Caracci.

3. Those in his most finished manner:—as the Battles of Alexander, from Le Brun, namely, the Passage of the Granicus; the Battle of Arbela; Porus brought to Alexander; Alexander enter-

ing the Tent of Darius; and the Triumphal Entry of Alexander into Babylon: the Plague, from Peter Mignard; the Baptism of the Pharisees, from N. Poussin; the Martyrdom of St. Laurence, from Eustace le Sueur; the Martyrdom of St. Agnes, from Dominichino.

4. Such as he did with the graver only. We need only mention Æneas saving his father Anchises from the plunder of Troy, after Dominichino. A few only of his works are here enumerated.

(Strutt's *Biographical Dictionary of Engravers.*)

AUERSTÄDT, a village in the department of Merseburg in Prussian Saxony, near which the main body of the Prussian army, commanded by the Duke of Brunswick, was defeated, by the French under Marshal Davoust, on the 14th of October, 1806. For this achievement Davoust received the title of Duke of Auerstädt from Napoleon. A monument has been erected on the spot where the Duke of Brunswick fell.

AUGE'R, ATHANA'SE, was born at Paris in 1734. He early applied himself to the study of the Greek and Roman writers, especially the orators, and he was appointed professor of rhetoric in the college of Rouen. Auger's first publication was a translation of Demosthenes and Æschines, 5 vols. 8vo., 1777. He now settled at Paris, where he lived in modest seclusion upon a small income, entirely devoted to his favourite studies. After the publication of his translation he was elected a member of the Academy of Inscriptions. His next works were a translation of Isocrates 3 vols. 8vo., 1783, and one of Lysias, 8vo; select translations of Cicero's orations; and an essay on the constitution of Rome, 'De la Constitution de Rome sous les Rois et au Tems de la Republique,' which was published after his death, as an introduction to the whole of Cicero's 'Orations,' 10 vols. 8vo, 1792-4. The second volume contains a life of Cicero. Auger also published selections from the works of the two Greek fathers, Chrysostom and Basil.

Auger, though a member of the clerical profession, was favourable to the principles of constitutional liberty which were promulgated in France at the commencement of the revolution. In his 'Projet d'Education Publique, précédé de quelques Reflexions sur l'Assemblée Nationale,' 8vo., 1789, he traced the outlines of two distinct plans, one for a learned or classical education, and another for the education of those who, not being able or not wishing to study Latin and Greek, might yet be desirous of being instructed in the literature of their own country, and of studying rhetoric, philosophy, and jurisprudence, in their native language. In his 'Catechisme du Citoyen Français,' 16mo., 1791, he observed that his former plan being intended for the higher and the middle classes, there still remained a much more numerous class, including the humbler ranks of the towns' people and the rural population, for whom he had sketched the present catechism. 'It may have been deemed advantageous,' he observes, 'under the former system of government, to keep this vast multitude in ignorance, but such a state of ignorance becomes dangerous now. This class, with the knowledge of its strength, ought also to acquire the knowledge of how to use that strength without abusing it—it ought to be told its duties as well as its rights—it ought to become instructed, orderly, and moral.' Auger was spared the grief of seeing the horrible issue of that revolution which had commenced so favourably. He died in February, 1792, universally esteemed and regretted. Herault de Sechelles, who afterwards figured as a member of the Convention, and who had studied Greek under Auger, composed his funeral eulogy.

AUGEREAU, PIERRE FRANÇOIS CHARLES, Duke of Castiglione and Marshal of France, was born of humble parents on the 11th of November, 1757. He first enlisted in the French carabineers, and from thence entered the Neapolitan service. He obtained his discharge in 1787, but continued to reside at Naples. When the French settlers were expelled from Italy in 1792, Augereau volunteered into the revolutionary armies of his country, and joined that which was intended to repel the Spaniards. He rose rapidly to the command of a division in association with Bonaparte. It was under Augereau that the French carried the passes of Millesimo, in the spring of 1796. At Dego he rendered eminent service; and again, Augereau's brigade, with himself at its head, rushed upon the bridge of Lodi, and finally carried it in the teeth of the enemy's batteries. His services were in constant demand through the whole of the revolutionary war, and he distinguished himself particularly at Castiglione, whence he subsequently took his title. In 1797 he sided with Barras and the Directory, and by him the coup d'état, or revolution of Fructidor, was effected. Augereau, however, seems to have been always jealous of Bonaparte, as a much younger man and soldier, whose rising reputation was threatening to obscure his own. This Bonaparte knew and felt, and when Bonaparte undertook to effect the revolution of the 18th Brumaire, Bernadotte and Augereau were the only generals whom he dared not to summon to his side. When the revolution was completed, Augereau submitted with the rest, but Bonaparte still distrusted him, and he had no important employ until 1805, when, with the new dignity of Marshal, he commanded the division of the great army which reduced the Voralberg. In 1806 he was engaged in the battle of Jena, and commanded the division which subsequently took possession of Berlin. At the battle of Eylau, though seized with sudden illness and fever, Augereau caused himself to be tied upon his horse, and remained to the last in the action, though wounded. In 1809 and 1810, he commanded in Catalonia, where he showed but little mercy to the Spaniards. In 1813, notwithstanding his age, he took part in the campaign of Saxony, and made a valiant stand near Leipzig. In 1814 he was intrusted with the defence of the south-east of France against the Austrians, when he occupied Lyon and organized its defence; but at length retired to the south, where he made his peace with the Bourbons, was confirmed in his

dignities, and created a peer. On the return of Napoleon in 1815 Augereau kept aloof. Louis XVIII. being a second time restored, Augereau re-appeared, when the painful task was imposed upon him of being one of the council to try Marshal Ney. He did not long survive, having been brought to the grave by dropsy in June 1816.

AU'GILA, or AUDJELAH, is a town situated in an oasis of the great Desert of Barca, on the track of the caravans which trade between Cairo and Fezzan, in 30° 3′ N. lat., 22° 46′ E. long. The oasis of Augila is a dependence of the regency of Tripoli. The people are chiefly employed in the caravan trade; and they have established direct communications with the countries of Borgoo, Bornoo, and Bagherme, without passing through Fezzan. They have also caravans which trade with the port of Bengazi, on the Mediterranean. The country round Augila is sandy and flat, but well watered and cultivated chiefly in gardens.

AUGITE, a mineral which occupies an important place in chemical and mineralogical systems, but concerning which much diversity of opinion has existed. Werner divided a large class of minerals, occurring commonly in basalt, lavas, and other volcanic rocks, into two species, to which he applied the names of *augite* and *hornblende*. This division was founded on the difference existing between the crystallized forms and structure. The same division was shortly after adopted by Haüy, who applied to them the names of *pyroxene* and *amphibole*, and gave the measurements, determining the oblique rhombic prisms, with the most general modifications characteristic of either species. Mohs and Jameson have in later years used the term augite to denote the eighth genus of their respective systems, comprising four species, the oblique-edged, the straight-edged, the prismatoidal, and the prismatic. Berzelius views the augites as composed of one equivalent of bisilicate of lime, united with one of the bisilicate of magnesia.

Taking the double bisilicate as a basis, many species are produced by substituting either protoxide of iron or protoxide of manganese, for either of the two bisilicates. Such are the following:—*Diopside*, a pale green crystal, with a vitreous lustre, a specific gravity of 3.299, and a tendency to melt before the blowpipe into a colourless semi-transparent glass: *Hedenbergite*, a dark green mineral, having less silica, lime, and magnesia, but more iron than diopside: *Diallage*, a crystal of a bronze yellow colour, a mother-of-pearl lustre, and a very perfect cleavage; its chemical constitution differs greatly in different specimens: *Hypersthene* is very similar in appearance and character to diallage: *Sahlite*, a mineral whose chemical constitution might be indicated by supposing one equivalent of hedenbergite to be combined with two of diopside.

Gustave Rose, Bonsdorff, and other mineralogists, have discussed at much length the connection between augite and hornblende, and their probable formation. Mitscherlich has observed that at many foundries in Sweden and Germany the scoriæ possessed the form, structure, and chemical composition of certain minerals found in nature. From this source he has obtained upwards of forty varieties; and among these specimens possessing the form and structure of augite are frequently found, whereas hornblende has never been discovered. Other investigations have led to the opinion, that augite is formed whenever the process of cooling, and consequently of crystallization, is rapid; and hornblende, when it is conducted more slowly: the chemical ingredients being in both cases nearly the same.

AUGMENTATION, COURT OF, This was a court established by 27 Henry VIII. c. 27, for managing the revenues and possessions of all monasteries under 200*l.* a year, which by an act of the same session had been given to the king, and for determining suits relating thereto. The court was to be called 'the Court of the Augmentations of the Revenues of the King's Crown,' and was to be a court of record with one great seal and one privy seal. All the dissolved monasteries under the above value, except those preserved incorporately, were in survey of the court, and the chancellor of the court was directed to make a yearly report of their revenues to the king. The annual revenue of 376 monasteries under 200*l.* a year, which were suppressed, was 32,000*l.*, and the value of their goods, chattels, plate, &c., was estimated at 100,000*l.*

The records of the Court of Augmentation are now at the Augmentation Office in Palace-yard, Westminster, and may be searched on payment of a fee.

AUGSBURG, the capital of the Bavarian circle of the Upper Danube, stands on the Wertach and the Lech, which unite in the town, in 48° 21′ N. lat., 10° 54′ E. long: population 30,000. It is 39¼ miles N. W. of Munich by the railway from Munich to Leipzig, which is now open as far as Donauwörth. The city of Augsburg is divided into the upper, centre, and lower towns, and the suburb of St. James; it is intersected by four canals, which supply the mills and manufactories of the town with water. The exterior boundary of the glacis has been converted into delightful walks; and within the glacis runs a wall flanked with towers, bulwarks, and ditches, which are crossed by four principal and six minor entrances. The streets, with few exceptions, are narrow and irregularly built. The general appearance of the town is, however, much improved by a variety of handsome buildings and squares, and enlivened by the manner in which the generality of the houses are painted with stripes, either green, red, or yellow —always separated by white. Every street and lane is provided with reservoirs of water for the use of the adjoining houses, and a separate work for the purpose of forcing the water into them.

The principal public buildings are—the town-hall (rath-haus), which contains the golden hall, 110 feet long, 58 broad, and 52 high; this splendid apartment, with four others adjoining, is used as a picture-gallery, in which are many masterpieces of the German and Italian schools: the 'Perlach Tower,' which is ascended by a staircase of 500 steps: the bishop's palace, in the hall of which Luther presented the Confession of Augs-

burg to Charles V., in 1530: the 'Halle,' a handsome commercial mart and storehouse: the arsenal, which has a finely embellished façade: the Public Library, which is rich in Greek books and manuscripts: the Franciscan Academy of Arts: the School of Arts: the Gothic cathedral, which was built in the fifteenth century; it is 350 feet long; its main aisle is 45 feet wide, and the side aisles are fitted up with 24 chapels, adorned with fine pictures; two stone portals divide the main aisle from the choir; there is also a side door of bronze, carved with figures and emblems, of the date of the year 1048; and St. Ulrich's Church, which is 310 feet long, and 94 wide; from the steeple, which is 350 feet high, there is a fine view of the town and environs. Augsburg contains 15 churches, 5 of which are Protestant, and a great number of richly endowed charitable institutions, the most important of which is the institution called the 'Fuggerei,' established in 1519. [FUGGER.] Among its literary and scientific establishments may be named the gymnasium, the seminary, the royal polytechnic school, the school of design, the institution for deaf-mutes, and the historical society. There are a great number of schools for the education of youth, a well-conducted orphan asylum, and two endowed schools for girls.

The principal sources of the present affluence of Augsburg are banking and exchange operations, and the transit of merchandise. It is a staple town also for the deposit and sale of the wines of Italy, Switzerland, and the south of Germany. It has above 200 mercantile establishments, and an annual circulation, varying in value from three to four millions sterling, in bills and merchandise. Augsburg is famous for its plate, jewellery, timepieces, philosophical and mathematical instruments, books, prints, maps, cotton and woollen manufactures, leather, beet-root sugar, and many other products, which rank it among the chief industrial and commercial cities of Germany. The 'Allgemeine Zeitung,' a newspaper which circulates in most parts of Europe, is printed and published in Augsburg, and is hence often called the 'Augsburg Gazette.'

The Emperor Augustus planted a colony here, about 12 B.C., to which he gave the name of *Augusta*, or distinctively, *Augusta Vindelicorum*, and hence comes the name of Augsburg. In the fifth century it was pillaged by the Huns; it afterwards came under the dominion of the Frankish monarchy, upon the dissolution of which it fell under the sway of the dukes of Swabia; but, growing rich by its commerce and manufactures, it gradually shook off all external authority, purchased its independence of its episcopal sovereigns, was recognized as a free state by the German emperors, and retained its rank as a free imperial city for upwards of five hundred years—namely, from 1276 to 1806. In the seventeenth century, the rise of Frankfort on the Main inflicted a blow on the prosperity of the town from which it has never recovered. Augsburg indeed has become a place of less importance in the circulation of exchange in Europe, and Frankfort is now the chief money-market of central Germany. Under the settlement of Germany, in 1802, Augsburg was recognised as one of the six Hanse Towns, which were declared independent of the German empire; but three years afterwards it was merged into the dominions of Bavaria, under the treaty of Presburg; and in March 1806 it was surrendered accordingly into his Bavarian majesty's hands, by the French general René, acting under the orders of Napoleon Bonaparte.

AUGSBURG, CONFESSION OF, the name given to the profession of faith of the Protestant Lutheran Church, which was drawn up by Melanchthon, with Luther's approbation, in order to be laid before the Emperor Charles V. at the great diet held at Augsburg in June 1530. The Confession was immediately afterwards printed, and, being translated into various languages, was spread over Europe. It has ever since continued to be the rule of the Lutheran Church in matters of faith. It consists of twenty-eight articles, twenty-one of which state the belief of the Lutherans on the principal tenets of religion; and the other seven consist of refutations of certain points either of dogma or discipline as maintained by the Roman Catholic Church, and on account of which the Lutherans separated from the communion of Rome. Melanchthon, while drawing up the Confession, had frequent conferences with Luther, who was then staying at Coburg, not far from Augsburg. Ernest Solomon Cyprian has written a good history of the Augsburg Confession, and Webber a 'Critical History' of the same, Frankfurt, 1783. (Schrœckh's *Kirchengeschichte;* Mosheim's *Ecclesiastical History*, and *Notes*, by Dr. Murdoch.)

AUGUR. The early inhabitants of Italy, like all rude nations, imagined that they saw in every unusual occurrence a manifestation of the will of Heaven. The power of interpreting these signs was thought to depend upon a peculiar talent conferred upon the favoured mortal from his birth, but a certain discipline was necessary to its full development. A superstition so deeply seated in the minds of the people was turned to account in the political constitution of Rome, by the establishment of a college of augurs, whose duty it was on all occasions of importance, by certain arts, to ascertain and report the pleasure or displeasure of the gods. Romulus himself was said to have been skilled in the arts of divination, and at the foundation of the city the claims of the rival brothers Romulus and Remus were decided by augury. The story of Tanaquil, of Servius Tullius, and the contest between the elder Tarquin and Attus Navius, afford additional evidence of this Roman superstition.

The institution of the college of augurs may be referred to the earliest period of Roman history. (Cicero, 'De Republica,' ii. 9.) The original number of augurs is stated differently by Cicero and Livy. Cicero, himself an augur, says that Romulus associated three others with himself, and that Numa added two. ('De Republica,' 14.) Livy reports that in the opinion of the augurs of his time the number of the college was related to the number of the ancient tribes, and that there must have been at the beginning either three or six;

so that each of the three tribes should have either one or two augurs. On the other hand, the same author found it recorded in the annals of Rome that, prior to the Ogulnian law, there were only four members of the college. Upon a careful consideration of all the facts, Niebuhr is of opinion that originally the Ramnensian tribe possessing the chief powers of the state had its two augurs; that when the Titienses were admitted to a share of these privileges, two others were added. This is confirmed by the statement of Cicero that Numa added two to the college. The Ogulnian law, which was passed B.C. 307, opened the pontifical and the augural colleges to the plebeians. (Liv. x. 6, 9.) In the latter, five plebeians were associated with the four patricians; and this number remained to the time of Sulla, B.C. 81, who increased it to fifteen. (Liv. 'Epit.' 89.) Among the extraordinary powers conferred upon Augustus in B.C. 29, was the right of electing augurs at his pleasure, whether there was a vacancy or not; and from that time the number of the college ceased to be definite. (Dion, xli. 20.)

At first, the augurs, like the other priests, were elected by the patrician assembly of the Curiæ, called the Comitia Curiata: but no election was complete without the sanction of the augury; so that the college possessed a virtual veto upon the admission of all members into it. (Dionys. ii. 22.) This power was not unlikely to lead to a gradual usurpation of the elective right; and as early as the year B.C. 452 it was the practice of the college to fill up vacancies by co-optation, that is, by the votes of the existing augurs. (Liv. iii. 32.) This mode of election continued to the third consulship of Marius, B.C. 103, when a law was enacted, that in case of vacancy in any of the sacred colleges, seventeen out of the thirty-five tribes chosen by lot should, by a majority of the votes of the said seventeen tribes, nominate a successor, whom the college should be bound to elect. (Cic. 'Contra Leg. Agrar.' ii. 7, &c.) The return of Sulla to power restored the election to the colleges; but in the consulship of Cicero (B.C. 63) T. Attius Labienus, with the support of Cæsar, procured the reversal of Sulla's law. (Dion. xxxvii. 37.) After the death of Cæsar, M. Antonius restored the old law, at least in the election of the chief pontiff, and therefore, most probably, in that of the other priests. (Dion. xliv. 53.)

The ceremonies and superstitions which constituted the supposed science of the augurs would be tedious to enumerate; but that which especially characterized the augural office was the pretended power of ascertaining the divine will from the flight of birds. So prominent a place did the birds hold as the interpreters of the divine will, that *avi*, the Latin for bird, is the chief element in the term *augur*, as it is also in the nearly equivalent word *auspex* (*avispex*). In the latter, the second syllable is deduced from *spec*, look, so that the word signifies bird-observer. The second element of the word augur does not admit of satisfactory explanation. The most important distinction between augury and auspice is, that the superior magistrates of Rome possessed the auspices (Cic. 'De Leg.' iii. 8) by virtue of their office, while the term augurium never refers to any other than an augur.

But there were various other occurrences in the physical world which, as expressive of the will of Heaven, came under the cognizance of the augurs. Absurd as all this system of augury appears, the political power of the augurs was substantial. The election of a king, a consul, a dictator, a prætor, a curule ædile, of the various priests, pontifex, augur, vestal, flamen, &c., all were void unless the auspices were favourable. A general could not cross the frontier of the state, or even a river, without the sanction of his birds. To engage an enemy in defiance of these interpreters of the will of Heaven was sure to entail present or future defeat. In the assignment of public lands the science of the augur was required to mark out the different allotments. These are a few out of many instances. A man once created an augur was an augur for life. (Plin. 'Ep.' iv. 8; Plutarch, 'Romaica,' 97.) That the augurs received money in some shape from the public treasury is positively stated (Dionys. ii. 6); and the public money may perhaps be traced in the dinners given by the augurs on their election, which were celebrated in the annals of Roman gastronomy. (Cic. 'Ad Fam.' vii. 16; Varro, 'Re Rust.,' iii. 6; Plin. 'Hist. Nat.' x. 23.) In the latter years of the republic many of the duties of the augurs were performed in the most lax manner. At the inauguration of a magistrate, says Dionysius (ii. 6), speaking of his own time, the ceremony is a mere shadow of what it was. The candidate takes his seat, rises, repeats a set prayer in the open air, an augur then declares he hears thunder on the left, when in fact there was none, and the candidate forthwith enters upon his magistracy.

AUGUST. The month of August was originally called Sextilis, being the sixth month in the Alban or Latin calendar; and this name, as is stated, it retained in the calendars of Romulus, Numa Pompilius, and Julius Cæsar. Since Numa's reform, however, it has held only the eighth place in the series of months. In the Alban calendar, Sextilis consisted of twenty-eight days; in that of Romulus, of thirty; Numa reduced the number to twenty-nine; Julius Cæsar restored it to thirty; and Augustus Cæsar, from whom it derived its new name of Augustus, extended the number of days to thirty-one, which has continued ever since.

The Flemings and Germans have adopted the word August for Harvest; *Oogst maand* is the harvest-month. (Hadr. Junius, 'De Annis et Mensibus,' in Grævius, 'Thesaur.' viii. col. 217.) So the German *Augst-wagen*, a harvest-waggon (Wachter, 'Glossar. German.'); and the Dutch *Oogsten*, to reap or gather corn from the field (Sewel's 'Dutch Diction.') The Spaniards also have the verb *agostar*, to gather in harvest; and both French and Spaniards have phrases for making harvest, *faire l'Aoust*, and *hazer su Augusto*.

Lammas Day, the first of the month, is also called the Gule of August. (Brand's 'Popular

Antiq.,' i. 275.) This day, called by our Anglo-Saxon ancestors *hlaf-mæsse*, 'loaf mass,' was the feast of thanksgiving for the first fruits of the corn.

AUGUSTA. This title was first given to his wife Livia after the death of Augustus, according to the will of the emperor. (Tac. 'Ann.' i. 8.) It was afterwards conferred by Claudius on his wife Agrippina (A.D. 51), and by Nero on his wife Poppæa (A.D. 64). Eventually it became a common title of the mother, wife, sister, or daughter of an emperor. [AUGUSTUS.]

AUGUSTA. This name was also frequently adopted by towns, sometimes in place of, sometimes in addition to, the previous name; also many new colonies received it. Thus we find Augusta in the country of the Salassi, now Aosta; Augusta Taurinorum, now Turin; Augusta Rauracorum, now Augst near Basle; Augusta Vindelicorum, now Augsburg, sometimes written Augstburg; Cæsar-Augusta, now Zaragossa. Nearly similar to these is Augusto-dunum, formerly Bibracte, the capital of the Ædui, now Autun. In other towns it has disappeared, as in Augusta Asturica, now Astorga. Many Greek cities received the equivalent Greek name Sebaste. One of these, Sebaste or Sebastia, on the upper stream of the Halys, is still called Sevas.

AUGUSTA, a town in the State of Georgia, North America, on the S.W. bank of the river Savannah, and 120 miles N.N.W. from the town of Savannah, in 33° 28′ N. lat., and 81° 54′ W. long. The population of Augusta, in 1840, was 6403. The houses are mostly of brick, and spacious; and the streets wide, straight, and ornamented with trees. Augusta has a city-hall, court-house, gaol, theatre, hospital, 2 markets, and 7 places of public worship, 2 printing-offices, 2 daily newspapers, 4 weekly, 2 semi-weekly; and 3 academies with 105 students.

It has a rich back country and a very active trade, and sends a large quantity of cotton, tobacco, and other produce down the river to Savannah. It is connected with Charleston and Milledgeville by a railroad.

(*United States Gazetteer*, by Haskel and Smith.)

AUGUSTA, a town in the United States of North America, the capital of the State of Maine, is situated on both sides of the river Kennebec, 43 miles from the sea, at the head of the sloop navigation, 44° 18′ N. lat., 69° 50′ W. long. The population in 1840 was 5314. A handsome bridge, 520 feet long, across the Kennebec, connects the two parts of the town. The ground rises from each side of the river, and the streets are regularly laid out. The town contains a state-house, court-house, arsenal, hospital for the insane, academy, high school, and 9 places of public worship. The state-house is a fine building of white granite, on an eminence half a mile from the town. A dam has been constructed across the Kennebec, half a mile above the town, with locks to facilitate navigation; it was completed in 1837, at an expense of 100,000 dollars. The lake formed by the dam covers 1200 acres. (*United States Gazetteer*, by Haskel and Smith; *American Almanac* for 1847.)

AUGUSTA HISTORIA, the name given to a series of Roman historians, or rather biographers, who wrote the lives of the Emperors from the accession of Hadrian to the death of Carinus, the immediate predecessor of Diocletian: these lives comprise a period of 167 years of the history of the Roman empire. They may be considered as a continuation of Suetonius's 'Twelve Cæsars,' except that between Domitian, the last in Suetonius, and Hadrian, the first in the 'Historia Augusta,' the reigns of Nerva and Trajan are not included in either of the two series. Lampridius states that four historians had written Trajan's biography, Marius Maximus, Fabius Marcellinus, Aurelius Verus, and Statilius Valens: all these lives are lost.

The writers generally included in the collections of the 'Historia Augusta' are six in number; they lived under Diocletian and his successors Constantius and Constantine. They are: 1, Ælius Spartianus; 2, Julius Capitolinus; 3, Ælius Lampridius; 4, Vulcatius Gallicanus; 5, Trebellius Pollio; and 6, Flavius Vopiscus. Among the editions of the writers comprised in the 'Augusta Historia,' is that of Cl. Salmasius, Paris, 1620, fol., and the Bipont edition, 2 vols. 8vo, 1787.

AUGUSTI, CHRISTIAN JOHANN WILHELM, was born on the 27th of October, 1771, at Eschenberge, a village near Gotha, where his father was pastor. After going through the gymnasium of Gotha, in 1790 he entered the University of Jena, where, under Griesbach, he devoted himself to theology and philology. In 1798 he entered on the career of an academical teacher at Jena. In 1800 he was made professor extraordinary, and in 1803 he succeeded Ilgen in the chair of oriental literature, which he exchanged in 1807 for that of theology. In 1811 he accepted the chair of theology in the University of Breslau, to which he was invited by the Prussian government, and he was also honoured with a seat in the consistory of the province of Silesia. His influence upon the University of Breslau and upon all the educational establishments of Silesia was very great. In 1819 Augusti was appointed to the chief professorship of theology in the newly established University of Bonn, and with the title of Councillor of the Consistory at Cologne. The influence which he exercised over the Protestant Church in the Rhenish province of Prussia rapidly increased, and in 1833 he was appointed director of the consistory of Coblenz. He continued his lectures in the University until his death on the 28th of April, 1841.

Augusti was one of the most voluminous theological writers of Germany. He was originally led by the influence of Griesbach to join the critical or philosophical school of theology, but during the last forty years of his life he was a zealous advocate of the established form of religion, without being bigoted. As far as his doctrines go, he may be considered an orthodox Lutheran. His writings, most of which are of an historical or archæological nature, are very useful as works of reference; but they are de-

ficient in elegance and simplicity of form, and contain more evidence of learning and industry than of the true spirit of an historian.

(*Jenaische Allgemeine Literatur-Zeitung*, for June, 1841; *Intelligenzblatt*, p. 66, &c.; *Biographical Dictionary* of the Society for the Diffusion of Useful Knowledge.)

AUGUSTIN, ST., CANONS OF THE ORDER OF, usually called AUSTIN CANONS. Regular Canons, according to Bishop Tanner (Pref. to 'Notit. Monast.'), were such as lived under some rule: they were a less strict sort of religious than the monks, but lived together under one roof, had a common dormitory and refectory, and were obliged to observe the statutes of their order.

The chief rule for these canons was that of St. Augustin, who was made Bishop of Hippo, A.D. 395. [AUGUSTINUS.]

Bale ('Script.' cent. xiii. 4) and Sir Robert Atkyns ('Antiq. of Glouc.' p. 1) state, that these canons were brought into England by St. Birinus in the beginning of the seventh century, but all other historians agree that we had no regular canons here till the eleventh century, or probably till the twelfth; for though they differ about the place of their first settlement, yet the general opinion is, that they came in after King Henry I. began his reign. Reyner asserts ('Apostol. Benedict.' tr. i. p. 157) that they were first brought into England by Athelwulphus or Adulphus, confessor to King Henry I.

Stevens, in his Continuation of Dugdale (vol. ii. p. 65), states, that though there were regular canons who embraced the rule of St. Austin taken from his 109th epistle, in the eleventh century (as particularly at the Abbey of St. Denis, at Rheims, about A.D. 1067), yet the regular canons did not make solemn vows till the twelfth century; and did not in general take the name of 'regular canons of St. Austin' till Pope Innocent II. ordained, in the Lateran Council, A.D. 1139, that all regular canons should submit to that rule of St. Austin in his 109th epistle. Tanner found above 175 houses of these canons and canonesses in England and Wales.

Their habit was a long black cassock, with a white rochet over it, and over that a black cloak and hood. The monks were always shaved, but these canons wore beards, and caps on their heads.

(Tanner's Preface to his *Notitia Monastica*; Introductory History of the Augustin order in the new edition of *Dugdale's Monasticon*, vol. vi. pp. 37-49. For more extended information, the *Histoire des Ordres Monastiques*, quoted by Stevens, may be consulted; and, for the minutiæ of the customs of the order in England, Fosbrooke's *British Monachism*.)

AUGUSTINE, ST., first Archbishop of Canterbury, also by contraction called ST. AUSTIN, was originally a monk in the convent of St. Andrew at Rome. He is usually called the Apostle of the English, because he was sent with about forty other monks, Italians and Gauls, to convert the Anglo-Saxons to the Christian religion, which mission was undertaken in the year 596.

Augustine and his companions, having passed through France, embarked for Britain, and landed in the Isle of Thanet, whence, after a short time, they repaired to Ethelbert, king of Kent, who allowed them to preach without molestation, and assigned them a residence in Canterbury, then called Dorobernia.

In 597, Augustine, by direction of Pope Gregory, went over to Arles, in France, where he was consecrated archbishop and metropolitan of the English nation, by the archbishop of that place; and having fixed his see at Canterbury, he dedicated a church which had been built in earlier times by some Roman Christians to the honour of our Saviour; and King Ethelbert founded an abbey, dedicated to St. Peter and St. Paul, since called St. Augustine's.

Augustine next made an attempt to establish a uniformity of discipline and customs in the island; and, as a necessary step, to gain over the British bishops, that is, the Welsh bishops, to his opinion. For this purpose a conference was held in Worcestershire, at a place since called Augustine's Oak, where the archbishop endeavoured to persuade the British prelates to make one communion, and assist in preaching to the unconverted Saxons. But neither this nor a second conference was successful; and Augustine is said to have threatened the Britons with a terrible calamity, as a punishment of their disobedience, which accordingly fell upon them in the shape of war, A.D. 613, after Augustine's death, when Ethelfrid, king of Northumberland, marched with an army to Caerleon, and when nearly twelve hundred monks of Bangor were put to the sword.

In the year 604, Augustine consecrated two of his companions, Mellitus and Justus, the former to the see of London, the latter to that of Rochester. In the same year he died at Canterbury, and was buried in the churchyard of the monastery which went by his name, the cathedral being not then finished. After the consecration of that church, his body was taken up and deposited in the north porch, where it lay till A.D. 1091, when it was removed and placed in the church by Wido, abbot of Canterbury.

(Bede, *Eccl. Hist.*; *Biog. Brit.*)

AUGUSTINE, ST., a town and sea-port of the State of Florida, North America, is situated on a bay of the Atlantic, two miles within a bar, which at low tide has not more than 9 feet of water, 29° 48′ N. lat., and 81° 35′ W. long. The principal streets cross each other at right angles. The houses are mostly of stone. Fort Marion, at the north end of the town, completely commands the harbour; and there are extensive barracks. The harbour is very large and safe. A packet runs regularly between Saint Augustine and Charleston. The population in 1840 was 2459. (*Gazetteer of the United States*, by Haskel and Smith.)

AUGUSTI'NUS, AURE'LIUS, Bishop of Hippo, born, as he himself informs us ('Epist.' 227), at Tagasta, a small town of Africa, in the inland part of Numidia, November 13th, A.D. 354. His father's name was Patricius, and his mother Monica was a woman distinguished for her piety. At the beginning of his treatise 'De Beatâ Vitâ,' Augustin speaks of his brother Na-

vigius; and in his 109th Epistle, of a sister who died an abbess. He first studied at Tagasta, then at Madaura, and at Carthage, where his illegitimate son Adeodatus was born, A.D. 371. About the year 373 he became a proselyte to the sect of the Manichæans, and for a time a zealous defender of their opinions. In the mean time he acquired fame as a rhetorician, and taught eloquence successively at Tagasta, Carthage, Rome, and Milan. At Rome he left the Manichæans, and joined the sect of the Academics. ('De Beatâ Vitâ,' tom. i. 212.) He arrived at Milan, A.D. 384, where St. Ambrose was at that time bishop, whose sermons, added to the tears and entreaties of his mother Monica, about A.D. 386, effected Augustin's entire conversion. He was accordingly baptized by St. Ambrose in the early part of the year 387 or 388. Previous to his baptism he wrote his work 'De Immortalitate Animæ.' Soon after this, Monica his mother died at Ostia Tiberina. He now renounced his rhetorical pursuits, and devoted himself to the study of the Gospel, going first to Rome, but afterwards settling for near three years at Tagasta, where he wrote several of his works.

Being at Hippo, Valerius, then bishop of that diocese, ordained him a priest early in 391; and at a council held there in 393, he displayed such learning and eloquence in defence of the faith, that the bishops who composed it were unanimously of opinion that he should be chosen one of their number. In 395 he became coadjutor to Valerius, and in 396 succeeded him in the bishopric of Hippo. He was still active in his opposition, not only to the heresies of the Manichæans, but to those of the Donatists and Pelagians. His great work, 'De Civitate Dei,' is believed to have been begun A.D. 413. In 418, after the general council held at Carthage, he produced his two works against the Pelagians, 'De Gratiâ Christi,' and 'De Peccato Originali.' His last work was his 'Confessions.' He died in August, A.D. 430, at a time when Hippo was threatened by the Vandals. The Vandals, who took Hippo the year following, showed respect to his library, his works, and his body. Victor Vitensis ('Hist. Persec. Vandal.', 8vo., Paris, 1694, p. 6) says his library contained two hundred and thirty-two separate books, or treatises, on theological subjects, besides an exposition of the Psalter and the Gospels, and an innumerable quantity of homilies and epistles.

St. Augustin's works are numerous, and have been printed in a collected form repeatedly: at Paris, in 10 vols. fol. 1532; by Erasmus, from Frobenius's press, 10 vols. fol. 1540-3; by the divines of Louvain, 10 tom. fol. Lugd. 1586; and by the Benedictines of St. Maur, 10 vols. fol. Paris, 1679-1700; 12 vols. fol. Paris, 1688-1703; and 12 vols. fol. Antw. 1700-1703. Some of St. Augustin's works are among the earliest specimens of typography. The 'Liber de Arte Prædicandi' was printed by Fust at Mentz, in folio, before 1466, and another edition appeared in that year from the press of Mentelin. The first edition of the treatise 'De Civitate Dei' was printed by Sweynheim and Pannartz, in the monastery of Subiaco, fol. 1467; and the treatises 'De Vitâ Christianâ,' and 'De Singularitate Clericorum,' in the same year, by Olric Zell, at Hanau, in 4to.

'The fame of Augustin, bishop of Hippo,' says Mosheim, 'filled the whole Christian world, and not without reason, as a variety of great and shining qualities were united in the character of that illustrious man. A sublime genius, an uninterrupted and zealous pursuit of truth, an indefatigable application, an invincible patience, a sincere piety, and a subtle and lively wit, conspired to establish his fame upon the most lasting foundations. It is, however, certain that the accuracy and solidity of his judgment were by no means proportionable to the eminent talents now mentioned; and that, upon many occasions, he was more guided by the violent impulse of a warm imagination than by the cool dictates of reason and prudence. Hence that ambiguity which appears in his writings, and which has sometimes rendered the most attentive readers uncertain with respect to his real sentiments; and hence also the just complaints which many have made of the contradictions that are so frequent in his works, and of the levity and precipitation with which he set himself to write upon a variety of subjects, before he had examined them with a sufficient degree of attention and diligence.'

A Life of St. Augustin, the first part written by himself, in the first ten books of his *Confessions*, was published in English, 8vo., Lond. 1660; but a more elaborate life, in Latin, is appended to the Benedictine editions of his works; and an account of his life and controversies fills the 13th volume of the *Mémoires pour servir à l'Histoire Ecclésiastique*, by M. Lenain de Tillemont, 4to., Paris, 1702. Many valuable remarks upon St. Augustin's writings, as they relate to his connection with the Manichæans, are in Lardner's *Credibility of the Gospel History*, part ii. vol. vi. pp. 58, 59; and again part ii. vol. x. pp. 198-303.

AUGUSTOVO, the most northern voyvodeship of Russian Poland, is bounded N. and E. by the Niemen, the Bobr, and the Narew, which separate it from the provinces of Vilna and Grodno; S.E. by the province of Bialystock, S. by the voyvodeship of Plock, and W. by Eastern Prussia. Its area is 6842 square miles; it is divided into five circles, and contains 47 towns, the chief of which are, Suwalky, the capital, population 3000; Augustovo, population 1087; Kalwary, population 2705, most of whom are poor Jews; Novgorod, population 1000; Nowe Miasto, or Neustadt, population 2310; and Staropol, or Marianpol, population 1178. Augustovo contains about 529,000 inhabitants. It abounds in small rivers, lakes, and morasses; some of the latter produce considerable quantities of wild hops, which form an article of export to Königsberg. It is likewise rich in forests, those which skirt the Memel being full of linden-trees, whence the celebrated 'linden-honey.' The northern districts of Augustovo form an extensive plain, and the soil being fertile and well cultivated produces a fine description of wheat; excellent rye is also grown in the southern

districts, which are watered by the Narew. The town of Augustovo is in 53° 40′ N. lat., 22° 58′ E. long.

AUGU'STULUS, the last emperor of the western portion of the Roman empire, was the son of Orestes, a Pannonian of birth and wealth, who stood high in the favour of Attila, and, on his death, entering the Roman service, rose to its highest dignities by favour of the Emperor Julius Nepos. He rewarded his patron by stirring to mutiny the barbarian troops in the pay of Rome. Nepos fled, and Orestes established his son upon the vacant throne. This youth, who bore the lofty name of Romulus Augustus, possessed no qualities to distinguish him except personal beauty; and his character is aptly expressed by the diminutive title Augustulus. Within a year Orestes fell, as he had risen, by the army, and Odoacer, the first barbarian king of Italy, became their leader. Orestes was besieged in Pavia, taken, and put to death. Augustulus yielded, and on his abdication was kindly treated by Odoacer, who allotted for his abode the celebrated villa of Lucullus, on the promontory of Misenum, near Naples, with a pension of 6000 pieces of gold. The date commonly assigned to this extinction of the western empire is A.D. 476. (Jornandes, *Rer. Get.*; Gibbon, c. xxxvi.)

AUGUSTUS is properly a title of honour which was conferred upon C. Julius Cæsar Octavianus, the first emperor of Rome, and adopted by his successors. The meaning of the word seems to be 'sacred,' for it appears to be derived from *Augur* [AUGUR], the analogy between the two words being the same as that between *robur* (strength) and *robustus* (strong). The Greek writers interpreted the word by *sebastos* (adorable). But though the title was common to the emperors of Rome, it is in history generally limited to the first who held it, and is almost looked upon as his proper name.

AUGUSTUS was the son of C. Octavius, and Atia. Atia was the daughter of M. Atius Balbus and Julia, sister of the Dictator C. Julius Cæsar, who was thus the great uncle of Augustus. Octavius was born at Velitræ on the 22nd of September, B.C. 63, in the consulship of Cicero. In B.C. 60, his father was appointed as prætor to succeed C. Antonius in the government of Macedonia. In Macedonia, Octavius conducted himself in a manner which was most favourably contrasted with that of his predecessor. [ANTONIUS, CAIUS.] Immediately after his return from his province, Octavius died, leaving behind him Octavia the elder by his first wife Ancharia, and Octavia the younger, together with his son Octavius, then only four years of age, by his second wife Atia, who afterwards married L. Marcius Philippus, the consul of B.C. 56. Octavius, at the age of twelve, pronounced a funeral oration on the decease of his grandmother Julia. In his sixteenth year he received the toga virilis. In B.C. 45 he was present with his great-uncle at the defeat of the sons of Pompeius near Munda; after which he was sent to Apollonia, on the Adriatic, that he might employ the winter in study under Apollodorus of Pergamum, and be ready to accompany the dictator on his projected expeditions against Dacia and Parthia. He had already been appointed a pontifex, and had received the honour of patrician rank. He had scarcely been at Apollonia six months when he heard of the murder of the dictator, that he had been appointed his heir, and adopted into the Julian family by Cæsar's testament. Though he was only eighteen years of age, and his step-father, in his letters from Rome, strongly recommended him to keep away from public affairs, he crossed over to Italy with his friend M. Vipsanius Agrippa, and was favourably received by the legions at Brundisium. On the 18th of April he was at Naples (Cic. 'Ad Att.' xiv. 10), and two or three days after Cicero saw him at the house of his step-father. M. Antonius was beginning to lay aside the hesitation which marked his conduct immediately after the dictator's death, and but for the arrival of Octavius, the two parties would probably soon have brought the dispute to some decided issue. The connection of Octavius with his murdered benefactor might naturally have led to an alliance with Antonius; while the marriage of his mother with Philippus brought him into contact with the chiefs of the opposite party. In this difficult situation the sagacity of a boy of eighteen baffled the oldest statesmen of Rome. At Naples he had persuaded Cicero that he was altogether devoted to his counsels, and yet by assuming the name of Cæsar, in conformity with the dictator's testament, he threw out a hint which was well understood by the veterans who had served under the conqueror of Gaul. No sooner had Octavius arrived at Rome than he formally accepted the dangerous inheritance of the dictator's name and property, so that henceforward he was called C. Julius Cæsar Octavianus—the last epithet being added to mark his previous connection with the Octavii. Having thus traced him from his birth into public life, we must leave to the historian the task of recording the annals of the world during the next fifty-eight years, in which the name of Cæsar or Augustus connects itself with every event of importance.

His private life may be briefly considered. A daughter of P. Servilius Isauricus had been betrothed to him, but the marriage was not completed, when the troops, after the war of Mutina, and the reconciliation which soon followed between him and M. Antonius (B.C. 43) called upon him to marry Claudia, or Clodia, the daughter of the notorious P. Clodius and Fulvia, who, by the second marriage of Fulvia, had become the step-daughter of M. Antonius. This marriage, however, was only nominal, and Claudia, still a virgin, was formally divorced on the occasion of the Perusian war (B.C. 41). His marriage with Scribonia soon afterwards was again dictated by motives of public expediency. This lady, already twice a widow, was the sister of L. Scribonius Libo, whose daughter was married to Sextus Pompeius, with whom Cæsar was then on the point of reconciliation. Cæsar had by Scribonia a daughter, Julia, born B.C. 39. But a marriage thus contracted was as readily dissolved at the

recommencement of the war with young Pompeius in 38; the more so as Cæsar had begun to feel an attachment for Livia Drusilla, the daughter of L. Livius Drusus Claudianus, who slew himself after the battle of Pharsalia. Livia was now the wife of Tib. Claudius Nero, to whom she had borne one son, of the same name as his father, and afterwards the Emperor Tiberius. Livia was then pregnant, but Cæsar prevailed on her husband to consent to a divorce; and in three months after the marriage Livia gave birth to Drusus. In B.C. 27, four years after the battle of Actium, Cæsar received from the flattery of the senate the title of Augustus; by which name he is generally known in history. Augustus had no children by Livia, and he gave his daughter Julia in marriage to M. Marcellus, his sister's son, with the hope of thus having a successor in his power. But the death of Marcellus, in his twentieth year (B.C. 23), defeated his wishes, and the hand of Julia was transferred to his friend M. Vipsanius Agrippa. The security of the house of Augustus appeared to be established by the birth of three sons, Caius, Lucius, and Agrippa, and two daughters, Julia and Agrippina. Caius and Lucius were adopted by the emperor, B.C. 17. The death of Agrippa (B.C. 12) left Julia a widow for the second time, and her father lost no time in contracting a third marriage between Julia and his step-son Tiberius (B.C. 11). This same year Augustus lost his sister Octavia, the mother of Marcellus. The latter part of the life of Augustus was crowded with melancholy events. The detection of the criminal conduct of his daughter Julia, and her banishment (B.C. 2), the death of her son Lucius at Massilia (A.D. 2), and of Caius in Lycia, only eighteen months after his brother, were blows from which he could scarcely recover. The loss of his adopted sons he endeavoured to repair by the adoption of his grandson Agrippa Postumus and his step-son Tiberius (A.D. 4); but the degraded character of Agrippa, and perhaps the arts of Livia, soon led to his disgrace and exile; and thus Tiberius was evidently destined to succeed Augustus. In B.C. 8, his grand-daughter Julia, who had been married to L. Æmilius Paulus, the son of the censor, was discovered to have closely imitated the conduct of her mother, and she was banished to an island on the coast of Apulia. (Tac. iv. 71.) Agrippina was married to Germanicus, son of Drusus, and grandson of Livia. In the year B.C. 14, Augustus, now in his seventy-sixth year, accompanied his adopted son Tiberius on his route to Illyricum, as far as Beneventum. On his return from Beneventum he died at Nola, on the 19th of August, in the very room in which his father had died. Tiberius was immediately recalled. Livia concealed the death of Augustus until she had made the requisite preparations for securing the succession to her son. The remains of the emperor were conveyed to Rome and placed in the mausoleum in the Campus Martius.

Augustus was of moderate stature; but his person was particularly graceful, though he took little pains to adorn it. His eyes were remarkable for their magnitude and brilliancy. His successful encouragement of literature, especially in the persons of Virgil and Horace, has procured the name of the Augustan age for the brilliant period in which he lived. He was also himself an author. Plutarch ('Anton.' 22) and Appian ('Bell. Civ.' iv. 110) availed themselves of commentaries written by the emperor; and Suetonius (85), most probably alluding to the same work, mentions an autobiography in thirteen books extending down to the Cantabrian war. He wrote also a poem in verse called 'Sicilia,' some epigrams, and a tragedy called 'Ajax;' the last did not satisfy him, and was never published. The fragments of the emperor's works were collected by J. Rutgers, and published by J. A. Fabricius, 1724, 4to.

(Cicero's *Letters;* the *Monumentum Ancyranum;* Velleius; Tacitus, *Ann.* i.; Plutarch's *Lives of Antonius, Cicero,* and *Brutus;* Appian's *Civil Wars,* books ii.—v.; Suetonius's *Life of Octavianus;* Dion Cassius, books 45—56. The events of his time, from the battle of Actium, are briefly given in Tillemont, *Histoire des Empereurs,* vol. i.; and more fully in Crevier, *Histoire des Empereurs Romains depuis Auguste jusqu'à Constantin;* and the chronology of his time in Clinton's *Fasti.*)

As the relations of the members of the Augustan family are exceedingly intricate, and yet a knowledge of them is essential to a full understanding of the history of the Roman empire, we subjoin a *stemma* of the family drawn up by Lipsius. (Oberlin's 'Tacitus,' vol. ii. p. 581.)

C. Octavius by Ancharia has *Octavia the elder;* by Atia, daughter of Balbus, he has *Octavia the younger,* and *C. Octavius,* afterwards AUGUSTUS. From which of the daughters the following progeny springs is uncertain.

I. *Octavia*

a. By C. Marcellus,
- 1. *M. Marcellus,* m. (1.) Pompeia dr. of Sextus Pompeius and (2) Julia dr. of Augustus—has no progeny.
- 2. *Marcella* the elder,
  - *a.* By M. Vipsanius Agrippa, — Children of names unknown.
  - *b.* By Julus Antonius Africanus, son of the Triumvir, — *L. Antonius Africanus,* father or uncle of — *S. Antonius Africanus?*
- 3. *Marcella* the younger.

- *b.* By M. Antonius the Triumvir.
  - 1. *Antonia* * the elder,
    - By L. Domitius Ahenobarbus,
      - 1. *Domitia*, m. Crispus Passienus?
      - 2. *Domitia Lepida* †
        - *a.* By M. Valerius Barbatus Messalla, — *Valeria Messalina*, m. Claudius, the emperor.
        - *b.* By Ap. Junius Silanus? — None?
      - 3. *Cn. Domitius*, by Agrippina. — Nero.
  - 2. *Antonia* the younger,
    - By Drusus, brother of Tiberius,
      - 1. *Germanicus*, adopted by Tiberius,
        - By Agrippina, dr. of Julia, — See below.
      - 2. *Livia* or Livilla, m. C. Cæsar, and afterwards Drusus son of Tiberius, is betrothed to Sejanus.
      - 3. Claudius,
        - *a.* By Plautia Urgulanilla,
          - 1. *Drusus*, Betrothed to dr. of Sejanus.
          - 2. *Claudia.*
        - *b.* By Ælia Petina, — *Antonia* m. Pompeius M. and Faustus Sulla.
        - *c.* By Valeria Messalina,
          - 1. *Octavia* Betrothed to L. Silanus, m. Nero.
          - 2. *Claudius Britannicus.*

* Tacitus makes Antonia the *younger* wife of Domitius. ('Ann.' iv. 44, and xii. 64.)

II. *C. Octavius*, afterwards *C. Julius Cæsar Octavianus* Augustus, has no children by his other wives; by Scribonia, daughter of L. Scribonius Libo, he has one daughter, *Julia.*

Julia,

a. By M. Marcellus, son of C. Marcellus and Octavia, has no progeny.

- *b.* By M. Vipsanius Agrippa,
  - 1. *Caius Cæsar*, adopted by Augustus, m. Livia sister of Germanicus.
  - 2. *Lucius Cæsar*, adopted by Augustus, betrothed to Æmilia Lepida.
  - 3. *Julia,*
    - By L. Æmilius Paulus, son of the Censor,
      - 1. *M. Æmilius Lepidus*, m. Drusilla dr. of Germanicus.
      - 2. *Æmilia Lepida* †.
        - *a.* Betrothed to Claudius.
        - *b.* By Ap. Junius Silanus?
          - 1. *L. Silanus*, Betrothed to Octavia, dr. of Claudius.
          - 2. *M. Silanus*, Proconsul of Asia.
          - 3. *Junia Calvina*, m. son of Vitellius.
        - *c.* By Drusus, son of Germanicus? — None.
  - 4. *Agrippina,*
    - By Germanicus,
      - 1. *Nero*, m. Julia dr. of Drusus, son of Tiberius.
      - 2. *Drusus*, m. Æmilia Lepida.
      - 3. Caius Caligula.
      - 4. *Agrippina*, By Cn. Domitius, Nero.
      - 5. *Drusilla*, m. L. Cassius and M. Æmilius Lepidus.
      - 6. *Livia* or Livilla, m. M. Vicinius and Quinctilius Varus?
  - 5. Agrippa Postumus, adopted by Augustus.

c. By Tiberius, has none.

† There seems to be some confusion between Domitia Lepida and Æmilia Lepida, the granddaughter of Agrippa. One is somewhat surprised to find a Lepida in a Domitian family. With this exception, the Lepidi are only found in the Æmilian gens. (Lipsius on Tacit. 'Ann.' xii. 64, and xii. 1; Suet. 'Nero,' 5.)

III. *Tiberius Claudius Nero.*

- 1. TIBERIUS *Nero*, adopted by Augustus,
- By Livia Drusilla,
  - *a.* By Vipsania Agrippina, gr. dr. of Atticus.
    - *Drusus*,
      - By Livia, sister of Germanicus,
        1. *Ti. Gemellus.*
        2. — *Gemellus.*
        3. *Julia.*
          - *a.* By Nero son of Germanicus, — None.
          - *b.* By Rubellius Blandus, — *Rubellius Plautus.*
  - *b.* by Julia, — None.
    - *Drusus*,
      - By Antonia the younger, — See above.

With the Emperor Nero the Julian family became extinct: as far as we have traced it here, the Julian blood descended from a single female, the sister of the Dictator Cæsar; the dictator had only a daughter, Julia, who left no descendants.

AUGUSTUS I. of Saxony was the younger brother of Maurice, who was made Elector of Saxony through the influence of Charles V., in place of his cousin John Frederic, who had fought against the emperor in the wars occasioned by the Reformation, and was therefore deposed by the diet in 1530. On the death of Maurice, in 1553, Augustus succeeded him. John Frederic, son of the deposed elector, aspired to the succession, but was obliged to satisfy himself with the duchy of Gotha and other districts. Hence arose the division between the electoral, now royal, house of Saxony, which continues in the successors of Augustus, and the ducal houses of Saxe Gotha and Saxe Weimar, which are the descendants of John Frederic. The reign of Augustus was on the whole peaceful and prosperous. In a short war against his rival, John Frederic, he besieged Gotha, took it, made the duke prisoner, and his territories were divided between his two sons.

Augustus was intolerant towards the Calvinists; he banished them from his dominions, and caused a creed of Lutheran orthodoxy to be drawn up, styled 'Formula Concordiæ,' and which was accepted by three other Protestant electors of Germany. He embellished Dresden, and built the fine palace of Augustenberg. He died in 1586, and was succeeded by his son, Christian I.

AUGUSTUS II. of Poland (in Saxon histories he is more generally styled Frederic Augustus I.) was the second son of John George III., elector of Saxony, and was born at Dresden in 1670. In 1694 he succeeded his elder brother, John George IV., as elector of Saxony, and his first step was an alliance with Austria, in whose behalf he raised troops against France; but as he refused to serve under Prince Louis of Baden, who commanded as Imperial general upon the Rhine, the court of Vienna entrusted him with an expedition against the Turks in Hungary, where he showed more valour and obstinacy than either skill or discretion.

The death of the heroic Sobieski in 1696 left the throne of Poland open to the ambition of candidates, of whom there were several; but after many intrigues, in the early part of 1698 Augustus succeeded in establishing himself almost the undisputed monarch of Poland: France and Sweden alone refused to recognize him.

The first aim of the new king was to keep his promise of recovering for Poland its lost possessions of Podolia, the Ukraine, and Kaminietz. War, conquest, the foundation of a great empire, and his own magnificence, were the favourite dreams of Augustus. He aimed in every respect at being the Louis XIV. of the North; but it was his fate to meet with as formidable rivals, and even more fatal reverses, than the French monarch. After a short war, his alliance with Russia enabled him to conclude the treaty of Carlowitz, by which most of the territories which he sought to recover were ceded to Poland.

This war being happily terminated, the allied monarchs proceeded to the completion of their projects against Sweden. This roused young Charles XII. of Sweden from the insignificance of youth, and excited at once the prince and his people to a pitch of heroism, that rivalled, or even surpassed, for a time, the glories of the great Gustavus. Augustus was repulsed from Riga, his army defeated on the Duna, and again in the following year, 1702, between Clissow and Binczow. The Saxon general made another stand at Pultusk, with the cavalry which he commanded, but the Swedes were, as usual, victorious; and Charles, penetrating to Warsaw, prepared to have another king of Poland elected in place of Augustus; and after some hesitation he pitched upon Stanislaus Leczinski, who was accordingly elected king on the 12th of July, 1704. After losing another battle at Fraustadt, in Saxony, Augustus was forced to abdicate the crown of Poland in favour of Stanislaus. He abandoned his allies and his fortresses, and was obliged to give up the unfortunate Patkul to the vengeance of Charles. What must have been still more humiliating, Charles, in imitation of his

great predecessor, Gustavus Adolphus, made himself the Defender of the Protestant Faith; and stipulated that Augustus should respect the creed and privileges of his protestant subjects of Saxony. This peace was concluded towards the close of the year 1706.

The battle of Pultowa, and the overthrow of the power of Sweden in 1709, recalled Augustus to the throne of Poland. The pope released him from his oath of abdication. Russia, Prussia, and Denmark supported his pretensions; and Stanislaus, instead of offering resistance, fled into Turkey to join Charles.

The interval between 1718, the year of Charles XII.th's death, and that of Augustus, which took place in 1733, passed away without being marked by any remarkable incidents. The unsuccessful effort of Augustus to secure the duchy of Courland for his son Maurice was almost the only attempt at active policy.

AUGUSTUS III., son of Augustus II., Elector of Saxony and King of Poland, was born at Dresden in 1696. The death of his father in 1733 made Augustus elector of Saxony, and left him at the same time the strongest pretensions to the throne of Poland. His indolent nature shrunk, it is said, from struggling to attain this uneasy eminence; but his wife, a daughter of Austria, supplied her husband with ambition, and Augustus became a candidate. He was supported by the courts of Vienna and St. Petersburg, both anxious that Poland should have for a monarch a prince of easy disposition, possessed of foreign and distant dominions. France, however, favoured his father's old competitor, Stanislaus, whose daughter had become the wife of Louis XV., and the Polish nation eagerly embraced the occasion to elect and to rally round a native prince. But a Russian army advanced to enforce the pretensions of Augustus III., and after a short contest the Poles yielded in 1736, though they disputed gallantly but unsuccessfully the passage of the Vistula. Under Russian auspices a few of the Saxon partisans in Poland, meeting in the village of Kamien, proceeded to the counter-election of Augustus. His competitor Stanislaus was obliged to fly, and take refuge in Danzig, which he was compelled eventually to abandon, along with his pretensions to the throne of Poland. Augustus, although crowned at Cracow in the commencement of 1734, did not become undisputed monarch of Poland till after the Diet of Pacification, held at Warsaw in 1736. Though oppressed by foreign troops, the Poles stipulated for the dismissal of foreigners, and for the maintenance of only 1200 Saxon guards within the kingdom.

Mutual spoliation was then the sole thought of the powers of Germany. It was his first minister Sulkowski's project to conquer Bohemia for Saxony. Bruhl, his successor, at first abandoned this scheme, and leagued with Austria to support the succession of Maria Theresa. In a little time, however, he was tempted to throw Saxony into the opposite party, and to resume the scheme of appropriating Bohemia, while Frederic was to have Silesia. Soon after, in 1743, an alliance was concluded at Warsaw between England, Saxony, and Austria, for the defence of the house of Hapsburg. The King of Prussia instantly marched 100,000 men into Saxony, routed all that opposed him, and made himself master of Dresden, December 1745; whilst Augustus, with his minister, took refuge in Poland. The truce of 1746, however, restored to him the electorate; and at the same period took place the marriage of Augustus's daughter, Maria Josepha, with the Dauphin of France; a marriage from which sprung Louis XVI., Louis XVIII., and Charles X., kings of France.

The impossibility of coping with Prussia, already proved by the defeat of the Saxons and their allies, could not keep Augustus or his minister from leaguing once more against Frederic, and even planning to share that king's territories with Russia. In consequence of this, Frederic invaded Saxony in 1756, and succeeded in taking prisoner the entire Saxon army in its intrenched camp at Pirna. Augustus again fled to Poland.

His reign in this latter country was as pernicious as in Saxony. The supremacy of Russia was allowed silently to establish itself in Poland under the empty government of Augustus. Pictures, porcelain, fêtes, and music, were the only cares of this prince. He expired at Dresden, in October 1763.

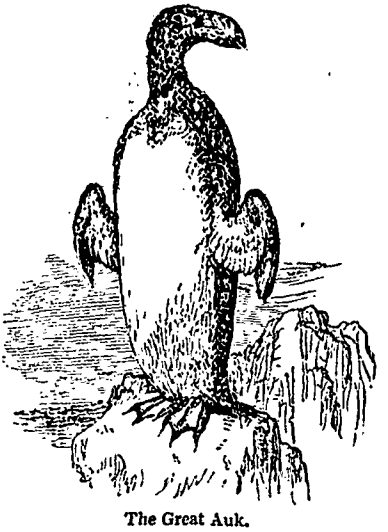
AUK, a family of oceanic birds (*Alcadæ*), including the Auks (*Alca*), the Guillemots (*Uria*), and the Puffins (*Mormon*), with a few genera besides.

The auks are expressly adapted for their aquatic home. The power of the wings as organs of flight is circumscribed, but they are efficient paddles; and in one species, the Great Auk, they are paddles only, and not constructed for flight. The legs are extremely short, but powerful, and placed so much posteriorly that in resting on the rocks the birds assume an upright attitude, the whole of the tarsus, or leg, as well as the toes, being applied to the surface. The toes are usually only three in number, and fully webbed; when the hind toe exists, it is in a rudimentary condition. The bill differs in form in the different genera, but is mostly compressed laterally, and often grooved at the sides. The auks are natives of the seas of the northern hemisphere, the penguins taking their place in the southern. Fishes, crustacea, and other marine productions, constitute their food. They breed, generally, associated in large companies, on the ledges of sea-cliffs, in holes and caverns, or on rocky places, laying only one disproportionately large egg. The young are fed from the crop of the parents, even when able to swim amidst the waves.

As examples of the family of auks we select the following:—

The *Great Auk* (*Alca impennis*, Lin.).—In the genus *Alca* the bill is deep, compressed, and cultrated; the upper mandible arched and hooked; the nostrils are nearly hidden by the feathers of the forehead; the wings are short, in one species used only as oars. These birds dive with great ease, and, using their wings, pursue beneath the surface their aquatic prey. On shore their move-

ments are awkward, but they shuffle along with considerable dispatch.



The Great Auk.

The great auk is one of the most extraordinary of our northern oceanic birds. As in the penguins, its rigidly feathered wings are used only as oars for aquatic progression, and the rapidity with which it ploughs its way is perfectly astonishing. This species is a native of the arctic circle, rarely visiting even the northern islands of Scotland. It is tolerably common on the coasts of Norway and Iceland, but still more so along the icy shores of Greenland and Spitzbergen. It breeds in the clefts and caverns of rocks above the highest tides. The female lays a single egg, as large as that of a swan, of a yellowish white tint, marked with strokes and lines of black. It feeds on crustacea and fishes, and its favourite prey is said to be the lump-fish (*Cyclópterus lumpus*).

The great auk measures nearly three feet in length. The upper part of the plumage is deep black, with the exception of a patch of white on the forehead and around the eyes, and a slight band of white across the wings; under plumage white; bill and legs dull black. In winter the cheeks, throat, fore-part and sides of the neck, are white. The change from the winter plumage takes place in spring.

The *Razor-bill Auk*, *Murre*, or *Black-billed Auk* (*Alca torda*).—In this well-known species the wings are so far developed as to serve as organs of flight, but only for short distances; in the water they are used as oars. The razor-bill is common during the summer on many parts of our coast, and those of the adjacent continent, especially in the more northern latitudes. It abounds on the shores of Labrador, where thousands are killed for the sake of the breast feathers, and vast numbers of eggs are collected. This species, with guillemots and puffins, visits the cliffs of the Isle of Wight, the Isle of Man, the Scottish isles, and the bold shores of the mainland of Scotland, where it rears its young on the ledges of the fearful cliffs, the birds sitting side by side in rows, like bottles on shelves, each on a single egg, and all in peace and harmony. The eggs, which are esteemed a delicacy, are taken in great numbers, but the means by which they are obtained is perilous, and requires no little nerve. A large stake or bar of iron is driven into the top of the cliff (five or six hundred feet in height), to this stake is fastened a strong rope, at the end of which a stick is put crosswise, on which rides the adventurer, who is lowered down the front of the precipice. If his object be to secure the eggs only, he shouts to scare the birds away, which rise in countless numbers, uttering discordant cries; but if his object be the feathers, which are valuable, he goes to work in silence, and knocks down all the birds within his reach. The flesh is worthless, but is used by fishermen as a bait for crab-pots, &c. This plan is practised in the Isle of Wight, in the Isle of Man, and the Feroe Islands, as well as along the indented coast of Norway.

The breeding season being over, the razor-bills, with the guillemots and puffins, migrate southwards, and follow the shoals of the sardine and anchovy, even into the Mediterranean Sea; nevertheless, some few from high northern regions make the Scottish and English coasts their winter abode, revisiting their arctic breeding places in the spring. There can be no greater contrast than that which the Needles and the cliffs of the Isle of Wight present in summer and in winter. During the former season the cliffs teem with a noisy busy animated population, some going out to sea for fish, some returning to their rocky abodes; but during the autumn and winter the cliffs are deserted; the birds have departed, and not a wing is to be seen.

The razor-bill is about 15 inches in length. The head, neck, and upper part of the plumage are black, with a distinct white line from the beak to the eye, and a narrow bar across the wings; under parts white; bill black, with a white streak down the sides of each mandible. In winter the throat and fore parts of the neck are white. The young and adults in this stage of plumage were regarded by the older ornithologists as a distinct species, and described under the titles of *Alca pica*, *Alca minor*, &c.

The *Puffin*, or *Coulterneb* (*Fratercula arctica*, Steph.; *Mormon fratercula*, Temm.).—In the puffins the bill is short, nearly as deep as long, and much compressed, the ridge of the upper mandible being thin and sharp. The nostrils are slits on the border of the upper mandible, near the base; the sides of the bill are marked by oblique ridges and furrows, and a loose puckered skin surrounds the corners of the mouth. Two horny appendages are placed on the eyelids, the smaller one above the eye, the larger beneath. The contour generally is thick and rounded. The wings are short, and used as oars; the flight, as in the razor-bill, is rapid, and sustained by repeated strokes of the pinions.

The general observations with regard to places

of habitation, rearing of the young, and migration, which we have made respecting the razor-bill,

The Puffin.

apply to this species also. It is common in the northern seas, and multitudes annually assemble on the cliffs of the Isle of Wight, upon Priestholm Island off the coast of Anglesey, on the Isle of Man, and most of the islands along the English and Scottish coasts. On rocky coasts the puffin selects the crevices and fissured recesses of the precipice for its breeding retreat; but on low shores it often usurps untenanted or even tenanted rabbit burrows; in the Fern Islands, where there are no rabbits, it digs a burrow for itself, in which to incubate, the labour being chiefly performed by the male. (See Selby's 'Ornithology,' vol. ii. p. 440.) The female lays a single large egg. The young are fed with small fish. In this species the upper part of the head and of the body, and a collar round the neck, are black; the cheeks are pearl grey; the horny appendages to the eyelids leaden grey; under plumage white. The bill, which is deeply furrowed, is bluish grey at the base; the middle being rich orange red, which deepens into fine red at the tip; legs orange red; length 13 inches. The young have the beak small and smooth, and of a dull yellow; and the general plumage more dusky.

The *Little Auk, Rotche*, or *Sea Dove* (*Morgulus melanoleucos*, Ray.; *Uria alle*, Temm.; *Alca alle*, Linn.).—In this genus, which is intermediate between that of the guillemot and the auk, the bill is short, thick, and broader than high at the base; the nostrils are lateral, basal, and partly covered with feathers; wings and tail short.

The little auk is a native of the arctic circle, and is recognized as a winter visitor to the coasts of Scotland. It abounds on the coasts of Greenland and Spitzbergen, and congregates in thousands at Melville Island. When the floes of ice are broken up by the wind, myriads of these birds may be seen riding on the waves, busily engaged in searching for various marine animals tossed up by the agitated waters. The ocean is in fact the home of this little bird, except during the season of incubation, when it resorts in thousands to the ledges of precipitous rocks, on which the female deposits her single egg, of a pale bluish green. The flight of this species is rapid, low, and never long sustained. The little auk is about nine inches long. The upper plumage is black, with a white bar across the wing; the throat and chest are pitch black in summer, more or less white in winter; under parts white.

The *Perroquet Auk* (*Phaleris psittacula*, Temm.; *Alca psittacula*, Pallas).—This species, which agrees with the little auk in habits and manners, differs from it in the form of the beak, the upper mandible being swollen and bent at the tip, and the under mandible enlarged and turned upwards. It is a native of the arctic circle, and swims and dives with great facility. The female lays a single egg of large size; the colour is yellowish white spotted with brown.

The length of this bird is about eleven inches. General colour above black, gradually blending into the white of the under parts. From behind each eye springs a tuft of white feathers, hanging down the sides of the neck.

AULACODON. [CHELODUS.]

AULIC COUNCIL was instituted by the Emperor Maximilian I. in 1500. Towards the close of the fifteenth century, the progress of the Turks alarmed the princes of Germany, and led them to feel the necessity of uniting in order to resist the common enemy. Accordingly, when the emperor assembled the Diet of Worms in 1495, and proposed a levy against the Turks, he was answered, that it was first requisite to restore internal concord, and that the establishment of a high court of justice for the settlement of all differences was the first step towards such union. The Imperial Chamber was accordingly instituted in 1496, as the high court of justice of the empire. It was to consist of one judge of princely rank, and of sixteen assessors, holding their office independent of any power. This tribunal was first fixed at Frankfort, then at Worms, at Nürnberg, and lastly at Spires: it was modified after the peace of Westphalia, and the number of judges was greatly increased, one half being Protestants.

Not contented with thus organizing a federal judicature, the German princes demanded of Maximilian a permanent council or senate, composed partly of members of the diet, who should govern the empire during the frequent absence of the emperor. Maximilian answered, that he had no objection to appoint a Hofrath, or court council, consisting of such noble and prudent men as he should select, who should perform the duties alluded to by the diet. The Hofrath was established at Vienna in 1500. By degrees this purely Austrian institution became the Aulic Council.

The judicial functions reserved for the Aulic Council were:—1, all feudal causes; 2, all cases of privilege or reserve in which the emperor was personally concerned; 3, all Italian causes. The merely civil and German causes were referred to the Imperial Chamber. But the Austrian

princes made use of the Aulic Council in other than judicial functions. It was with them not only a court of appeal, but a political council, which was called upon to give the monarch advice in weighty matters, more especially of legislation. It thus corresponded with the French Grand Conseil, or Conseil d'Etat. The Aulic Council was finally regulated by Ferdinand III. in an edict issued in 1654, subsequent to the treaty of Westphalia and the admission of Protestants to share in all the privileges and functions of the empire.

At the extinction of the German empire by the renunciation of Francis II. in 1806, and the establishment of the Confederation of the Rhine under the protection of the Emperor Napoleon, the Aulic Council ceased to exist.

AULIS. [EGRIPOS.]

AU'LOLEPIS, a fossil genus of Cycloïd fishes, from the chalk of Sussex and Kent. (Agassiz.)

AULO'PORA (Goldfuss), a fossil genus of Polypiaria, from the Silurian strata.

AULUS GELLIUS. [GELLIUS.]

AUMALE, CHARLES DE LORRAINE, DUC D', was the son of Claude d'Aumale, who was governor of Burgundy, and uncle to Henry, duke of Guise, the head of the League. [GUISE.] Charles d'Aumale entered into the party of the League, which, under pretence of suppressing the Huguenots, aspired to the supreme power. After the assassination of the Duke of Guise in December 1588, D'Aumale and the Duke of Mayenne became the heads of their party. D'Aumale in 1589 took possession of Paris, from which King Henry III. had been obliged to retire, and he dissolved the parliament by force, and sent its members to the Bastile. After the surrender of Paris to Henry IV., D'Aumale joined the Spaniards, who had invaded the province of Picardy, for which he was declared guilty of high-treason by the parliament of Paris, and sentenced to be broken on the wheel, which sentence was executed in effigy the 24th of July, 1595. D'Aumale, however, continued to reside abroad, chiefly in Flanders, enjoying the favour of the Spanish government. He died at Brussels in 1631, in his seventy-seventh year. (Lacretelle, *Histoire de France pendant les Guerres de Religion.*)

AUNIS, the smallest of the former provinces of France. It now forms the north-western portion of the department of CHARENTE INFERIEURE. Rochelle was the capital of the province, in which were included the islands of Ré and Oleron.

AURANTIA'CEÆ, or the Orange Tribe, are dicotyledonous polypetalous plants, with dark-green jointed leaves, filled with fragrant essential oil collected in little transparent dots, and a superior ovary changing to a succulent berry, the rind of which is also filled with fragrant essential oil. No natural order can well be more strictly defined than the orange tribe, and none have properties more uniform and definite. It consists of trees or shrubs found exclusively in the temperate or tropical parts of the Old World, and unknown in a wild state in America. Their flowers are usually odoriferous, and their fruits subacid; the rind has some shade of yellow. They principally differ from each other in the number and proportion or arrangement of their stamens, in the number of cells or seeds in the fruit, and in the texture of the rind of the fruit, which does not always pull off as in the orange, the lemon, the citron, and their congeners, but is frequently a mere skin inclosing the pulp.

AURE, River. [ORNE.]

AURE'LIA, in entomology, a name given to that state of an insect which is between the caterpillar and its final transformation, and is commonly called a *chrysalis* or *pupa*. The term aurelia was first applied by the Romans, and that of chrysalis by the Greeks, to certain butterfly pupæ which have a golden colour. In England, those of the peacock (*Vanessa Io*) and the small tortoiseshell (*Vanessa Urticæ*) butterflies are beautiful examples, and may be seen in abundance hanging to the common stinging nettles about the latter end of the month of June. [PUPA.]

AURELIANUS, CÆLIUS. [CÆLIUS AURELIANUS.]

AURELIA'NUS, LU'CIUS DOMI'TIUS, is commonly said to have been born at Sirmium, in Pannonia; but the place and time of his birth are uncertain. His father was a husbandman. At an early age he enlisted as a common soldier. Tall, handsome, and strong, skilful and diligent in all athletic and military exercises, temperate in his habits, and of acute intellect, he rose from his humble station to the highest military offices, during the reigns of Valerian and Claudian. His discipline was strict even to severity. He wrote to his lieutenant, 'If you wish to become tribune, or to live, keep the soldiery in order. Let no one steal another man's fowl, nor touch his sheep. Let none plunder grapes, nor injure corn-fields. Let none exact oil, salt, or wood. Let each be content with his own rations. Let each get rich from the booty of the enemy, not from the tears of the provincials,' &c.

On the death of Claudius, A.D. 270, Quintillus, brother of Claudius, assumed the purple, but put himself to death at the end of seventeen days, on hearing that the legions of the Danube had raised Aurelian to the imperial dignity. The new emperor suppressed an inroad of the Suevi and Sarmatæ, and compelled them to retreat north of the Danube; but he withdrew the Roman troops from Dacia, and made the Danube the frontier of the empire. Aurelian was recalled to the north of Italy by an invasion of the Alemanni or Marcomanni, who after a hard contest were destroyed, A.D. 271. Aurelian now visited Rome, and punished with severity the authors of a sedition which had disturbed the city. The disturbance at Rome was owing to the 'Monetarii,' who were apparently the persons who managed the public coinage, which they had probably debased for the sake of their own profit. We know that Aurelian afterwards issued an improved coinage. Gibbon (ch. xi. end), puts this disturbance after Aurelian's triumph.

Aurelian at this time was master only of the central portion of the empire. Spain, Gaul, and

Britain, acknowledged Tetricus; but he was in possession of a power which he could not wield and dared not resign. He is said to have himself betrayed his own army into a defeat near Châlons, while he himself, with a few friends, took refuge with Aurelian. Spain and Britain acknowledged the victor. Gibbon places these events in 271, contrary to most other historians, who make them subsequent to the fall of Zenobia. (Vopiscus, cap. 32.)

The west being secured, Aurelian prepared to reduce Palmyra. [PALMYRA; ZENOBIA.] Odenathus, prince of Palmyra, was dead, and succeeded by his widow, Zenobia, a woman of accomplished tastes and masculine talents. The march of Aurelian was through Illyricum and Thrace to Byzantium, and thence through Asia Minor to Antioch. Antioch opened its gates after a slight skirmish at Daphne. This is the statement of Vopiscus; but Eutropius speaks of a severe battle at Antioch, and makes no mention of that fought at Emesa. The hostile armies met at Emesa, in Syria, where Aurelian gained a decisive victory, and continued his march to Palmyra unopposed, except by the attacks of the 'Syrian robbers.' The resistance of the city did credit to its warlike fame. Aurelian offered favourable terms of capitulation—an honourable retreat to Zenobia, and the reservation of their rights to the Palmyrenians; but a haughty answer was returned by the queen. Zenobia at last felt resistance to be hopeless, and she tried to escape, but was intercepted and brought to the Roman camp. The soldiers clamoured for her death. Aurelian refused to shed female blood; but he took his revenge on her advisers, among whom perished Longinus, who had been Zenobia's instructor in Grecian literature. The city surrendered A.D. 273, and was not plundered.

Aurelian had already returned to Europe, when he heard that the Palmyrenians had revolted, and massacred the small garrison. He returned in wrath, and inflicted a cruel vengeance on the people. Aurelian was recalled a third time to the East by a rebellion in Egypt, excited by Firmus, a rich merchant. This was immediately quelled by the emperor's presence, and he returned to Rome, where he celebrated his victories with a magnificent triumph. (Vopiscus, chap. 33, &c.)

After visiting Gaul and Illyricum, Aurelian set out on an expedition against Persia, to revenge the defeat and degradation of Valerian. On his march between Heraclea and Byzantium he was assassinated by some of his officers, in October, 274 (in 275, according to some), after reigning from five and a half to six years, according to Vopiscus and Aurelius Victor. Gibbon, without quoting his authority, makes it four years and nine months. He left a single daughter, whose descendants remained at Rome when Vopiscus wrote.

This stern and successful soldier had many great qualities, among which temperance, love of order, and justice, were conspicuous. His faults were those of his education and his military habits.

(Vopiscus, in the *Historia Augusta;* Eutropius; Aur. Victor; Gibbon, c. xi.)

AURE'LIUS, MARCUS (or, as he is called on his medals and elsewhere, MARCUS ANTONINUS), was the son of Annius Verus and Domitia Calvilla. Aurelius was born at Rome, on the 26th of April, A.D. 121, and was named Marcus Annius Verus. Hadrian, with whom he was a favourite from infancy, familiarly called him Verissimus (most true), which was a kind of play on his name. To his natural disposition and early acquirements he owed his adoption into the Aurelian family by Antoninus Pius, who was himself adopted by Hadrian, upon condition that he should adopt Annius Verus, and the son of a deceased favourite, L. Ceionius Commodus Ælius Verus Cæsar, who was to have been his successor; this son was named Lucius Verus. [VERUS.] The father of Aurelius dying while he was young, his grandfather took charge of his education. We learn from Aurelius that he had masters in every science and polite art, whose names and qualifications he has gratefully recorded. ('Medit.' i. 1.) These men were not only tutors, but models upon which the more perfect character of Aurelius was formed; the foundation of which, however, he piously says was laid by his parents. Most of his teachers were Stoics. One of the most distinguished of them, Rusticus, procured him a copy of the works of Epictetus, which confirmed his natural inclination to Stoicism; he delighted in commenting upon them, and thanked the gods for furnishing him with a manual from which he could collect wherewith to conduct his life with honour to himself and advantage to his country. The life and writings of the emperor rank him indeed amongst the best teachers and brightest ornaments of the stoical school. He applied himself to the study of law under the jurist L. Volusianus Maecianus.

After the death of Hadrian Aurelius married his cousin Faustina, daughter of Antoninus Pius. Upon the death of Antoninus, A.D. 161, with whom Marcus had been already associated in the administration, he took the name of Antoninus, and associated Lucius Verus with himself in the empire: he also gave him his daughter Lucilla in marriage. A troublesome reign ensued, and the life of a philosopher and an emperor who loved peace was almost entirely occupied with war.

At the beginning of the reign there were disturbances on the German border, and a Parthian war broke out. Verus took the command in this war, and returned victorious, A.D. 166, but the rejoicings of a triumph were followed by a grievous pestilence in Rome. In A.D. 167, the two emperors marched together across the Alps against the Marcomanni, and obliged them to sue for peace. During another expedition Verus died, A.D. 169. In the year 170 Aurelius prepared for a more serious war against the northern nations. During this campaign a battle was fought with the Iazyges on the frozen Danube; and in the year 174 an event happened which has given rise to much controversy: the army of Aurelius, being unwarily drawn into a defile by the Quadi, was nearly overcome by the attacks of

the enemy, and was in danger of perishing by thirst. They were suddenly relieved by a violent storm, that fell lightly on them, and gave them an opportunity of refreshing themselves, while it directed its fury against the enemy, and threw them into confusion. The Romans took advantage of the crisis, and gained a victory. Upon this, some unlucky legendist, not knowing that the 12th or Thundering Legion, which was engaged in this affair, had its name before it happened, took occasion to call it a Christian Legion, and to attribute the miraculous storm to the efficacy of its prayers: and a letter exists from the emperor to the senate acknowledging the fact. This letter is in Greek; and there is no Latin original. The internal evidence of the letter is sufficient to destroy its credit. The heathens are also said to have acknowledged the miracle, and to have attributed it to the prayers of the emperor. (Capitolinus, cap. 24.) The Antonine column at Rome commemorates the miraculous shower in the historical sculptures on its shaft. [ANTONINE COLUMN.]

During his long northern campaigns Aurelius crossed the Danube, and brought the Sarmatians to terms. But the German war was interrupted by a revolt in the East. Avidius Cassius (A.D. 175), the governor of Syria, after a feeble attempt to get possession of the empire, was put to death by his own officers. The emperor showed his prudence and humanity by his lenient treatment of the family and partisans of Cassius. [CASSIUS, AVIDIUS.]

On hearing of the revolt of Cassius, the emperor had advanced to the East, and he heard of the death of Cassius on his route through Asia. His wife Faustina, who accompanied him, died at a place called Halale, at the foot of Mount Taurus. Though her infidelity to the emperor was generally believed, the good-natured prince lamented her loss as if she had been the best of wives; and his own writings show that he believed her to be such. ('Medit.' i. 17.) The senate decreed a temple to her memory, and raised her to divine honours with the title of Diva. Aurelius also instituted a new establishment for young ladies under the title of Novæ Puellæ Faustinianæ, in imitation of that which was created by Antoninus in honour of the mother of the empress.

During this journey the emperor visited Egypt and Syria, and conciliated all people by his mildness and considerate behaviour. On his return he passed through Athens; and either on this occasion or at some other time, he appointed public teachers of various branches of knowledge in this city; or probably he added to the endowments and privileges which Antoninus had already conferred. In A.D. 176 Aurelius and his son Commodus entered Rome in triumph.

The close of the philosophical emperor's life was not spent in the peaceful retirement which he loved, but in the midst of a northern campaign against the Marcomanni, Hermunduri, Sarmatians, and Quadi. His son Commodus accompanied him during these campaigns, which appear to have lasted between two and three years. Aurelius died A.D. 180, after a short illness, at Vindebona (Vienna), in his fifty-ninth year, having reigned ten years alone, and nine with his colleague. His loss was regretted by the whole empire: he was ranked amongst the gods, and every house in Rome had his statue or picture. The character of Aurelius is shown in his own writings, and those who study them will be the better for it. The work of Aurelius, which is divided into twelve books, and written in Greek, is generally known by the name of his 'Meditations.' It is a private note-book. Aurelius accomplished the arduous task of passing through a life of extraordinary difficulty with unblemished character. The severest and most important rule of Stoicism relates to self-government, and enjoins daily and hourly examination of all our thoughts, words, and actions. Aurelius always observed the golden rule, as his book proves; it was his monitor to keep him to his duty; it fully illustrates the efficacy of stoical discipline, and its effect upon the man himself gives it its peculiar value. Besides this, it contains the history of his education, and a collection of rules, dogmas, theorems, comments, and opinions, put down as they were suggested by passing events, reading, or conversation; sometimes they appear to be preparatives for particular cases in which he expected to be called upon to act or decide. They form no regular series, nor have they any relative order, but they all tend to the purposes of morals, discipline, and self-government. When not new, they are placed in a new light. They may be considered as a supplement to Epictetus, and the two together form the best code of moral discipline left to us by the ancient philosophers. This book was first edited in Greek and Latin by Xylander, Zürich, 1558, then by M. Casaubon in 1643, much improved; but still more by Gataker, Camb. 1652, with some valuable tables of reference. It was re-edited by G. Stanhope, with Dacier's life, Lond. 1697, 1704. An edition by J. M. Schulz was published at Schleswig, 1802, and reprinted at Leipzig, 1821, 12mo; and another by Coray, Paris, 1816. The English translations are by M. Casaubon, seven editions between 1634 and 1702; by J. Collier, a coarse, vulgar, inaccurate paraphrase; by J. Thomson, 1747; anonymous, Glasgow, 1749, harshly literal; and by R. Graves, 1792, said to be the best. There is a good German version by J. A. Hofman, and several others. No English version is worthy of the original.

During the reign of Aurelius the Christians were persecuted both at Smyrna and Lyon. The emperor was acquainted with the doctrines of the Christians, for Athenagoras addressed his apology to Aurelius and his son Commodus. [ATHENAGORAS.] Justin the Martyr suffered at Rome, probably during the reign of Aurelius, but the year is uncertain. However, the fact of the Christians being severely punished in the time of Aurelius, or persecuted, cannot be disputed, though the narratives of the sufferings are evidently marked by exaggeration, and in some cases by want of precise statement. The emperor's undoubted humanity, and the mildness of his temper, render it exceedingly difficult, in the

absence of better historical evidence than we possess, to form a true judgment of the condition of the Christians in his time, and of the reasons alleged for the cruel treatment which they experienced. Under Commodus, the unworthy son and successor of Aurelius, the Christians were not molested.

(Capitolinus, *M. Antoninus;* Herodian, lib. i.; Dion Cassius, lib. 71; the various authorities referred to in Gataker's edition by Stanhope; Tillemont, *Histoire des Empereurs*, tom. ii; *Biog. Dict.* of Society for the Diffusion of Useful Knowledge, art. 'Antoninus, Marcus.')

AURE'LIUS VICTOR, SEXTUS. Four books are commonly published together under the name of Aurelius Victor. 1. 'Origo Gentis Romanæ,' an imperfect work, beginning with Janus and Saturn, and going down to the foundation of Rome. 2. 'De Viris Illustribus Urbis Romæ,' which contains short biographies of the most illustrious Romans, with a few foreigners, from Romulus down to M. Antonius. 3. 'De Cæsaribus,' which contains the lives of the emperors, from Augustus to the appointment of Julian to govern Gaul, A.D. 356. 4. 'De Vita et Moribus Imperatorum Romanorum,' or 'Aurelii Victoris Epitome,' another history of the emperors, from Augustus to the death of Theodosius the Great, A.D. 395.

The only one of these four works that can with certainty be ascribed to Aurelius Victor is 'The Cæsars.' He says ('De Cæs.' xx. 5) that he was 'born in the country, of a poor and unlearned father.' The 'Cæsars' seems, on the evidence of a passage written in the present tense, to have been composed about A.D. 359.

The chief edition of Aurelius Victor is by Arntzenius, Amsterdam and Utrecht, 1733, 4to.

AU'REUS, or DENA'RIUS AUREUS, the ordinary Roman coin of gold, was equivalent to twenty-five silver denarii, or a hundred sestertii.

Gold was first struck at Rome B.C. 207. The earliest coin of gold at this time was named a scruple (scrupulum), and went for twenty sesterces

of that age. It had the head of Mars on one side, and an eagle standing on a thunderbolt upon the other, with the word 'ROMA' below; and was marked XX at the back of the head of Mars. Seventeen and a half Troy grains is the weight of one in perfect condition in the British Museum. Its double was marked XXXX, or forty sesterces; and its triple ↓X, or sixty, which weighed 52 grains. The symbol which precedes the X on this triple scruple, indicates L or 50.

Pliny ('Hist. Nat.', 33, c. 13) says, that it was afterwards usual to coin forty pieces out of the pound of gold (larger of course, bearing the general name of Aurei), and that the Roman emperors by degrees made them forty-five to the pound. The aureus was sometimes called solidus, as opposed to a half and a third. A constitution of Valentinian and Valens ('Cod. Just.' 10, tit. 70, c. 5) declares that the pound (*libra*) of gold must be considered as 72 solidi.

An aureus of Julius Cæsar, in the British Museum, weighs 123 grains, which is exactly the weight of an English sovereign, but the Roman coin contains no alloy, or very little. The coin of Carausius, of which a copy is here given, is be-

lieved to be unique. The Rev. Mr. Cracherode, who bequeathed it to the British Museum, bought it for 150*l*. Of the aurei of Constantine in the Museum, one weighs 66 grains, three 67, three 69½, one 73½, and one 81½. The average weight of the aurei of Augustus appears to have been nearly 121 grains; that of Nero's aurei nearly 117.

The following is Letronne's table of the mean weight of Aurei, transferred into Troy grains:—

	French gr.	Troy gr.
C. Julius Cæsar . .	153.25	125.73
Augustus	148.71	121.97
Tiberius	145.7	119.53
Caligula	144.5	118.55
Claudius	144.6	118.63
Nero	139.5	114.44
Titus	137.3	112.64

(Letronne, *Considérations générales sur l'Evaluation des Monnaies Grecques et Romaines, &c.* Paris, 1817, 4to.)

AURICH, a province (*landrostei*) of Hanover, formerly the principality of East Friesland, is bounded W. by Holland and the North Sea, N. by the North Sea, E. by Holstein-Oldenburg, and S. by Meppen. The whole surface of the province is so level that the Plotenberg, the highest land, is not more than 60 feet above the sea. The districts adjacent to the North Sea, which washes nearly one half of its frontier, are the most fertile marsh-land in the Hanoverian dominions. They are separated from the interior of the province, which is a series of moors and heaths, by a tract of sand between two and three miles in breadth; on the sea side they are protected against the ocean by a rampart of artificial dykes, 24 feet high, and nearly 100 miles in length. The larger villages in this marsh-land are built upon eminences, thrown up by the natives; they are clean and airy, but destitute of trees or other natural shelter. The area of Aurich is 1147 square miles; about two-thirds of this is fit for cultivation, one-fourth is moorland, which contains turf for fuel, and the remainder is barren heath. The Ems traverses the province in the south, and in

the middle of its course receives the Leda. The coast is fronted by sand banks, varying from 4 to 9 miles in breadth, and covered by the tide at high water; their outer margin is dotted with a chain of low sandy islands. The province contains about 155,000 inhabitants, mostly Protestants. They grow grain, particularly oats and rapeseed; breed great numbers of horses, sheep, and cattle; make much honey; export great quantities of turf; and are actively engaged in foreign commerce and the herring-fishery on the Scotch coast. The province is divided into 12 royal bailiwicks—Aurich, Berum, Emden, Esens, Friedeburg, Greetsyl, Yemgum, Leer, Norden, Stickhausen, Veener, and Vitmund—9 lordships, and 145 parishes, and contains 5 towns—EMDEN: AURICH: Norden, on a navigable canal which unites the bay of Leysand with the North Sea; population 5400; it has a harbour, timber and dockyards, tanneries, breweries, distilleries, tobacco and woollen factories: LEER: and Esens, about 20 miles E. of Norden; population 2200.

AURICH, the capital of the province of Aurich, is 15 miles N.E. of Emden, with which it is united by the Treckschuiden canal, 53° 28′ N. lat., 7° 28′ long. It is neatly built in the Dutch style, and is embellished with an old palace, the residence of the former princes of East Friesland. It is the seat of justice and the place of judicial record for the province. Aurich contains 3400 inhabitants, and has a lyceum or college, a few tanneries, distilleries, and tobacco factories, and a large trade in horses.

AURICHALCITE occurs amorphous, sometimes granular, or in radiating masses. Colour green. Slightly transparent. Hardness but slight. Found at Loktewsk in the Altai. Analysis, by Bottger: Oxide of copper, 28.19; oxide of zinc, 45.84; carbonic acid, 16.06; water, 9.93.

AURICULA, a kind of primrose, found wild abundantly on the Swiss Alps, where its flowers are usually of a clear bright yellow; they are sometimes white, but this is unusual. It has for centuries been an object of cultivation by florists, who have succeeded in raising from seed a great number of varieties, which have little resemblance to the wild plant except in foliage. Instead of yellow or white there is substituted a centre of deep purple or brown, surrounded by a broad edge of a white, grey, or green powdery matter, or the whole corolla is of some uniform colour, such as purple, deep violet, or even green; these are technically called *selfs*, and, though more beautiful than the powdered kinds, are less esteemed by florists.

In these plants the great object of the grower is to obtain large clusters, or *trusses*, of flowers, and clear well-defined colours; and the value of a variety is determined by its excellence in these respects.

In order to grow auriculas successfully, the cultivator must imitate the natural conditions in which the plant grows. To imitate these conditions, the cultivator must have recourse to artificial means. The protection afforded by the snow of the native mountains of the auricula, he provides by a frame covered with glass sashes and sheltered by mats. When the plants begin to grow in March or the end of February, the natural moisture of their mountains is supplied by gentle watering; they are left entirely exposed to light and air all day long, except in cold or stormy weather; and they are supplied with more and more water as their leaves become large enough to consume it. The pots in which they are planted are half filled with fragments of pottery, in order to ensure the free escape of the water which the plants do not consume. At last, in April, the flowers are about to expand; but a shower of rain or a storm of wind would deface the delicate surface, and tarnish the soft velvety colours in which the beauty of the auricula consists. Greater precautions than ever are now taken; for a few days the sashes are never removed from the frames; they are only elevated at the back to admit the free air, and screened by mats or awnings from the direct rays of the sun. At last the development is completed; the corolla displays its rich surface, and all that care and skill can accomplish has been effected. To remain, however, in a frame but imperfectly ventilated and constantly shaded would soon destroy the freshness of the colours, produce a general relaxation of the parts, and the blossoms would quickly perish. As soon therefore as the flowers begin to open, the pots are taken from the frame, are placed on slates or boards on the north side of a wall or hedge, and are screened by hand-glasses propped up by pieces of brick or wood so as to admit a free circulation of air, and provide against injury from rain or sun.

The main points in the cultivation of the auricula, with reference merely to the preserving the plants in a healthy state, are, moisture, drainage, protection from cold, and full exposure to light and air. If these are properly attended to, no auricula plant can be unhealthy, or fail to flower well; for the leaves will be enabled to execute all their vital actions fully and regularly, and this will ensure the well-being of all the other parts. In order to obtain a large number of flowers, rich and stimulating manures are applied; and the most disgusting refuse of the animal world has been ransacked for materials upon which the auricula may feed and grow strong.

The propagation of the auricula takes place by its lateral offsets, which are produced more or less abundantly according to the healthiness of the individual or of the variety. In the spring, when the plants begin to grow, these offsets will readily form roots, for it is then that their vital powers are in their greatest activity; it is at that period, therefore, that the propagation of the auricula should take place. The offsets should be carefully cut from the mother plant, potted in light rich earth, and placed under a hand-glass until they have established themselves; as soon as that has taken place, the hand-glasses should be lifted up, and air freely admitted to the young plants, which will, however, still require to be shaded and kept slightly moist.

New varieties of the auricula are procured exclusively by sowing the seed; and if this were judiciously saved, a large number of all seedlings

would possess sufficient beauty to deserve preservation.

AURICULA, a genus of univalve-shelled *mollusks*, which live in marshes, or on their borders. They respire atmospheric air, and feed on plants. They are natives of the warmer climates. The shell called Midas's Ear (*Auricula Midæ*), well known to collectors, is brought from the East Indies. (See Cuvier's 'Règne Animal,' *Gastéropodes Pulmonés*, vol. iii. p. 49.) The shell is ovate-oblong.

AURI'GA, the Charioteer, a constellation situated between Perseus and Gemini. It is represented as a man holding a bridle in the right hand and supporting a goat and kids on the left arm. The star in the body of the goat, called Capella (and Alioth by the Arabs) is of the first magnitude, and presents the best guide to the constellation. There is no satisfactory account of the mythology of this figure. It is said to have been the Horus of the Egyptians. Among the Greeks, the human figure is by different writers called Erichthonius, Bellerophon, Hippolytus, &c.; while the goat is Amalthæa, the foster-mother of Jupiter. But this explanation is even more unsatisfactory than most others, owing to the want of apparent connection between the figures of the group.

AURIGNY. [ALDERNEY.]

AURILLAC, capital of the department of Cantal in France, is situated on the right bank of the Jourdanne, a little above its junction with the Cère, a feeder of the Dordogne, in 44° 55′ N. lat., 2° 26′ E. long., 344 miles S. of Paris, by the road through Orleans, Limoges, and Uzerche; population 10,700. The town has wide but irregular streets, which are kept clean and fresh by running streams. There are three suburbs, viz. 'St. Stephen,' 'des Frères,' and 'Du Buis.' The suburb des Frères took its name from two convents which were formerly in it. In the suburb of St. Stephen is a castle on an elevated situation which commands the town. The other remarkable buildings are the churches of St. Géraud and Nôtre Dame, the Benedictine Abbey in the suburb Du Buis, the hotel of the Prefect, the corn-market, and the theatre. There are a college, and societies of agriculture, arts, and commerce: there are also near the town an establishment of mineral waters, a royal stud, and a race-course, in which races are held in June every year. The manufactures carried on here are paper, lace, copper, household utensils, and leather; the chief trade is in cattle, cheese, stockings, tapestry, and lace.

AURO'RA BOREA'LIS, or 'northern daybreak,' so called because it usually appears at or near the north, and presents a light somewhat resembling that which precedes sunrise.

The phenomena attending the Aurora Borealis are so various, in almost every particular, that a general description can scarcely be given; but that which follows corresponds nearly to the appearances usually observed.

In the northern region of the horizon, but having its centre about 20° westward of the northern point, that is, nearly in the direction of the magnetic meridian, there is occasionally perceived, soon after sun-set a horizontal cloud extending from 10° to 100° in length, and rising to a height which may amount to 40°. It is sometimes grey and obscure, but generally a brilliant white, and through it the stars are perceptible: its upper edge, which is luminous and irregular, is often nearly parallel to the horizon. From the upper edge, and also from openings in the cloud, streamers, or columns of light resembling jets of a luminous fluid driven from a syringe, are seen to rise, each column being narrowest and brightest at its lower extremity, and becoming broader and fainter as it ascends. The streamers are sometimes at considerable distances from one another, but often they are very close together, and occasionally they cross each other in the zenith, where there is then formed a small meteor of a green, blue, or purple colour, which proceeds from thence to the south. The columns themselves are of a white, red, or blood colour, and occasionally they have exhibited the tints of the rainbow. The phenomenon lasts sometimes nearly all night, the streamers gradually disappearing, and the horizontal cloud, before it ceases to be discerned, assuming the appearance of the morning twilight.

The Aurora is described by Aristotle ('De Meteoris,' lib. i. c. 4, 5) as an appearance resembling flame mingled with smoke, and of a purple, red, or blood colour. Cicero, Pliny, and Seneca also make allusions to or give descriptions of such phenomena; and it is probable that the pretended appearances of armies fighting in the heavens, which have been described as preceding remarkable events, were Auroræ Boreales. The terror which such appearances seem to have excited renders it very probable that they did not occur so frequently before the eighteenth century as they have done since.

In England, before the Aurora of 1716, according to Halley, no such phenomenon had been recorded for more than 80 years, and none of any magnitude since 1574. No appearance is recorded in the 'Transactions' of the French Academy of Sciences, between 1666 and 1716. One recorded in the 'Berlin Miscellany' for 1797 is called a very unusual phenomenon; and the one observed at Bologna in 1723 was stated to be the first which had ever been seen there.

The frequency with which the Aurora Borealis is now witnessed in northern regions has led many to conclude that the phenomenon has always been there of almost constant occurrence. But Celsius (1733) affirms the contrary, and states that the oldest inhabitants of Upsala considered the phenomenon as a great rarity before 1716. Anderson, a native of Hamburgh, who wrote on the subject about the same time, says, that in Iceland the inhabitants themselves were greatly astonished at the frequent recurrence of the Aurora which began to take place. Torfæus, the historian of Denmark, himself an Icelander, who wrote in 1706, was old enough to recollect the time when the Aurora was an object of terror in his native country.

The first account of the Aurora Australis was given by Don Antonio D'Ulloa to M. de Mairan. The former being at Cape Horn in 1745, and in

one of the thick mists, which he describes as common in that climate, saw, whenever the mist cleared off, a light on the southern horizon, to an elevation of about 30°, sometimes of a reddish colour, sometimes like the light which precedes moonrise, but occasionally more brilliant. In 1744 an Aurora appeared at Cuzco, which very much terrified the Peruvians. Since that time the phenomenon has been frequently observed in the South Seas; and one of great brilliancy is described in the account of Captain Cook's second voyage as having been observed, Feb. 17, 1773, in lat. 58° south.

M. Mairan, in his 'Traité Phys. et Hist. de l'Aurore Boréale, 1754,' has given a table of all the recorded Auroræ Boreales from A.D. 583 to 1751. The whole number of distinct phenomena in that interval is 1441, of which 972 were observed during the winter half-years, and 469 during the summer half-years. Dr. Dalton determined the average height of the Aurora to be about 100 miles above the earth. That the phenomenon is really atmospheric, and not astronomical, is presumed from the diurnal rotation of the earth producing no effect upon its apparent position.

The rise of the auroral arches is mostly from N.W. to S.E.; but Professor Forbes, in 1826, traced one from the N.E. through the zenith till it vanished nearly on the horizon in the S.W. This arch did not move in the direction of the magnetic meridian, and was diametrically against the wind. ('Reports of the British Association,' vol. i. p. 256.)

The influence of the Aurora upon the magnetic needle must now be considered as an ascertained fact. It was first measured by Wargentin in 1750, but Halley and Celsius had previously noticed a similar circumstance. At the same time it does not appear that in every instance the effect takes place. Much discussion has arisen from the fact, that while in one place the needle is violently agitated, in another it is not disturbed at all. In one instance the variation of the needle has been detected at a place where the Aurora was not visible though it was seen in other parts.

Of late years these phenomena seem to have become more common in England than formerly. In February 1837 there occurred one of the most extraordinary on record in these latitudes; and one was observed June 24 of the same year, a season in which no appearance of an Aurora is on record as having been observed in this country.

By three corresponding observations of a bright Aurora observed in March 1833, it was found that the arches of light were similar to parallels of latitude round the magnetic axis. Should further observations prove this to be a general law, no more valuable step will ever have been made towards a consistent explanation of these meteorological comets.

The Aurorea Borealis must be considered as a phenomenon well worthy of being studied; but till lately no concerted plan was acted on in observing them. The British Association has now, however, turned its attention to the subject, and has published directions for the use of persons who may be disposed to make the requisite observations.

(*Reports*, vol. ii. p. 486, and vol. iv. p. 35.)

AURUNGABAD, a province of Hindustan, formerly known as the province or soubah of Ahmednuggur. It is situated in the Deccan, and lies between 18° and 21° N. lat., and between 72° 40′ and 77° E. long. The limits are not very clearly defined, and the name is now little used except as a general designation for a certain portion of Hindustan, which belongs in part to the British, in part to the Nizam, and others. To the north it has Guzerat, Candeish, and Berar; to the east, Beeder and Hyderabad; to the south is Bejapoor, and to the west the Indian Ocean. Its length is estimated at 300 miles, and its breadth at 160 miles.

The surface of the province is in general mountainous, especially where it is crossed by the western ghauts, the hills there rising to a considerable height. The tract of country which lies to the eastward of the ghauts, and which includes the largest portion of the province, is for the most part elevated table-land, seldom less than 1800 feet above the level of the sea. In its general character, the soil of the province is fertile, producing abundance of rice. Many European fruits attain to a high degree of perfection, particularly strawberries, peaches, and grapes, the last of which are very large.

Arungabad contains the sources of several rivers; among others are the Neera, the Beema, and the Godavery. The Neera rises in the western ghauts south of Poona, and flowing eastward divides the province from Bejapoor, and falls into the Beema. The Beema rises in the mountains about 40 miles north of Poona, and passes at a distance of 15 miles from that place; thence it flows in a S.E. direction about 400 miles, and joins the Krishna in the province of Hyderabad. The Godavery proceeds from numerous sources in the western ghauts, and traverses the province from west to east. [GODAVERY.]

The principal towns of the province are—Aurungabad, Ahmednuggur, Dowlatabad, Poona, Jalna, and Bassein. The inhabitants are principally Hindus; only about one-twentieth are Mohammedans. The Mahratta language is that which is principally used, and of this there are several local dialects. Hindustanee and Persian are spoken by the higher classes.

(Malcolm's *Memoirs of Central India;* Rennell's *Memoir of a Map of Hindustan.*)

AURUNGABAD, a city of Hindustan, in the Nizam's dominions, and the capital of the province of Aurungabad. It is situated in 19° 54′ N. lat., and 75° 30′ E. long.

Aurungabad was originally a village, but having become a favourite residence of Aurungzebe while he was governor of Candeish, it speedily rose in importance. For a long time after the Nizams had shaken off their dependence upon the court of Delhi, this city continued to be the place of their residence.

Aurungabad is situated in a hollow, on the banks of the river Kowlah, a mountain stream, which separates the city from a considerable suburb called Begum Poora, the communication with which is preserved by means of two substantial bridges. A supply of excellent water for the use of the in-

habitants is brought by means of stone conduits from the neighbourings hills, and is distributed to numerous stone reservoirs in different parts of the city. The principal street is nearly two miles long, and of a considerable width, with a spacious quadrangle at one extremity, and a handsome market-place near it. The palace of Aurungzebe, now in ruins, covers an extensive space. Here is also a mausoleum erected by order of Aurungzebe to the memory of his daughter: it bears some resemblance to the Taje Mahal built by the Emperor Shah Jehan at Agra. The population has been estimated at 60,000, and is said to cover a space about seven miles in circumference. A considerable traffic is carried on in the bazaar, where both European and native goods are exposed for sale: the principal trade is in silk manufactures.

(Rennell's *Memoir of a Map of Hindustan;* Malcolm's *Memoir of Central India.*)

AURUNGZEBE was the third son of Shah Jehan, the son and successor of the emperor Jehanghir. He was born Oct. 22, 1618, and had attained his tenth year when, upon the death of Jehanghir, his father ascended the throne, Feb. 1, 1628. Aurungzebe appears from an early age to have aspired to the throne of the Mogols; but he artfully concealed his ambitious designs under an assumed air of piety and devotedness to religious duties. From his twentieth year, however, military duties devolved upon him, and soon engaged his entire attention. After an expedition against the Deccan, Aurungzebe was appointed governor of the conquered province of Candeish, and founded the city of Aurungabad. Soon afterwards he succeeded in subduing the Uzbek sovereign, who had invaded Afghanistan; and he was equally successful in several other enterprises. After these events (about the end of the year 1656), the health of Shah Jehan, who was then upwards of seventy years old, excited alarm. His eldest son, Dara-Shekuh (born in A.D. 1615), endeavouring to secure the throne to himself, confined his father, and took the reins of government into his hands. He was at first opposed by his brother Sujah (born in A.D. 1616), the next in age to himself, but without effect. But Aurungzebe, after a civil war, having defeated his brother Dara Shekuh, and imprisoned his brother Murad Bakhsh at Agra, was proclaimed emperor in the gardens of Izz-abad, near Delhi, on the 20th of July (according to others on the 2nd of August), 1658. His father, Shah Jehan, had in the meantime recovered from his illness; but Aurungzebe continued to keep him in custody, and removed him from Delhi to Agra, where he died Jan. 21, 1666, at the age of 74.

Shortly after Aurungzebe had been proclaimed emperor, first his brother Sujah, and then Dara Shekuh, renewed their attempts on the throne, but were both defeated. Sujah was imprisoned by the Rajah of Aracan, and Dara was put to death in 1659.

As soon as Aurungzebe had repressed all competition for the throne, he showed great prudence and talent in his administration, and his reign was peaceful and tranquil. Much credit is due to the foresight and prudent measures by which he succeeded in averting or mitigating the disastrous consequences of a famine which occurred in the third year of his reign.

A new enemy, however, to the throne of Aurungzebe had arisen in the person of Sevagee, the founder of the Mahratta power. In 1677 he entered the territory of Golconda with 40,000 horse, and placed Mahratta governors in the towns and fortresses; and when he died (1682) his dominions comprehended an extent of about 400 miles in length, by 120 in breadth. The hostilities between the Mahratta and Mogol dominions were continued under his son Sambagee, who roused the indignation and resentment of Aurungzebe by affording a refuge to Prince Akbar, one of the emperor's younger sons, who had revolted against his father. In 1687 Aurungzebe led an army into the Deccan, compelled the cities of Hyderabad, Bejapore, and Golconda to surrender, and extended his dominion nearly to the limits of the Carnatic. Sambagee was taken prisoner, and put to a cruel death. His brother Rama threw himself into the fort of Gingee, where he offered a most desperate resistance, and retarded the reduction of the Carnatic from the year 1692 till 1700. The settlement of the Deccan, and the subjugation of the Mahrattas, continued to occupy the whole attention of Aurungzebe during the latter years of his life. In the midst of these struggles Aurungzebe died at Ahmednuggur, in the province of Dowlatabad, on the 21st of January, 1707. With his death terminated the brilliant epoch of the Mogol power in India.

(Dow's *History of Hindostan;* Mill's *History of British India.*)

AUSCULTATION, from *auscultо*, 'to listen,' the method of distinguishing the states of health and disease by the study of the sounds produced by the organs in the movements which they make in the performance of their functions. When air rushes by the wind-pipe into the lung in the action of inspiration; when it is expelled through the same tube in the action of expiration; when it is acted upon in the larynx by the organs of the voice; when the heart beats, that is, when the different chambers of which it is composed forcibly contract; when the blood flows through the great arterial trunks; when air is contained in the intestines and is acted on by these organs in their natural movements,—in all these cases sounds are produced which can be heard, often by the unassisted ear, and still more distinctly by the aid of an acoustic instrument. When attention is paid to these sounds, it is found that they differ greatly from each other. The sound of the air in the wind-pipe during inspiration is different from that in the same tube in expiration; the sound of the air in the larynx during the act of speaking is different from both; while the sound produced by the action of the heats, and even by the action of its different chambers, may be discriminated the one from the other. It is upon these facts that the modern practice of applying the ear to the body in various diseases is founded. Although sounds may be easily heard by applying the naked ear to the body, the recognising these

sounds is greatly facilitated by the use of an instrument called the stethoscope. This instrument was first employed by Laennec, a French physician, who has furnished the following account of its discovery.

'In the year 1816,' says Laennec in his great work, 'De l'Auscultation Médiate et des Maladies des Poumons et du Cœur,' 'I was consulted by a young woman affected with the general symptoms of diseased heart, and in whose case percussion and the application of the hand were of little avail, owing to her being extremely lusty. The immediate application of the ear being inadmissible for obvious reasons, I happened to recollect a simple and well-known fact in acoustics, and fancied it might be turned to some use on the present occasion. The fact I allude to is the great distinctness with which we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other. Immediately on this suggestion I rolled a quire of paper into a kind of cylinder, and applied one end of it to my patient's chest and the other to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear. From this moment I imagined that means might be found to ascertain the character, not merely of the action of the heart, but of every species of sound produced by the motion of all the organs within the chest.'

Diligently applying himself to improve and perfect the rude instruments which he employed in his first trials, Laennec at length constructed that which is now in general use, called the stethoscope (from στῆθος, 'breast' or 'chest,' and σκοπέω, 'examine' or 'explore'), by the aid of which he was at once impressed with the conviction that he should be enabled to discover 'a set of new *signs* of diseases of the chest, simple and certain, and such as might probably render the diagnosis of these diseases as positive and circumstantial as that of many affections which come within the immediate reach of the hand or the instrument of the surgeon.' And this conviction, to a great extent, has been realised, for a new, clear, steady, and certain light has, by the aid of this instrument, been thrown on almost all the diseases of all the organs contained in the chest. [Laennec.]

AUSONIANS (*Ausones*), an ancient people of the Italian peninsula, who appear to have been a branch of the great Opican or Oscan nation. Niebuhr shows that Ausones is the Greek form of the native name Auruni, from which the adjective form Aurunicus, shortened into Aruncus, would come. This interchange of *s* and *r*, in certain positions, is not at all uncommon. The Ausones, then, and the Aurunci, are identical. Suessa Aurunca, near the Liris, was in the centre of the country which they occupied. Cales (Livy, viii. 16), Ausona, Minturnæ, and Vescia (ix. 25) were Ausonian cities. (Niebuhr, i. p. 63, &c., English translation; and Osci.)

AUSONIUS, DE'CIMUS MAGNUS, was born at Burdigala, Bordeaux, some time early in the fourth century. His father, Julius Ausonius, was a distinguished physician, eminent for his acquaintance with Grecian literature. Ausonius devoted himself to the cultivation of letters. When about thirty he was employed to teach grammar in the schools of Bordeaux, and soon after was appointed professor of rhetoric. He has celebrated in a book of poems ('Commemoratio Professorum Burdigalensium') all those who had taught in the schools of Bordeaux, and those natives of the place who had filled professorships elsewhere. In A.D. 369 his reputation caused him to be selected by the Emperor Valentinian as tutor to his son Gratian. He was appointed Prætorian Præfect of Italy A.D. 377, and of the Gauls in the following year; and was made consul by Gratian in 379.

The style of Ausonius is vicious and full of conceits, and his subjects generally trifling. He wrote 'Epigrams,' which contain more indecency than originality; 'Ordo Nobilium Urbium,' a series of short poems on eminent cities; 'Idyllia,' among which 'Cupid Crucified' and the 'Moselle,' a descriptive poem on the Moselle river, are perhaps the best; 'Epistolæ;' 'Gratiarum Actio,' an address of thanks, in prose, to Gratian, which contains many of the particulars of his life.

There are numerous editions of Ausonius. The Bipont, 1785, is in one vol. 8vo. There are several separate editions of the poem on the Moselle; that of Böcking, 1828, has a German translation.

AU'SPICES. [Augur.]

AUST CLIFF. In the bone-bed of this famous locality, usually classed with the lias formation, occur a few organic remains which appear to belong also to the keuper deposits. This has been thought a sufficient reason for removing these beds out of the lias. But if we regard their mineralogical and geological relations, this displacement will hardly be allowed.

AUSTELL, ST. [Cornwall.]

AUSTEN, WILLIAM, an English metal-founder of the fifteenth century. A very interesting document respecting Austen and other artists has been preserved by Sir William Dugdale in his 'Warwickshire.' Austen had a great share in the construction of the celebrated tomb at Warwick, in St. Mary's church, of Richard de Beauchamp, earl of Warwick, who died in 1439. In the document in question, William Austen is styled 'citizen and founder of London,' from which, and the details of the agreement, it appears that he was not the designer or modeller of the figures which he cast in brass, for it is expressly stated that he is to work from models made of timber. 'Will. Austen, citizen and founder of London, xiv. Martii, 30 H. 6, covenanteth, &c. to cast, work, and perfectly to make, of the finest latten (brass) to be gilded, that may be found, xiv. images embossed, of lords and ladies in divers vestures, called weepers, to stand in housings made about the tomb, those images to be made in breadth, length, and thickness, &c., to xiv. patterns made of timber. Also he shall make xviii. less images of angells, to stand in other housings, as shall be appointed by patterns, whereof ix. after one side, and ix. after another. Also he

must make an hearse to stand on the tombe above and about the principal image that shall lye in the tomb according to a pattern; the stuff and workmanship to the repairing to be at the charge of the said Will. Austen.

'The said William Austen, xi. Feb. 28 H. 6, doth covenant to cast and make an image of a man armed, of fine latten, garnished with certain ornaments, viz. with sword and dagger; with a garter; with a helm and crest under his head; and at his feet a bear musted (muzzled), and a griffon perfectly made of the finest latten, according to patterns; all of which to be brought to Warwick and laid on the tombe, at the peril (risk) of the said Austen.'

In the opinion of Flaxman, these works of Austen are equal to what was done in Italy at the same time, and though he is mentioned only as the founder, he may possibly be the designer of the figures, as the patterns spoken of in the covenant may have been made in relation to size and costume, and not as exact models to prepare the casts from. The monument, one of the earliest and best in England, is still in a good state of preservation, and is of brass; the meaning therefore of the word latten, which has been disputed, is evidently brass.

(Dugdale, *Antiquities of Warwickshire*, p. 446.)

AUSTEN, JANE, was born December 16, 1775, at Steventon in Hampshire, of which place her father was rector. Mr. Austen bestowed upon Jane an education superior to what was then general among females of her rank in society. But if education did much for her, nature did more, endowing her with considerable beauty of both features and person, with sweetness of disposition, and good sense. She removed to Winchester in 1817, where she died July 24 of that year, and was buried in the cathedral.

Of her six novels, four were published in her lifetime, but anonymously—'Sense and Sensibility;' 'Pride and Prejudice;' 'Mansfield Park;' and 'Emma.' The two others, 'Northanger Abbey,' and 'Persuasion,' did not appear until the year after her death. Her novels are all of the domestic class, and consist of delineations of every-day life and actual society. They exhibit extraordinary graphic power and truthfulness. Nor is it their least merit that they are all of decidedly moral tendency, without any parade of moralizing. They have all been translated into French.

AUSTERLITZ is a small town on the Littawa, in the circle of Brünn, in Moravia, about 9 miles east of the town of Brünn; population 2000. A handsome palace, to which delightful grounds are attached, forms its principal embellishment. This place owes its celebrity to the 'Battle of the three Emperors,' which was fought in its vicinity on the 2nd of December, 1805, and gained by Napoleon over the combined armies of Austria and Russia. This victory cost the Austrian crown nearly 24,000 square miles of territory, 2,786,000 subjects, and an income of 1,300,000*l.* sterling, independently of severe temporary sacrifices. [BONAPARTE.]

AUSTIN, ST. [AUGUSTINUS.]

AUSTRALASIA. [POLYNESIA.]

AUSTRALIA. At one time this name was employed as a general designation for a large number of islands in the Pacific; but *Polynesia* is now more frequently adopted as the collective term, and the name of Australia is restricted to one island, the largest on the globe. This island, formerly called New Holland, lies between 115° and 153° E. long., and 10° 30′ and 39° S. lat. It extends, in its greatest length, between Sharks Bay on the west coast and Cape Sandy on the east coast, 2400 miles; and from north to south between Cape York on Torres Straits to Cape Otway on Bass Straits, about 1700 miles. Its average breadth may be nearly 1400 miles. Timor and Timorlaut are the nearest of the Asiatic islands, the former being about 280 miles distant from Cape Talbot, and the latter equally distant from Coburg Peninsula: but the continent approaches nearer to New Guinea, which is separated from it by Torres Straits, not quite 90 miles wide at Cape York. Australia is divided from Van Diemen's Land by Bass Straits, which extend from N. to S. about 140 miles at a mean.

Discovery of Australia.—In the beginning of the seventeenth century, Pedro Fernandez de Quiros and Luis Vaez de Torres undertook a voyage of discovery in the western part of the Pacific (1605–1607), and while they remained together they discovered the Terra del Espiritu Santo, which, when re-discovered by Cook, was found to consist of many islands, and was called by him the New Hebrides. Torres, having been separated from Quiros, sailed along the southern coast of New Guinea, and passed through the straits which separate that island from the continent of Australia, and which at present bear his name. He saw the coast of Australia, at its most northern point, Cape York, only a few months after it had been discovered by the Dutch, but he was not aware of its being part of a vast continent, and thought it was some islands of small extent.

Not long before the voyage of Quiros and Torres, the Dutch sent, in 1605, a yacht, called the Duyfen, from Bantam, to explore the coast of New Guinea. On its return from the expedition, this vessel fell in with the coast of continental Australia, to the south of Endeavour Strait, on the eastern shores of the Gulf of Carpentaria. The Dutch did not at first pursue their voyages of discovery, though the greatest portion of the coasts of the continent was shortly afterwards first accidentally seen by their vessels carrying on the commerce between Europe and Batavia. Hertoge, Zeachen, Von Edels, Van Nuyts, De Witt, and Carpenter, discovered a large extent of coast between 1616 and 1628. In 1642 Tasman discovered Tasmania, or Van Diemen's Land, which for more than a century was believed to be part of Australia.

The English entered much later on the career of discovery, and were not at first successful. Towards the end of the seventeenth century, Dampier explored some parts of the coasts of the continent, and surveyed New Britain and New Ireland, which had previously been discovered by the Dutch; but he did not add to the number of discoveries. After the middle of the eighteenth

century, the discoveries of the English were of great importance. Captain Cook, in his three voyages, besides exploring and surveying a large number of the islands formerly known, discovered the eastern coast of Australia, from Cape Howe to Cape York, which was called by him New South Wales, with New Caledonia, the Sandwich Islands, and many smaller islands. After the establishment of the English colony in New South Wales, those coasts of the continent which till then had not been visited by Europeans were explored. Bass and Flinders discovered, in 1798, the strait which separates Van Diemen's Island from the continent; and the adjacent coast of the continent was called Bass Land. In 1800 Grant discovered the coast to the west of Bass Land up to Cape Northumberland, and this portion of the continent was called Grant's Land. Flinders, after having surveyed Nuyt's Land, discovered, in 1805, a large extent of coast to the east of it, which after him was called Flinders' Land. Thus, nearly all the remaining parts of the coast of continental Australia which had not been seen by the Dutch were discovered by the English in less than fifty years. Only a small portion between Flinders' Land and Grant's Land remained undiscovered, and this was afterwards explored by the French, under Captain Baudin, in 1805.

After the establishment of the English colony at Port Jackson, in 1788, the settlers began to penetrate into the interior; but their progress was soon stopped by that mountain range which runs along the coast of New South Wales at no great distance from the ocean. For many years their attempts to cross these mountains were baffled; not so much by their height, which is inconsiderable, as by the steep rocks which form the highest summits, and because they probably had never been passed by the natives. At last an attempt made in 1813 succeeded; and during the thirty-five years that have since elapsed the exploratory journeys into the interior have been very numerous.

In 1817 Mr. Oxley traced the river Lachlan to what appeared to him to be an inland sea; and he thence concluded that the whole country beyond was an uninhabitable marsh. In the next year he followed the course of the Macquarie to a similar termination. In 1824 Messrs. Howell and Hume discovered several large rivers whose courses seemed to concentrate in the Morumbidgee. In 1829 Captain Sturt followed Mr. Oxley's second route, and penetrated about a hundred miles further than he had done. Captain Sturt made a second journey in 1830, in which he further explored the Morumbidgee and the Hume River. In 1831 Major Mitchell commenced a series of researches, which made known a very considerable district of south-east Australia. In the first journey the rivers Peel and Darling were the chief objects of research; in the second, in 1835, a further portion of the Darling, and also the river Bogan, were explored; in 1836, the Darling, the Lachlan, the Morumbidgee, and the Murray rivers engaged Major Mitchell's attention, together with the country generally between Port Philip and Sydney. In 1841 Mr. Earle gave many details of information concerning the inhabitants of the north coast of Australia, and the bays and headlands of that region. About the same period Mr. Eyre travelled northward from Adelaide towards the interior; and Count Strelecki explored Gipps's Land. Captain George Grey, in Western Australia, and Mr. Windsor Earle, in North Australia, soon afterwards added to the store of information previously obtained. About the beginning of 1843, an expedition was made by Messrs. Landor and Lefray through much of the hitherto unknown region of Western Australia. In 1844 the President of the London Geographical Society announced that the colonial authorities at Sydney were planning an inland expedition across the continent from New South Wales to North Australia, with a view to commercial enterprize. In the same year, Governor Grey explored a good deal of the country intervening between South Australia and New South Wales; and Mr. Eyre about the same time examined the lower course of the river Darling. In 1846 was completed one of the most dangerous and difficult of these exploratory journeys—that of Dr. Leichardt. He left New South Wales in October 1844, reached the Gulf of Carpentaria, in North Australia, in November 1845, and returned to Sydney in March 1846.

Physical Geography.—The south-eastern part of the continent is traversed by a range of mountains which begins at the most southern point of Australia, Cape Wilson, and runs generally nearly due north up to 28° S. lat. Probably it continues in the same direction or with inconsiderable bends to Cape York, at Endeavour Strait. The distance between this mountain range and the shore is not everywhere the same. South of 33° lat. it averages between 40 and 50 miles, but at that latitude the range declines somewhat to the west, and continues in this direction to 32°, where its distance from the sea is 140 miles, at the sources of the river Hunter. It then turns suddenly to the east, and continues in this direction for about 50 miles, till it again resumes its former course due north or a point or two to the east, and at a distance of about 80 or 100 miles from the shore. The southern range up to 33° is called the Blue Mountains; that portion of it which lies in the direction of west and east bears the name of Liverpool Range. This chain divides the rivers which cut the coast from those which traverse the interior of Australia. That portion of the range which extends to the west of Sydney appears not to rise much above 3000 feet; but some of the summits are from 6000 to 7000 feet in height. The average breadth of this range is above 50 miles, and it is difficult to cross, as the higher part consists of steep and bare rocks and deep chasms, and contains only a few passes.

The country between the dividing range and the sea may be called rather hilly: the flats which are generally found along the shore are in most places of small breadth, though in some few they extend 40 miles inland, and almost to the dividing range itself. Between these flats and the mountain range is a region of hills and valleys. South of

33° S. lat., these valleys are parallel with the great range, and are occupied by the courses of the Hawksbury, the Cox, the Cataract, the Shoal Haven, and other rivers. North of 33° S. lat., the principal valleys are transverse, and the course of the rivers is consequently west and east: among them are the Hunter, the Manning, the Hastings, and the Brisbane rivers. The region westward of the main ridge may be divided into the region of the terraces and that of the plains or lowlands, and the 148° meridian may be considered as the mean line of division between these two regions; observing, however, that on the south, especially between the rivers Lachlan and Morumbidgee, the terraces may extend somewhat farther west, and on the north may fall short of this line of division. The terraces, which may be considered as the western declivity of the mountain range, are composed of plains separated from one another by low ridges of hills. The plains commonly occur in the immediate neighbourhood of some river; sometimes they occupy the high country between two rivers; they are either dead flats or a succession of gently swelling hills, clear of timber and covered with luxuriant herbage, which affords abundant food for cattle. The low ridges which divide them are covered with open forests, and are formed of serpentine, quartz in huge white masses, granite, chlorite, micaceous schist, sandstone, chalcedony, quartz, red jasper, and conglomerate rocks. These terraces form excellent pasture ground for sheep.

Nearly all the rivers which drain these terraces rise in the dividing range, and are full and rapid, though not well adapted to navigation. Before they descend into the lowlands, which extend farther to the west, they join one another, and form a few large rivers. Such are especially the Morumbidgee, the Lachlan, and the Macquarie. In the portions of the terrace-regions between 30° and 32° S. lat., are the rivers Peel, Field, and York.

The lowlands join the terraces on the west; their extent in that direction, as well as to the north, is not known. Captain Sturt, who advanced on the north beyond the 145° E. long., and on the south beyond 140°, found that the country preserved, as far as he was able to see from some hills, the same uniform appearance of an immense level plain, somewhat resembling the steppes near the Caspian. The soil presents only two varieties: it is either a red sandy loam or a white coarse sand. In some places it is entirely destitute of vegetation, at others it nourishes only salsolaceous plants, without a blade of grass between them. Large tracts of country are covered with shells and the claws of crayfish, and this soil, although an alluvial deposit, is superficially sandy. They bear the appearance, not only of being frequently inundated, but also of the floods having subsided upon them. Captain Sturt thinks that the whole country is of recent formation.

The rivers which traverse this region descend from the terraces as large and full watercourses; but, after having run in the lowlands a considerable distance, they change their character. Instead of increasing in breadth, depth, and volume of water, they begin to diminish in all these respects. Some of them, such as the Macquaire, terminate in marshes covered with reeds. Other rivers of this region are the Murray, the Morumbidgee, the Lachlan, and the Darling; and the results of recent investigation have been such as to support the opinion, that the Peel, the Macquaire, the Darling, the Lachlan, the Morumbidgee, and the Bogan, all empty themselves into the Murray river, the largest yet discovered in the island, and which finds its exit in Lacomte's Bay, near the new colony of Adelaide.

All the above details relate to the south-eastern portion of the island. The physical geography of the other regions is much less known; but we may expect a large accession of knowledge from the spirit of research now manifested in the various colonies.

Geology and Climate.—The vast interior of this continent is too little known to afford a judgment of its geological character. Granite has been found in some spots near the coast. Red sandstone has been met with at Cambridge Gulf, York Sound, St. Vincent's Gulf, Yass Plains, and other spots. A thick stratum of limestone occurs near Bathurst. A valuable series of coal beds is worked near Botany Bay, associated with which are beds of sandstone. Iron ore is abundant in many parts.

With regard to fossils, immense deposits have been met with, consisting of little else but shells: it is supposed that vast tracts of country, now dry land, were once submerged beneath the ocean. Fossil bones in large numbers have been found, chiefly embedded in earthy fragments found in limestone clefts and caves. Only a few of these bones belong to animals which are known to be identical with existing species.

The produce of Australia is gradually becoming available in the useful arts. Sand is met with highly valuable as an ingredient in the glass manufacture. Building stone, potters' clay, and roofing slate, occur abundantly. Copper, tin, and lead are also wrought by the colonists.

The climate of Australia differs considerably from that of other countries. The most remarkable as well as the most unfavourable characteristic is the long droughts which occasionally prevail, at intervals of about 10 or 12 years; they are succeeded by very heavy rains. Another peculiarity is the quick transition from heat to cold. There are instances of the thermometer having varied 25° in 50 minutes. This is owing to the sudden change of the winds. The north-west winds, blowing over the great sandy deserts in the interior, attain such a degree of heat, that they become too scorching to be pleasant to men and animals, or to be favourable to vegetation. The thermometer then rises suddenly from 80° to 110°. On the other hand, the south-eastern winds are often very cold and piercing, especially when there is a sudden shift from a hot north-western wind. The climate is however, on the whole, pleasant and healthy. The wet season takes place earlier in the interior than on the coast. Dews are frequent and heavy; hail-stones are common in December and January;

and frosts are occasionally very keen on the mountain heights, but are almost unknown near the coast.

Inhabitants.—The natives of this portion of the globe belong to two races—to the Malay, and to another, which seems to constitute a separate division of the human race; the men of this second race, from their resemblance to the African negro, having obtained the name of Australian negroes, or austral negroes. These latter form the present native inhabitants of Australia. The austral negroes, though they are considered by Cuvier as being a branch of the African negroes, resemble them only in the colour of the skin and their woolly hair; yet even their skin is not quite black, like that of the Africans, but of a sooty brown. They differ widely from one another in the form of the head and face, and of the whole frame. Their forehead rises higher, and the hinder part of the head projects more than in the negro. The nose projects more from the face, and the lips are not so thick. The upper lip is larger and more prominent, and the lower projects forward from the lower jaws to such an extent as to divide the face into two parts. Their limbs and the whole frame of their body are lean, and display nothing of the muscular strength by which the African negroes are distinguished. The greatest difference in the formation of the human body is found to exist between the Caucasian race and the austral negroes. This race seems to be purest in Van Diemen's Land and in New Guinea, the inhabitants of the continent and of the other islands having probably been crossed by some other race, perhaps the Malay.

The austral negroes may be considered as still living in the lowest state of civilization. Cannibalism is common among them, and they do not deny it: they have neither habitations, nor do they wear raiment, at least not the men; the women commonly wrap themselves up in a species of cloak made of opossum skin, or in a blanket. Wherever they intend to pass the night they kindle a fire and place a slip of bark or a bough to windward for shelter. This want of habitations is mainly to be attributed to their being continually on the move in search of food; for, in some places along the coast, where fish and oysters are so abundant as to afford them a constant supply of food for the greater part of the year, they have erected convenient huts of tea-tree bark, which they clean daily.

They have no chiefs, either elected or hereditary, and the authority of a man depends on his personal strength and his cunning. They believe in a good spirit, *Koyan*, and in a bad one, *Potoyan*. The former is thought to watch over and protect them from the operations of the latter, and to assist them in recovering strayed children, which the other is supposed to decoy for the purpose of devouring them.

They are not delicate in food. When pressed by hunger, they devour grubs, snakes, stinking whales, and even vermin, with eagerness.

They are lively, good-humoured, inquisitive, and intelligent, and acquire the knowledge of reading and writing almost as speedily as Europeans; their senses are extremely acute, and they possess great powers of mimicry.

It is important, however, to observe, that the later travellers, who have penetrated further into the interior than their predecessors, speak more favourably of the natives, in regard to their habits and intelligence; although there is a constant tendency to attack the white man when he approaches. Major Mitchell speaks of those whom he encountered in the interior as being superior to the wretched beings who hover round the settlements near Sydney.

Division and Settlements.—The north-western coasts are commonly comprehended under the name of New Holland, which was given to them by the Dutch after having discovered these parts. By this term the whole continent was formerly designated. The several parts on the northern coast are Carpentaria round the gulf of the same name, Arnhem Land, Tasman Land, De Witt Land; and on the western coast Endracht Land, Edel Land, Vlaming Land, and Leeuwin Land. One half of the southern coast is called Nuyt's Land; after this follows Flinders' Land and South Australia. The eastern coast, which properly should be called Cook's Land, bears the name of New South Wales.

The English are the only nation who have founded settlements on the continent of Australia. The colony of Botany Bay, or Sydney, is in a flourishing state. Settlements are made on the eastern coast at Moreton Bay, on the southern at Port Philip, on the south-western at Swan River, in Edel's Land, and on the northern at Melville Island, opposite Diemen's Bay. A new colony, that of South Australia, has received the grant of an immense territory, which extends along the coast from Fowler's Bay on the west, to beyond Cape Northumberland, or from 132° to 141° E. long. Towards the north, the boundary extends to the Tropic of Capricorn.

The settlement of New South Wales was made in 1788; West Australia, or Swan River, in 1829; South Australia in 1834; and North Australia in 1838. Port Philip is a dependency of New South Wales.

The trade of Australia has been gradually increasing since the English made settlements in different parts; but that of New South Wales is as yet the only one of considerable amount. According to a return presented to the House of Commons in 1845, it appears that the colony of New South Wales imported, in 1841, commodities to the value of 1,615,968*l.*; while the neighbouring island of Van Diemen's Land imported to the value of 488,588*l.*; making together 2,164,556*l.* The exports in the same year amounted, for New South Wales, to 916,549*l.*; and for Van Diemen's Land, to 407,822*l.*; making together an amount of 1,324,371*l.* The chief articles of import were wearing apparel, textile manufactures, corn, spirits, and sugar; the chief articles of export were oil and sheep's wool, the latter item alone amounting to 763,332*l.* in the two colonies.

(*Travels and Expeditions* by Cunningham, Oxley, Sturt, Mitchell, Earle, Eyre, Grey, &c.;

and *Journal* of the London Geographical Society, from 1833 to 1846.)

Zoology. Australia stands alone as it respects the mammalia which inhabit its surface. With the exception of a few small rodents and bats, all belong to the great section of *Marsupialia*. From Australia they have spread to Celebes, Amboyna, Waigiou, Banda, Timor, New Guinea, and New Ireland. If we turn to the warmer parts of North America, and the continent of South America, we find that among quadrupeds of a very different type certain marsupials, known as opossums (*Didelphys*), are, so to speak, scattered among the animal population. In Australia, on the contrary, there are no terrestrial quadrupeds, with the exceptions alluded to (the Dingo dog, and introduced domestic animals, are of course out of the question), which do not range under the Marsupialia. Gigantic quadrupeds, like the elephant and rhinoceros; feline animals, as the lion and tiger; solidungulous beasts, as the wild horse and zebra, are all wanting. There are no wild oxen, no mouflons, no antelopes, no deer. Nevertheless, among the forms presented by the Marsupialia, we may recognize the analogues of many of the orders of the mammalia of other countries. If we take a general survey of the Marsupialia we shall find that the section contains herbivorous, carnivorous, and insectivorous species, forming distinct groups or genera, exhibiting marked diversities of structure, in unison with their instincts and modes of life. The monkeys and lemurs are represented by the arboreal phalangers; the sloths perhaps by the koala (*Phascolarctus*); the *Carnivora*, by the *Dasyuri*, and especially by the night-prowling *Thylacynus*, equal to a wolf in size, and called by the colonists tiger, hyæna, zebra-wolf, &c; the *Insectivora*, by the *Phascogales*, *Perameles*, &c.; the *Ruminantia*, by the kangaroos; and the insectivorous *Edentata*, by the *Echidna* and the *Ornithorhynchus*. There is perhaps something, more fanciful than just in this parallelism. Indeed, though the wombat may represent some of the larger rodents, and the *Petauri*, or flying phalangers, the flying squirrels, still no analogues of any of the *Pachydermata*—of elephants, horses, or rhinoceroses—can be at all pointed out. Besides, these presumed analogues of distinct groups or orders of the ordinary mammalia are really, in many cases, members of the same family of Marsupials. For example, *Thylacynus*, *Dasyurus*, *Phascogale*, *Perameles*, &c., are members of the same family, and do not form two distinct families, as do the *Carnivora* and the *Insectivora*, each having its definite characters.

To a traveller who wanders from the settlements into the more interior part of the country, the most extraordinary among the mammalian orders, both as regards size, singularity of form, and manners, which will attract his observation, are the kangaroos, of which between thirty and forty species have been described. Besides the true kangaroos, a group of small kangaroo-like animals, termed rat-kangaroos (*Hypsiprymnus*), abounds. In the woods, phalangers (*Phalangista*), petaurists, or flying phalangers (*Petaurista*), with that strange animal, the koala, and various *Dasyuri*, take up their abode; and around the skirts of the forest the grass-cutting wombat makes its deep burrows. The sluggish pools are inhabited by the *Ornithorhynchus*, which excavates its deep galleries in the banks; the ant-eating *Echidna*, clad in a panoply of spines, forms its mines in the solid ground. All however belong to the marsupial group, in which (excluding the opossums of America) the numerical ratio of the species already ascertained amounts to one hundred; but besides these there are many varieties or doubtful species not taken into the account, and many have yet to be discovered.

It is remarkable that all the fossil relics of mammalia, which have hitherto been found in Australia, belong to the marsupial group. Of these we may notice, *Macropus Atlas*, *Macropus Titan*, *Macropus Goliah*, *Macropus affinis*, *Hypsiprymnus spelæus*, *Diprotodon Australis*, *Nototherium inerme*, *N. Mitchellii*, *Pascolomys Mitchellii*, *Dasyurus laniarius*, and *Thylacynus spelæus*. *Diprotodon Australis* appears to have been larger than the elephant, and of massive proportions.

If we turn from the mammalia to the birds of Australia, many peculiar facts will strike us. Though eagles and hawks abound, no true vultures have been discovered. Pigeons are very numerous and beautiful, and the true gallinaceous birds are represented by various species of quails (*Coturnix*, and *Hemipodius*), and those two singular birds, the brush-turkey (*Talegalla Lathami*, Gould), and the mountain pheasant (*Leipoa ocellata*, Gould). These two birds do not hatch their eggs by incubation, but the first buries them in mounds of decaying vegetable matter, and the other in sand, which they themselves pile up, so as to construct large hillocks. Maccaws, cockatoos, and paroquets, are multitudinous, and of gorgeous plumage. Elegant finches are numerous. Flocks of honey-eaters. (*Meliphagidæ*), derive their sustenance from the blossoms of the eucalypti. The emeu represents the ostrich of Africa, the rhea of South America, and the cassowary of the Moluccas. Wading birds are of various species, as spoonbills, storks, stilt-plovers, &c. Many of the species closely resemble those of Europe. Among the aquatic birds of which the forms are common to Europe, Asia, and America, we may especially notice the cereopsis goose, and that '*rara avis*,' now rare no longer, the black swan. Many forms of birds are peculiar to Australia. Among these the lyre-bird (*Menura superba*), is conspicuous: it is a sweet songster, and though formerly regarded as belonging to the gallinaceous order, seems in reality to come within the pale of the thrushes.

Reptiles are numerous in Australia. There are many venomous snakes, chiefly of the genus *Acanthophis*, and various lizards, of which the frilled lizard (*Chlamydosaurus*) is one of the most remarkable. Fish are abundant along the coast.

In speaking of the mammalia of Australia, we of course exclude the *cetacea* and the *seals*, marine animals, limited to no fixed spot, and visiting not

only the shores of Australia but those of the adjacent islands and more remote countries. The ocean is their home. When, therefore, we say that all the indigenous mammalia of Australia are marsupial, we must be understood as referring more exclusively to the terrestrial species. [MARSUPIALIA.]

Botany.—There is no part of the world the vegetation of which is so unlike that of all other countries as that of Australia. The plants are, to a very considerable extent, of so peculiar an organization, that a large proportion of the genera and some entire natural orders are absolutely unknown beyond its shores or dependent islands. Trees are there with the leaves twisted constantly out of their ordinary position, and with their functions inverted (*Eucalyptus*), or with transformed and dilated leaf-stalks performing the office of leaves (*Acacias*), and this so commonly, that, according to the computation of Dr. Brown, 'if taken together, and considered with respect to the mass of vegetable matter they contain, calculated from the size as well as number of the individuals, they are perhaps nearly equal to all the other plants of that country.'

In the southern parts of Australia we find the concentration of all those curious forms of vegetation for which the country is so remarkable. Forests, consisting of many species of gigantic *Eucalypti*, by the settlers called gum-trees, many of which are a hundred and fifty feet high, with a girth of from twenty-five to forty feet; among which are intermingled wattle-trees (*Acacias*), with their countless myriads of yellow-tufted flowers and bean-like pods, wild figs of enormous size, and in some places numerous *Seaforthia palms* constitute the wooded part of the country. In shaded places near Port Jackson, the *Corypha Australis* outspreads its umbrageous leaves, heavily contrasting with the light and delicate many-parted fronds of occasional tree-ferns. Nettles of an arborescent habit, from fifteen to twenty feet high, are not uncommon, to which may be added multitudes of proteaceous plants, with their hard and woody leaves, giving a most singular appearance to the places where they grow; hair-branched weeping *casuarinas*, and myrtaceous plants with white blossoms, studding their deep green box-like leaves, or with tassels of yellow, purple, or crimson stamens, contribute to produce the first sensation of surprise in a stranger who explores the wilds of the uncleared country. But it is among the plants of a smaller growth and a less conspicuous appearance that the botanist recognises the greatest number of new and strictly Australian forms. The thousands of compound-flowering plants are all of a structure with which he is unacquainted elsewhere. In place of the heaths and the geraniums, the *ixias*, and other iridcous plants, the fig-marigolds, and wood-sorrels, that diversify so beautifully the under-growth of the Cape of Good Hope, he finds thousands of *epacrideæ*, some with scarlet blossoms, and many with lilac or white or rosy blossoms; purple *tremandreæ*, polygaleous plants, yellow-flowered species of the *dillenia* tribe, looking like shrubby buttercups, and vast numbers of yellow-and-brown-flowered decandrous papilionaceous bushes. The *orchideæ* of the Cape and of the southern districts of South America are represented by totally different genera, having however a more decided resemblance to those of the latter than of the former country; while the *diosmeæ* of those two regions are unknown, although the order exists in abundance in the form of the exclusively Australian genera, *phebalium boronia, zieria, correa,* and *eriostemon*, which give a striking appearance to many places. The common weeds, too, of the land are often not less peculiar. Many of the umbelliferous plants are remarkable objects, especially the beautiful *Didiscus cæruleus;* while *Goodenoviæ*, a curious tribe nearly related to *Lobelias*, and *Stylidieæ*, still more singular objects with a slender irritable column of stamens, contribute here and there to the wonders by which the traveller is astonished. If to these we add a rich sward of grasses, among which the kangaroo grass (*Anthistiria Australis*) is invaluable to the colonist; festoons of the lovely *Tecoma Australis*, a climbing trumpet flower; pines belonging to the genus *Callitris*, and resembling cypresses; little twining *Billardieras*, with narrow bells of green or yellow; the singular zamias with the trunk of a dwarf palm and the leaves of a fern, which, with xanthorrhæa, are characteristic of soil that the settler will do well not to select; and finally, extensive plains in the interior terminating in morasses choked up with gigantic reeds—the botanist may form some idea of the vegetation in the parallel of Port Jackson.

To the southward it changes but little to the eye of the ordinary observer, although the naturalist may discern signs of an approach to a colder than European climate in the buttercups, anemones, and polygonums, that appear in abundance in the high land of Van Diemen's Land. Malvaceous plants become uncommon, casuarinas gradually disappear, palms shrink before the cold blasts from the southern pole, and migrate northwards; and but a single species of tree-fern extends its territory to Van Diemen's Land. The celery-topped pine (*Podocarpus asplenifolia*) and some species of *Callitris*, form trees of remarkable appearance on the sides of the mountains at the height of 4000 feet, and growing from 50 to 70 feet high.

Towards the westward the same general characteristics of the scenery, varied chiefly by soil, mountains, or other circumstances, still continue to exist. The shores of the promontory of Cape Jervis are bordered with mangrove swamps, and the mountainous land at the back of the coast line is covered with trees of more than ordinary size.

About King George's Sound, the extreme south-western portion of the continent, the general appearance of the country, although of a barren nature, is very picturesque. The hills are strewed with a profusion of beautiful shrubs: *Banksias*, one of which is called by the colonists wild honeysuckle, are of extraordinary beauty; grass-trees are abundant; and the forests consist of swamp oaks (*Casuarina*) and gum-trees (*Eucalyptus*). The plains are overrun with a coarse herbage. Culinary vegetables, in the form of a kind of parsley (*Apium prostratum*), and of a

common European species of orach (*Atriplex halimus*), are abundant in a wild state.

The flora of Swan River, as it is produced in a more northern latitude, changes a little from that of King George's Sound. The plants consist principally of species belonging to the *Protea, Myrtle, Epacris*, and compound-flowered tribes, and to the leafless part of the genus *Acacia*. The singular production called grass-tree by the colonists (*Kingia Australis*) rises upon the sandy plains in solitary uncouthness in the shape of scorched and blackened cylindrical trunks, terminated by tufts of long grassy leaves. A remarkable species of *Xanthorrhœa*, a *Zamia* with a stem sometimes thirty feet high, many individuals of the genus *Casuarina* remarkable for their long weeping thread-like branches, and some of the pine tribe, belonging to the genus *Callitris*, and resembling the Norfolk Island pine in character, give a peculiar character to the landscape. Kangaroo-grass is said to form here, as at Port Jackson, a rich and luxuriant herbage; *Banksias*, which at King George's Sound are only small trees, here acquire extraordinary dimensions, one of them (*B. grandis*) occurring 50 feet high, and more than 2½ feet in diameter. A noble species of gum-tree (*Eucalyptus calophylla*) forms a beautiful object in the scenery. The latter, and several other species of the same genus, here, as in so many other parts of Australia, form the common timber of the country. Magnificent *melaleucas* with scarlet flowers abound, together with *leptosperma* resembling weeping willows, and fragrant species of *metrosideros*, all cut off from the river by a belt of rushes of great height and thickness. On approaching the equator from the colony of Port Jackson, the appearance of the plants gradually changes. But a little to the northward a variety of differences are observable; the little billardieras all disappear, the araucaria pine begins to meet the view in Norfolk Island, and becomes plentiful within the influence of the sea air; the singular genus *Pandanus*, which looks like a pine-apple growing on a palm trunk, rears its slender stem among the woodland scenery; the blue gum-trees (*Eucalyptus piperita*) acquire stupendous dimensions; and a singular proteaceous plant resembling *Knightia excelsa* appears as a common timber tree.

Near Moreton Bay the tops of the mountains are covered with a vegetation similar to that which is common at Port Jackson, the difference in latitude and the approach to the equator being, as usual, compensated by elevation of surface. In the low lands, the forests abound in a gigantic nettle, and in the valuable chestnut bean (*Castanospermum Australe*), whose seeds, when roasted, afford a wholesome nutriment to the natives. Here also, in the forests near Brisbane Town, Mr. Fraser observed several species of ficus upwards of 150 feet high, inclosing immense iron bark trees (*Eucalyptus resinifera*), on which originally the seeds of those fig-trees had been deposited by birds. Native cherries (*Exocarpus cupressiformis*) abound, *Gyrostemon* emulates the weeping willow with its pendulous branches; and extensive distincts of araucaria pine form by their sombre green colour a striking contrast to the brownish hue of the gum-trees. The open parts of the forests contain an immense quantity of yellow wood (*Oxleya Xanthoxyla*), with silk oaks (*Grevillea venusta*), and a great profusion of magnificent trees. The beach is in some places ornamented with *Hibiscus tiliaceus*, and native bread-fruit (*Pandanus pedunculata*); in other places it is thickly clothed with mangroves. What are called by the colonists apple-trees (*Angophora lanceolata*), in remembrance of the grateful fruits of their native country, appear on the richest forest land, along with the eatable tarra root (*Caladium glycyrrhizum*), and many remarkable ferns. Xanthorrhœa also is described as forming a truly superb object, with its extraordinary bee-hive tops.

Approaching towards the north, the araucaria still continues common; palms increase in number; a rattan (*Calamus*) is most abundant in a damp tract thickly wooded with forest, between 15° and 17° S.; and a most extraordinary caper-tree, with the dumpy but enormous form of the baobab of Senegal, forms a striking feature. At last, on its northern shores, all the forms of Australian and Malayan vegetation are blended; species of *sida* and *hibiscus*, which were rare in the south, become common; and *Banksias*, the most Australian of Australian plants, disappear; *Eucalypti* indeed remain, and a *melaleuca* or two, like the cajeputi tree; but an abundance of *Cinchonaceæ* and other Malayan forms almost overpower the effect that the former produce upon the eye. Cabbage palms (*Livistona inermis*), but too small to be of value as a fresh vegetable, are abundant; plants allied to the nutmeg and sandal wood are not uncommon; and *Casuarinas* and *Pandanus* contribute to confound the Australian character of the vegetation with that of the Indian Archipelago.

It is a common observation, that Australia does not produce a single native species of eatable fruit: although exotic fruits thrive exceedingly in the genial climate of many parts. This remark is very nearly correct; for it is true that, with the exception of the Australian cranberry (*Lissanthe sapida*) and a few berries of scarcely any importance, the country is, as far as has yet been seen, entirely destitute of anything which could by possibility be introduced to a dessert.

(Brown's *Appendix* to Flinders's *Voyage to Terra Australis;* Cunningham's remarks in the *Appendix* of King's *Voyage to New Holland;* and various papers by Brown, Cunningham, Frazer, Nind, &c., in the *Journal of the Royal Geographical Society*, and in Hooker's *Botanical Miscellany.*)

AUSTRALIA, EASTERN. [WALES, NEW SOUTH.]

AUSTRALIA, SOUTH. [SOUTH AUSTRALIA.]

AUSTRALIA, WESTERN. [WESTERN AUSTRALIA; SWAN RIVER.]

AUSTRIA, EMPIRE OF. This Empire has been formed by the gradual junction of a number of separate states under one sovereign, until at length it occupies one-twelfth of the whole area of Europe. It forms a compact dominion, to which its southernmost extremity, the narrow tract of Dalmatia, forms the only exception. It

lies between 42° and 52° N. lat., and 9° and 27° E. long., occupying an area of 247,159 square miles, the circuit of which has been estimated at 4400 miles. The territories of Saxony and Prussian Silesia bound the Austrian dominions on the N.W. and N., the former for 250 miles and the latter for nearly 320 miles; on the N.E. the frontier runs for about 50 miles next to the territory of Cracow, which has an area of 500 square miles, and a population of 100,000, and which was incorporated with the Austrian empire by an imperial decree dated Nov. 11, 1846. On the N.E. and E. the Russian provinces of Podolia, Volhynia, and Bessarabia border the dominions of Austria for a distance of more than 530 miles. On the S.E. and S. the confines adjoin the Turkish provinces of Moldavia, Wallachia, Servia, Bosnia, and Croatia, along a line of nearly 1400 miles. The Adriatic washes the Austrian shore for 650 miles; the land boundary on the S. next skirts the dominions of the Roman see about 60 miles, of Modena and Parma 120, and of the Sardinian States about 100. On the W. the dominions border for an extent of 330 miles on the Swiss cantons of Tessino, the Valais, and St. Gallen; of 14 miles on the principality of Liechtenstein; of nearly the same distance on Lake Constance; and of 550 miles and upwards on the kingdom of Bavaria. The extreme length of the Austrian empire has been estimated at 870 miles, and its greatest breadth at 690 miles.

The Austrian empire consists of—the kingdoms of Hungary, Lombardy and Venice, Dalmatia, Bohemia, Illyria, and Galizia and Lodomiria; the Archduchy of Austria, the Principality of Transylvania and the Military Frontier, the Duchy of Styria, the Earldom of the Tyrol, the Margraviate of Moravia, and Silesia.

The following table gives the area and population of these according to the latest returns:—

Divisions.	Area, in sq. miles.	Population in 1840.
Lower Austria .	7,310	1,409,626
Upper Austria .	7,077	857,568
Styria	8,287	975,309
Carinthia and Carniola . . .	7,522	759,541
Illyrian Coast .	2,933	481,189
Tyrol	10,498	839,755
Bohemia . . .	18,785	4,174,168
Moravia and Silesia	10,115	2,166,638
Galizia and Lodomiria . . .	33,171	4,797,243
Dalmatia . . .	4,760	394,028
Lombardy . . .	8,011	2,547,976
Venice	8,734	2,168,553
Hungary . . .	85,000	12,096,202
Transylvania . .	20,442	2,079,000
Military Frontier	14,514	1,203,605
Total . .	247,159	36,950,401

Soil, Climate, and Productions.—The Austrian dominions contain, in almost every part, lofty mountains, some forming the natural line of demarcation into provinces, as the Sudetsch branch of the Hercynians, and the Carpathian chains in the N. and E.; and others, like the Alps and their branches, in the S. and W., penetrating into the heart of the several countries which form part of the empire in this direction. The plains do not occupy more than about a fifth part of the whole surface.

The soil is of endless variety, but in general favoured by a mild and genial climate, and distinguished by remarkable productiveness.

Slavonia and the south-eastern and central parts of Hungary present a wide expanse of low land, abounding in clay and marl, and of exuberant fertility, yet lying in immediate contact with arid sandy steppes and extensive morasses, which occupy more than 6400 square miles of the Hungarian territory alone. Large tracts of these steppes however have been brought under cultivation. This territory, however, in its northern and western districts, is characterized by mountain and forest, belonging to the Carpathians, and to branches of the Julian and Styrian Alps.

The general character of the Hungarian soil is that of great productiveness. The province abounds in rivers, streams, and lakes, and possesses some considerable canals; and it is richer than most European countries in metals and minerals. Slavonia is traversed from east to west by mountains and hills; and this province, as well as Croatia, has alternations of plain and highland which are very fruitful in grain, wine, tobacco, silk, honey, and other products.

Nearly the whole of the western frontier of Transylvania borders on the Hungarian territory. As the Carpathians range over its whole extent, its surface is at a much greater elevation than the neighbouring territories, and slopes gradually from the north-easterly border of the province to the south-westerly point. The country being mountainous, the produce is chiefly timber and minerals. Northward of Transylvania is Galizia and Lodomiria, an extensive plain, gradually sloping from the mountains till it opens upon the extensive flat that reaches to the Baltic. Galizia, though it contains many sandy tracts, is, next to Hungary, a principal granary of the Austrian states, and supplies large quantities of salt, some precious metals, and many other mineral and vegetable productions; but the climate is too cold for the grape. Austrian Silesia, next adjoining Galizia, is abundant in pasture and timber, but not in grain.

South-west of Silesia lies Moravia; it is mountainous in its eastern, northern, and western districts, but low and open towards the centre and south, the rich expanse of which has been styled 'a land of maize and wine.' West of Moravia is Bohemia, bound in on every side by the granite-based chain of the giant Sudetsch mountains, the Riesen-Gebirge, the Moravian Böhmerwald and Erz-Gebirge (ore mountains), which send out their offsets into the interior of the country. The heart of this kingdom is lower than the borders, but it is still higher than neighbouring countries: the natural produce is rich and abundant.

The Archduchy of Austria consists of the provinces of the Gns [Gns], commonly called Lower and Upper Austria. The Lower Province is intersected on the confines of Styria by a branch of the Noric Alps, and its centre by one of their smaller arms, the Cetian mountains, whilst the warm and fertile valley of the Danube traverses this and the adjoining province for above 160 miles. The Upper Province, which forms the western part of the archduchy, is a mountain region, the southern portion of which abounds in the lofty peaks, glaciers, and valleys, that distinguish the Noric Alps; the northern contains part of the less elevated summits of the Bohemian Forest chain or Böhmerwald-Gebirge. Both provinces are poor in grain; but fruit, wine, and salt, are procured in abundance. The adjoining province of Styria being completely intersected by the Styrian Alps, is well supplied with rivers, streams, fertile valleys, and rich pastures, and is besides rich in mineral produce. Next to this is the Tyrol, in which the numerous alpine ranges divide the face of the country into smiling plain and valley, whence the Tyrolese lowlands have derived their appropriate name of 'Thaler,' or vales, of which about twenty-nine are dotted with towns or villages, and fertilized by the waters of the Inn, Etsch, Brenta, and a number of other streams. The air is generally pure and keen, though in the south the effect of the scirocco is occasionally felt. The chief products are horses and cattle, grain, wine, fruit, potatoes, timber, salt, iron, copper, silver, lead, and a little gold.

Illyria, which is composed of Carinthia, Carniola, and some smaller provinces, is principally of a mountainous character, full of lakes, natural caves, and wild scenery. A district called the Karst, or desert, is covered with unfruitful limestone hills; and a maritime or frontier district, called Küsten-land, is not much more fertile. No other part of the Austrian empire includes so many varieties of climate. Dalmatia, southward of Illyria, is a narrow strip of land on the east side of the Adriatic. Both the high and low lands of this province are in general of limestone formation, uncultivated, and abounding in forests. In climate it is Italian, seldom visited by snow, but exposed to the cold north wind, and to the insalubrious exhalations from the marshes along its shores. The chief products of Dalmatia consist in marble of excellent quality, wine, oil, figs, almonds, wax, horned cattle, sheep, salt, and more particularly fish.

At the north-western extremity of the Adriatic, bounded by the lofty chain of the Alps on the north and by the Po along the whole line of its southern frontier, lies the spacious plain which forms the larger portion of the modern kingdom of Lombardy and Venice, one of the richest appendages of the Austrian crown. The land is fertilized by artificial irrigation: in the west in particular the soil consists of a thick coat of loam or mould; but at its eastern extremity, especially in the vicinity of the mouth of the Po, the surface changes to extensive swamps and marshes.* The maritime districts on the Adriatic are flat and sandy, and abound in lakes of stagnant water, which have been gradually created by the numerous streams which seek an outlet in this direction. The climate is in general mild and temperate; but the winter rains are very heavy. The soil produces grain, maize, rice, millet, peas, beans, potatoes, hemp, flax, vegetables and fruits of all kinds, and, in some parts, saffron. There is no branch of industry more carefully or profitably cultivated than the production and manufacture of silk; the Alpine districts yield considerable quantities of iron, copper, coal, marble, and other minerals.

Mountains.—The larger portion of the Austrian dominions, especially the south-western and eastern provinces, is occupied by *mountains*, which send out numerous lofty and wide-spreading branches. Their position, to a certain extent, breaks up the Austrian territory into separate parts, and throws great difficulties in the way of internal communication; at the same time, these numerous mountain-ranges give that manifold character to the productions of the different districts which connects them by ties of mutual dependence and advantage.

In the south are five Alpine chains—The Rhætian, the Noric, the Carinthian, the Julian, and the Dinaric Alps. Of these the Rhætian or Tyrolese Alps, which cover the Tyrol, are the loftiest in the empire. One of the peaks, the Oertlers-Spitze, is 12,811 feet high: numerous minor branches are thrown off from this range. The Noric Alps traverse the whole of Carinthia which lies on the left bank of the Drave, then turn eastward through Styria, spread into Lower and Upper Austria, and gradually subside into the plains of Oedenburg in Hungary. The Carinthian Alps run south-eastward through the Illyrian provinces of Carinthia and Carniola, and gradually subside in the Küstenland, or government of Trieste, on the Adriatic. The Julian Alps run in a south-easterly direction between the right bank of the Save and the Isonzo, until they have encircled the gulf of Quarnero on the Adriatic. The Dinaric Alps traverse a considerable portion of Croatia and Dalmatia. [Alps.]

The eastern and north-eastern territory of Austria is characterized by its own independent mountain system. The Carpathians, which commence near Pressburg on the Danube, near the north-western border of Hungary, are connected by their northward slope with the Sudetsch branch of the Hercynian chain; and when they reach the district where the boundaries of Austrian Silesia, Moravia, and Hungary meet, attain a great elevation. From this point the principal mass sweeps in an arch to the east, and then follows a southerly course until it reaches the south-eastern extremity of Transylvania at Mount Mosa Mika, from which point it turns towards the west, and then, deviating a little to the south, terminates a course of between 640 and 700 miles on the left bank of the Danube near Old Orsova, close upon the frontier of Wallachia. In this course, the Carpathians form a boundary-line, separating Hungary from Moravia, Austrian Silesia, Gallizia, and the Buckowine in the north; Transylvania from Moldavia and Wallachia in

the east and south; and the military frontier of south-eastern Hungary from the western confines of Wallachia, and the northern of Servia, on the right bank of the Danube. This extensive range is described under CARPATHIAN MOUNTAINS.

The declivities of the several Carpathian ranges, but more particularly those which spread into Hungary and Transylvania, contain the sources of several rivers. On the Hungarian and Transylvanian sides, the Theiss, Szamos, Maros, and Aluta on the northern and eastern sides of the Carpathians, the Sereth, Moldava, Pruth, Hernath, Gran, and Neutra; and in the central and Beskide ranges, the Waag, Vistula, Dunajec, and Dniester.

The Sudetes, or Sudetsch range, connected with the Carpathians near Weisskirchen, follows a north-westerly direction for more than 200 miles through the upper part of Moravia, Austrian Silesia, and along the northern districts of Bohemia, until it reaches the Elbe, the right bank of which on the side of Saxony forms its north-westerly limit. The Sudetes are remarkable rather for their length than breadth; in no part are they completely broken by the interposition of plains, and they occasionally rise from their general elevation of 1000 feet to a height of 4000 feet. The natural character of the Sudetes has led to their subdivision into four distinct ranges. The Silesian-Moravian division contains the sources of the Oder and the March; the Glatzer-Gebirge division consists of a quadrangular mass of mountains, the slopes of which are clothed with forests; the Riesen-Gebirge division has within it the source of the Iser, and has a very inclement climate; the Lusatian division extends to the banks of the Elbe and the Oder. In the Sudetes generally, the higher regions are of various primitive formations, and, in certain directions, rich in different kinds of ores. The mountain ranges of more moderate height are composed of clay-slate, limestone, and amygdaloid, and in parts contain beds of coal. The offsets, which stretch deep into Moravia and Bohemia, are of flötz-trap and sandstone, or grauwacké and basalt, with isolated and towering caps. Among the streams which spring from the Sudetes are the Oppa, Neisse, Bober, Oder, March or Morava, Iser, and the Elbe.

Around the north-west and south-west of Bohemia extend mountain-ranges which receive various names, such as the Erz-Gebirge, the Mittel-Gebirge, the Böhmerwald-Gebirge, and the Mährisch-Gebirge. Many of these mountains consist of granite and gneiss; some of them exhibit a thickly wooded and precipitous region; and some few of the slopes are very fertile.

Waters, Lakes, Rivers, and Canals.—The only sea-coast which this great empire possesses is on the Adriatic, the waters of which, so far as the Austrian dominions are concerned, extend from the Punto di Goro along the eastern territory of Venice, the western, southern, and eastern frontiers of the government of Trieste in Illyria, the 'littorale' of Hungary and Austrian Croatia, and the western limits of Dalmatia to their most southerly extremity. In describing this line, the

Adriatic not only makes four considerable bays or inlets—the Lagunes of Venice, the Gulf of Venice, the Gulf of Fiume or Quarnero, and the Bay of Cattaro—but forms several narrow straits called canals, between the islands and mainland in its north-eastern parts: such are the Morlakian canal on the coast of Dalmatia, the canals of Pago, Zara, di Mezzo, Solta, Trau, Brazza, Curgola, Narenta, and others. This line of coast being, however, to a considerable extent, cut off from communication with the bulk of the Austrian dominions by intervening mountains, over which the roads are difficult, the benefits which the Adriatic affords to Austrian navigation are almost entirely confined to the provinces immediately adjacent to it.

The Austrian territory, with regard to lakes and inland waters, will bear a comparison with most countries in Europe, particularly in its southern and eastern provinces. The Platten See in Hungary occupies an area of 504 square miles, including its swampy borders; and it receives the Szala, and upwards of forty streams and rivulets. Among smaller lakes are the Neusiedler See in Hungary, having 120 square miles of surface; the Grüner See of the Carpathians; the Palitsh Lake and White Lake, impregnated with natron; the Tsheger See in Transylvania, 14 miles in length; the Atter, the Mond, the Gemünd, the Hall-Städter, the Waller, the Matt, the Alben, and the Zeller lakes, in Upper Austria; the Wörth, the Mühlstädt, the Ossiach, and the Czirknitze, surrounded by caverned limestone hills, in Illyria; the Tsuntratz and the Pillwitzer lakes, in Croatia; and a very considerable number in Dalmatia.

Of the several lakes in the Italian dominions of Austria there are two, of which the property is shared with neighbouring states: the Lago Maggiore, or Lake of Locarno; and the Lago di Lugano or di Laviso. The Lago Maggiore is on the north-west border of Lombardy, and is half possessed by Piedmont; the Lago di Lugano is connected with the former by the river Tresa, and is likewise divided between the two governments. The Lago di Como and the Lago di Garda are beautiful lakes of Lombardy, and among the smaller ones are those of Iseo, Idro, and Alleghe.

The empire of Austria belongs, to a greater or less extent, to four of the great river systems of Europe—those of the Black Sea, Baltic, North Sea, and Mediterranean. The Danube, among European streams, is second only to the Volga. [DANUBE.] The more important of the streams which discharge themselves into the Danube, after they have flowed through portions of the Austrian territory, are,

The Inn, which crosses the Grisons frontier above the pass of Finstermüntz into the Tyrol, and then flows through Bavaria into Austria, where it joins the Danube at Passau, after a course of 320 miles. The Traun rises in Styria, and flows 110 miles to the Danube, which it joins near Linz. The Ens rises near Radstadt, and flows through Styria and Austria to the Danube at Ens, a course of 170 miles. The March, or Morava, rises in the mountains between

Moravia and Bohemia, and flows between Austria and Hungary until it falls into the Danube near Pressburg. The Drave rises in the Tyrol, flows through Styria and part of Hungary, and joins the Danube near Almas in Slavonia after a course of 400 miles. The Save rises in the Carinthian Alps, flows between Styria and Illyria, then between Slavonia and Turkey, and joins the Danube between Semlin and Belgrade, after a course of 440 miles. The Waag rises in Hungary, and flows 270 miles to the Danube at Komorn. The Gran rises in the Hungarian Erz-Gebirge, and flows 161 miles to the Danube at Parkany. The Leitha rises in the Lower Ens, and passes through Styria into a branch of the Danube above Wieselburg, a course of 80 miles. The Raab flows 170 miles from Mount Rechberg in Styria to Raab. The Sarvitz flows from Bakony Forest to Bata in Hungary. The Theiss rises in Transylvania, and flows through Hungary to the Danube near Peterardein, after a course of 740 miles, during which it receives numerous contributory streams. The Temesh rises in the Transylvanian Alps, and flows 270 miles to the Danube near Belgrade. The Aluta rises in eastern Transylvania, and flows 350 miles to the Danube opposite Nicopolis. The Pruth rises in the Carpathian chain of Hungary, and flows to the Danube at Reni. The Sereth has its source in the Szesul mountain, and flows into the Danube at Fodeni. The Dniester does not rise within the Austrian borders. [DNIESTER.]

Parts of the northern dominions of Austria are connected with the Baltic and the North Sea, through the Vistula, the Oder, and the Elbe. The Vistula originates in the Beskide range, in Austrian Silesia, and after flowing for about 195 miles through the Austrian dominions, and attaining in some parts a breadth of 1700 feet, it enters Poland. The Oder rises near Olmütz in Moravia, and flows about 50 miles through that province before it enters Prussia. The Elbe rises on the north-east frontier of Bohemia, and flows about 160 miles before it enters Saxony. [ELBE; VISTULA; GERMANY.] The Moldau, one of the tributaries to the Elbe, flows 220 miles through Bohemia. The Rhine touches the Austrian dominions only as far as it divides Vorarlberg from Switzerland. [RHINE.]

In the river system of the Mediterranean are comprehended the streams which discharge themselves into the Adriatic. The Po is the only large Austrian river whose outlet is in the Austrian dominions. It first touches Lombardy between Casale and Pavia, where it receives the Ticino, and, bearing its slow and turbid current eastwards, it separates the Lombard from the Papal dominions and enters the Adriatic by several mouths. The largest of its subsidiary streams bound or traverse Lombardy, and have their influx on its northern banks. The more important of them are the Ticino, the Olona, the Lambro, the Adda, the Oglio, and the Mincio. The Adige, the Brenta, and the Piave, also belong to the Austrian-Lombard dominions.

The canals which exist in the Austrian dominions are of limited extent, and merely local in their advantages; for their object in general is merely to facilitate the communication between one particular district or town and another. Their whole number is not more than 35; and their entire length does not exceed 500 miles at the utmost. The chief among them are the Bega, the Emperor Francis' Canal, and the Yarsgina, the Neustädte, and the Schwartzenberg canals. The Italian dominions of Austria abound in canals, most of which are useful for draining and irrigation.

Agriculture and Produce.—The variety of soils within the Austrian empire is perhaps not equalled by any other state in Europe. But there are few portions of it in which the liberality of nature has hitherto been adequately seconded by human skill and industry. The cultivable portion of the 247,159 square miles which constitute the area of these dominions, may be estimated at 231,000, of which 221,950, being about 89 parts in every 100 of the entire area, or 96 parts in every 100 of the cultivable portion, have been rendered available. This extent of available surface may be thus distributed:—

	Acres.
Arable land	47,497,053
Vineyards	5,487,202
Gardens, &c.	19,660,794
Pastures	21,373,248
Woodlands	47,523,153
Total . .	141,541,450

It has been estimated that the gross quantity of grain produced in the Austrian dominions is 51,552,506 British imperial quarters, consisting of 6,228,797 quarters of wheat, 20,855,000 quarters of maize and rye, 8,712,878 quarters of barley, and 16,555,831 quarters of oats. The largest quantities of these sorts of grain are raised in Hungary, Galizia, Bohemia, and Lombardy; while some of the provinces do not raise enough for their own consumption. Lombardy and Venice produce 146,000 quarters of rice, independently of about 5000 more grown in the marsh lands of Temeswar, Slavonia, the Military-Frontier districts, Dalmatia, and other provinces in the south. Buck-wheat, millet, peas and beans, lentils, rapeseed, and linseed, as well as potatoes, and other ordinary vegetables, are more or less cultivated in almost every part of Austria: nor is there any want of an adequate supply of fodder for horses and cattle, in the growth of which, especially of clover and lucern, Lombardy, Styria, the Archduchy, Bohemia, and Silesia take the lead. Turkish pepper, mustard, aniseed, ginger, truffles, hops, flax, hemp, indigo, saffron, madder, anil, and safflower, are also among the vegetable produce.

The principal medicinal plants cultivated in Austria are—rhubarb, which is raised in Styria, the Lower Ens, Bohemia, and Galizia; liquorice, a favourite article of growth in Moravia, whence 400 tons and upwards are annually exported, and which is also gathered in the wild state in Hungary and Slavonia; manna, derived from the *Fraxinus ornus*, which abounds in the forests of

Hungary and Slavonia; and spikenard (*Spica Celtica*), which is collected with much care in the mountains of Carniola, Styria, the Tyrol, and the Upper Ens. The white species of this plant is mostly exported to the Levant, where the Turks and Greeks make use of it in their baths on account of what they conceive to be its invigorating properties. An intoxicating spirit is distilled in Carinthia and Styria from gentian, which is found in most of the elevated regions; and Iceland-moss is collected in considerable quantities on the Carpathian mountains, where it grows in masses of five and six feet in height.

The cultivation of fruit is carried to a great extent in every part of Austria, with the exception of Galizia. Plums, damsons, filberts, chestnuts, figs, almonds, currants, raisins, grenades, pomegranates, limes, lemons, oranges, dates, olives, and melons, are largely grown: some more plentifully near and in the Hungarian portion of the empire, and some nearer to or in Italy.

More than one-third of what is deemed the available soil of the Austrian dominions is occupied by woods and forests, and wood is one of the staple productions. The more level districts grow the oak, beech, ash, alder, elm, poplar, lime or linden, birch, willow, and plantain; whilst the fir, pine, larch, cedar, and yew, and, where these will not thrive, the dwarf-pine and juniper, seek the more elevated regions. Among the products of the Austrian forests we may name potashes, which are chiefly made in Hungary, Galizia, and the Buckowine, Moravia, the Archduchy, and Bohemia. Tar, charcoal, gall-apples, and turpentine should be added to this enumeration of the products of these forests, though they are not of considerable moment.

The quantity of wine annually made in the Austrian territory averages about 3,200,000,000 gallons; of which Hungary produces more than one-half, and of which the inhabitants of the empire are said to consume about seven-eighths. Tokay is a Hungarian wine, very choice, but small in quantity.

The number of horses in the Austrian dominions has been estimated at 2,110,000, of horned cattle 10,500,000, of sheep 12,700,000, of mules and asses 59,000, of swine 5,500,000, and of goats 700,000. With respect to the horse, the finest breeds are reared in Transylvania and the Buckowine. Of horned cattle, the choicest breeds are reared in Hungary, Transylvania, Lombardy, and Styria. Poultry of all kinds is very abundant in all parts of Austria, but especially in the north-west of Hungary, where prodigious numbers of fowls, ducks, geese, and turkeys are reared. The Tyrol is celebrated for rearing canary birds, of which between 3000*l.* and 4000*l.* in value are annually sold. Game of all kinds is plentiful; and on the list of wild animals we find the bear, lynx, wolf, fox, martin, and chamois goat. The rivers abound in fish.

The rearing of the silkworm, though not wholly neglected in other parts of the south of Austria, is nowhere carried on to such an extent as in the territories of Lombardy and Venice. The whole produce of the empire is estimated at about

6,000,000 lbs., of which about 4,500,000 lbs. are the produce of the Italian provinces. A considerable proportion of this article in the wrought state, chiefly of the sort termed organsine, is exported from the Italian provinces to the English market. Cantharides, or Spanish flies, are a considerable article of export from Hungary and Slavonia; the cochineal insect draws many purchasers into the sandy tracts of Galizia from Turkey and Armenia; and the leech of late years has become an article of considerable trade between Austria and France.

Among the other productions of this monarchy, we may notice that tobacco is a monopoly engrossed by the department of finance in every province but Hungary, Transylvania, and the Tyrol. The annual produce of Hungary alone amounts to 330,000 cwts. There are private manufactories in the three provinces to which this monopoly does not extend. Of seed-oil, though the produce is very considerable in all quarters, enough is not manufactured for the consumption. Large quantities of olive-oil also are obtained from the territories of Lombardy and Venice, particularly the neighbourhood of the Lago di Garda, Illyria, and Dalmatia. The manufacture of paper and of glass is very extensive, and employs a large number of hands.

In *Mineral Productions* Austria surpasses every other country in Europe. With the exception of platinum, it would be difficult to name any metal which it does not possess. The richest of its gold-mines are in Transylvania, which has been called the gold-mine of Europe, and in which no less than forty mines are worked. [GOLD; TRANSYLVANIA.] Silver is largely produced in Hungary; and in smaller quantity in other districts. Schemnitz is the great mining capital for the gold and silver districts. Copper mines and works exist in different parts of the empire; and the annual supply of copper which is raised in the Austrian dominions would appear to amount to about 2500 or 3000 tons. More than double this quantity of lead is produced. Iron is a metal of which almost inexhaustible resources exist, though, on account of the dearness of fuel, the mines have not yet been turned to any very extensive use: the quantity raised throughout the empire is about 80,000 tons per annum. In the Hüttenberg, Carinthia possesses one of the oldest and at the same time one of the richest iron mines in Europe, its produce being from 8000 to 9000 tons a year. Tin is raised in no part of Austria but Bohemia, and the whole produce does not exceed 2000 cwt., which is far short of the consumption. The quality, however, is good. There is no mine of quicksilver in Europe so rich as the mine at Idria in Carniola. Calamine and zinc are obtained from the Tyrol, the Archduchy, Styria, and Bohemia; cobalt, from Hungary, Styria, and Bohemia; arsenic, from Hungary, Transylvania, Bohemia, and Salzburg; antimony, from Hungary, Transylvania, the Tyrol, and Bohemia; chrome from the Tyrol; and bismuth and manganese from Hungary.

The various species of salt, such as sea-salt, rock and that made from brine-springs, exist in

abundance. The second species is abundant on both sides of the Carpathians; and the celebrated mine of Wieliczka, which has been worked ever since the year 1253, and lies in the north-western part of Galizia, is but an inconsiderable inroad upon a massive bed extending for a length of nearly 600 miles along the Carpathians, as far as Okna in Wallachia. The whole salt produce of the empire amounts to nearly 300,000 tons yearly. Vitriol, alum, saltpetre, and soda, are among the mineral produce.

Although the forests furnish nearly the whole of the fuel which is consumed in the Austrian dominions, there is scarcely a province which is deficient in coal. At present, however, the whole quantity raised is not very large; and although there is abundance of turf or peat in Styria, Carinthia, and elsewhere, little of it is used. Every part of the Austrian dominions possesses more or less of native sulphur, but more particularly Galizia, Hungary, Transylvania, and Bohemia. Mineral tar and oil are chiefly obtained in Galizia and the Buckowine; but they are also produced, though but partially turned to account, in the Archduchy, Hungary, Bohemia, Illyria, and Dalmatia.

Among precious stones, the Bohemian carbuncle and Hungarian opal stand in highest repute. The chalcedony, ruby, emerald, jasper, amethyst, topaz, carnelian, chrysolite, and beryl, as well as what is called the 'marble diamond' in Hungary, must be added to the list of Austrian precious stones. Marble of every description and variety of colour and vein is raised either in Hungary, Transylvania, Bohemia, the Archduchy, Tyrol, Styria, Illyria, Dalmatia, or the Italian possessions of Austria, in which latter the Veronese alone is said to possess 106 distinct varieties. Carinthia and Styria, indeed, supply a quality of white marble no way inferior to the Carrara marble. Alabaster, serpentine, black tourmaline, gypsum, black-lead, slates, and flint, are among the mineral produce.

Every part of the Austrian dominions abounds in mineral waters, and it is said that 1500 distinct springs may be enumerated. Carlsbad, Töplitz, Eger, Bilin, Licbwerda, Seidlitz, Seidschütz, Carlsbrunn, Rohitsch, Bartfeldt, Füret, Mehadia, Baden, Dorna-Handreni, Krynitza, Gasteiner Wildbad, Rabi, and Pejo, are all celebrated for their mineral springs.

Manufactures and Commerce.—The principal seats of the linen manufacture, or rather of those productions in which flax and hemp are employed, are Bohemia, Moravia, and Silesia, which furnish the finest articles of this description in Austria, though in diminished quantities as compared with the earlier part of the present century. For variety and goodness of manufacture, the states of Lombardy and Venice deserve to be classed in the next rank to those three provinces. The Tyrol, Hungary, Galizia, and Transylvania produce scarcely any but the middling and coarser species of linen; nor is there much beyond what is termed house-linen made in the Archduchy, Illyria, or the Military-Frontier districts. The raising and preparation of flax alone in Austria are estimated to give employment to 750,000 individuals, and its native manufactures to yield sufficient not only for domestic use, but for partial exportation.

The largest manufactures of woollens, both cloth and other kinds, are established in Moravia and Bohemia. These products in both countries are said to be as much distinguished for their excellence as their variety. In the other parts of the empire, where this branch of industry is proportionably pushed to a much less extent, the principal articles manufactured are of middling and coarse quality, whilst the finer sorts, so far as their domestic consumption requires it, are of Moravian and Bohemian fabric. Considerable quantities of the latter are exported to foreign parts. The woollen manufacture employs at least 320,000 Austrian hands; and the crown has given no small impulse to it by erecting several establishments, conducted at its own expense, among which is that at Linz, which employs 10,000 spinners and weavers.

The silk manufactures have been rapidly extending in Austria since the introduction of Jacquard's machinery. They are principally carried on in the province of the Lower Ens, and in the Milanese and Venetian territories. The cotton manufacture, though it has been prosecuted with some energy, especially near Vienna, can hardly be said to be prosperous, owing to the difficulty of competing with England and other countries.

The province of the Lower Ens takes the lead in the manufacture of leather, of which the best qualities are made in Vienna. The Upper Ens, Moravia, Styria, Bohemia, and the Tyrol rank next in importance. Hungary abounds in tanneries; and in fact nearly every province in Austria is engaged more or less in this branch.

Iron, the mines of which have been already alluded to, is wrought into marketable form in many parts of the empire. Cast-iron is produced in Bohemia, Styria, Hungary, and Illyria; bars and sheets are rolled in the Lower Ens, Styria, Carinthia, and Bohemia; iron and steel wire are made in the Archduchy; nails in many of the provinces; and fire-arms and swords in Styria and Hungary. Manufactories of copper, brass, cannon, tin, lead, balls and shot, buttons, gold and silver, are maintained in various parts of the empire.

It was estimated by Lichtenstern, Stein, and Malchus, a few years ago, that the number of manufacturers employed in working up the native produce of Austria, or the raw materials imported from other countries, amounted to 2,365,000, and the yearly value of their productions to 1425 millions of silver currency, representing a sum in British sterling of upwards of 140 millions.

With respect to external trade, no country of equal extent is perhaps more disadvantageously situated; its line of sea-coast is comparatively inconsiderable, and, with the solitary exceptions of the Po and Adige, its finest streams, such, for instance, as the Danube and Elbe, lie, even when crossing its frontiers, at a considerable distance from the sea. There are commercial restrictions, too, which retard instead of advance the natural progress of commerce. But the recent introduc-

tion of steam transit on the Danube, and the numerous railways, which will soon connect all the Austrian territories with each other and with neighbouring countries, will no doubt open new fields of commercial enterprize to the empire generally.

Inhabitants.—At the decease of the Emperor Charles VI., in 1740, the possessions of the house of Austria had a population of 17,493,000; at the close of what is called the Seven Years' War, in 1763, the disasters of that war had reduced it to 16,243,000; on the death of the Empress Maria Theresa, in 1780, an interval of seventeen years only having elapsed, it had increased to 22,636,000; during the following ten years it rose to 24,427,000; these numbers were found to have increased after the treaty of Campo Formio, in 1797, to 24,609,497; in 1803, after the new settlement of the German states, in which Austria was indemnified for preceding losses, the number of its inhabitants was 25,548,000; in 1805 it was reduced under the treaty of Pressburg to 23,067,892; and again, in 1807, under that of Vienna, to 20,695,883. Upon the downfall of Napoleon, the restitutions and cessions of 1815 enlarged the dominions of Austria beyond all former limits: in 1818, therefore, we find them inhabited by 28,413,482 individuals; in 1825 they had increased to 31,624,888; and six years afterwards to 33,630,381. In 1840 the population had risen to 36,950,000.

The great mass of the Austrian population is composed of six distinct races—distinct as much by descent, features, and bodily conformation, as in character, language, manners, and usages. Nearly one-half, about 17,000,000, is of Slavonic extraction. Of this race are the Wenden or Vandals, in Illyria and the eastern parts of Styria; the Slawaks and Hinzes settled in those districts of the Archduchy which border upon Hungary and in certain circles in the latter kingdom; the Czeches, or aboriginal Bohemians, of Bohemia and parts of Moravia; the Hanaks, Slawaks, and Podenlaks of Austrian Silesia and Moravia; the Poles (of two distinct classes, the Mazuraks and Gorals), and Russniaks, or Russians of Galizia and the mountain confines of Hungary and Transylvania; and the Morlaks and Montenegrines of Dalmatia, the military frontier districts, &c. The second race in numerical importance, and perhaps the first in point of intelligence and usefulness, is of German descent: their numbers are estimated at 7,000,000; they form an integral part of the population in the Archduchy, Styria, Carinthia, the Tyrol, Moravia, and Bohemia, but constitute separate communities in Hungary, where their numbers are between 800,000 and 900,000; in Transylvania, where they are denominated Saxons, and have increased to about 240,000; in Galizia, where there are 186 colonies, consisting of about 75,000 individuals; in the Military-Frontier districts to the extent of about 10,000; on the Kulpa, in Carniola, where the Gotschewers amount to about 48,000; and in the Venetian territories around Asiago, where they have lived isolated for centuries under the name of the Sette and Tredici Communi, and are about 55,000 in number. The third race are the Magyars, who migrated from the Kuma, and settled around the banks of the Danube and Theiss in the ninth century; they are esteemed to be of pure Asiatic extraction, akin to the Tartar and Turk, and are a fine and intelligent class of men; they are about 4,500,000 in number, form the majority of the population of Hungary and Transylvania, and are possessed of the finest lands in both countries; some few of them have also settled in the Buckowine and Military-Frontier districts. The Italians compose the fourth race, to the extent of about 4,770,000; they constitute nearly the entire population of Lombardy and Venice, inhabit a considerable portion of the south of the Tyrol and the government of Trieste, and are scattered throughout Dalmatia and other parts of Austria. The fifth race are the Valaks, Dako-Valaks, or, as they term themselves, Rumani, a medley of ancient Thracians, Romans, and Slavonians, in number about 1,950,000, whose language is evidently a corrupted dialect of the Latin; recent investigations, indeed, have proved their Roman descent, as well as that they colonized Dacia at an early period, and were afterwards allowed to recross the Danube in the reign of Aurelian: they are chiefly found in Transylvania, Hungary, and the Buckowine. The Jews, to the extent of about 520,000, form the fifth race: nearly one-half of them are settled in Galizia, and about 160,000 in Hungary; the remainder are dispersed over Bohemia, Moravia, and other parts of Austria. The residue of the population consists of Zigeuner, or gipsies, of whom upwards of 100,000 are conjectured to exist as a wandering people in Hungary, Galizia, the Buckowine, and other provinces; Arnauts, Greeks, Armenians, French, &c.

The established religion of Austria is the Roman Catholic. The following is an estimate of the numbers of the various religious bodies:—Roman Catholics, and Greeks received into union with them, 28,800,000; Greeks not in union, 3,500,000; Protestants, of the Lutheran and other denominations, 3,700,000; Jews, 820,000; Gipsies, Mohammedans, &c., 130,000.

Government and Administration.—The various elements of which the Austrian empire is composed are united under an hereditary monarchy, the head of which assumed the title of Emperor of Austria, King of Jerusalem, Hungary, &c., on the 11th of August, 1804; and by a solemn act on the 6th of August, 1806, in which he renounced the style of Emperor of Germany, determined the title and armorial bearings which the emperors of Austria should thereafter use. The prefix of Apostolical Majesty has been borne by the Austrian sovereigns ever since the year 1758. In his character of sovereign of certain states in Germany, which include the Archduchy, Styria, Illyria, the Tyrol and Voralrberg, Bohemia, Moravia, and Silesia, with the principalities of Auschwitz and Zator, he is one of the six leading members of the German confederation. Many of his provinces or sub-kingdoms have parliaments or popular assemblies; but their powers are in no case very great. The succession to the crown of Austria is in the male line, and in default of this

passes into the female, as determined by the Pragmatic Sanction, promulgated by the Emperor Charles VI. on the 19th April, 1713. The rules as to minority and regency differ in some particulars in the different provinces. The emperor professes the Roman Catholic faith, and cannot, under a family compact, marry any female unless she be of royal blood. The princes and princesses of the imperial family are styled archdukes and archduchesses, and the heir-apparent or presumptive, Imperial Crown Prince.

The administration of public affairs partakes of a twofold character: on the one hand, there are departments which superintend and conduct the general affairs of the state; and, on the other, there are offices the duties of which are confined to isolated portions of the monarchy. Among the former are the Privy Cabinet, the Council of State, the Privy Chancery, the Council of War, the Ministry of Finance, and the General Directory of Accounts. Besides the above, each of the separate kingdoms and provinces has special dignitaries of its own.

The administration of justice is under the superintendence of the Superior Ministry of Justice (oberste Justiz-stelle), at the head of which there are two presidents. It is divided into two senates: one at Vienna, for the provinces of Bohemia, Galizia, German states, Illyria, and Dalmatia; and the other at Verona, for the Lombardo-Venetian kingdom. There are nine high courts of appeal and criminal judicatures subordinate to them: their seats are in Vienna, Prague, Brünn, Lemberg, Innsbruck, Klagenfurt, Zara, Milan, and Venice. Next there are sixteen special courts, termed Landrechte, in as many different towns, for adjudicating matters relating to the nobility, clergy, and corporate bodies; and local courts (Ortsgerichte) for such matters as concern the common laity. Besides these there are local tribunals belonging to particular districts. The clergy are amenable, in all temporal matters, to the temporal judicatures; but the military to their own tribunals. The sovereign enjoys, excepting in very few cases, the prerogative of making laws. All provincial statutes have been abolished; nor are any complete codes extant but in Hungary and Transylvania, which have their own courts of judicature.

The maintenance of public order and prevention of offences are vested in the ministry of police, assisted by provincial and district boards. The censorship of the press is also wholly confided to its jurisdiction; but Hungary falls no way within it. Medical police is carefully attended to, and a surgeon and physician, paid by the state, have charge of every circle or district.

Another most important prerogative enjoyed by the sovereign of Austria is that of an irresponsible control over the public income and expenditure. A portion of the public income is derived from the immediate property of the state, consisting of crown lands and mines, and another portion from royalties and monopolies; but the greater part proceeds from taxes and rates, which are not, however, raised according to any uniform system for the whole state. The national debt of Austria amounts to about 125,400,000*l.*: the revenue in 1837 was 15,450,000*l.*, and the expenditure in the same year amounted to 17,300,000*l.* The revenue has increased since 1837 so as nearly to balance the expenditure.

The management of the military resources of Austria is committed to the council of war; these resources are of two classes, the one the peace and the other the war establishment. The peace establishment comprises 220,000 infantry, 45,000 cavalry, and 30,000 artillery. The war establishment raises the total number to above half a million. All the regiments but the Hungarian and Transylvanian have a district assigned to them of from 307,000 to 578,000 inhabitants, for filling up vacancies in their ranks; every male peasant and citizen being liable to serve in the line from the age of 19 to that of 27, and from the latter age until he attains that of 50, in the Landwehr; the only exemptions made are in favour of the nobility and clergy and in a few other instances. The Hungarian and Transylvanian troops are recruited by bounty, or filled up by the contingents to which the nobility and free towns are subject. The number of field officers, attached and unattached, is 646; viz. 8 field-marshals, 34 field-masters-general and generals of cavalry, 96 field-marshals-lieutenant, 199 major-generals, and 309 colonels.

The military seminaries, the regimental schools, and the veterinary schools, are very numerous; as are likewise the hospitals for invalids. The number of actual fortresses amounts to 26, of which the most important are, Arad, Brod, Cattaro, Essek, Gradisca, Josephstadt, Carlsburg, Königingratz, Komorn, Legnago, Mantua, Olmütz, Palma-Nuova, Peschiera, Prague, Peterwardein, Ragusa, Salzburg, Temeswar, Theresienstadt, Venice, and Zara. Besides these there are 60 fortified places of inferior strength, which are not under governors, but local commandants. The whole territory is divided into 13 military districts, each under the control of a general of superior rank, assisted by a regular establishment with five subordinate departments.

The Austrian navy is under the management of a naval commandant at Venice, who is accountable to the council of war. It consists of between thirty and thirty-four vessels of war; among which are three ships of the line in ordinary, five frigates, five sloops, eight brigs, and six schooners. The establishments attached to it are a corps of naval artillery and engineers, a cadet academy, and a corps of marines. The flag, which is borne also by the merchant vessels, is of a red ground, with a broad white stripe in the centre.

In religious matters the emperor acknowledges the Pope as head of the visible church; but is more independent of that spiritual influence than most other Roman Catholic sovereigns. The ecclesiastical organization of the empire comprises 13 archbishops, 60 bishops, 12 titular bishops, and a numerous body of members of chapters and colleges, arch-priests, deans, rural deans, parish priests, local chaplains, vicars, and beneficed ministers. Besides these, there are more than 500 monasteries, and numerous nunneries and other religious

establishments. The Greek and Protestant churches have establishments far exceeding in extent and power those of the Roman Catholics, but arranged on a defined footing, though there are occasionally persecutions and oppressions on the weaker party.

As to education, there are three head 'boards of studies;' one at Vienna, for superintending and controlling whatever concerns the business of education in every province but Hungary and Transylvania; a second at Ofen for Hungary; and a third at Klausenburg for Transylvania, which also takes cognizance of all ecclesiastical affairs. The various provincial authorities, in conjunction with the clergy and consistories, act under the immediate sanction or directions of these boards. The same system obtains with regard to the Greek and Protestant schools, though it will be conceived that the state of the latter is not likely to have been improved by subjecting them to the visitation of Roman Catholic deans and episcopal consistories. A director is appointed for every branch of instruction to every province and academical district, and he is assisted by a pro-director in matters of external discipline, and by an exhortator in matters of religious discipline. In the universities, both are entrusted to their own magistracy. The lower class of schools are subject to the inspection of the local clergy at each spot, but that of whole districts is vested in the dean or vice-dean appointed by the bishop: and the general superintendence and conduct of all matters connected with education is in each province carried on by its own local government. There is a great variety of schools: national schools, head schools, normal schools, civic schools, gymnasia or grammar schools, episcopal and monastic seminaries, polytechnic schools, schools for teaching special branches of knowledge, and regular universities.

The greater part of these institutions are well supplied with libraries and scientific collections. Of public libraries there is no deficiency: those most deserving of mention are the Imperial Library at Vienna, consisting of 350,000 volumes, and the University Libraries, of 130,000 in the same capital, and of 100,000 in Prague; the Ambrosian, of 90,000, and that belonging to the college of Brera, of 80,000, in Milan; the libraries at Brescia, Venice, Grätz, and Mantua, and of the Theresianum in Vienna, of about 70,000 volumes each; and the Pesth University Library of about 100,000. The number of museums and cabinets of science and the fine arts, both public and private, is very considerable; they abound more particularly in Vienna, Milan, Venice, Prague, and Pesth. Of the 23 botanical gardens in Austria, 10 are in Vienna or its vicinity; and that at Padua, which was established in 1533, is said to be the oldest. The 9 Austrian observatories are those of Vienna, Milan, Padua, Grätz, Karlsburg, Erlau, Kremsmünster, Ofen, and Prague.

History.—In the times immediately succeeding the Christian æra, the Romans advanced from the Alps and invaded that part of the Archduchy of Austria which is at present called the 'Province below the Ens,' in which Vienna itself is situated. But they found here no homogeneous state nor united people to encounter; the land was occupied as separate hunting grounds, the resort of semi-barbarians, among whom the Pannonii, Boii, and Norici occur most frequently in the Roman annals. Over such a race triumph was easy; a state of dependence quickly succeeded to a condition of savage freedom; and the establishment of military colonies on the Danube, as part of the Roman line of defence against the barbarous hordes of the north, was succeeded by the incorporation of this tract of country with the province of Pannonia. Noricum thenceforward supplied the Roman legions with fierce and hardy soldiers. In the fourth century, when the north poured down its hordes upon the south, the middle regions of the Danube fell a victim to the spoilers who successively crossed them in quest of more alluring prey. From thence to the time of Charlemagne it was subjected to a succession of ruthless attacks; but that conqueror reduced it under his dominion. It was a dependency of Bavaria from 944 to 1269, when Ottaker, king of Bohemia, seized it; but in his struggle to maintain his conquest against Rudolph of Habsburg, emperor of Germany, the latter expelled him from the Austrian territories in 1276, and seven years afterwards invested his son Albert with the sovereignty, as an appendage to the Habsburg possessions. His posterity, in the course of time, extended their dominion over several other states, which they acquired either by marriage, purchase, or inheritance: among these we may mention the Margravinate of Burgau, in Styria, acquired in 1283; Carinthia, in 1331; the Tyrol, in 1363; Trieste in 1380; and the Landgraviate of the Breisgau, in Swabia, in 1367. From the middle of the fifteenth century, or more accurately speaking, from the year 1437, when Albert II. was raised to the dignity of King of the Romans and Emperor of Germany, this high office was uninterruptedly enjoyed by the Habsburg line of Austrian sovereigns. At one time the Austrian emperor's dominions, under the House of Habsburg, included Alsace and the Netherlands, and at another time (under Charles V.) Spain and the Indies; but both of these possessions afterwards fell off. Ferdinand I., by marriage with the daughter of Lewis II., king of Hungary, in 1526, became possessed of her extensive inheritance, which was composed of Hungary, Bohemia, Moravia, Silesia, and Lusatia. The ancient possessions of the house of Habsburg in Switzerland had been gradually wrested from it, the signal being given by the confederation formed by Uri, Schwytz, and Unterwalden, in November 1307, and the Thirty Years' War stripped it in the middle of the seventeenth century of Alsace and Lusatia. Austria, however, received ample compensation under the treaty of Utrecht in 1713, which united the Netherlands and certain states in Italy to its dominions. Under Maria Theresa, the Austrian empire lost Silesia, and then Parma; but gained Galizia and Lodomiria, and the Buckowine. No additions were made to the Austrian territory by

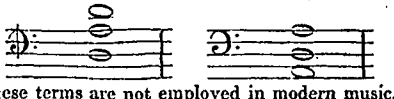
either of her successors, Joseph II. or Leopold II. Francis II., whose accession took place in 1792, lost the Netherlands and Lombardy in 1797, in exchange for which the treaty of Campo Formio gave him the Venetian territories. The subsequent treaty of Luneville in 1801 did not much affect his dominions, but the peace of Pressburg in 1805 was purchased by the sacrifice of his possessions in Italy, Swabia, and the Tyrol, for which the acquisition of Salzburg was but a poor indemnity; and the treaty of Vienna, four years afterwards, wrested from him in addition, not only a considerable portion of Galizia, which fell to Russia, but Carniola, Istria, Salzburg, the lands called the 'Innviertel,' Venice, and other southern provinces. Full restitution was, however, made to him by the provisions of the treaties of Paris in 1814, and of Vienna in the following year. The Breisgau, we should add, became the property of Baden in 1810. Francis declared himself hereditary Emperor of Austria in 1804, and laid down the dignity of Emperor of Germany and King of the Romans two years afterwards. He died in 1835, and was succeeded by his eldest son, Ferdinand I. By virtue of his German possessions, the emperor is a member of the German confederation, entitled to four out of the seventy votes in its full diets, and his representative has the prerogative of presiding over their deliberations. As such member, it is his duty to keep one in every thousand of the population of his German dominions in a perfect state of equipment and in marching order, and to supply, in case of public emergency, a first contingent of 94,882 men.

(Von Lichtenstern, *Outlines of the Statistics of the Austrian Empire*, and *Manual of the latest Geography of the Austrian Empire;* Hietzinger's, Demian's, and Rohrer's *Statistics of Austria;* Gräffer's *Manual;* Hassel's *Austria;* Malchus's *States of Europe.*)

AUSTRIA, ARCHDUCHY. [ENS, PROVINCES OF.]

AUTHENTIC, in ancient ecclesiastical music, was a species of harmony in which the interval of a 5th was below that of a 4th; in contradistinction to the *Plagal*, where the 4th was below the 5th, as thus illustrated :—

Authentic. *Plagal.*



These terms are not employed in modern music.

AUTHENTICA. [NOVELLAE.]

AUTO-DA-FE' ('Act of Faith') is the Portuguese expression for the public and solemn reading of extracts from the trials promoted by the Inquisition, and of the sentences pronounced by the judges of that tribunal. At this form or act the offenders themselves were present, or, in case of their death or unavoidable absence, their bones or effigies were substituted for them: there were also present the civil authorities and corporate bodies of the town where it was performed, particularly the criminal judge, into whose hands the offenders were delivered, that he might inflict upon them the punishment prescribed by the laws; the fire, gallows, and executioners, having been previously prepared by order of the inquisitors. When this execution was performed with the highest pomp and ceremony, it was called in Spanish *auto público general*, 'general and public act.' There was also an *auto particular*, private act, at which the inquisitors and criminal judge only were present; the *autillo*, held in the halls of the Inquisition, in the presence of such persons as the inquisitors invited, and of the ministers of the tribunals alone; and, finally, the *auto singular*, held in the church, or in the public square, against a single individual.

Spain, Portugal, and the Spanish and Portuguese colonies in Mexico and at Goa in the East Indies, were the principal scenes of these exhibitions. According to Llorenti, the last took place in Dec. 1815, at Mexico, but the tribunal had been formally abolished by the Cortes in 1813.

(Olmo, *Relacion del Auto General de Fé celebrado en Madrid en* 1680; Llorente, *Historia Critica de la Inquisicion.*)

AU'TOGRAPH, from the Greek *αὐτόγραφον*, 'written with one's own hand,' an original manuscript; the handwriting of any person.

Collections of autographs, as the handwritings of individual persons, had their origin about the middle of the sixteenth century in Germany, where the gentry carried about with them *white-paper* books, to obtain and preserve in them the signatures of persons of eminence, or new acquaintance; whence such a book received most generally the name of 'Album,' though it was sometimes called 'Hortus,' or 'Thesaurus Amicorum.' Several are preserved in the British Museum, and some are adorned with splendid illuminations. There is one preserved in the library which belonged to George III., evidently made for King Charles I., with whose and his queen's mottoes and signatures it opens. '1626. Si vis omnia subjicere, subjice te rationi, Carolus, R.' 'En Dieu est mon espérance, Henriette Marie, R.'

The earliest royal autograph of England, now known, is the small figure of a cross, made by the hand of King William Rufus, in the centre of a charter, by which the manor of Lambeth was granted to the church of Rochester. The next royal autograph known is 'Le Roy R.E.,' the signature of King Richard II., affixed to two documents, one preserved in the archives of the Tower of London, the other relating to the surrender of Brest, among the Cottonian manuscripts. From his time the royal signatures of England continue in uninterrupted succession.

In later times collections of autographs have been formed far more extensive than those which the Germans made in the sixteenth and seventeenth centuries. There are several of such collections in the British Museum.

The first English work in which a series of fac-similes of autographs appeared was Sir John Fenn's 'Original Letters from the Archives of the Paston Family,' published in 1787; followed by 'British Autography,' a collection of fac-

similes of the handwriting of royal and illustrious personages, with their authentic portraits, by John Thane, 3 vols. 4to, 1789-1791. Another work, more extensive and more correct, is the 'Autographs of Royal, Noble, Learned, and Remarkable Personages, conspicuous in English History, from the Reign of Richard II. to that of Charles II.,' by John Gough Nichols, fol. Lond. 1829.

AUTO'MATON, derived from two Greek words, meaning *self-moved*, is a name generally applied to all machines which are so constructed as to imitate any actions of men or animals.

The pigeon of Archytas, the clock of Charlemagne, the automaton made by Albertus Magnus, to open his door when any one knocked, the speaking head of Roger Bacon, and the fly of Regiomontanus, are early examples of such machinery, respecting which, however, we have too little information to afford a correct judgment concerning them. In more recent times we read a marvellous account of an automaton group constructed by M. Camus for the amusement of Louis XIV., consisting of a carriage and horses, with a lady who alighted to present a petition, and also, in the 'Memoirs of the Academy of Sciences' for 1729, of a set of actors representing a pantomime in five acts. Less marvellous, though highly ingenious, was the automaton flute-player of Vaucanson, exhibited at Paris in 1738. The same ingenious person subsequently produced a figure which played the flageolet and tambourine, and a duck, which not only imitated the motions and sounds of a real duck, but swallowed food, and digested it by means of chemical substances in the stomach. More recently M. Maelzel exhibited at Vienna an automaton trumpeter; and automata have been made to write, to draw, and to play on the piano-forte. The automaton chess-player is now known to have been worked by a person concealed inside the figure and its table or pedestal, which supposition, however, does not deprive its maker of the credit of great ingenuity in the mechanism by which the hands were set in motion. As recently as 1846, a speaking and singing automaton called the Euphonia, was exhibited in London, by M. Faber, of Vienna.

In looking at the preceding instances, our readers may regret that so much power of invention has been wasted upon trifles. What is Vaucanson compared with Arkwright in the estimation of posterity?

AUTONO'MEA (Risso), in zoology, a genus of long-tailed decapod crustaceans, founded on *Autonomea Olivii*, which is a little more than an inch in length, and bears great resemblance in form to *Nika* and *Alpheus*. *Autonomea* lives solitary in sea-weed, &c., and the female produces red eggs, which she carries with her about the middle of summer. It is found in the Adriatic Sea, and sometimes, but rarely, in the neighbourhood of Nice. [NIKA.]

AUTUN, a city in France, in the department of the Saône-et-Loire, on the Arroux, a tributary of the Loire, is situated 179 miles S.E. of Paris, in 46° 46′ 51″ N. lat., 4° 17′ 47″ E. long.; population 11,200. Autun is one of the most ancient cities in France, having existed before the Roman conquest under Julius Cæsar. It was known under the name of Bibracte, and belonged to the Ædui, a powerful people in Gaul. It was made a Roman colony under Augustus, and called Augustodunum, of which the modern name Autun is a corruption. In the third century it suffered much from the ravages of war. Tetricus, an aspirant to sovereign power, besieged Autun, and took it in spite of the vigorous resistance of the inhabitants. From the effects of this severe blow, the town was raised by the patronage of the emperor Constantius Chlorus and his son Constantine the Great, in gratitude to whom it took the name of Flavia, from their surname Flavius. Upon the downfall of the Roman power, the town was burnt by Attila, king of the Huns, and afterwards came successively into the hands of the Burgundians and the Franks. In 731 the Saracens burnt Autun, which has never recovered its former eminence.

The ancient town stood on the left bank of the Arroux, and at the foot of three hills, called respectively, Mont-Dru, on which druidical assemblies are said to have been held; Mont-Jeu, from a temple of Jupiter upon it; and Mont-Cenis. From the last-named of these eminences, which has, like the Mont-Cenis of the Alps, a lake on its summit, the town is well supplied with water in every part. The remains of antiquity are numerous. The circuit of the ancient walls may still be traced. They are of considerable extent, built with great solidity, of stones so well fitted and so nicely joined as to give to the whole the appearance of solid rock. These walls were flanked with a great number of towers, and are supposed by some to be of earlier date than the Roman conquest. Of the ancient gates, supposed to have been four in number, two remain, the Porta Senonica, now called Porte d'Arroux, from the river Arroux, close to which it stands; and the Porta Lingonensis, now Porte Saint André, close to the church of St. André. The Porte d'Arroux is a kind of triumphal arch built of stones, without cement, 55 feet high, and 62 broad, having two greater archways for carriages, and two smaller ones for foot passengers. Above these is an entablature, and then a kind of open gallery, with seven arches yet remaining of ten which formerly existed. The Porte St. André is almost as well preserved, and very similar to the other. Two main streets ran through the town, one from the Porta Senonica to the Roman gate, and the other from the Porta Lingonensis to the gate of the Druids. At the intersection of these was the Martiale Forum, which retains some trace of its ancient designation in the name *Marchau*. A short distance south-east of the town is a singular monument, called Pierre de Couard. It is a pyramid surmounted by a spherical mass, which measures 72 feet by 59 at the base and is 65½ feet high. It consists of a solid mass of unhewn stones, joined by a very hard whitish cement. Some suppose it to be the monument of some illustrious Æduan. It is in the midst of a field in which many funeral urns have been found. On the

eastern side of the ancient town are the ruins of a theatre, and traces of the seats and arena of an amphitheatre. Not far from these, but outside the ancient walls, is the site of the *naumachia*, a large basin or hollow used for exhibiting the representation of a naval engagement, with the remains of an aqueduct for conveying the water to it. There are also the ruins of some temples, both in this part and within the modern town. A Roman bridge over the Tarenai (the Roman Taranis), which runs into the Arroux near the Porte d'Arroux, still exists. This river runs through the ancient Campus Martius of the Æduans, where they held their assemblies. The name of Chaumar or Chamar is still given to the spot. Many remains of antiquity, paintings, statues, medals, &c., have been dug up.

The modern town is built on the slope of a hill, and occupies only part of the site of the ancient city: from the river a good prospect of it can be obtained, as the houses rise in the form of an amphitheatre. It is divided into three parts, the highest of which, called Le Château, is considered to occupy the site of the ancient capital. The gothic cathedral dedicated to St. Lazare is much admired for the boldness of its architecture, for its lofty spire, and for its carvings and sculptured decorations. It was founded in the eleventh century. In front of it is a square adorned with a handsome fountain. The second quarter, called La Ville, 'the city,' contains the principal square. It is surrounded by good houses, and being planted with trees furnishes the citizens with a promenade close at hand. The third quarter, the Marchau, already noticed, has low ill-built houses and narrow streets. There are two bridges over the Arroux. Before the revolution Autun possessed 12 religious houses, and with its suburbs was divided into 8 parishes. The collegiate church of Notre Dame, which was founded by the chancellor Rollin and his wife, in 1444, possesses a painting on wood by Peter of Bruges, which is much admired by connoisseurs. The abbey of St. Martin, founded by Brunehaut, queen of Austrasia, that of St. Jean le Grand, and that of St. Andoche, were of considerable magnificence. Two hospitals and two institutions for the instruction of ecclesiastics, are still among the establishments of Autun. It remains to mention the bishop's palace, which suffered greatly at the revolution, but has been since restored; and the hotel-de-ville, or 'town-house,' recently erected.

There are here three libraries; a collection of pictures, statues, and medals; an agricultural society; baths; a theatre; a tribunal of commerce, and a tribunal of first instance. The trade of the town consists in horses, cattle, wood, and hemp. Serge, cotton-velvet, cloth for regimentals, hosiery and leather, are among its manufactures. To the east of the town are several mills. A fabric called *tapisserie de marchau*, fitted for coverlets of beds, horse-cloths, and other purposes, is made. The district round the city contains green porphyry and grey granite. There are also iron and lead mines near the town. The bishops of Autun held high rank in the church. They had jurisdiction over part of the city of Autun. At present the diocese comprehends the department of Saône-et-Loire. Talleyrand was bishop of this see when the revolution broke out.

AUVERGNE, a province of Central France which now forms the departments of CANTAL and PUY-DE-DÔME, and the arrondissement of Brioude in Haute-Loire. [LOIRE, HAUTE.] It is almost entirely covered with high mountains, which contain many dome-shaped summits, extinct craters, and other evidences of former volcanic action. The greater part of the province is not adapted to cultivation. Little corn is grown, but chestnuts are very abundant, and pasturage is excellent; cattle are very numerous, and a great deal of cheese is made. The province was formerly divided into Haute-Auvergne, Basse-Auvergne, and the Pays-de-Combrailles, the chief towns of which respectively were St.-Flour, Clermont, and Evaux. In Basse-Auvergne lies the only fertile district in the province. It is called the Limagne, and extends along both banks of the Allier: it presents a succession of hill and dale, towns, villages, and hamlets, gardens, orchards, vineyards, and cultivated fields. The numerous streams by which the district is intersected are applied by the industrious inhabitants to increase by irrigation the natural fertility of the soil.

Auvergne contains several mineral and hot springs, coals, iron, and antimony mines, and numerous industrial establishments, the most important of which are its paper-manufactories. The chief rivers of Auvergne are the Allier, the Dordogne, the Sioule, and the Alaignon.

(*Dictionnaire de la France*, Paris, 1845.

AUVERGNE, GEOLOGY OF. A considerable portion of Central France is formed of gneiss, mica-slate, and other of the inferior stratified rocks, associated with granite. The beds of gneiss, mica-slate, and others of the same class, are sometimes highly inclined and contorted, as may be observed near Menat, showing that they have been acted on by some powerful force. As a whole, these rocks constitute a kind of elevated plain, having a mean height, according to Ramond, of about 3200 English feet, and rising, at Pierre-sur-Haute, to an elevation of 5410 feet above the level of the sea.

About these rocks we find others that must have been formed at periods separated from each other by considerable intervals of time, since many rocks, necessary to complete the series of European deposits, are wanting between them. Finally, numerous volcanoes, now extinct, poured forth an abundance of igneous products, which, though comparatively recent, have covered the remains of animals that have disappeared from the surface of the earth. The rocks which in the order of relative antiquity succeed the inferior stratified and granitic rocks above noticed are referred, from the vegetable remains detected in them, and from their general mineralogical character, to the same age as the coal measures of Great Britain.

A long interval of time appears to have elapsed, judging at least from the rocks now found in Auvergne, before any other deposits were formed in this part of the European area. The most

notable are the supercretaceous lacustrine deposits, formed apparently in large lakes, and consisting of three portions:—1, An inferior accumulation of sandstones and red and variegated marls; the former being the lowest. In these are discovered the remains of a quadruped, of a few small reptiles, and the impressions of dicotyledonous plants. 2, A central accumulation of marls, limestones, and gypsum, in which are found the exuviæ of the palæotherium, anoplotherium, anthracotherium, a small pachydermatous creature, the crocodile, tortoise, some small reptiles, and of birds analogous to the genus *Anas*. To which may be added the eggs of birds, sometimes well preserved. 3, A superior deposit of limestone and marl, containing an abundance of the Indusin tubulata, Cypris faba, Gyrogonites, Potamides, Helix, &c. The remains of numerous vertebrated animals are discovered in it; among which there are three species of rhinoceros, two ruminants analogous to the genus *Moschus*, animals of the genera *Canis*, *Felis*, &c. The nature of these various beds seems to indicate that they were deposited very slowly in deep lakes.

Subsequently to the production of the greater proportion of these lacustrine rocks, the surface of the country was broken up, and volcanic products ejected in great abundance. The volcanic products are extremely various; some appearing like the older rocks melted by heat beneath, and thrown up, while others seem to have been derived from the matter deeper seated. The two groups of the Cantal and the Monts-d'Or are remarkable for a certain general resemblance to each other, consisting principally of trachytes and basalt; the former having been, as a whole, first thrown up, dislocating the lacustrine rocks where they opposed their ejection, as may be seen in the Cantal between Aurillac and Murat, particularly from the village of St. Roque to Polminhac. Large fragments of lacustrine limestone (from 40 to 50 feet in diameter) are included among the trachytic conglomerate near Giou. The trachytic rocks of the Cantal have not been produced at a single eruption, but appear to have been formed at distinct intervals of time, judging at least from the repetition of the beds. The Plomb-de-Cantal, which is the highest part of the group, attaining an elevation of 6118 English feet above the sea, is formed of a small patch of basalt. The Monts-d'Or constitute another somewhat circular system of volcanic mountains, about four leagues in diameter, and rising at the Puy-de-Sancy to the height of 6246 English feet above the sea—the most elevated point of Central France. The trachytic rocks are here also the most ancient volcanic products, and occupy the central and largest part of this group of mountains, the basalts skirting the general mass.

The great proportion of the more modern volcanoes of Auvergne occur in the vicinity of, or at moderate distances from, the town of Clermont. Though they are, for the most part, distinguished by craters in different states of preservation, by lava currents, and by accumulations of cinders, ashes, and ejected portions of pre-existing rocks, there are some remarkable for the absence of craters and lava currents, and which seem due to a modification of the more usual volcanic action. Of these, one of the most remarkable is the Puy-de-Dôme, formed of a lightish grey rock, sometimes containing fragments of granite, and of the porphyritic trachyte. Another is the Pariou, which has a truncated cone, and a crater about 930 yards in circumference. A third is the Puy-de-Laschamps, which rises to a height of 4170 feet above the sea-level. The remains of animals, so situated that they must have been entombed in the places where they now occur when the Auvergne volcanoes were in activity, have been found, and from the kind of remains discovered volcanic eruptions are supposed to have occurred up to a late part of the supracretaceous period. There are at the Montagne de Perrier (N.W. from Issoire), and in the neighbouring country, about thirty beds above the lacustrine limestone, which contain a large variety of fossil remains. Many of the lava currents seem to have choked up valleys, and to have had channels cut in them at a later period by the action of running water.

(Croizet, *Bulletin de la Société Géologique de France*, 1833; Messrs. Dufrénoy and Elie de Beaumont, *Sur les Groupes de Cantal*, &c., in the *Annales des Mines*, 1833; Messrs. Croizet and Jobert, *Recherches sur les Ossemens Fossiles du Puy-de-Dôme*.)

AUXERRE, capital of the department of Yonne, in France, is situated on the left bank of the Yonne, which here begins to be navigable, at a distance of 104 miles S.E. from Paris by the road through Melun, in 47° 47′ 54″ N. lat., 3° 34′ E. long.; population 12,236. The city stands on the slope of a hill, in a country fruitful in wine; the air is considered very pure. It is a fine old place, with many well-built houses, and some wide streets. There are two squares. The cathedral, dedicated to St. Stephen, stands high, and is accounted one of the finest in France. The church of St. Germain is celebrated for its crypts and holy relics. The other remarkable buildings are the churches of St. Eusebius and St. Peter, the buildings of the ancient abbey of St. Germain, now used as a hospital, and the bishop's palace, now the residence of the prefect. Woollen cloths, serges, druggets, stockings, cotton-yarn, bricks, and pottery, are made in Auxerre. The chief trade of the town is in wine, of which about 4,000,000 gallons are sent by water to Paris and into Normandy. Wood and charcoal are also considerable articles of trade at Auxerre. There are in this town a library which contains 25,000 volumes and several ancient manuscripts, a museum of natural history, and a collection of philosophical instruments, an agricultural society, a college, a theatre, and baths. The bishopric of Auxerre dates from the third century, its first bishop, St. Peregrin, having suffered martyrdom in the reign of Aurelian, in 263. It now forms part of the arch-see of Sens and Auxerre. Auxerre is mentioned in the later periods of the Roman dominion in Gaul under the name of Autissiodurum. It was in the country of the Senones. After the fall of the Western Empire the city came under the dominion of the

Franks. Under the Carlovingian dynasty, the county of Auxerre, which was then co-extensive with the bishopric, was granted by the kings of France to the bishops of Auxerre; and by these the city of Auxerre was bestowed on the counts of Nevers to hold on condition of fealty and homage to the see. It was subsequently united to the crown of France in 1370. The bishop retained, till of late years, the only relic of his feudal superiority. When he made his solemn entry into his see, the king's *procureur*, as first vassal, assisted in carrying him to the throne.

AUXILIARY VERBS are distinguished from other verbs in the following way. Verbs express the notions of *action:* auxiliary verbs, though they originally expressed notions of action, only express *relations of action* when considered as auxiliary verbs, and are accordingly employed, in connection with other verbs, to give to them certain relations called by grammarians tense, mood, and voice. The modern languages of Europe, and our own more particularly, abound in such forms; but they are likewise found in the languages of Greece and Rome, sometimes altogether undisguised, more commonly so completely blended with the main verb as to pass for a mere arbitrary suffix, which the grammarian does not attempt to explain. It is in the very nature of a particle which plays a secondary part that it should not occupy too large a share of the attention; and thus those verbs which in course of time are used as auxiliaries, though originally as significant as any other verbs, lose something of their distinctive character; so that, if the fuller form happen to disappear from a language, the corrupted auxiliary presents anomalies which it is not easy for the philologist to explain. This difficulty is increased by the circumstance that verbs used as auxiliaries generally throw off much of the distinctive meaning which they originally possessed.

Among the auxiliaries, the most important is the substantive verb signifying *to be;* and, as might be expected, no word has passed through more variations of form. Grimm and other grammarians, indeed, have laid down that there are three or even more distinct roots combined in the conjugation of this verb. But when allowance is made for the known changes that take place in the letters of the alphabet, there will appear, we think, some reason for supposing that all the varying forms of this verb are derived from a common origin.

AUXONNE, a fortified town in the department of Côté-d'-Or, in France, is situated on the left bank of the Saône, 201 miles S.E. of Paris, and 18 S.E. of Dijon; population 7251. The streets are straight, and the fortifications serve as promenades. There is a fine bridge over the Saône; and at the end of the bridge, on the side next the town, is a causeway 2400 paces in length, having 23 arches for allowing passage to the water in case of inundation. There are barracks, an arsenal, a school of artillery, a cannon foundry, and powder mills; also a library and a college. The trade of Auxonne is chiefly in wine, brandy, grain, melons, and wood; as well as in cloth and serges, which are sent to Lyon. In return, groceries, silk, and the wines of Mâcon, are received. There are in the neighbourhood quarries of marble and of various kinds of stone. Turquoises and fossil corals are found in these quarries.

AUZOUT, ADRIEN, was a native of Rouen, in France, but the time of his birth is not known. He had established his reputation as an astronomer in 1666, and was one of the original members of the Academy of Sciences, founded in that year. He died in 1691, or according to some, in 1693, at Rome. Auzout is celebrated as having, in conjunction with Picard, applied the telescope to the mural quadrant. (Montucla, ii. 569.) He also made an independent invention and application to the telescope of the movable wire micrometer, on which he published a treatise in 1667. Picard assisted him in perfecting this instrument. Auzout published observations and calculations of the comet of 1664. He also made a laborious comparison of the weights and measures of France and other countries, which is to be found, together with his own account of his micrometer, in the collection published by the Academy of Sciences, entitled 'Divers Ouvrages de Mathématique et de Physique,' Paris, 1693. Among other results of the micrometer, he observed and measured the diurnal variation of the moon's diameter, first explained by Kepler. He was a good optician and maker of telescopes; and, when it is added that he never enjoyed even tolerable health, he must be considered as having done not a little for astronomy.

AVA. [BIRMA.]

AVAL. [BAHREIN ISLAND.]

AVALANCHES are the most dangerous and terrible phenomena to which the valleys embosomed between high snow-topped mountain-ranges are exposed. They are especially frequent in the Alps, owing to the steepness of their declivities, but they are also known in other mountain regions, as in the Pyrenees and in Norway. They originate in the higher region of the mountains, when the accumulation of snow becomes so great that the inclined plane on which the mass rests cannot any longer support it. It is then pushed down the declivity by its own weight, and precipitated into the subjacent valley, where it often destroys forests and villages, buries men and cattle, and sometimes fills up the rivers and stops their course.

Four different kinds of avalanches may be distinguished: drift avalanches; rolling avalanches; sliding avalanches; and glacier or ice avalanches; of which the first commonly take place in the early part of the winter, the second and third at the end of winter and in spring, and the last only in summer.

The drift or loose snow avalanches take place when heavy snow has fallen in the upper region of the mountains during a calm, and this accumulated mass, before it acquires consistency, is put in motion by a strong wind.

The rolling avalanches take place when, after a thaw, the snow becomes clammy, and the single particles or flocks stick to one another, so as to unite into large hard pieces which commonly take the form of balls. Such a ball, moved by its own

weight, begins to descend the inclined plane, and all the snow it meets in its course downwards sticks firmly to it. This snow-mass, increasing rapidly in its progress, and descending with great velocity, covers, destroys, or carries away everything that opposes its course — trees, forests, houses, and rocks. This is the most destructive of the avalanches, and causes great loss of life and property.

The sliding avalanches originate on the lower and less steep declivities, when, after a long thaw in spring, those layers of the snowy covering which are nearest the ground are dissolved into water, and thus the bond is loosened which unites the mass to its base. The whole snowy covering of a declivity then begins to move slowly down the slippery slope, and to carry before it everything which is too weak to withstand its pressure.

The ice or glacier avalanches are nothing but pieces of ice which formerly constituted a part of a glacier, but, loosened by the summer heat, are detached from the principal mass, and precipitated down with a noise like thunder. They are commonly broken into small pieces by the rocks which they meet in their progress.

Avalanches is the common French expression for these natural phenomena; but in those districts of France which are situated between the ranges of the Alps they have other names, as avalanges, lavanches, lavanges, lavanzes, lids, lits, lydts. In Italian they are called lavina and lavine; and in the Rhetic dialect of the Grisons, lavina and lavigna. Among the German inhabitants of Switzerland they are called lauinen, lauwinen, lauwen, leuen, lowen, and lähnen. In the Pyrenees they are sometimes called congeres; and in Norway, snee-shred and snee-fond.

(Kasthofer's *Observations on a Journey through the Alps, &c.*)

AVALLON. [YONNE.]

AVANTURINE, a variety of quartz, remarkable for the brilliancy with which it reflects light, the effect being in general produced by fine points of mica imbedded within the crystalline mass. From this circumstance it is sometimes employed in jewellery, but it is of little value.

AVANZI, JA'COPO DI PAOLO D', a celebrated old Italian painter of the fourteenth century. He lived at Bologna, but whether he was a Venetian or a Bolognese is doubtful. Franco Bolognese and Vitale dalle Madonne are both said to have been his masters, but without the slightest certainty. Jacopo was himself sometimes called Dalle Madonne, because he, as well as Vitale, painted at one time almost exclusively Madonnas.

Most of Jacopo's works have perished, but some remain. The frescoes of the chapel of San Felice, in the church of Sant' Antonio at Padua, were painted by Jacopo in 1376. He painted also, in partnership with Simone da Bologna, many frescoes in the old church of the Madonna di Mezzaratta; besides which he painted two triumphs in a public hall at Verona, and some works in company with Aldighieri da Zevio in the chapel of San Giorgio in the church of Sant' Antonio at Padua. Jacopo died probably in the early part of the fifteenth century. There are two pictures attributed to him in the gallery of Bologna.

(Vasari, *Vite de' Pittori*, &c.; Malvasia, *Felsina Pittrice*; Lanzi, *Storia Pittorica*, &c.; Giordani, *Pinacoteca di Bologna.*)

AVATA'RA is a Sanskrit word, which properly signifies 'a descent' or 'the act of descending,' as from a boat or other vehicle; but is particularly applied to the incarnations of the Hindu deities, or their appearance, in some manifest shape, upon earth. Our information regarding the successive development of religious and mythological ideas among the Hindus is yet very imperfect. It appears, however, that the doctrine of the Avatâras belongs to a comparatively recent period. Those portions of the 'Vedas,' or sacred writings of the Hindus, to which, from the style and structure of their language, the highest antiquity may with safety be attributed, inculcate the worship of elements and deified natural powers, but do not allude to those apparently more spiritualized deities that require to be invested with a bodily frame to operate in the material world.

The number of the Avatâras mentioned in the 'Puranas,' or legendary poems of the Hindus, is very great. Those of Vishnu alone, who is distinguished by the character of 'Preserver' in the Trimûrti, or triad of the principal Hindu deities, are stated to be endless. They are variously enumerated; but all accounts seem to agree that there are ten which are particularly enumerated as the most conspicuous.

The mythology of the Hindus abounds in Avatâras of the inferior deities. We do not remember ever to have heard of any of Brahmâ or Siva, the two supreme deities who, with Vishnu, constitute the Trimûrti.

(MANU; VISHNU; BUDDHA; Bohlen, *Das Alte Indien*, vol. i. pp. 213-234; Vans Kennedy, *Researches into the Nature and Affinity of Ancient and Hindu Mythology*, 1831, 4to.)

A'VE MARI'A, the two first words of a short Latin prayer or invocation to the Virgin Mary, which is frequently said by Roman Catholics in their orisons. The first part of the prayer is merely a repetition of the salutation of the angel to Mary on her conception. (Luke i. 28.) The second part is an entreaty to the Virgin 'to pray for the salvation of sinners now and at the time of their death.' The recital of the Ave Maria generally follows that of the 'Pater Noster,' or Lord's Prayer.

AVEBURY, or ABURY, the name of a village and parish in Wiltshire, is remarkable as the site of what appears to have been one of the largest Celtic or Druidical temples in Europe. The origin of the name is uncertain: the last part, *bury*, a borough, or fortified place, appears to be a Saxon word; and, if so, Avebury is not the original name of the place.

Before Stukeley's publication ('Abury, a Temple of the British Druids,' fol. 1743), very little was known of Avebury. Neither Camden, Leland, nor any other topographer or antiquary, seems to have published any account of it. Aubrey, a native of Wiltshire, and an ardent lover

of antiquarian subjects, had visited Avebury in 1648. In the year 1663, he was commanded by King Charles II. to write some account of it, the king being then on his way to Bath, and having examined the whole in company with Aubrey and Dr. Charlton, who afterwards published 'An Account of Stonehenge.' 'These antiquities,' says Aubrey in his MS. treatise, 'are so exceedingly old that no books do reach them. I can affirm that I have brought this temple from utter darkness into a thin mist, and have gone farther in this essay than any before me.' His account, however, is imperfect, and was never completed.

The immediate site chosen for this grand circular temple, as it appears to have been, is a flat area of ground, having an irregular range of gentle hills to the east, running north and south, a rising tract of land to the south, a level country of some miles in extent to the north, some undulating and rather high hills to the west. A small brook called the Kennet, a tributary to the Thames, has its source a short distance to the north. The geological characteristics of the district probably occasioned its being chosen for the erection of a temple of this description. On the surface of the ground, both in the neighbouring valleys and on the high lands, are numerous large masses of stone. There are still numerous detached oolitic sandstones of various sizes, known by the name of the Grey Wethers, lying near the Bath road, in the neighbourhood of Avebury. From amongst these stones scattered about the neighbourhood the makers of the temple selected such as seemed best adapted to their rude design.

No less than 650 blocks seem to have been brought together and placed in circles and rows. These stones were of various dimensions, measuring from five to twenty feet in height above the ground, and from three to twelve feet in width and thickness. One hundred were raised on end, and placed in a circular form, within a flat and nearly circular area of about 1400 feet in diameter; and these stones were bounded by a deep ditch and lofty bank, which inclosed the whole work, except at two places, where openings were left for entrances. The bank or mound at present is broken down in four places, but there seem to have been originally only two openings corresponding to the two great avenues which formed the approaches. The inner slope of the bank measured 80 feet, and its whole extent, or circumference, at the top, was, according to Sir Richard Colt Hoare, 4442 feet: the area within the bank or mound is somewhat more than thirty-five acres. There were two other small circles within the periphery of the great circle. One was a double circle of upright stones, with a single stone raised near the centre, and consisted of forty-three stones. Another circle, of forty-five stones, some of which are still standing and of immense size, was placed a little north of the former, and consisted also of two concentric circles, inclosing a group of three tall stones. These were the component parts and general design and arrangement of the triple temple, as it may be called; but there were two connecting parts which gave a peculiarity to this work, distinguishing it from all other Celtic temples. These were avenues of approach, consisting of double rows or lines of upright stones, which branched off from the central work, each to the extent of more than a mile. One of them branched off from the outer circle to the south, turning, near its extremity, to the south-east, where it terminated in two circular or rather elliptical ranges of upright stones. According to Stukeley, this avenue was formed by two hundred stones, being finished at its eastern extremity with fifty-eight stones, which were arranged in a double circle on an eminence called Overton Hill, or the Hakpen Hill, and measured about 146 feet in diameter from outside to outside. The width of the avenue varied from fifty-six to thirty-five feet between the stones, which were, on an average, eighty-six feet apart from each other in their linear direction. The western avenue extended about one mile and a half, and consisted of 203 stones; its extremity ended in a point, or with a single stone. These avenues or grand approaches to the temple were not arranged in straight lines, but in flowing or curved lines.

Besides the works already described, there are others of very remote antiquity in the immediate vicinity, which probably belonged to the same age and people. These are the numerous barrows, or tumuli, which abound on the neighbouring downs, with the cromlechs and the track-ways. Among the first may be named that large barrow called Silbury Hill. This vast artificial conical mound of earth is regarded as the largest tumulus in Europe, though considerably smaller than the mound in Asia Minor, spoken of by Herodotus, i. 93. [ALYATTES.] It is a work which must have cost immense labour. In Sir Richard Hoare's 'Ancient Wiltshire,' we are furnished with the survey and calculations of Mr. Edward Crocker, a scientific practical surveyor. 'The circumference of the hill, as near the base as possible, measures 2027 feet, the diameter, at top, 120 feet, the sloping height 316 feet, and the perpendicular height 170 feet; but that part of our measurement which will excite the most surprise is, that this artificial hill covers the space of five acres and thirty-four perches of land.' Many other barrows of various dimensions and forms are seen on the downs.

About one mile north of Avebury are the remains of a large cromlech, with the stones fallen, which Stukeley calls a kist-vaen: and at Clatford-bottom, about three miles east of Avebury, is another cromlech, consisting of two standing stones, and one larger raised on them. South of Avebury, about two miles, is a large and long tumulus, which was formerly surrounded by upright stones, and had a kist-vaen, or a cromlech, at one end. At Winterbourne-Basset, north of Avebury, were two circles of standing stones, and a single stone standing detached from the circle. At Rockley, and on Temple Downs, east of Avebury, were other cromlechs, and works of a similar kind to those already referred to. There were numerous other earth-works and standing stones in different parts of the downs, all tending to show that this district was, at a remote age, the chief

seat of the religious order of the ancient Britons.

The space inclosed by the great earthern bank of Avebury now contains a village with its fields, hedge-rows, and buildings, so that it is difficult at present to make out the original design. When Aubrey surveyed the place in 1648, there were many more stones than at the time Dr. Stukeley commenced his examination in 1720; and when Sir Richard Hoare and his surveyor made their plan and drawings in 1812 the stones were still further diminished in number. Even since the latter date, others of the upright stones have been broken to pieces, and it is feared that the remainder will speedily be destroyed and converted into materials for stone fences or roads. Aubrey describes 63 stones as remaining within the entrenched inclosure in his time, which were reduced to 29 when Stukeley made his plan. Only 17 of these remained in 1812, as mentioned by Sir Richard Hoare. In the western avenue there are two upright stones left, and about 16 of the southern avenue; but not one remains of the two ovals on Hakpen Hill.

As to the time when this singular work at Avebury was constructed, and the design of it, opinions differ considerably. The most common opinion is, that it was raised by the Druids before the Christian æra, and was a national temple in which they performed their sacred rites.

All that is known of the Druids is to be found in the writings of Julius Cæsar, Diodorus, Strabo, Mela, Lucan, Tacitus, and Pliny. The whole information of all those authors would only amount to a few pages; yet from such materials various English writers have written many volumes. Those who wish to know the various theories may consult the writings of Borlase, Stukeley, King, Higgins, Davies, and Deane.

(Stukeley's *Abury;* Stukeley's *Stonehenge;* Hoare's *Ancient Wiltshire;* Davies's *Celtic Researches;* Davies's *Mythology and Rites of the British Druids;* Roberts's *Sketch of the Early History of the Cymry, or Antient Britons;* Borlase's *Antiquities of Cornwall;* King's *Munimenta Antiqua;* Mallet's *Northern Antiquities;* Toland's *History of the Druids;* Higgins's *Celtic Druids;* Hunter's *Present State of Abury;* *Gentleman's Magazine*, July, 1829.)

AVEIRO, a small episcopal town in the province of Beira, in Portugal, stands in 40° 38′ N. lat., 8° 56′ W. long.; population 4000. It stands on a gentle elevation, upon the banks of the river Vouga, which flows through the town, and is ornamented with a handsome quay. The town and its suburbs are adorned with several fountains, the water of which is employed for domestic uses and for irrigating the gardens. Aveiro is separated from the sea by a bar of sand-hills formed by the tide of the mouth of the river Vouga, which forms a small haven. Over this bar vessels of 8 or 9 feet draught may conveniently pass. The small gulf opposite the town is covered with little islands on which the inhabitants make great quantities of salt; this article, oranges, and salt fish, form their principal exports. The neighbourhood of the town is low and marshy, and ague is common; but not to such an extent as formerly, in consequence of improved drainage.

AVE'LLA, a town of 5000 inhabitants in the province of Terra-di-Lavoro, 18 miles N.E. of Naples. Near it are the ruins of the ancient Abella, celebrated for its apples by Virgil (Æneid vii. 740). The neighbourhood is still famous for apples and also for honey.

AVELLI'NO, the capital of the Neapolitan province of Principato Ultra, 30 miles E. by N. of Naples, in 40° 55′ N. lat., 14° 45′ E. long.; population 13,000. Avellino is built on the declivity of a hill in a fine valley watered by the river Sabato, between two offsets of the Apennine chain. From Avellino a road leads to Salerno, which is 17 miles to the south. Three miles north of Avellino, on a rugged mountain, stands the celebrated sanctuary of Monte Vergine, once a rich Benedictine abbey, now suppressed; it was built in the 11th century, on the ruins of a temple of Cybele. Avellino is a bishop's see, and a place of considerable trade in country produce, cattle, &c.; there are also several manufactures of cloth, maccaroni, and paper. It has a royal college, contains the courts of justice for the province, and is the residence of the governor of the province. The territory of Avellino abounds with fruit-trees, especially the apple and the hazel-nut: the latter was much esteemed in the time of the Romans, under the name of Nux Avellana.

AVEMPACE, or AVEN PACE, properly *Abu Bekr Mohammed ben Bajah*, but better known in the East under the surname of *Ebn-as-Sayeg*, an Arabian philosopher and poet, was a native of Saragossa, or, according to others, of Cordova. Of the circumstances of his life we know but little. He was practising as a physician at Seville in 1119. He entertained very free opinions respecting the divine authority of the Koran, and several other points of the Mussulman faith. He died at an early age in 1138. He wrote several short dissertations and essays on philosophical subjects. Other more extensive works he left behind in an unfinished state; among these, Treatises on the Soul, on Solitary Life, on Logic, and on Natural Science. (Nicol. Antonii *Bibliotheca Hispana Vetus*, Rome, 1696, vol. ii. p. 232; D'Herbelot, *Bibliothèque Orientale*, art. 'Saieg.')

AVE'NA, the botanical name of the genus to which the cultivated oat belongs. As understood by Linnæus and the writers of his school, it comprehended many very distinct forms of grasses, as well as the common cultivated kinds; but by other botanists it is more correctly limited to the species that yield corn, and to such as are closely allied to them. They are known by their lax panicles, their two loose membranous glumes, and by the small number of their florets, each of which has one of its husks or palæ armed with a strong twisted beard or awn. The grain is generally, but not uniformly, closely invested with the hardened husk.

The common oat, *Avena sativa*, is that which is most generally cultivated for the use of man; like most other corn-plants, its native country is unknown: it cannot, however, be supposed to be the offspring of cultivation or of chance, but is

more likely to be an inhabitant of some of the northern provinces of Asia, to which Europeans have little access. [OATS; TRISETUM.]

The seeds of *A. sativa*, deprived of husks, or decorticated (*grutum*), are employed under the name of groats or grits to form with water the Decoctum Avenæ, or water-gruel. When bruised, ready for use, they are denominated Embden grits, or prepared or patent groats or grits. A greater or smaller quantity of these are to be used to a pint of water, according to the object in view. When employed for an article of nourishment, the gruel may be made thick; when required as a demulcent or diluent, to promote perspiration at the commencement of a cold, it should be thin; and the addition of butter, spices, and wine, or anything save a little salt and sugar, is to be avoided. This is regarded as a light and digestible article for invalids. With some, it readily produces heartburn, and the same objection is urged against oatmeal, whether eaten in the form of oat-cakes, or employed to form porridge, the usual breakfast of the labouring classes and of the children of the middle classes in Scotland and even Ireland. This in a few instances is certainly true; but as a national fare there can be no objection to its use by those who like it. The idea that oatmeal is the cause of cutaneous diseases is devoid of foundation. The husks are frequently steeped in water for a few days, and then drained off. The liquid when boiled stiffens into a dish called sowens in Scotland. This is slightly acid, and forms with milk a favourite food of the peasantry for supper. Its cooling properties render it a suitable article of diet in summer.

AVENBRUGGER, LEOPOLD, a physician of the last century, was born at Graetz, in Styria, in the year 1722. He studied medicine, and graduated at Vienna, where he practised, and became physician in ordinary to the Spanish nation in the imperial hospital of that city. In 1761 he published a treatise, entitled 'Inventum Novum,' in which he made known his discovery of an application of the laws of acoustics to the investigation of the phenomena or action of the internal parts of the human body, particularly the cavities of the chest and abdomen. It was translated out of the original Latin into French by Rozière in 1770, and again by Corvisart in 1808, accompanied with notes and comments. It has since been translated into English by Dr. Forbes of Chichester, along with a selection of Corvisart's comments. This translation is entitled 'Original Cases,' by John Forbes, M.D., London, 1824. This method is termed *Percussion*. Avenbrugger wrote a work on madness, in Latin, 1776. He died in 1809.

AVENS. [GEUM.]

AVENTINE HILL. [ROME.]

AVENZOAR, or AVEN ZOHAR, is the name of two Arabian physicians, father and son, who lived in Spain in the twelfth century. They were Jews by descent and religion. The first and most celebrated of them is Abumeron Avenzohar, or, with his complete name, and correctly written, *Abu Merwan Mohammed ben Abdalmelic ben Zohar*. According to Ebn Alabari, an Arabian author quoted by Casiri ('Biblioth. Escur.' tit. ii. p. 132), he was a native of Sevilla, and lived as physician at the court of Ibrahim ben Yussuf ben Tashfin, the Almoravide sovereign of Marocco and Cordova. He died, according to the same authority, at Sevilla, A.D. 1162, A.H. 557. He is the author of several esteemed works on medicine. The most important is the 'Taisir,' or 'Introduction,' a Latin translation of which, made from an intermediate Hebrew version, has been printed repeatedly—for the first time by Johannes de Forlivio and Gregorius, at Venice, in 1490, with the 'Colliget' of Averroes. Latin translations of several other works attributed to Avenzohar are enumerated by Nic. Antonius; among which is a treatise 'De Cura Calculi,' printed at Venice, 1497; and another, 'De Regimine Sanitatis,' Basil, 1618. Sprengel, after giving an account of the 'Taisir,' proceeds to observe that Avenzohar has done less to improve the theory than the practice of medicine. 'Contrary to the custom of his countrymen, he was a declared enemy of sophisms and dialectic subtleties. Following the plan of his father, he intrusted himself to no other guide but experience, but in doubtful cases had often recourse to Galenus. He was not free from prejudice, and his practice sometimes approached to empiricism.' ('Hist. de la Médecine,' trad. par Jourdan, tit. ii. p. 335.) Avenzohar was the teacher of Averroes. The younger Avenzohar, who is also named Rhasis (but must not be confounded with another Arabian physician of that name, Mohammed ben Zacaria al-Razi, who died A.D. 922), was the pupil of his father. It appears that after the death of his father, and in consequence of a persecution, he quitted Spain and went to the court of Mansur, the Almoravide sovereign of Marocco, who appointed him his physician. He died in Marocco, at the age of seventy-four years, A.H. 594, A.D. 1197. Nic. Antonius observes, that of several books which have the name of Avenzohar, it is doubtful whether they should be ascribed to the father or to the son. (Nic. Antonii *Bibliotheca Hispana Vetus*, tit. ii. p. 232-235; Sprengel, *Histoire de la Médecine*, tit. ii. p. 332-337.)

AVERAGE is a quantity intermediate to a number of other quantities, so that the sum total of its excesses above those which are less is equal to the sum total of its defects from those which are greater. Or, the average is the quantity which will remain in each of a number of lots, if we take from one and add to another till all have the same; it being supposed that there is no fund to increase any one lot, except what comes from the reduction of others. Thus, 7 is the average of 2, 3, 4, 6, 13, and 14; for the sum of the excesses of 7 above 2, 3, 4, and 6—that is, the sum of 5, 4, 3, and 1—is 13; and the sum of the defects of 7 from 13 and 14—that is, the sum of 6 and 7—is also 13. Similarly, the average of 6 and 7 is 6½. To find the average of any number of quantities, *add them all together, and divide by the number of quantities*. Thus, in the preceding question, add together 2, 3, 4, 6, 13, and 14, which gives 42; divide by the number of them, or 6, which gives 7, the average.

The average of a set of averages is not the average of the whole, unless there are equal numbers of quantities in each set averaged. For instance, if ten men have on the average 100*l.*, and fifty other men have on the average 300*l.*, the average sum possessed by each individual is not the average of 100*l.* and 300*l.*; for the ten men have among them 1000*l.*, and the fifty men have among them 15,000*l.*, being 16,000*l.* in all. This, divided into 60 parts, gives 266*l.* 13*s.* 4*d.* to each. A neglect of this remark might lead to erroneous estimates; as, for instance, if a harvest were called good because an average bushel of its corn was better than that of another, without taking into account the number of bushels of the two.

The average quantity is a valuable common-sense test of the goodness or badness of any particular lot, but only when there is a perfect similarity of circumstances in the things compared. For instance, no one would think of calling a tree well grown because it gave more timber than the average of all trees; but if any particular tree, say an oak, yielded more timber than the average of all oaks of the same age, it would be called good, because, if every oak gave the same, the quantity of oak timber would be greater than it is. It must also be remembered that the value of the average, in the information which it gives, diminishes as the quantities averaged vary more from each other.

AVERAGE, in Marine Insurance. If any part of the ship or furniture, or of the goods, is purposely sacrificed for the sake of saving the rest, all parties interested must contribute towards the loss. This contribution is properly called Average. It is sometimes called general average, in opposition to special or particular average, which is the contribution towards any kind of partial damage or loss, or gross average, in opposition to petty average, which is the contribution mentioned in the bill of lading towards the sums paid for beaconage, towage, &c.

The principle of average is recognized in the maritime law of all nations. It was introduced into the civil law from the law of Rhodes ('Dig.' 14, tit. 2, 'Lex Rhodia de Jactu;' and the Commentary of Peckius, in tit. 'Dig. et Cod.' 'Ad Rem Nauticam pertinentes'). If goods are laden on deck, no average is recoverable in respect of the loss occasioned by throwing them overboard, unless by the usage of trade such goods are usually so laden. If a ship is voluntarily stranded for the purpose of saving her and the goods, and afterwards gets off safely, the expenses incurred by the stranding are the subject of general contribution; but if the ship be wrecked in consequence of the voluntarily stranding, the wrecking not being voluntarily, is therefore not such a loss as calls for a general contribution.

The things upon which average is payable are the ship, boats, furniture, &c., but not provisions or ammunition; also all merchandize, to whomsoever belonging, which is on board for the purposes of traffic, but not the covering, apparel, jewels, &c. of parties on board for their own private use. The freight due at the end of the voyage is also subject to average. The goods are to be valued at the price for which they would have sold at their place of destination. If the ship, by reason of what happened when the average was incurred, return to her port of lading, and the average is there settled, the goods are to be valued at the invoice price. The losses incurred by the ship and furniture, &c. are calculated at two-thirds of the price of the new articles rendered necessary to be purchased. As to the adjustment of average, see ADJUSTMENT.

AVERMENT. [PLEADING.]

AVE'RNO, a lake in the neighbourhood of Naples, about two miles and a half N.W. of Pozzuoli, and near the coast of the gulf of Baiæ. It is a circular sheet of water, about a mile and a half in circumference, the water clear, and of great depth, surrounded with high banks, which are covered with vineyards and gardens. On the south-eastern side is a break through this high margin, where formerly was a channel communicating with the Lucrine lake. The scene, though secluded, is serene and pleasing, very different from the gloomy descriptions found in ancient poets, and even historians, of the impervious darkness and foul mephitic emanations of this lake. It is likely, however, that when the surrounding banks were thickly covered with forest trees overhanging the water, it may have had a much gloomier appearance than at present. The story of the mephitic exhalations which killed the birds that attempted to fly over the surface of the lake (Virgil, vi.), although evidently exaggerated, may at one time have had some foundation in truth, as the whole of this region is of volcanic formation, and emits volcanic exhalations. Indeed, the lake itself is the crater of an extinct volcano. In the time of Virgil, a communication was opened between Avernus and the neighbouring lake Lucrinus, which, itself communicating with the sea, was converted by Agrippa into a fine harbour, called Portus Julius. The Lucrine lake was filled up by an eruption which took place in 1538, when a conical mountain rose in its place, which is called Monte Nuovo. Averno has thus become again a separate lake; and a small muddy pool half filled with reeds, and close to the sea-coast, is all that remains of the famed Lucrinus. There are several mineral springs in the immediate neighbourhood of the lake of Averno, some of which are used as baths. The most celebrated are the baths called the Baths of Nero, which are close by the sea-shore, and consist of galleries worked through the rock, and terminating in a fountain of hot water strongly impregnated with sulphur, so hot as to boil eggs immersed in it, and the vapours of which fill up the whole place. Persons resort here for the purpose of taking vapour-baths. The ruins of Cumæ are about one mile west of Averno. The air of the country about Averno and the Lucrine pool is unwholesome in summer. (Strabo, p. 244.) [BAIÆ.]

AVERRHOA, a genus of plants belonging to *Oxalidaceæ*, or the Wood Sorrel tribe. It consists of two species, both of which form small trees in the East Indies. They are remarkable for their leaves, which are pinnated, possessing, in a slight degree, the kind of irritability found in the sensi-

tive plant, and for their fleshy oval fruits with five thick longitudinal wings. From the other genus of *Oxalidaceæ* they are known by this character, independently of all others.

In the carambola (*A. carambola*), the leaves are smooth, the flowers of a violet purple, and the fruit about the size of a goose's egg; it is of a pale yellow colour, and is said to be agreeably acid in the East Indies. It was expected that it would prove worth cultivating in the hothouse for the dessert, but it proves upon trial to be insipid, and far inferior to the common fruit of the European markets.

The other species, called *A. bilimbi*, has downy leaves, and fruit resembling a small cucumber. The latter is intensely acid, and cannot be eaten raw. It is pickled or candied, or a syrup is obtained from it by boiling with sugar. The juice is found an excellent agent for removing iron-moulds or other spots from linen.

AVERROES, or AVERRHOES, or, with his complete name, *Abul-Walid Mohammed ben Ahmed ben Mohammed ben Roshd*, was an Arabian philosopher and physician of great celebrity, who lived during the latter part of the twelfth and the beginning of the thirteenth century. He was born in A.D. 1149, at Cordova, where his father filled the high office of mufti or chief judge and priest of Andalusia. Some of the most distinguished Arabian scholars of the age are mentioned as his teachers. He studied Mohammedan jurisprudence under his father; theology and philosophy under Ebn-as-Sayeg (Aven Pace) and Tofail; and medicine under Avenzohar, the father. He devoted the greater part of his time to philosophy and medicine, and read history or poetry only for recreation. Averroes adopted the creed of the Ash'ari sect, the main principle of which is, that God, being the cause of everything, is also the author of all human actions; but that men being free, either acquire merit or incur guilt according as they obey or disobey the precepts of religion. Averroes succeeded his father as mufti of Andalusia, and at the same time delivered lectures at Cordova. He was afterwards appointed chief judge of Mauritania; but Avenzohar the younger charged him, at the court of Mansur, the Almoravide sovereign of Marocco and Spain, with having expressed heretical opinions. Averroes lost his office and was forced publicly to recant the heretical doctrines with which he was charged. He went first to Fez, and afterwards to Cordova. But the judge who had succeeded him in Mauritania gave so little satisfaction, that Averroes was reinstated in his former office, which he continued to fill till his death. He died, according to Casiri ('Bibliotheca Escurialensis,' vol. i. p. 184), A.H. 595, or A.D. 1198, according to Leo Africanus (quoted by Hottinger, Bibliothecarius Quadripartitus,' p. 279) in A.H. 603 (A.D. 1206).

Averroes entertained the highest respect for Aristotle, whom he regarded as the greatest of all philosophers, though in studying and translating his works he seems to have placed too much reliance on his commentators, Ammonius, Themistius, and others. The works of Averroes were very numerous. Many of them were early translated into Latin, and studied by the schoolmen. An edition of Averroes in Latin was published at Venice, 1562, in eleven volumes, folio. His commentaries on Aristotle and on the 'Republic' of Plato seem to be the most generally known; but he composed likewise original treatises on philosophical subjects, and on Mohammedan theology and jurisprudence. Among his medical works, the 'Kulliyat' ('The Total,' or Comprehensive System) is the most important, a Latin translation of which, commonly called the 'Colliget Averrois,' has been repeatedly printed with the 'Taisir' of Avenzohar, for the first time, it seems, at Venice, by Johannes de Forlivio and Gregorius, A.D. 1490, fol.

(Sprengel, *Histoire de la Médecine*, translated by Jourdan, ii. 337.)

AVE'RSA, a town in the province of Terra di Lavoro, situated in a fertile plain 8 miles N. by W. of Naples, in 40° 57′ N. lat., 14° 11′ E. long. It is a bustling, lively place, with about 16,000 inhabitants. From Aversa a fine broad avenue leads to Naples. The town is famous for its foundling hospital (orfanotrofio) and lunatic asylum. The inmates of the former are all taught some trade or useful branch of industry; the institution thus becomes a nursery of artizans for the whole kingdom. The treatment of the insane patients is described as humane, ingenious, and eminently successful; they are occupied in various pursuits congenial to their respective tastes; they have music, a fine garden, and other amusements. This establishment has served as a model for others of a similar nature at Reggio, Modena, and Palermo. Aversa is a bishop's see, one of the richest in the kingdom. The territory of Aversa is very fertile in corn, grapes, fruit, &c. The sweetmeats of Aversa are in great repute at Naples.

AVES, a small uninhabited island 125 miles W. by S. from Guadaloupe, in 15° 40′ N. lat., 63° 38′ W. long.; it is ¾ of a mile long, very low, and has only a little grass growing on it. It is much resorted to by birds, and has a white appearance from their dung. The Dutch visit this island to gather eggs and catch turtle.

AVES (Fossil). Fossil birds have been recognized by bones and foot-prints in the red sandstone of Connecticut (Hitchcock), in the Wealden of Sussex (Mantell), in the chalk of Maidstone (Owen), in the tertiary beds of England and France (Cuvier), in the bone-caves of Kirkdale (Buckland), and in many late deposits. From New Zealand comes the Dinornis of Owen.

AVESNES. [NORD.]

AVEYRON, River. [AVEYRON, Department.]

AVEYRON, a department in France, which coincides with Rouergue, a country in the ancient province of Guienne. It is bounded N. by the department of Cantal, E. by those of Lozère and Gard, S. by those of Hérault and Tarn, and W. by those of Tarn-et-Garonne and Lot. The department lies between 43° 41½′ and 44° 45′ N. lat.; 1° 50′ and 3° 26′ E. long. Its greatest length from N. to S. is 90 miles; from S.E. to N.W. 78 miles. The area contains 3,429 square

miles: the population in 1841 was 375,083, which gives 109.3 to the square mile, or 58.6 below the average per square mile for all France.

The department is mountainous, and has a general inclination from E. to W. The N. is crossed by the Lot, which enters the department on the E., and running N.W. passes St. Geniez, Espalion, and Entraigues, where it receives the Truyère from the N., and becomes navigable; it then turns W., and before leaving the department receives the Dourdon from the S. The central part is crossed by the Aveyron, which, rising near Séverac-le-Château, and flowing W., passes Rodez and Villefranche; it then runs S. till it reaches the borders of the department, where, taking a western direction, it enters the department of Tarn-et-Garonne, and falls into the Tarn below Montauban, after a course of about 140 miles, no part of which is navigable. The chief feeders of the Aveyron on the right are the Serre, the Alson, and the Caude; on the left the Viaur, the Cérou, and the Verre. Farther S. the department is crossed by the Tarn, which passes Millau, and having received the Dourbie, the Lorgue, and the Rance, all on its south bank, enters the department of Tarn on its way to join the Garonne.

The north-east of the department between the Lot and the Truyère is covered by the mountains of Aubrac, an offshoot from the Margeride chain which unites the Cevennes with the mountains of Cantal. This district is volcanic, and everywhere presents evidence of having formerly been in a state of violent eruption. The climate is cold, and the winter severe and long. Rice and oats are the only corn grown in this region. Cattle and oats are the only articles of trade. Between the Lot and the Aveyron there is another mountain mass containing some fertile valleys, and many round-topped summits which are planted with trees. Rye, oats, some wheat, and a great quantity of chestnuts and plums, are grown. This district has rich beds of coal, one of which having been accidentally set on fire has burnt for years, and presents at night the appearance of a volcano. Between the Aveyron and the Tarn rise the mountains of Levezou, the northern side of which is almost perpendicular and uninhabited, while the southern side slopes down gradually to the Tarn, and contains some hamlets, each of which is surrounded by a patch of cultivated land yielding rye, oats, and buckwheat. This whole region, however, is barren and desolate, and the surface is in most places covered with furze, fern, or broom. The mountains to the south of the department are a continuation of the Cevennes, and their northern slope consists mostly of high table lands, inclining to the Tarn. One of these high plains, called Larjac, which lies between the Dourbie and the Lorgue, is remarkable for its extent, and for the number of rocks of cubic and pyramidal form with which it is strewn. The soil of this district is calcareous, and produces abundant pasture for sheep, which for flesh and fleece are not surpassed in France. This part of the Cevennes abounds in grottoes, and contains slate, plaster of Paris, and potter's clay. The west of the department consists of plains having a general inclination westward: rye, oats, truffles, and a little wheat, are produced, and cheese is made. The east of the department is in general warm; the land is good, farms are large and well cultivated, and much wine is produced.

The department contains 2,194,107 acres distributed among 122,660 proprietors. Of this area 893,811 acres are under tillage, 296,000 are grass land, 214,644 are covered with forests, and 516,230 acres consist of barren heath. About 330,000 quarters of bread-corn are annually produced, a quantity which barely meets the consumption; 104,000 quarters of oats; and about 50,000 quarters of potatoes. The wine of the department is, with a few exceptions, disliked for its earthy taste; the annual produce is stated to be about 6,600,000 gallons. Horses and horned cattle are very numerous, but of inferior breed. Great numbers of excellent mules are reared, many of which are sent to the Spanish markets. Oxen and cows are used for ploughing. Goats, sheep, and swine, are very numerous. The rivers are well stocked with trout and other fish. Wolves and foxes are commonly met with in the mountains: of large game there is little, but hares and rabbits abound in the heaths; among the reptiles are adders, vipers, and snakes.

Besides its rich coal mines, the department contains mines of copper, lead, zinc, sulphur, antimony, iron, and alum. The lead ores are rich, and contain a considerable quantity of silver. Marble, rock-crystal, kaolin, millstone grit, flint, emery, chalk, marl, plaster of Paris, &c. are found. There are several mineral and hot springs. The abundant water power of the department is applied to good purpose in various factories for the manufacture of paper, iron, cotton, leather, woollen stuffs, &c. The trade of the department is in the mineral and industrial products already named, together with corn, plums, chestnuts, almonds, wax, bacon, cattle, hides, wool, hemp, timber, turnery, oak planks, &c. Cheese also, made of ewe's milk mixed with that of goat's, is manufactured in great quantities in the south of the department, especially in the neighbourhood of Roquefort, and forms an important article of export. About 170 fairs are held in the department yearly.

The department is divided into five arrondissements, which with the number of cantons, communes, and population in each, are as follows:—

Arrond.	Cantons.	Communes.	Pop. in 1841.
Rodez . . .	11	183	102,556
Espalion . .	9	101	66,913
Millau . . .	9	78	64,015
St. Affrique .	6	85	58,531
Villefranche .	7	137	83,068
Total . .	42	584	375,083

The chief town of the arrondissement of Rodez, and of the department, is Rodez or Rhodez, which was also the capital of Rouergue. It was in ancient times called Segodunum, and was the chief

city of the Ruteni, a Gallic tribe. It stands on a hill on the right bank of the Aveyron, 375 miles S. of Paris, in 44° 21′ N. lat., 2° 34′ E. long., and has a population of 9,272. Rodez is the seat of a bishop; it has a tribunal of first instance and of commerce, a college, a normal school, two ecclesiastical seminaries, a school for deaf mutes, a public library of 16,000 volumes, and cabinets of natural history and natural philosophy. The cathedral is ranked among the finest Gothic structures in France. Serges, coarse woollens, woollen yarn, and leather, are manufactured; the chief trade is in these, together with linen, wool, cheese, mules, and beasts. The other towns are—Cassagnes-Comtaux, 13 miles S. of Rodez, population 1256: Conques, built in the bottom of a deep ravine, population 1418: La-Salvetat, 30 miles from Rodez, population 3128: Marcillac, 12 miles N.W. of Rodez, in a district containing vineyards and good grass land; the town has some trade in linen, wine, oil, and cattle; population 1575: Requista, 3 miles from Rodez, which has a large market for cheese, butter, linen, and yarn; population 4,185: Rignac, 18 miles from Rodez, in which woollen hosiery is made; population 1666: Salles-Comtaux, situated in a beautiful valley, and in a neighbourhood famous for its waterfalls; population 2601: and Sauveterre, 20 miles S.W. of Rodez, in which hosiery is made; population 1845.

In the arrondissement of Espalion the chief town is Espalion, 24 miles E. of Rodez, which stands in a fertile district on the right bank of the Lot. There is a college, a tribunal of first instance, and a drawing-school in the town. Coarse woollens and leather are made: these, with timber and staves, are the chief articles of trade; population 4404. The other towns are—Entraigues (Interaquas), at the confluence of the Truyère and the Lot, which last here becomes navigable; population 3000; timber, turnery, and oak staves, are the chief articles of trade: La Guiolle, 15 miles N.N.E. of Espalion, situated between high volcanic mountains on the left bank of the Selve, a feeder of the Truyère; a large quantity of good cheese, and some woollen stuffs are made, and five cattle fairs are held; population 2174: Mur-de-Barrez, 36 miles from Espalion, formerly a fortified town; serges, camlets, and barracans, are made here; population 1622: St. Chely-Daubrac, 12 miles from Espalion, in which serge and flannels are made; population 2088: St. Geniez-de-Rive-d'-Olt, situated on the Lot, in the east of the department, and in a valley hemmed in by hills covered with vineyards; this active town has several woollen and cotton factories, besides numerous tan-yards, dyeing establishments, and nailcries, the produce of which, together with timber, wool, and turnery, are the chief articles of trade; the town has a tribunal of commerce, a college, and a population of 3851: and Ville-Comtal, in a valley watered by the Dourdon, 14 miles W. of Espalion; population 1971.

In the arrondissement of Millau the chief town is Millau or Milhau, 40 miles S.E. of Rodez; it is built in a rich dale near the meeting of the Dourbie and the Tarn, over the latter of which a fine bridge is thrown; population 9014. The principal street is wide and adorned with fountains, but the other streets are narrow. Broad cloths, gloves, and leather of different kinds, are made. There are also some silk-throwing establishments. These products, with wool, hides, timber, oak-staves, cheese, wine, and cattle, are the chief articles of trade. The neighbourhood produces abundance of peaches, almonds, and other fruits. There are tribunals of first instance and of commerce, a college, an exchange, and an agricultural society in the town. The other towns are—Laissac, 27 miles N. of Millau, in which serges, paper, pottery, and woollen yarn are made; near the town is the mountain of Monberle, on the summit of which there is an ancient camp capable of containing 12,000 men; population 1282: Nant, 18 miles S.E. of Millau, in a fertile valley planted with fruit-trees, and watered by the Dourbie, in which cotton hosiery is made; population 3134; in the environs of this town are many interesting grottoes, one of which, called Poujade, is 500 feet long, 130 wide, and above 100 feet high: Salles-Curan, 14 miles W. of Millau; population 2489: Séverac-le-Château, 19 miles N. of Millau, built on the slope of a conical hill, on the top of which there is an ancient castle; coal mines are worked in the neighbourhood; population 2782.

In the arrondissement of St. Affrique the chief town is St. Affrique, 45 miles S.E. of Rodez; population 6336. This town is situated in a delightful valley, watered by the Sorgue, and is joined to the suburb of Vabres by two bridges. The streets are wide, but the houses are generally not well built. There are tribunals of first instance and of commerce, a college, and several churches, one of which is Reformed Protestant. Broad cloths, serges, swanskin, and blankets, are made. There are also cotton and woollen factories, several tan-yards, and a good trade in the products of these, and in wool and cheese. The other towns are—Belmont, S.S.W. of St. Affrique, on the right bank of the Rance; population 1546: Camarès, E. of Belmont, also on the Rance, near which are the mineral springs of Andabre; population 2132: Cornus, which has some trade in coarse woollens, woollen yarn, linsey-woolseys, and cheese; population 1654: Roquefort, 7 miles from St. Affrique, a small village near which there are extensive grottoes, in which about 18,000 cwts. of cheese are annually made: St. Rome-de-Tarn, on the left bank of the Tarn, which is here crossed by a bridge of six arches; the town has old ramparts and faux-bourgs, manufactures calicoes and leather, and trades in these, together with wine and almonds; population 3070: and St. Sernin, situated between three hills, on the right bank of the Rance, 18 miles S.W. of St. Affrique; population 2399.

In the arrondissement of Villefranche the chief town is Villefranche, situated at the meeting of the Alson and the Aveyron, 28 miles W. of Rodez; population 9088. The manufacturing industry of the town is important: there are several large linen factories, copper and iron foundries,

tan-yards, and paper-mills; the products of these, together with corn, wine, bacon, cattle, and truffles, form the items of a considerable trade. The other towns are—Aubin, 20 miles N. of Villefranche, near which there are rich coal mines, which produced 570,000 tons in 1835; there are also mines of sulphur, alum, and iron, and several large iron furnaces in the neighbourhood; population 3076: Cransac, a small place famous for its mineral waters: Decazeville, 25 miles N.N.E. from Villefranche, which has been founded since 1830; the inhabitants amounted in 1845 to 4154, and consist chiefly of an iron company and their workmen, who are employed in the coal and iron mines, and iron works of the neighbourhood; there are several large furnaces here worked by steam power: Firmy, also in the mining district, which has iron furnaces, and a population of 1572: Montbazens, 15 miles N.E. from Villefranche; population 2983: Najac, on the left bank of the Aveyron, which has manufactures of serges, linsey-woolseys, grey and scarlet cloth, and trades in these, together with hams, chestnuts, plumbs, figs, linen, and cattle; there is a very strong old castle on an eminence above the town; population 2070: Rieupeyroux, 15 miles S.E. of Villefranche, which has some linen factories, and a population of 2709: and Villeneuve, 6 miles N. of Villefranche, in which there is a brisk trade in wine and cattle; population 3251.

The department forms the diocese of Rodez, and is subject to the jurisdiction of the Cour Royale, and of the University Academy of Montpellier; it returns five members to the Chamber of Deputies, and belongs to the 9th military division, of which Montpellier is head quarters.

(*Dictionnaire de la France*, Paris, 1845-6.)

AVICENNA, named *Aben Sina* by Hebrew writers, but properly, *Ebcn Sina*, or, with his complete name, called *Al-Sheikh Al-Rayis Abu Ali Al-Hossein ben Abdallah ben Sina*, was a celebrated Arabian philosopher and physician. He was, according to the Biographical Dictionary of Ebn Khallican, born at Kharmatain, near Bokhara, A.H. 370, or A.D. 980. Soon after his birth his parents removed to Bokhara, where Avicenna received his first education. Ebn Khallican informs us that, when he had reached his tenth year, he was thoroughly versed in the study of the Koran, and knew something of the elements of Mussulmen theology and of Hindu arithmetic (*hisáb ul-Hind*) and algebra. Under Abu Abdallah Al-Natheli, he studied logic, Euclid, and the Almagest. When Al-Natheli left Bokhara, Avicenna, then about sixteen years old, began to turn his attention to medicine. In his twenty-first year he wrote his 'Kitâb al-Majmû, literally 'The Book of the Sum Total;' and he compiled a commentary to it, in about twenty volumes. When he was twenty-two years old, Avicenna lost his father, whom he succeeded in the office of minister to the sultan of Bokhara; but after the downfall of the Samanide dynasty, about the beginning of the eleventh century, he quitted Bokhara, and settled successively at various places. He was for a time attached as physician to the court of the Dilemite sovereign, Shams-ul Maâli Kâbûs ben Washmgîr. When this prince was dethroned, about A.D. 1012, Avicenna retired to Jorjan, where he began to write his celebrated treatise on medicine known under the title of the Canon ('Kitâb al-Kânûn fi' l Tibb,' 'Book of the Canon in Medicine'). He subsequently lived at Rai, Kazwin, Hamadan, and lastly at Ispahan, when he became physician to Alâ-eddaulah, the sovereign of Ispahan. He died at Hamadan, to which place he had accompanied Alâ-eddaulah, being then fifty-eight years old. The writings of Avicenna, chiefly on philosophy, mathematics, and medicine, are very numerous. Ebn Khallican states the number of his great and short treatises at nearly a hundred. The titles of many of them are in Casiri (vol. i. p. 270). Among them, the 'Kânûn' acquired the greatest celebrity, and became, even in Europe, for many centuries, the standard authority in medical science, less on account of original merit, in which, according to Sprengel, it is very deficient, than on account of its judicious arrangement, and the comprehensive view which it afforded of the doctrines of the ancient Greek physicians, at an age when the knowledge of the Greek language was very scanty. It was translated into Latin by Gerardus Cremonensis, at Toledo. This translation, revised and accompanied with a commentary, by Jacobus de Partibus, was edited for the first time in 1498, at Lyon in four large volumes in folio, by two Germans, Johannes Trechsel and Johannes Klein; several other editions have since appeared, the latest at Venice, in 1585, fol. An edition of the Arabic text of the 'Canon' was published at Rome, 1593, fol. (Casiri, *Bibliotheca Arabico-Hispana*, i. 268, &c.; Sprengel, *Hist. de la Médecine*, trad. par Jourdan, ii. 205, &c.)

AVICENNIA, a genus of plants belonging to the natural order Myoporaceæ. The species are natives of New Holland and America. *A. tomentosa*, the white mangrove, contains tannin, and is used in Rio Janeiro for tanning. *A. resinifera* is a native of New Zealand, and is said by Forster to yield a green resinous substance that is eaten by the New Zealanders as food. It is remarkable also for its clusters of large flowers. *A. nitida* is a native of Martinique. (Burnett, *Outlines*; Lindley, *Natural System*.)

AVICULA, a genus of bivalve mollusks, comprising two sections; those which have the base or hinge considerably prolonged, as in *Avicula macroptera*; and those which are without that prolongation, as the mother-of-pearl shell (*Meleagrina margaritifera*, Lam.). In this genus the shell is lined with a brilliant *nacre*; and the animal is furnished with a *byssus*, by means of which it attaches itself to rocks. All are natives of the warmer seas.

The mother-of-pearl shell, or pearl oyster, is not only valuable for the nacre of the shell, but for the pearls which are obtained from it, and which are in fact extravasated nacre. Fisheries of this shell are established in both hemispheres; but the principal are at Ceylon, Cape Comorin, and in the Persian Gulf. The shells are brought up by divers. [PEARL.]

AVIDIUS, CASSIUS. [CASSIUS AVIDIUS.]

AVIE'NUS, or AVIANUS, sometimes written *Anianus*. Under one or other of these names we have a collection of Æsopian fables in Latin elegiac verse; translations of the 'Phænomena' and 'Prognostica' of Aratus into hexameters; a translation of the 'Periegésis' of Dionysius, entitled 'Descriptio Orbis Terræ;' and a poem in iambic verse, entitled 'Ora Maritima,' of which only the first book remains, containing a description of the Mediterranean, from the Straits of Gibraltar to Marseille. The fables commonly bear the name of Flavius Avianus; the other works that of Rufus Festus Avienus. The identity of these two persons is largely discussed in the dissertation annexed to the edition of Avianus's Fables, by Henry Cannegieter, Leiden, 1731. The translations from Aratus are printed in the edition of Aratus by Buhle, Leipzig, 1793, 1801. The 'Descriptio' was edited by Friesemann, Amst. 1786, and, with the Ora Maritima, is contained in the Oxford edition of the Minor Greek Geographers. The author of these works appears to have lived about A.D. 400: Avianus the fabulist is placed, by those who deny his identity with Avienus, about 240 years earlier.

AVIGNON, the capital of the department of Vaucluse, in France, is situated on the left bank of the Rhone, just above where it is joined by the Durance, 426 miles S.S.E. of Paris, in 43° 57′ N. lat., 4° 48¼′ E. long. Population 33,844.

Avignon (in Latin *Avenio*) is a very ancient city. It was in the territory of the Cavares, from whom it was called *Avenio Cavarum*. It came into the hands of the Romans at an early period of their dominion in Gaul, and a Roman colony appears to have been established here. Upon the downfall of the Western Empire it was possessed by the Burgundians, and afforded to the king of that people a secure asylum from the power of Clovis, king of the Franks, who besieged it in vain. It subsequently became subject to the Ostrogoths, Franks, and Saracens. Afterwards it came into the hands of the kings of Arles and Burgundy. It was an object of contention between the counts of Provence and Toulouse, who at last agreed to hold the city conjointly, and to divide its dependencies between them. Part of the dependencies was also held by the Counts of Forcalquier; but the last of that family bequeathed his portion to the citizens of Avignon, who were enabled by this accession to their resources, and by the dissensions of the Counts of Provence and Toulouse, to acquire a kind of independence. But when the domains of the two last-mentioned nobles came by marriage into the hands of Charles and Alphonso, brothers of Louis IX. of France, Avignon was obliged to submit. It was at first divided between the two princes, but afterwards was wholly included in the county of Provence. The period of independence terminated in 1251, after subsisting less than half a century. It had previously (in 1226) been taken by Louis VIII. in the war against the Albigenses.

In 1309, Pope Clement V., himself a native of France, removed his court from Rome to Avignon, which continued to be the papal residence, until Gregory XI., in 1376, left it to return to Rome. In the schism which took place on the election of Urban VI., successor of Gregory, Avignon became the residence of the anti-popes Clement VII. and Benedict XIII. The latter was driven out in 1408 by the French, who were tired of the schism. Clement VI. in the year 1348 purchased the city of Joan, Countess of Provence and Queen of Sicily; and the sovereignty was retained by his successors until it was seized by the French in 1791, since which period Avignon has belonged to France.

Avignon is pleasantly situated in a valley, which is adorned with meadows, orchards, and mulberry plantations. The city is surrounded on the land side by a promenade, planted with elms, which runs outside the walls. In the 12th century a stone bridge was built over the Rhone, by which the city was joined to Villeneuve and the fortress of St. André, on the right bank of the river. The work was undertaken and commenced by St. Benezet, a shepherd boy of eighteen, but he did not live to see the completion of the work. It had 25 arches; and was regarded as a wonderful structure, on account of the breadth, depth, and rapidity of the river. In the year 1669 it was almost entirely carried away by an inundation, and only four arches, which still remain, were left entire. The river is now crossed by a remarkably long wooden bridge.

While under the papal dominion, Avignon had 60 churches and a great number of religious establishments, most of which no longer exist. The cathedral crowns the summit of the rock of Doms, which rises 194 feet above the Rhone; it is by no means of uniform architecture. Its portal is supposed to have been removed from an ancient temple of Hercules. The interior is adorned with many fine pictures and sculptures; among the latter is a fine statue of the Virgin by Pradier. Among the tombs which it contains are those of Benedict XII., John XXII., and 'Crillon the brave.' The church of the Cordeliers was celebrated for the tomb of Laura de Sade, the Laura of Petrarca. The same tomb contained also the body of her husband, Hugues de Sade. The site of the church and its inclosure is converted into a fruit-garden, and a small cypress-tree marks the spot where Laura is interred. Of the churches which remain, the most remarkable are those of St. Agricol, St. Pierre, and St. Martial, all of which are adorned with fine pictures, sculptures, and carvings. But the most remarkable structure in Avignon is the Palace of the Popes. It is built on the southern slope of the rock of Doms. Its extent, imposing grandeur, the thickness of its walls, which are 100 feet high, its numerous towers and means of defence, render it the most complete model of the military architecture of the 14th century. It is now used for a barrack. The former mint is used for a similar purpose; this is also a fine building, and has a splendid façade.

Avignon is still remarkable for the number of its charitable and useful institutions. It has an infirmary for soldiers whose wounds require a milder climate than that of Paris; a lunatic asylum; a college; two ecclesiastical seminaries; a society of arts; an agricultural society; a fine col-

lection of paintings and antiquities; a museum of natural history; a botanical garden; and a public library of 45,000 volumes and 700 MSS. There is also a society called the Academy of Vaucluse.

The town is clean: the houses are of stone and well built; but some of the streets are narrow and crooked. The trade of Avignon has been making considerable progress for some years past. Silk stuffs of various kinds are largely manufactured; of taffeta (florence) alone, 4,950,000 yards are annually made, the value of which is estimated at upwards of 8,000,000 francs: there are also a cannon foundry, a foundry for sheet-iron, copper, and tin, a saltpetre refinery, tanneries, paper mills, type-foundries, cotton factories, and various other industrial establishments in the town. Avignon has also a large trade in books, corn, wine, brandy, sumac, colonial products, and cattle. A great part of the trade of Avignon is carried on through the port of Marseille, to and from which goods are conveyed on the Rhone by way of Arles. There is constant communication by steamers with Lyon, Arles, and Marseille, and by diligence with Paris and Marseille several times a day. A railroad now (1847) in course of construction between Lyon and Marseille passes through Avignon.

The bishopric of Avignon dates from the 1st century of our æra. In 1474 or 1475 Sixtus IV. raised the see to an archbishopric. The suffragans of the Archbishop of Avignon are the bishops of Nimes, Valence, Viviers, and Montpellier. The department of Vaucluse forms his diocese.

AVILA, one of the 4 districts into which the province of Old Castile, in Spain, is divided. It is bounded E. by Segovia; W. by Salamanca; S. by Toledo; and N. by Valladolid. The territory of this district is the most elevated in the central part of Spain, particularly in its southern extremity, where it is very mountainous, cold, and very thinly peopled. The northern districts are milder, more productive, and better inhabited; but they are deficient in fuel, which is supplied from the forests in the south. The principal rivers are—the Adaja, a feeder of the Duero, which crosses the district from E. to W. as far as the city of Avila, from which its course is from S. to N.: and the Albercher, which flows through the district from W. to S.W. on its way to join the Tagus, near Cazalegas, in Toledo. The area of the province is 2600 square miles; and its population in 1827 was 153,479. Agriculture is in a very backward state. The chief products are grain, fruit, oil, wine, and flax.

AVILA, the chief town of the district of Avila, stands on a high plain on the right bank of the Adaja, in 40° 45′ N. lat., 4° 45′ W. long.; population 4000. It is surrounded by old walls: the streets are very irregular, but well paved and clean. The town is ornamented with many fountains, and has a good promenade in the suburbs. Avila is the seat of a bishop, and contains 8 fine old churches and a university. The cathedral was founded in 1007. There are at Avila manufactories of woollen stuffs, cotton prints, and hats, besides the royal manufactory of cloth, the machinery of which is moved by water. Avila is the birthplace of Santa Theresa, the founder of the barefooted Carmelites, whose writings are so highly valued in Spain for the purity and elegance of their style.

AVISON, CHARLES, was born about the year 1710. When young he visited Italy for the purpose of study, and after his return became a pupil of Geminiani, under whom he acquired his knowledge of score-writing. He settled at Newcastle-upon-Tyne, having accepted the place of organist of the principal church in that town, where he continued till his death, May 9, 1770. In 1752 he published his 'Essay on Musical Expression,' a well-written work, which gave rise, however, to a somewhat bitter controversy between him and Dr. Hayes of Oxford. Avison was the projector of the adaptation of Marcello's Psalms to the English version, which Garth of Durham undertook and published, much assisted by the former. His own compositions consist chiefly of five sets of Concertos for a Full Band, forty-five in number, a few of which are still occasionally performed at the Ancient Concerts.

AVLO'NA or VALO'NA, a town in Albania, on the Gulf of Avlona, which is formed by the headland known to the Greeks and Romans as the Acro-Ceraunian Promontory, and now called Capo Linguetta, or Glósa. The long connection of Avlóna with Italy has given to it the appearance of an Italian town. There is a Greek Bishop of Avlona, but the number of Greeks is few. There are a few Christians of the Latin church, whose superior is the Bishop of Monte Negro. The harbour of Avlona is good: the imports are fire-arms, glass, and paper: the exports consist of corn, wool, oil, and more especially of pitch from the asphalte mines of Selenitza, which is about 8 miles N.E. of Avlona. Avlona was known to the ancients by the name of Aulon. It is in 40° 29′ N. lat., 19° 26′ E. long; population about 5000. The town has 6 mosques and one Greek church.

AVOCADO PEAR. [PERSEA.]

AVOCA'T, a French word, derived from the Latin *advocatus*, and corresponding to the English 'counsellor at law.' [ADVOCATE.] From the middle of the fourteenth century the avocats were distinguished into 'avocats plaidans,' who answer to our barristers, and 'avocats consultans,' called also 'juris-consultes,' a kind of chamber-counsel, who merely give their opinion on intricate points of law. Previous to the Revolution the advocates of Dijon, Grenoble, the Lyonnais, Perez, and Beaujolais were entitled to rank as nobles; in some places this order was freed from the demands of the farmers of the king's taxes. Under the old monarchy the avocats were distributed, with regard to professional rank, into various classes. The order of advocates was suppressed by a decree of the 11th September, 1790. The persons who performed the functions of counsel were then termed *hommes de loi*, and any one might act as counsel. In 1795 something was done by the French Directory to re-organize the bar, and in December 1810 another step was taken in the same direction. Napoleon had a great aversion to the bar, and when the Legion of Honour was established not a single advocate re-

ceived the decoration; but they were more favourably treated under the Restoration.

At present there are in France 'avocats au conseil du roi,' as formerly; 'avocats généraux,' of whom there are five at the Court of Cassation, or Supreme Court, four at the Cour Royale of Paris, besides substitutes, and two or three at each Cour Royale in the departments. The practising barristers are classed into 'avocats à la Cour de Cassation,' who are fifty in number, and who conduct exclusively all causes before that court; and 'avocats à la Cour Royale,' who plead before the various royal courts. All avocats must be bachelors at law, and must have taken the oath before the Cour Royale. There is a roll of the advocates practising in each court. Candidates are admitted by the Council of Discipline after a probationary term. The members of the Council are elected by the advocates inscribed on the roll. The 'avoués' (attorneys) also plead when the number of advocates is not sufficient for the despatch of business.

(*Code des Avocats; Code des Officiers Ministériels; Histoire de l'Ordre des Avocats*, par Bouchier d'Argis.)

AVOCET, a genus of grallatorial or wading birds (*Recurvirostra*), distinguished by the form of the bill, which is long, slender, tapering, and bending upwards at the tip, which is very flexible. The legs are long and slender, and the three anterior toes united for nearly the whole of their length by a scolloped membrane.

The Common Avocet (*Recurvirostra Avocetta*) is

The Avocet.

widely diffused throughout temperate Europe and northern Africa. It abounds in Holland, and is not uncommon along the eastern coast of our island, south of the Humber. It breeds also in Romney Marsh, Kent, and in the fens of Lincolnshire. The nest is merely a slight depression sheltered by such herbage as the morass affords. The eggs are greenish, spotted with black. During the summer the avocets are scattered in pairs, but on the approach of winter they assemble in small flocks, frequenting muddy shores and the mouths of rivers in quest of food. They feed upon marine insects, minute shells, and crustacea, wading in the shallows, and swimming when suddenly out of their depth. Their slender, elastic, recurved bill, resembling whalebone, enables them to pick up from the surface of the slimy ooze the minute insects on which they feed, and during this operation they appear as if incessantly beating the water with the beak. The flight of this bird is rapid, and all its actions are quick and lively. Like the lapwing it draws off the intruder from its nest by artifice, uttering loud cries. The plumage of the avocet is elegantly parti-coloured black and white. Length, 18 inches.

AVOIDANCE OF A BENEFICE. [BENEFICE.]

AVOIRDUPOIS, or AVERDUPOIS, the name given to the common system of weights in England, now applied to all goods except the precious metals and medicines. Thus, a pound of tea is a pound *averdupois*, and contains 7000 grains; a pound of gold is a pound *troy*, and contains 5760 grains. The word has been supposed to be derived from the French *avoir du poids*, to have weight; but considering that *averdupois* is the more ancient mode of spelling the word, and that the obsolete French verb *averer*, and the middle Latin word *averare*, signify to *verify*, it is more likely that we are to look here for the true etymology.

The ancient pound was heavier than the averdupois, and weighed 7600 grains. The earliest regulations on the subject fix the *troy* weight. The averdupois is mentioned in some orders of Henry VIII., A.D. 1532, and a pound of this sort was placed in the Exchequer as a standard by Elizabeth, A.D. 1588.

The committee of 1816 made no alteration in the weights, but ascertained the value of the grain, as afterwards described in the Act of Parliament 5 Geo. IV. c. 74: 'A cubic inch of distilled water, weighed in air by brass weights, at the temperature of sixty-two degrees of Fahrenheit's thermometer, the barometer being at thirty inches, is equal to two hundred and fifty-two grains, and four hundred and fifty-eight thousandth parts of a grain.' The pound averdupois contains 7000 such grains. From this it may be deduced that a cubic foot of water, under the above conditions, weighs 997.14 ounces, which, being very nearly 1000 ounces, gives an expeditious rule for deducing the real weight of a cubic foot of any substance from its specific gravity. For example, if the specific gravity of gold be 19.36, the weight of a cubic foot of gold is 19360 ounces averdupois. If more accuracy be required, subtract three for every thousand from the result. [WEIGHTS AND MEASURES.]

AVON, Rivers. [WARWICKSHIRE; WILTSHIRE; SOMERSETSHIRE.]

AVOWRY. [REPLEVIN.]

AVOYER is a term derived from the Latin *advocatus*. *Avoué* or *Avoyer* was a French form or corruption of *advocatus*, and was applied in general to the lay champion or guardian of the church.

AVRANCHES, a city in the department of

Manche, in France, stands on the south bank of the Sée or Séez; 198 miles W. of Paris, in 48° 41′ N. lat., and 1° 22′ W. long. Population 8,256. Avranches is delightfully situated on the side of a hill. The river winds at the bottom of the hill, and falls into the sea two or three miles below the town. The valley of the river is covered with fine verdure, and with woods which reach quite down to the shore. Before the Revolution, Avranches had a cathedral, 3 parish churches, and several monastic and educational establishments. The cathedral, built in the 11th century, suffered greatly at the revolution, and is now a heap of ruins. A flat stone marks the spot where Henry II. did penance, in 1172, for the murder of Becket. Small vessels can get up the river as far as the bridge. Hemp, flax, lace, butter, cattle, and cotton are among the articles of trade; a good deal of salt is made. There are a tribunal of first instance, a college, a library of 10,000 volumes and 204 manuscripts, and a botanic garden. Many English families settled here after the peace of 1814. Avranches formerly gave name to a district (Avranchin), which now forms the arrondissements of Avranches and Mortain. [MANCHE.]

AWARD. [ARBITRATION.]

AWATSKA BAY is a capacious basin on the eastern coast of Kamtchatka, lying in the bight between Cape Gavaria and Chepoonski Noss, and the only good harbour in the whole peninsula. The entrance, which is N. by W., is four miles in length, and one and a half in breadth at the narrowest part. The land is high on both sides, with a succession of bluff points and alternate sandy bays. On the S.E. point of the entrance is a small fort and lighthouse; the latter is only used when the annual visit of vessels from Europe is expected with supplies. This entrance leads into a large basin, about thirty miles in circumference, within which are the three harbours of Rakoweena, Petropaulovski, and Tareinski. The bay is bounded by high and well-wooded land on all sides, except to the N.W., where the rivers Awatska and Paratounca discharge themselves among swamps and shoals. The general depth of water is from twelve to fourteen fathoms; the bottom level, and of soft mud.

Within the entrance to the W. is the harbour of Rakoweena, about four miles deep, and one and a half wide at the entrance, narrowing towards the head. It has depth of water for the largest vessels, but a shoal lies across the mouth, leaving only a narrow channel on each side of it, so that vessels can only enter with a fair wind.

Two miles to the northward of this lie the town and harbour of St. Peter and St. Paul, or Petropaulovski (pronounced shortly Petropaulski), the capital of the province, and residence of the government and the commercial agents. There are two small forts for the protection of the harbour. The town, which formerly consisted of a few huts on the sandy spit across the harbour, is now situated at the head of this snug little landlocked basin, which is capable of containing six or eight ships of the line in the most perfect security. The town, from being built without any regard to regularity, has but a poor appearance: the houses are all constructed of logs; on the upper side of each log a groove is cut to receive the next, and a notch at each end for the transverse log, the ends being allowed to project some inches, and the interstices filled up with moss, which renders the dwelling proof against the weather. They are for the most part thatched; the entrance is intricate, and the visitor has to pass several doors previous to reaching the apartments, which are warmed by hot air conveyed through pipes from a large fireplace or oven in the centre of the building. The excessive cleanliness which pervades the interior of these dwellings amply compensates for the deficiency of external beauty. As a substitute for glass, large plates of mica, brought from Siberia, are used by all classes, except in the governor's house and the public buildings. There is a church, in the oriental style, near the beach. It is entirely of wood. The chief instrument employed in the construction of these buildings is a long knife, which the natives use with great dexterity. Most of the houses have gardens attached for growing a few vegetables. The population of the town is about 600.

At the head of the bay is the river Awatska: it is nearly a quarter of a mile broad at the entrance, but soon gets narrow. It is very rapid, especially at the season of the snow-melting, and is said to continue its course 100 miles in a N.W. direction, but is so shallow even at its mouth that it is only navigable for canoes. The small village of Awatska, consisting of eight or ten houses, is situated on the eastern point of entrance. About five miles S.W. of this is the small river Paratounca.

In the S.W. part of the bay is the spacious and commodious harbour of Tareinski, ten miles long, and three broad, affording every convenience for a civil and naval establishment of the largest kind, free from danger, easy of access; in short leaving nothing to be wished for as a harbour. In consequence of the high land, squalls arise with great violence, which must be guarded against, and the winds are very variable in the bay; but should the progress of commerce put the Pacific on an equality with the Atlantic as to trade (against which no reason can be urged), Awatska Bay must take its rank as one of the first in the world. The lighthouse at the entrance is in 52° 52′ N. lat., 158° 47′ E. long. Variation of the needle 4° 45′ E.; inclination, 64° 02′.

The tides are regular and strong: it is high water, at full and change, at 3 hours 30 min. P.M.; the rise in the springs is 6½ feet, in the neap 2½ feet. In the entrance the eddies are very strong.

AWE, LOCH. [ARGYLE.]

AWN or ARI'STA, the beard of grasses, is a rigid bristle, often hairy and frequently twisted, proceeding from the back of some of the envelopes of the flower. It is often employed for systematic purposes, in consequence of the number of modifications to which it is subject. It appears to be one of the veins or ribs of the envelopes, unusually lengthened, and separated from the cellular substance to which it belongs.

AXE, Rivers. [SOMERSETSHIRE; DEVONSHIRE.]

AXBRIDGE. [SOMERSETSHIRE.]

AXHOLME, ISLE OF, a river island in the county of Lincoln. It is bounded on the eastern side by the Trent, and on the northern and north-western sides by the old river Don, which flowed by Crowle, Luddington, and Garthorpe, into the Trent, and formed in part of its course the boundary between Lincolnshire and Yorkshire. The old rivers Torne and Idle formed the western boundary, and the ancient Bykersdyke, or Vicar-dyke, which runs from the Idle to the Trent, may be regarded as completing the circuit.

The isle of Axholme is about seventeen or eighteen miles long from N. to S.; and, on the average, five or six miles broad from E. to W., except in the northern part, where it becomes narrower and ends in a point. It includes a small portion of the county of Nottingham in its circuit. Leland, in his Itinerary (drawn up in the reign of Henry VIII.), gives the dimensions of Axholme as ten miles in length, and six in breadth.

Dugdale ('History of Embanking and Draining,') states that Axholme was once a well-wooded island; but that it became marshy ground, by irruptions and overflowing of neighbouring rivers. In the reign of Edward III., commissioners were appointed to superintend the banking and draining of the marshes; but for three centuries afterwards little was done to bring the island into a profitable state.

In the reign of Charles I., however, the drainage of this level was attempted on a large scale. It had, together with Hatfield Chase, come into the hands of the king as feudal superior; and he, in the second year of his reign (1626) employed a Dutch engineer, Cornelius Vermuyden, to drain the marshes at his own charge, on condition of receiving one-third of the land so recovered. The owners of all lands in the level were to receive compensation at the award of four commissioners, two to be named by Vermuyden, and two by the Lord Treasurer of England for the time being; persons having the right of common pasturage were to receive a compensation in land or money; and a corporation was to be appointed by Vermuyden, and lands assigned by him, for the preservation of the works. In five years Vermuyden finished his work, at a cost of 55,825*l*. By embankments and sluices he so drained the land as to make it productive for agricultural purposes. About two hundred families, Dutch and French (of the French Protestants who had taken refuge in Holland), settled in the recovered lands; and a chapel was built at Sandtoft, in the island, a spot previously consecrated by religious associations (a cell for one of the religious of the abbey of St. Mary at York had been once placed there), and central to the whole drainage. This was in 1634. From the commencement of the proceedings, however, the original inhabitants looked with much jealousy at the foreigners; and continued opposition was manifested, first by law-suits, and then by personal encounters, throughout the remainder of Charles I.'s reign.

During the Protectorate the confusion in the island seems to have continued, and for half a century after the restoration of Charles II. a state of insubordination prevailed such as no other part of England at that time presented. This was strikingly shown by a barrister named Reading, who, in 1655, was appointed agent to the king at Axholme, and protector of the settlers against the 'commoners,' or original inhabitants. In a memorial drawn up by him in the latter part of his life (1702) he states that he had obtained 'several writs of assistance, and orders of the House of Lords, and deputations from the sheriffs of the three counties;' had provided horses, arms, and necessaries, with twenty hired men, and often more, with a surgeon in ordinary; and had, after thirty-one set battles, wherein many of his men were killed, wounded, and lamed, besides numerous mutual indictments, prosecutions, and actions at law, reduced the riotous inhabitants to obedience, repaired the church, settled another minister, and rendered the levels safe, quiet, and flourishing. But this was scarcely the case, for until 1719 the anger of the 'commoners' seems never to have ceased for an instant. A chancery decision, made in that year, settled a quarrel which had lasted fiercely for almost ninety years. Few of the descendants of the Dutch settlers now remain on the island.

Leland spoke of Axholme in his day as being, in parts, 'fertile in pasture and corn.' Camden, at the beginning of the seventeenth century, adds flax to the other plants mentioned. Hunter, in his 'South Yorkshire,' says, 'It was not till the farmers on these lands (of the great level) were more English than French or Dutch, that anything was cultivated but oats or rye; nor was it till the beginning of the last century that the plan was adopted of destroying the grub, the great enemy of the crops in low and watery lands, by lime, which then began to be brought in great quantities from Balby and Hexthorpe (near Doncaster). Flax, peas, beans, clover, and wheat, are now the produce of these lands.' Arthur Young, in his 'Agricultural Survey of Lincolnshire,' said, 'The soil of the Isle of Axholme is among the finest in England; they have black sandy loams; they have warp land (land formed of the rich mud, brought up by the rivers at high water); they have brown sands; and they have rich loams, soapy and tenacious; the understratum at Haxey, Belton, &c., is in many places an imperfect plaster-stone.'

This island is in the west division of Manley Wapentake, and includes seven parishes, which contain 46,980 statute acres. There are two market-towns, Crowle and Epworth. Crowle is 167 miles N. by W. of London, through Gainsborough, from which it is 18 miles distant. The petty sessions are held here. The church, which is very ancient, presents a fine specimen of early Norman architecture. Epworth is 7 miles S. of Crowle, and 11 N. by W. of Gainsborough. It is a long straggling town, the inhabitants of which are chiefly employed in spinning flax and hemp (which, as observed above, are grown in the island), and in the manufacture of sacking and bagging.

AXIL'LA, in Botany, is the angle formed by the separation of a leaf from its stem; hence the

term *axillary* is applied to anything which grows from that angle. It is at this point that buds appear.

AXINITE. This mineral usually occurs crystallized in flat prismatic crystals, with very sharp edges, the fundamental form being a double oblique prism. Its colour is clove-brown, sometimes inclining to plum blue; sometimes transparent, at other times only translucent on the edges; its lustre is vitreous. The specific gravity of a crystallized variety from Cornwall is stated by Mohs to be 3.271, and its hardness 6.5 to 7. Before the blowpipe it readily fuses into a dark green glass. It is found in Saxony and in Cornwall. According to Wiegmann, it consists of—silica, 45.00; alumina, 19.00; lime, 12.50; peroxide of iron, 12.25; peroxide of manganese, 9.00; magnesia, 0.25; boracic acid, 2.00.

AXINUS (Sowerby), a fossil genus of Conchifera, of which some species occur in the magnesian limestone, and one in the London clay. To those which are found in the magnesian and other palæozoic limestones Mr. King applies the title of Schizodus.

AXIOM. [POSTULATE.]

AXIS, AXE. This word is used in so many different senses, that it may be defined as follows: any line whatsoever which it is convenient to distinguish by a specific term, with respect to any motion or other phenomenon, is called the axis. Thus we have axes of co-ordinates, of oscillation, of inertia, of rotation, of polarization, &c. The word, when used by itself, generally means either *Axis of Rotation*, or *Axis of Symmetry*. An axis of rotation, or revolution, is the line about which a body turns; an axis of symmetry is a line on both sides of which the parts of the body are disposed in the same manner, so that to whatever distance it extends in one direction from the axis, it extends as far in the direction exactly opposite. Or if perpendiculars to the axis be drawn from all points and in all directions through the body, the whole of each perpendicular which is within the limits of the body will be bisected by the axis. Such is the middle line of a cone, any diameter of a sphere, the line drawn through the middle of the opposite faces of a cube, &c.

AXIS, in Botany, a term which is applied to the root and stem of the whole plant. The result of placing the seed of a plant in a place fitted for its growth is the development of the embryo. The plumule ascends into the air, whilst the radicle descends towards the earth. The former is said to be the *ascending axis* of the plant, the latter the *descending axis*. It is around these axes of growth that all other parts of the plant are arranged. Those which are found upon the ascending axis, or stem, are collectively termed the *appendages of the axis*, and individually constitute the scales, leaves, bracts, flowers, sexes, fruit, and modifications of those parts of the plant; all these parts are in connection with the vascular system of the axis, and must not be confounded with mere expansions of the epidermis and the like, such as ramenta, thorns, &c., which have no real connection with the axis.

The cause of the direction taken by the ascending and descending axis of plants has been variously explained. Dodart is the first who appears to have paid attention to this circumstance. He assumed that the root is composed of parts that contract by humidity; and that the stem, on the contrary, contracts by dryness. For this reason, according to him, it ought to happen that, when a seed is sown in an inverted position, the radicle will turn back towards the earth, which is the seat of humidity; and that the plumule, on the contrary, turns to the sky, or rather atmosphere, a drier medium than the earth. The experiments of Du Hamel are well known, in which he attempted to force a radicle upwards and a plumule downwards by inclosing them in tubes which prevented the turning back of these parts. It was found that, as the radicle and plumule could not take their natural direction, they became twisted spirally. These experiments, while they prove that the opposite tendencies of the radicle and the plumule cannot be altered, still leave us in ignorance of the cause of such tendencies. The well-known fact of the stems of plants seeking the light when confined in dark places, had led De Candolle and other observers to attribute the tendency of the stem to an upward growth to the influence of light. Another well-known fact, that of the tendency of the roots of plants to grow towards water, or moisture, suggested water as a cause of the tendency of the root to grow downwards. Observing that the ascending axis of plants is always coloured, and that the descending axis is white, Dutrochet suspected that the action of light on the coloured parts of the plant was the cause of its growing upwards.

Herr von Kielmeyer gave a report on the direction of the organs of plants, to the assembly of naturalists at Stuttgart, in 1835, in which he explained the upward and downward growth of the axis of plants by the theory of polarity. Although every writer on this subject has endeavoured to give to one agent the position of a cause in this phenomenon, it will be found on inquiry that the particular directions of the stems of plants can no more be referred to one cause, than the growth in particular directions of the organs of animals. Growth, in whatever directions, is the result of all the forces that are acting on an individual organism; and therefore there can be little doubt that gravitation, light, the chemical constitution of the tissues, and electrical agency are all involved in producing the determination of the particular direction of the roots and stems of plants.

(Meyen, *Pflanzen-Physiologie*; Lindley, *Introduction to Botany*; Dutrochet, *Ann. des Sciences Naturelles*, xxix. 1833.)

AXIS, a species of Indian deer. The word is also used generally to denote a small group or sub-genus of solid-horned ruminants, presenting the same characters and inhabiting the same climate as the common axis. [DEER.]

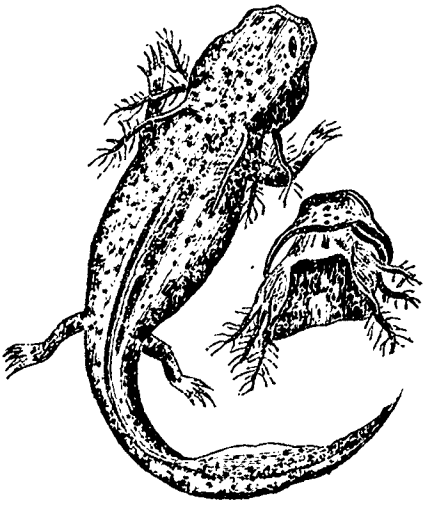
A'XIUS, a river of Macedonia, now called Vardar, which flows into the Gulf of Salonica. The alluvial depositions have encroached greatly on the gulf, leaving a low and swampy land, intersected with numerous small streams, which form islets of high reeds, and render the principal

branch difficult to discover. The entrance is obstructed by shoals and sand-banks, but the river is navigable for boats of twenty-five to thirty tons for several miles. It runs about N. by W. nearly a straight course for eight miles, when it is joined from the E. by a small stream not navigable for boats, (possibly the ancient Echeidorus); then taking a more westerly direction, it becomes more tortuous. The depth of the river depends on the season of the year. From a point about 16 miles above its mouth the river appears to have deviated from its ancient bed, which may still be traced about six miles from Salonica to the W., and to have taken a more westerly direction; it is now joined, about a league from the sea, by the Kara Azmac (apparently the ancient Lydias), which flows from the Lake of Pella. The nearest point of the river is now about 14 miles west of Salonica.

A'XIUS, in zoology, a genus of long-tailed decapod crustaceans, founded by Leach on *Axius stirhynchus*, which is about three inches or three inches and a half in length, and rarely found on our coasts. It has been taken near Sidmouth and Plymouth. Desmarest, with much reason, considers this genus entirely artificial, and thinks that it ought not to be separated from *Callianassa*. [Callianassa.]

AXMINSTER. [Devonshire.]

AXOLOTL (*Siren pisciformis*, Shaw; *Siredon pisciformis*, Wagler; *Gyrinus edulis*, Hernandez; *Menobranchus pisciformis*, Harlan), a fish-like amphibious reptile, allied to the Proteus, &c., and possessing permanent gills or branchiæ, in the form of long fringed processes on each side of the neck. It is a truly perennibranchiate amphibian, furnished with gills as well as lungs, and capable of respiring both air and water. The limbs are



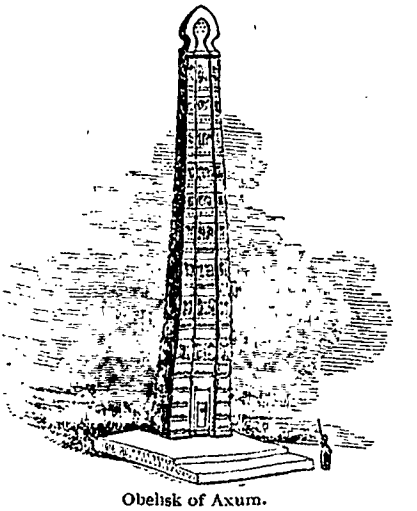
The Axolotl.

four; the anterior are furnished with four toes, the hinder with five. There are teeth in both jaws, as well as palatal teeth aggregated in numerous rows, and rasp-like, as in certain fishes. The tail is compressed at the sides like that of a water-newt, and furnished above and below by a membranous fin; the head is broad, the muzzle blunt, and the eyes are small. The axolotl is a native of Mexico, and common in the lake on the east side of the city of Mexico, as well as in cold mountain lakes at a much greater elevation above the level of the sea than the Mexico lake. This animal is sold in the markets of Mexico, and is esteemed a luxury by the inhabitants; it is dressed after the manner of eels, and served up with a rich sauce. For a long time the axolotl was considered as the tadpole of some frog, newt, or other batrachian, and was so regarded by Cuvier till he prepared the last edition of his 'Règne Animal;' and even there he expresses some degree of doubt respecting it. Its true characters as a perennibranchiate amphibian are however now clearly established.

The length of this singular naked-skinned animal is eight or ten inches. The general colour is deep greyish brown, thickly mottled with round black spots. The communications which open from the gills into the mouth are four in number, and of large size; they are covered externally by a fold of skin forming a sort of operculum.

(Humboldt, *Observations de Zoologie;* Shaw, Cuvier, &c.)

AXUM, a town of Abyssinia, in about 14° 7′ N. lat., and about 120 miles S. from Arkeeko, which is on the coast of the Red Sea. The present town consists of only about 600 houses; it stands 'partly in and partly at the mouth of a nook formed by two hills on the N.W. end of an extensive and fertile valley, which is watered by a small stream.' One of the objects that first strikes a traveller is a small plain obelisk, with the remains of many others lying near it; but the great curiosity is the large obelisk, 60 feet high, made of a single block of granite. The engravings on this obelisk are not hieroglyphics like those of Egypt, nor



Obelisk of Axum.

does it exactly agree with them in shape. Though it is quadrilateral, one of the sides has a hollow space running up the centre from the base to the

summit, which, instead of terminating in a pyramid like the regular obelisks, is crowned with a kind of patera. At the bottom of the hollow space just described a doorway is represented. The obelisks of Axum were originally 55 in number, and four of them, it is said, were as large as that now standing. Among the other antiquities of Axum is a stone which contains two inscriptions: that on one side is in rude Greek characters; that on the opposite side is supposed by Mr. Salt, who copied part of it, to be in Ethiopian characters, and to have been cut at the same time with the Greek inscription.

Besides the obelisk, there is a Christian church at Axum, to which there is an ascent by two fine flights of steps. The church itself, which dates only from 1657, is 111 feet long, 51 broad, and 40 high, with a flat roof, and of no great beauty in its architecture. It is in this church that the history of Abyssinia, known under the name of the 'Chronicles of Axum,' is kept and continued. A copy of the 'Chronicles of Axum' was brought to Europe by Bruce. Another remnant of former times, near the church of Axum, is a square inclosure, with a pillar at each corner; within it are a seat and a footstool; the whole is of granite. On this seat, tradition says, the ancient kings were crowned. Within 30 yards of this Mr. Salt found another granite stone resembling a footstool, on which he says there is an Ethiopian inscription.

The kingdom of the Axumites is first noticed by the author of the 'Periplus' (or 'Coast Survey') of the Red Sea and part of the east coast of Africa, &c. This document, which is still extant, was written probably about the close of the second century; but how long this Axumite kingdom had existed before we are not able to say. The Greek inscription, which was copied by Mr. Salt, shows us that the monarch of Axum had an extensive empire; in Africa, it was co-extensive at least with the present kingdom of Tigré, and his possessions extended even into Arabia. Through the port of Adule on the Red Sea, Axum maintained a commercial intercourse with Arabia and India; and it was probably for some advantage to be secured to Greek merchants from Egypt in the Indian trade, that the Byzantine Cæsars paid a yearly tax to the Axumite king until the commencement of the Arab conquest. Axum was the great emporium for ivory, which was exported through Adule.

(Bruce's *Travels;* Salt's *Abyssinia.*)

AYACU'CHO, the name of a plain in Peru, in South America, in the district of Guamanga, the scene of a decisive battle in the war of independence, fought in 1824 between the Spaniards and the revolutionists, wherein the Spaniards were defeated with great loss, and the viceroy, 15 general officers, and 3200 men were compelled to surrender.

AYAMONTE, a town in Spain, in the province of Seville, in 37° 12′ N. lat. 7° 15 W. long. It is situated on the slope of a lofty hill, on the eastern side of the mouth of the Guadiana: it is a fortified town and stands opposite to Castromarin, in Portugal. Its population is about 6000, three-fourths of which number are fishermen, sailors, and ship-carpenters, and the remaining part are employed in agriculture and commerce. Soap, earthenware, brick, and lime are made; but the inhabitants are chiefly engaged in the tunny and anchovy fishery. The castle is of very old construction. The place was conquered by the Moorish king of Granada in 1406. The infante of Antequera wrested it from the hands of the Infidels two years afterwards.

AYEEN AKBERY, properly *Ayin-i-Akari*, the title of a geographical and statistical account of the Mogul empire in India during the reign of the emperor Jelâleddin Mohammed Akbar [AKBAR], written by his vizir Abu'l Fazl. [ABUL FAZL.] It constitutes properly the third or concluding part of the 'Akbarnameh' of the same author. The first volume of this work consists of a summary account of Akbar's ancestors, and the second volume comprises the occurrences of his reign, from his accession to the throne down to the 47th year. A free and often abridged translation of this work into English was undertaken by Mr. Francis Gladwin, and began to be published at Calcutta, in 1783. It has twice been reprinted in England. As an original and we may say an official account of the internal organization of the Mogul empire at the time of its greatest prosperity, the 'Ayin-i-Akbari' is highly interesting. It is divided into four parts: the first three are chiefly political and legislative; the fourth part is chiefly statistical and geographical, giving a description of the several provinces at that time comprehended under the Mogul government, and a detailed account of the ancient institutions, religion, and literature of the Hindus, which is very comprehensive, and in many parts surprisingly accurate.

AYLESBURY, a town in Buckinghamshire, 38 miles from London, through Watford, Berkhampstead and Tring, and 40½ through Uxbridge, Amersham, and Wendover. A railway 7 miles in length connects Aylesbury with the London and North-Western Railway.

This town is situated near the centre of the county, on a small elevation in the midst of the fertile vale of Aylesbury. It is close to a small rivulet which comes from the neighbourhood of Wendover, and which, after passing Aylesbury, falls into the Thame about two miles north-west of the town. It consists of several streets and lanes irregularly built. The elevation of the town above the general level of the vale caused the want of water to be frequently felt by the inhabitants; but the houses are now well supplied by means of machinery in the gaol, which is worked by the prisoners. The town is also well paved, and lighted with gas.

Although Aylesbury does not give name to the county, it seems to have the fairest title to be considered as the county town. The quarter-sessions are always held there. The summer assizes are held at Buckingham, the Lent assizes at Aylesbury, where also is the county gaol; and it is the place of election of the county members.

The county hall is a handsome brick building erected in the earlier part of the last century.

The old town-hall and market-house have been replaced by a building on the model of the Temple of the Winds at Athens. The parish church, dedicated to St. Mary, is a spacious ancient structure, with a low tower rising from the intersection of the nave and transepts. There are meeting-houses for Independents, Baptists, Quakers, and Methodists.

There is an endowed school, the annual income of which amounts to nearly 540*l.*; it consists of two houses, one for the head or Latin master, and the other for the writing or English master, with a school-room connecting the two. In this school one hundred boys are taught by the English master, while twenty more are instructed by the head master in the different branches of a classical and mathematical education, in a building adjoining and belonging to the church, supposed to have been originally a chantry chapel. There is a charity denominated, from the name of the founder, Bedford's charity, deriving a yearly income of about 535*l.* from houses and lands, which income is employed in repairing the roads in and about the town, or distributed in money and clothing to the poor. There are also alms-houses, bequests of property for apprentice fees, and many minor charities. (*Report of Commissioners of Charities*, January, 1833.)

The only manufacture carried on in the town is of lace. There is a market on Saturdays, principally for corn, and six fairs in the year, chiefly for the sale of cattle.

Aylesbury is a parliamentary borough, and returns two members to the House of Commons. The population in 1841 was 5429. It is a very ancient town, and is said to have been one of the strongest holds of the Britons in their struggle against the Saxons, who took it in 571. The Saxons called it Aeglesburge. In 'Doomsday Book,' it appears under the name of Elesberie. In Leland it is written Alesbury, and in Camden Ailesbury.

(Lysons, *Buckinghamshire; Parliamentary Returns.*)

AYLESFORD. [Kent.]

AYLSHAM. [Norfolk.]

AYLIFFE, JOHN, LL.D., an English jurist, of the circumstances of whose life hardly anything is known. He styles himself Fellow of New College, Oxford. In 1714 he published in 2 vols. 8vo. 'The Antient and Present State of the University of Oxford,' &c., a work of which a great portion is avowedly an abridgment of Wood's 'Athenæ.' In 1726 he published in folio 'Parergon Juris Canonici Anglicani, or a Supplement to the Canons and Constitutions of the Church of England,' in which he brings much learning and research to bear against the exercise of a separate and independent legislative power by ecclesiastical bodies. In 1732 he published 'The Law of Pledges and Pawns as it was in Use among the Romans;' and in 1734, in a large folio volume, a 'Pandect of the Roman Civil Law, as anciently established in that Empire,' &c. This volume covers the greater part of the author's subject, but the complete work was never published.

AYMESTRY LIMESTONE, one of the calcareous bands in the upper Silurian series, which has been produced by coral and shell accumulations amidst the masses of argillaceous sediments. It is not traceable beyond the districts of Ludlow, Abberley, Malvern, Woolhope, May Hill, and Usk. Partially characterized by Pentamerus Knightii.

AYR, the county town of Ayrshire, Scotland, and a sea-port on the Frith of Clyde. It is a royal burgh, and also a parliamentary borough included in the Ayr district of boroughs. It is situated on the south bank of the river Ayr, on a wide level plain, and can be seen from a distance of several miles in all directions. It is 77 miles S.W. from Edinburgh, and 34 miles S.S.W. from Glasgow, in 55° 28′ N. lat., 4° 39′ E. long. The population of the parish and burgh of Ayr in 1841 was 8264; but the parliamentary borough includes Newton-upon-Ayr, on the north bank of the river, and other places, and had in 1841 a population of 15,749. The principal streets are lighted with gas, and have generally side-pavements. Two bridges, the Old Bridge and the New Bridge, connect Ayr with Newton-upon-Ayr. The county buildings, in Wellington-square, form a massive structure built in imitation of an ancient temple of Isis at Rome; these buildings consist chiefly of courts of law and offices connected with them. The town's new buildings contain a spacious news-room, and various other apartments for town meetings, &c., and the whole can be thrown into one suite of rooms for public dinners, balls, and assemblies. From the centre of these buildings rises a handsome spire 226 feet high. There is a gaol of modern construction, and under improved regulations. The Wallace Tower, on the site of an old building of the same name, which was pulled down to make room for it, is 115 feet high, and a conspicuous ornament to the town. The old church, erected during the protectorate of Cromwell, is a very solid and venerable-looking structure. The new church, erected in 1810, is rather a handsome building, but has no tower or spire. There are also Episcopalian and Roman Catholic chapels, and places of worship for various bodies of Protestant Dissenters. The academy is a plain but handsome building, in an open space near the town. The number of scholars averages from 500 to 600 annually. There are barracks situated on an open level ground near the harbour. A short distance from Ayr, on the top of the east bank of the river Doon, near Alloway Kirk, is Burns's Monument. It is an architectural structure of great beauty, consisting of nine Corinthian columns on a massy rustic base, and surmounted by a gilt tripod. The height is upwards of 60 feet, and it cost more than 2000*l.*, chiefly raised by subscriptions. It is surrounded by an inclosed space of nearly two acres, laid out in walks, and planted with beautiful and rare shrubs.

The harbour has two piers which extend into the sea upwards of 300 yards, one on the south side of the river and the other on the north side, and a breakwater still farther out has also been recently constructed. A bar at the mouth of the harbour limits the size of the ships which enter it. The depth of water, in ordinary spring tides, is 13

to 14 feet, and there is space within the bar to contain 80 vessels. The number of vessels registered December 31, 1845, was 12 under 50 tons burden, and 27 above 50 tons. About 16 vessels arrive annually from foreign ports with cargoes of hemp, mats, tallow, tar, iron, pitch, timber, &c.; from 12 to 17 vessels sail to foreign ports, with cargoes of coals, cordage, leather, cotton, and woollen goods, &c.; from 200 to 300 vessels, coastwise, arrive at Ayr from other parts of the United Kingdom, laden with corn, groceries, haberdasheries, hardware, &c.; from 1100 to 1300 vessels, coastwise, sail from Ayr to other parts of the United Kingdom, with cargoes of coals, corn, wool, and other goods.

Ayr is one of the towns at which the high court of justiciary for the southern circuit (corresponding to the English assizes) is held. It is also the seat of a sheriff-court, small-debt court, commissary court, burgh criminal court, and justice-of-peace court. It is the place of residence of persons in easy circumstances, professional men, and tradesmen; and the business of the town arises chiefly from the number of gentry who inhabit it, and from its rank as a county town. Two county newspapers are published weekly in Ayr. There is a flourishing Mechanics' Institute, savings' bank, poor-house, dispensary, and there are various charitable institutions and bequests to the poor. Newton is the seat of the coal-trade, and most of the coals are sent to Ireland.

(*New Statistical Account of Scotland.*)

AYRSHIRE, a county in the S.W. part of Scotland. The Frith of Clyde, an arm of the sea which washes it on the W. side, forms a bay, near the bottom of which is the town of Ayr. The coast-line is about 66 miles in length. The inland boundary, from the northern point of the coast-line, runs about 44 miles in an irregular line towards the S.E., and separates Ayrshire from Renfrewshire and Lanarkshire: after it reaches the most eastern point it turns to the S.W., and with many windings reaches the southern point of the coast, separating Ayrshire from the shires of Dumfries, Kirkcudbright and Wigton.

The southern and eastern parts, with a small portion of the northern part, are the most hilly; and some of the eminences are of considerable height. Along the shores of the Frith are narrow plains, abounding with gravel; the country inland rises into hills, which inclose, as within an amphitheatre, the best part of the country. The principal hills are Knockdolian (1950 feet), Cairntable, Blackside-end, Carleton-hill, Knockdaw, Knocknorman (from 1540 to 1650 feet). Ailsa Craig (1098 feet), situated off the coast, is the summit of a submarine mountain, about two miles in circumference, formed of primary rocks, and covered with verdure.

Ayrshire is a natural basin. Many streams rise near the inland boundary, and flow through the county into the sea; but the shortness of their course prevents them from becoming of much importance in a commercial point of view. The Garnock, rising in the north, and pursuing a course towards the south, unites with the Irvine, which comes from the east; or, rather, both these

rivers fall into Irvine harbour. The Irvine, which is the larger of the two, is about 20 miles long. The Ayr crosses the county at its widest part, flows from east to west, and falls into the sea near the town of Ayr. It has a course of from 30 to 35 miles. The Lugar is its principal tributary. The Doon rises from several small lochs on the S.E. border of the county, and, passing through Loch Doon, flows N.W. till it falls into the sea not far from the mouth of the Ayr. It is of about the same length as that river. The Girvan and the Stinchar rise in the same district as the Doon, and drain the southern parts of the county. They are about 20 to 25 miles long. The Nith, which flows through Dumfries-shire, and the Cree, which divides Kirkcudbrightshire from Wigtonshire, rise in Ayrshire or on the border. In addition to the rivers, there are several small lochs, some of which abound in fish.

The mineral riches of Ayrshire are considerable. Coal is abundant, especially in the middle and northern parts of the county, which may be considered as included in the great coal-field of Scotland. Harbours and railroads have been formed to carry on the export coal trade. The coal is of different varieties, among which is the blende coal, found in the earth charred, or reduced to the state of a cinder. It burns without smoke or much flame, and is used for drying grain and malt. Considerable quantities are exported to Ireland and to the Western Isles. The county affords also abundance of stone; such as freestone, whinstone, puddingstone, granite for mill-stones, black-stone for ovens, whetstones, and marl. Among the mineral produce is ironstone; at Muirkirk, near the eastern extremity of the county, extensive iron works are carried on. Lead, plumbago, or black lead, antimony, and copper (of each of which the quantity is small) may be considered as nearly completing the list of all the minerals of Ayrshire.

The soil of this county is thus distributed by Chalmers in his 'Caledonia:'

	Acres.
Clay soil	261,960
Sand or light soil	120,110
Moss and moor land . . .	283,530
Total	665,600

The light or sandy soil is met with along the coast, interspersed with a deep and fertile loam. On the eastern boundary the moor lands, intersected with mosses, occur. Of these mosses, Aird's Moss and Moss-Mallock, which last is partly in Lanark and Renfrew shires, may be noticed for their extent. In the parish of Muirkirk and New Cumnock, which are in the east part of the shire, more than half the land is moss. The clay soil, which constitutes so large a portion of the land, varies in its character; it is, in some parts, strong and productive, while in others it is spongy, wet, and cold, producing grass unfit for fattening cattle, and merely sufficient for keeping alive a breeding stock.

Wheat is not cultivated to any great extent; and, though the quality of that which is raised is very good, yet the cultivation of it is attended

by many disadvantages. Oats are much more generally cultivated. Bigg or bear, turnips, potatoes, the artificial grasses, and flax, are grown. The best rotation of crops is considered to be oats or beans raised after ploughing up a grass-field: after these, in dry soils, turnips or other green crops, such as kale, vetches, tares, or potatoes. In very strong soils, drilled beans, cabbages, and carrots may be substituted in the place of turnips. These are followed by a crop of barley sown with artificial grass seeds. After the clover, wheat or oats, and, in very light lands, rye.

The cattle in the southern part of the county are chiefly reared for the market, and are for the most part of the Galloway breed. They are commonly black or brindled (though some are white or dun), and the best are without horns. They are very hardy, and grow fat where the large heavy breed of some other counties would be starved. Great numbers are yearly sent to England. The cattle in the northern part of the county is partly of the Dunlop breed, which has been established there for a century and a half. They are remarkable for the quantity and excellence of their milk. Besides these, there is a breed of brown and white mottled cattle, which is considered to have been introduced at a considerably later period. They are, like the others, excellent milkers. The dairy is an object of great attention in Ayrshire, and a considerable quantity of cheese is made. The Dunlop cheese is in good repute; and the making of it forms almost the sole business of the farmers in the parish of Dunlop. The Alderney, the Irish, the small Highland, the Holderness, and some other breeds of cattle have been partially introduced. On the dry lands along the coast a small white-faced breed of sheep has long been maintained. They produce but little wool, and that of middling quality, and seem to have very little to recommend them. The native sheep is bred in great numbers on the moors. These are among the hardiest, most active, and most restless of the sheep tribe. They are round, firm, and well-shaped, with black faces and horns. The wool is scanty in quantity, and coarse in texture; but the flesh at five years old is excellent. The county possesses hardy and strong work horses. Swine are reared in small numbers. Rabbits are more numerous than in any other county in Scotland. The lower parts of the county and the banks of its numerous rivers are thickly studded with plantations around the mansions of the proprietors. It is to be regretted that, in the early period of improvement, the Scotch fir was preferred to the larch. Plantations of willows for hoops and baskets have been made with considerable benefit. There is a reed near the lakes, in some parts, which is excellent for thatching.

The climate of Ayrshire is moist, but far from unhealthy. The westerly winds blow severely on the coast; and the part near the Isle of Arran is subject to frequent and heavy showers, the clouds being attracted by the lofty mountains of that island. The air is milder and more temperate than in the east of Scotland; and towards the western or coast side it is pure and free from fogs. Snows melt as they fall on the coast.

The manufactures of Ayrshire are important, for the district possesses considerable advantages. Fuel is abundant; materials for building are at hand; there are channels of communication open; and the vicinity of Glasgow and Paisley has given a great impulse to improvement. The woollen manufacture has been long established; and bonnets and serges were early made at Kilmarnock. Improved machinery soon came in, and carpets, cloths (except the finer broad cloths), and stockings were made by it. Towards the end of the last century the woollen manufacture extended to other parts of the county, and is carried on to a considerable extent by the aid of machinery. Dyers and fullers have established themselves in connection with this manufacture. Cotton works were erected at the village of Catrine on the Ayr, and the manufacture of cotton is considerable at other places in the county; but the linen and silk manufactures are of small amount. There are numerous tanneries; and the leather is employed in making shoes, boots and saddlery. Pottery for domestic purposes is made, but not to any great amount. Kelp, soda, and salt have all been made to advantage along the shore. It may be remarked here that neither brick nor tile are much used in this county in the erection of houses, the numerous quarries supplying plenty of stone for building, and tiles being neither so handsome as slate nor so warm as thatch.

Roads have been made in almost every direction in which they are wanted. The Ayrshire and Glasgow Railway runs through the county; and most of the towns of any importance in the county are already placed in railway connection with each other.

The county of Ayr contains the three ancient districts of Carrick, Kyle, and Cunninghame. Carrick includes the country to the south of the river Doon; Kyle, the country between the Doon and the Irvine (which is again subdivided into King's Kyle, south of the Ayr, and Kyle-Stewart, north of that river); and Cunninghame, the district north of the Irvine. These divisions are marked in many maps, and are used in speaking of the county; but they have had no distinct legal existence since the act abolishing hereditary jurisdictions. The population of Ayrshire in 1841 was 164,356; being about 13 per cent. increase on that of 1831. The county returns one member to parliament.

The chief towns in Ayrshire are the following:—

Ayr, the county town. [AYR.]

Ardrossan is a sea-port, and the small town, which is of recent formation, owes its origin to the harbour. The streets are wide, and cross each other at right angles, and the houses neat and well-built. The place is frequented in the summer for the benefit of sea-bathing. The harbour is formed on a magnificent plan, and was constructed under the patronage, and chiefly at the expense, of the late Lord Eglinton. Though unfinished, it is capable of accommodating a great number of vessels of large size, there being from 12 to 20 feet depth of water at full tide. It is

secure against all winds, and is sometimes crowded with vessels which have run into it for safety in boisterous weather. Lord Eglinton acted on the belief that Ardrossan would become the harbour of Glasgow, and thus render unnecessary the circuitous navigation of the Clyde; and, in order to unite the harbour with the town of Glasgow, a canal was projected, but was not completed farther than from Glasgow to Johnstone in Renfrewshire. In 1827 an act of parliament was obtained for a railway from Ardrossan to join the canal at Johnstone; but the capital raised was only sufficient to complete a single line to Kilwinning, six miles inland; but the line has since been extended northwards to Johnstone, Paisley, and Glasgow, and southwards to Kilmarnock and Ayr.

Girvan is a market-town and port-town, beautifully situated at the mouth of the river Girvan, on a fine bay, about 20 miles S.S.W. from Ayr. The harbour is small, and has a small pier, erected a few years ago, which has facilitated the shipment of coals and grain. The population of the parish of Girvan in 1841 was 7424.

Irvine, formerly written Irwyn and Irwine, is situated on the north bank of the river Irvine, a little below the confluence of the Garnock with the Irvine. Formerly the sea came up close to the town, and vessels were loaded and discharged at the Seagate, as it is still called; but the town is now nearly half a mile distant from the harbour. Before Port Glasgow was constructed, the goods imported by the merchants of Glasgow were brought to Irvine. The sea has receded considerably on this coast within the last two hundred years. Irvine is one of the most ancient of the royal burghs of Scotland, and is also a parliamentary borough, included in the Ayr district. The principal buildings are the academy, the town-house, and the parish church. The population of the town in 1841 was 7647. The imports consist chiefly of timber, of grain from America, and of large quantities of grain and butter from Ireland. Coals to the amount of about 280,000 tons are exported annually from the port and district of Irvine, and carried coastwise and to Ireland. The number of vessels belonging to the port is 118, with an average burthen of 15,756 tons.

Kilmarnock is a market-town 65 miles S.W. by W. from Edinburgh. It is also a parliamentary borough, included in the Kilmarnock district, with a population in 1841 of 19,956. The population of the town of Kilmarnock was 12,232. It has railway communication with Glasgow, Paisley, Ardrossan, Irvine, Troon, and Ayr. The old streets of the town are narrow and inconvenient, but the modern streets are spacious and handsome. Kilmarnock has various manufactures, some of which are extensive, especially worsted printed shawls and carpets. The manufacture of boots, shoes, and bonnets is also very considerable, and there are large tanneries. There are five bridges over the water of Kilmarnock, all within the town.

Kilwinning derives its name from St. Winning, a monk celebrated for his piety at the beginning of the eighth century. A large monastery, called the monastery of Kilwinning, was founded here about 1140. It was suppressed at the Reformation, and the buildings were destroyed in 1560: scarcely any remains of it exist. The population of the town of Kilwinning in 1841 was 2971. There are several collieries in the neighbourhood. Near the town is the castle of Eglinton, with its extensive park.

Largs is situated on the coast, and is a favourite place of resort for sea-bathing. A pier was erected in 1834, and steam-boats ply between Glasgow and Largs. The population of the town and suburbs in 1834 was 3523.

Mauchline, about 12 miles E.N.E. from Ayr, contained in 1841 a population of 1336.

Maybole is situated on a small eminence surrounded by hills, about 5 miles from the coast, and 70 miles S.W. by W. from Edinburgh. The population of the parish of Maybole, in 1841, was 7027.

Saltcoats (or Saltcots, as spelled in old records) is about three quarters of a mile S. from Ardrossan, and there is a beautiful sweeping bay between them, with a fine beach, which is a favourite promenade for strangers in the sea-bathing season. The population of the town of Saltcoats in 1841 was 4238, a large proportion of whom are weavers, employed by the Glasgow and Paisley manufacturers. The harbour admits vessels of 200 tons burthen, and is chiefly used for the shipment of coal, of which there are several mines in the neighbourhood. About 30 vessels belong to the harbour, of from 20 to 200 tons burthen each. Saltcoats is 32 miles S.W. from Glasgow.

Stewarton, on the north bank of the Annock Water, is 18 miles S.S.W. from Glasgow, and 6 miles N. from Kilmarnock. The inhabitants are chiefly employed in the manufacture of regimental and naval bonnets, and in weaving carpets, blankets, druggets, &c. The population in 1841 was 4654.

Troon is a town and harbour about 5 miles S. from Irvine. It is connected with the Ayr, Glasgow, and Kilmarnock Railway, which has added greatly to the improvement of the town and harbour and the prosperity of the inhabitants. The population of the town in 1841 was 1409. The harbour admits vessels drawing 15 feet of water at low tide, and is of easy entrance, but not sheltered from a north-west gale. Timber is imported, and coal exported. About 20 vessels belong to the port.

There are in Ayrshire several monuments of antiquity; of which the chief are two cairns of grey stones of large diameter; several oval and circular encampments; the remains of an ancient fire-beacon, near Ardrossan; the ruins of Loch Doon Castle, Turnberry Castle, and more than a dozen others, in different parts of the county; the ruins of Crossraguell Abbey, of Kilwinning Abbey, of the old collegiate church at Maybole, and of Alloway Kirk, immortalized in Burns's 'Tam o' Shanter.'

Ayrshire was inhabited, at the time of the Roman invasion under Agricola, by the great

tribe of the Damnii. At a later period, the descendants of the Scots, who came over from Ireland to the peninsula of Cantire, and crossed from thence into Ayrshire, were mingled with the Damnii. In the eighth century, Kyle fell into the hands of the Saxon kings of Northumberland. In the ninth century, an attempt made by Alpin, king of the Scoto-Irish in Kintyre, to subjugate the district, failed. The invader was defeated and killed. The people of Ayrshire at that time spoke the Gaelic language, and their country formed part of Galloway. The 12th century was marked by the introduction of colonists from England, with new principles, customs, and jurisprudence; but the change was very gradual, and even at the end of the 16th century the Gaelic language was still spoken in Ayrshire. In the middle of the 13th century the Norwegians invaded this part of Scotland; but in 1263 they were defeated and driven to their ships by the king of Scotland, Alexander III. The decisive battle took place at Largs, in Cunninghame. The earldom of Carrick came soon after, by marriage, into the family of the Bruces, lords of Annandale; and, on the accession of Robert Bruce to the throne, was merged in the crown.

In the religious troubles which occurred in the time of the later Stuarts (Charles II. and James II.), the men of Ayrshire supported the Covenant with much zeal, and suffered severely for their steady adherence to the cause which they had embraced: many were put to death, and the highland clans were brought in to live at free quarters among them. They consequently rejoiced in the revolution of 1688, which overthrew the power of their persecutors. In the moors, mosses, and fastnesses of Ayrshire are several monuments to the memory of those who fell in the troubles; and especially of the field-preacher Richard Cameron, and some of his associates, who were killed after a skirmish with a party of the military in Charles II.'s time. The character of the people at the present day indicates their descent from the zealous presbyterians. They are remarkable for their regard for religion, their decency, and good conduct. Burns's 'Cotter's Saturday Night' may be regarded as descriptive of the manners of many of those in humble life. Their religious fervour has led them, however, in some instances, into irregularities and errors, as was shown by the rise of the prophetess, Mrs. Buchan, towards the close of the last century. In the towns and villages there are many dissenters from the kirk, and also throughout the county many adherents of the free church.

The Island of Little Cumbrae, about a mile in length, and half a mile in breadth, belongs to Ayrshire. The loftiest eminence in this island is 780 feet high. The whole island belongs to the Earl of Eglinton. There is a light-house upon it. Great Cumbrae is in Buteshire.

(Chalmers's *Caledonia;* Sir John Sinclair's *General Report of Scotland;* Colonel Fullarton's *General Report on the Agricultural Surveys;* Playfair's *Description of Scotland; Beauties of Scotland; New Statistical Account of Scotland.*)

AYTOUN, SIR ROBERT, was born in Fifeshire, in the year 1570, and followed King James I. to London on the union of Scotland with England. He seems to have spent the remainder of his life principally in attendance on the king's person, holding several places at court. He died in the palace of Whitehall, in 1638. The 'Delitiæ Poetarum Scotorum' contains a considerable number of occasional poems of his, in Latin hexameter and elegiac verse. His English poems were neglected and scattered abroad, many of them probably never finding their way into print. One collection of them was printed a few years ago, in the 'Miscellany of the Bannatyne Club;' and a volume entitled 'The Poems of Sir Robert Aytoun,' edited by Charles Roger, Edinburgh, 1844, contains all the poems attributed to him in both languages. Aytoun's Latin poems, although creditable to his Latinity, now call for little notice. His English poems are greatly more interesting and original, and valuable for the grace and animation which pervades the best of them, especially those of a sportive cast.

AYUNTAMIENTO, JUSTICIA, CONCEJO, CABILDO, REGIMIENTO, are the names given in Spain to the councils of the towns and villages. These councils are in general composed of the corregidor, alcalde, regidores, jurados, and personeros, or hombres-buenos. All these officers, with the exception of the corregidor, who was always appointed by the government, were originally elected every year by the inhabitants of the concejo, or commune. To be the head of a family, a native of Spain, and settled in the commune, were the only qualifications required either from an elector or a candidate. The origin of this institution may be traced to the remotest period of Spanish history. (Masdeu, 'Historia Critica,' vols. iv. to ix., more particularly vol. viii. book 3, pp. 33–49.) It existed in the Peninsula under the Romans; and under the Goths it was called the Council of the Præpositus or Villicus, a political and military governor appointed by the king. The individuals who formed the council were called priores or seniores. In the eleventh and twelfth centuries, the territories which the cruel and devastating wars between the Christians and the Moors had deprived of inhabitants, were again peopled, and the kings of Leon and Castile granted particular *fueros*, or charters, by which many great privileges were bestowed on such as chose to settle in these new colonies. Among these privileges was the re-establishment of the concejos, or communes. In some of these concejos the king appointed an officer who had the political and military command in the commune; he also collected the revenues, and watched over the observance of the fuero; but this officer had neither voice nor vote in the ayuntamiento, and was in every other respect subject to the authority of the concejo. These officers were called domini, dominantes, and also seniores. The administration of justice, the levying of taxes, raising of troops, and all the interior policy of the concejo, devolved upon the ayuntamiento. The members of this body were chosen every year by ballot, by the inhabitants of the commune. All the citizens enjoyed equal rights in these concejos: Christians, Moors, and Jews all had the same privileges.

No nobleman was allowed to settle in them, unless he first renounced all the privileges of his class, and became a commoner; nor was he allowed even to build a castle or a palace by which he might be distinguished from the rest of the citizens. If any one attempted to do so, the alcaldes were bound by fuero, and under the most severe penalties, to expel him from the concejo.

Such were the immunities enjoyed by these colonies and their consequent state of prosperity, that many barons voluntarily renounced the privileges of their rank to settle in them. Many behetrias, or free cities, which were at liberty to place themselves under the protection of any lord they chose, preferred the patronage of the king, in order to enjoy the same privileges as the concejos. Similar fueros were also granted to such cities as rendered eminent services in the wars against the Moors. In all ordinary cases the ayuntamiento decided alone, but every subject which could interest the whole community was, and is even at this day, particularly in villages, decided in *concejo abierto*, or open council, in which all the citizens in the commune have a voice. These ayuntamientos had also the privilege of sending their procuradores, or deputies, to the Cortes, or great assemblies of the nation; and these procuradores formed there the Brazo de las Universidades, or the House of Commons. During the disturbed minorities of Ferdinand IV. and Alonso IX. of Castile, the municipal constitution of Spain suffered greatly. The kings and the feudal lords availed themselves of the pretext of disturbances in the elections of the ayuntamientos, and the king usurped the right of appointing their members in some concejos. Another innovation introduced by the kings was that of appointing corregidores, or *jueces asalariados*, salaried judges, to administer justice in the concejos, in the name of the king, by which measure he deprived the ayuntamiento of the judicial power. The nation frequently remonstrated against this abuse, and a law was enacted about 1540, by which it was ordered that no town having a population under 500 vecinos (about 2000 inhabitants) should have an ayuntamiento appointed by the government. The Cortes of 1812 abolished all the abuses, and all the towns were restored to their primitive right of electing their municipal officers. Ferdinand VII., on his return from France in 1814, rescinded everything which the Cortes had done, and restored the ayuntamientos perpetuos.

Notwithstanding the continual efforts of the government to destroy this salutary institution, it still exists, and has been at all times a check against despotism—feeble indeed, but yet sufficient to have still preserved in the Spanish nation a democratical spirit, which has manifested itself on all occasions of great national interest. Ignorance of the municipal constitutions of Spain is one of the causes why politicians, both native and foreign, are so frequently deceived in their judgments and calculations relative to Spain, particularly in times of great political excitement. When the Spanish government in 1808 deserted the nation, and delivered it into the hands of the French; when the nobility, the high clergy, and all the high civil and military functionaries acknowledged the disgraceful transactions of Bayonne, the alcalde of Mostóles (Schepeler, 'Histoire de la Révolution d'Espagne, vol. i. chap. 3, p. 55), an insignificant village in the neighbourhood of Madrid, raised the national standard against the Emperor of the French, and the whole nation, flocking round it, exercised in its fulness that portion of the sovereign power which it had always preserved.

(Mariana, *Examen de la Antigua Legislacion de España; Recopilacion de las Leyes de estos Reinos*, book vii.; Mariana, *Historia de España*, book xx. chap. 13.)

AZA'LEA, in Botany, is the name of a genus belonging to the natural order *Ericeæ*, and consisting of shrubs remarkable for the beauty and fragrance of their flowers; on which account they are very generally cultivated in Europe. By some botanists the genus is esteemed the same as *rhododendron*, in which it is accordingly sunk; and it must be confessed that it is difficult to point out any positive character, except the thin and generally deciduous leaves, by which azalea can be distinguished from rhododendron. It will, however, be more conformable to popular usage if we speak of them apart.

Since the year 1734, when we have the earliest record of the existence of American azaleas in England, they have been so generally diffused, and have been so much altered from their wild characters by domestication, that it is no longer possible to trace them, in a satisfactory manner, back to their original types. It is not by merely raising them from seed that this deviation from their wild characters has been brought about, but also by their having been accidentally or artificially hybridized till all trace of their original forms is lost in new and unnatural features. We shall therefore state, in the first place, the characters by which the species are distinguished on their native hills, and then describe the modes of cultivation in this country.

Four principal forms exist, to one or other of which all the species are referable:—1, those with glutinous flowers and short stamens; 2, those with glutinous flowers and stamens much longer than the corolla; 3, those with flowers that are scarcely at all glutinous, and stamens much longer than the corolla; 4, those with flowers that are scarcely at all glutinous, and short stamens. These form the natural subdivisions of the genus.

Section 1.—*Flowers covered with numerous glutinous hairs. Stamens little or not at all longer than the tube of the corolla.*

1. *Azalea viscosa*, Linn. Leaves shining, green on both sides, fringed at the edge.—A native of swamps, copses, and wet and shady woods, throughout the United States of North America, from Canada to Georgia. It is a shrub from three to eight feet high, with the young branches covered with numerous stiffish brown hairs.

2. *Azalea glauca*, Lamarck. Leaves dull green, somewhat wrinkled and wavy at the edge, glaucous on the under side, fringed at the edge.—Found in clayey swamps in the middle states of North Ame-

rica, where it flowers rather earlier than the last.

Section 2.—*Flowers covered with numerous glutinous hairs. Stamens much longer than the corolla.*

3. *Azalea nitida*, Pursh. Branches with very few hairs. Leaves small, rather leathery, shining and smooth on both sides.—Found in deep mossy swamps on the mountains of North America, from the state of New York to Virginia; flowering in June and July.

4. *Azalea hispida*, Pursh. Branches clothed with numerous stiffish hairs. Leaves long-lanceolate, covered with bloom on both sides, hairy on the upper surface, and smooth on the lower.—A native of the borders of lakes; and on the highest part of the Blue Ridge in the state of Pennsylvania; flowering in July and August.

5. *Azalea pontica*, Linn. Leaves large, not shining, puckered, reflexed and wavy at the edge, green and slightly hairy on both surfaces. Flowers yellow, long-stalked, covered with long hairs and glutinous glands.—Common in the Crimea, the Caucasus, and the eastern parts of Poland, rendering the whole country a brilliant garden with its golden fragrant flowers, during the month of May.

Section 3.—*Flowers with scarcely any glutinous hairs. Stamens much longer than the corolla.*

6. *Azalea periclimena*, Persoon. (*A. nudiflora*, Willd.; *A. periclymenoides*, Michaux; *A. coccinea, speciosa, rubra, rutilans, carnea, alba, papilionacea, partita, pòlyandra*, of the gardens.) Leaves flat, nearly hairless, except the midrib, which is bristly. Tube of the corolla much longer than the limb, which is white.—Found wild on the sides of hills, in woods all over North America, where it is called Upright Honeysuckle, a name which it well merits for its fragrance and beauty.

7. *Azalea canescens*, Michaux (*A. bicolor*, Pursh). Leaves hoary, especially beneath, where they are also downy; their midrib without any stiff hairs. Tube of the corolla of about the length of the limb, which is white.—On barren sandy hills, in the southern parts of the United States, on the banks of rivers in South Carolina, and on the mountains of Virginia.

8. *Azalea calendulacea*, Michaux. Leaves convex, shining, bright green, slightly hairy on both sides, reflexed and wavy at the edge; their midrib without stiff hairs. Tube of the corolla not longer than the broad orange-coloured or scarlet limb.—A native of moist places in the southern states of North America; sometimes inhabiting the banks of rivers, but more frequently adorning the mountains with a garment of living scarlet.

9. *Azalea arborescens*, Pursh. Leaves covered on the under-side by a glaucous bloom, and smooth on both sides. Tube of corolla longer than the segments. Calyx with leafy divisions.

Section 4.—*Flowers entirely destitute of glutinous hairs. Stamens short. Corollas bell-shaped.*

10. *Azalea sinensis* (*A. pontica; A. sinensis*, Botanical Register, plate 1253). Leaves downy on both sides, sharp-pointed, glaucous beneath, reflexed and wavy at the edges. Flowers covered externally only with a fine silkiness; their tube much shorter than the bell-shaped limb, the divisions of which are acute.—Introduced from China about the year 1826, and supposed to be a native of that country.

11. *Azalea indica*, Linnæus. Leaves obovate, flat, green on both sides, and very abundantly clothed with stiffish brown hairs. Flowers quite smooth externally; their tube much shorter than the bell-shaped limb, the divisions of which are rounded. Calyx small and very hispid; stamens five.—This and the following are the most beautiful plants which exist in the rich Flora of China, where they far exceed in splendour of appearance the camellias, moutans, chrysanthemums, and roses, of that favoured climate.

12. *Azalea ledifolia*, Hooker. Leaves obovate, flat, evergreen, green on both sides, and clothed with brown hairs.—A native of China.

The *cultivation* of azaleas must be divided into that of the hardy and that of the green-house kinds. Hardy azaleas succeed perfectly if planted in peat-earth mixed with about one-third or even one-half loam. They should be sheltered when young by one another, or by rhododendrons, which can be cut away as the azaleas advance in size, for they are natives of swampy situations, where they spring up among the bushes, and are, when young, completely protected from the scorching sun. The dampness of our climate renders it unnecessary to treat them as swamp plants; on the contrary, they succeed nowhere in England better than on the sides of dry hills or on elevated ground; but it is absolutely indispensable that the soil in which they grow should be screened from the sun, either by their own shadow, or by that of other things.

For the green-house azaleas a mode of management essentially the same in principle, but different in application, is required. Forcing should commence gradually in a temperature of 50° or 55° during the month of January, keeping them gently moist; in February the heat should be increased, and, as vegetation becomes more active, moisture should be more frequently applied along with a very small quantity of liquid manure. This mode of treatment must be persevered in, never allowing the temperature to rise above 75° or 80° at the utmost, until the flowers are expanded; after that has taken place the plants should still be kept growing till June or July, when watering should be discontinued, except at intervals, and they should be allowed to sink to rest, in which state they are to remain till the succeeding January, great care being taken that during the whole of the growing time they are fully exposed to light, and that as much air as possible is given them. When about to be again called into existence, they should be shifted into new pots of a larger size than before, and supplied with fresh peat and loam.

AZA'NI, an ancient town of Phrygia, in Asia Minor, now in ruins. The inhabitants were called Azanitæ, or Æzanitæ. (Stephanus Byzantinus, 'Azani.' Strabo (xii. 576) mentions Azani, Nacoleia, and Kotyaeion (the present Kiutaya) as

towns of Phrygia Epictétus. The situation of Azani had been long a matter of doubt, until a few years since, when Mr. Keppel visited its remains, and ascertained from the inscriptions he found there that they belonged to the Azani or Æzani of the ancient geographers. It is situated 20 miles S.W. of Kiutaya, on the left bank of the river Rhýndacus, on which are two ancient bridges. A vast quantity of shafts of columns, beautifully-worked capitals, entablatures, &c., lie scattered on the ground, and the Turkish village of Tjadvéré Hislar has been built entirely out of the ruins. Rows of erect columns are still standing in several places. The finest remains are those of a temple and a theatre. The temple is on a hill, and is 116 feet in length, and 68 in breadth; thirteen out of fifteen pillars on the north side, and five out of eight on the west front, remain standing, and in the highest preservation. Those on the east and south sides are overthrown, but lie close to their original position. They are of the Ionic order; the shafts are fluted, and made each of a single block of marble 28 feet in length. The walls of the temple on the north and west sides are also standing, but the other two sides have fallen. Under the temple is a subterraneous chamber, having an arched stone roof, and of the same extent as the temple itself. The theatre is 232 feet exterior diameter; the stone benches and part of the walls still remain. Some of the Greek inscriptions on the walls of the temple refer to the reign of Hadrian. Numerous coins of Roman emperors and others have been found in this neighbourhood. (G. Keppel's *Journey across the Balkan and into Asia Minor*, London, 1831; Hamilton's *Asia Minor*.)

AZA'RA, DON JOSE' NICOLAS DE, was born at Barbunales, in 1731. He studied at Salamanca, where he distinguished himself so as to attract the attention of Don Ricardo Val, minister of King Ferdinand VI. He took an active part in the difficult negotiations concerning the expulsion of the Jesuits from Spain. After the death of the Duke Grimaldi, Spanish ambassador at the court of Rome, Azara was appointed his successor. Azara was fond of literature and of the arts, and was intimately connected with all the distinguished men who were then in the Roman capital, such as Cardinals de Bernis, Albani, and Borgia; the archæologists Winckelmann, Fea, Marini, and Visconti; the artists Canova, Angelica Kaufmann, Mengs, Volpato, &c.; and the learned Jesuits Arteaga, Andres, Clavigero, and Ortiz. Azara made a valuable collection of antiquities, and he was successful in several excavations near Rome. In 1798, when the French took possession of Rome, Azara withdrew to Florence. In 1801 he was appointed ambassador for Spain at Paris. He lost his situation through the intrigues of Godoy, the favourite of King Charles IV., and died in 1803, as he was preparing to set off for Italy to resume his favourite studies.

AZA'RA, DON FELI'Z DE, was born at Barbunales, in Aragon, in May 1746. In 1764 he entered the army. He was made a captain in 1776. In 1780 he was sent as one of the commissioners appointed by Spain to define the limits of its possessions in Paraguay. While there he undertook the task of making a map of Paraguay, —a labour which occupied him for thirteen years. He had to explore vast and wild unknown regions, inhabited by Indian tribes, often hostile, and in the midst of dangers and privations of every kind. &c.

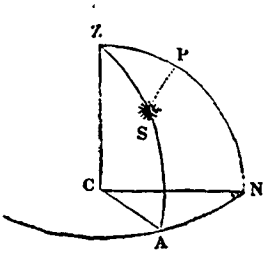
He was recalled to Europe in 1801. He then went to Paris, where his elder brother, Nicolas de Azara, was then ambassador for Spain; and he remained there until his brother's death in January 1803. Afterwards Charles IV., king of Spain, called him to Madrid, and appointed him a member of the council for Indian affairs. Azara's travels in South America were published in French at Paris in 1809. They contain a description of Paraguay, with an account of the Spanish discovery and conquest, and of the establishment of the missionary colonies by the Jesuits. This work was translated into French from the MSS. of the author, by Moreau St. Mery.

AZAROLE. [CRATÆGUS.]

AZERBIJAN.. [PERSIA.]

A'ZIMUTH, a corrupted Arabic word, which when properly written is *as-samt*, the *as* being the article *al* assimilated to the initial letter of the word to which it is prefixed: *samt* means 'a way, a road, a path;' also 'a part, tract, country or quarter.'

The azimuth of a celestial body is the angle contained between the plane of the meridian of any station and that of a vertical circle passing through the body. Thus C being the place of the



spectator supposed to be at the centre of the earth, while, in the celestial sphere, Z is the zenith of his station, and P the pole of the equator, so that ZPN represents a quadrant of the meridian, ZSA a verticle or azimuth circle passing through S the place of the body; the angle ACN or the spherical angle PZS is the azimuth of S.

The instruments by means of which the azimuth of a celestial body may be directly observed are the theodolite and the altitude and azimuth circle. [CIRCLE; THEODOLITE.] The magnetic azimuth, or the angle which the vertical circle passing through a celestial body S makes with the plane of the magnetic meridian, is observed by means of an azimuth compass.

If the polar distance PS of a celestial body, the colatitude ZP of the station, and the zenith distance ZS of the body be given, the azimuthal angle PZS may be computed by spherical trigonometry; and the difference between this angle and

the observed magnetic azimuth is the *declination* or *variation* of the compass needle.

An instrument is said to be moved *in azimuth* when it is turned on a verticle axis, so that any line in it drawn through the axis points to the same altitude in the heavens, but not to the same azimuth. Similarly an instrument is moved *in altitude* when it is turned on a horizontal axis. An altitude and azimuth instrument is one which admits of both motions.

It is hardly necessary to observe that when the star is in the horizon, and when the azimuth is less than 90°, 90°—azimuth is the amplitude; and that, when the azimuth is greater than 90°, azimuth—90° is the amplitude. [AMPLITUDE.]

AZIMUTH, or ANALEMMATIC DIAL, is one whose plane is parallel to the horizon, and whose hour points are in the periphery of an ellipse. The conjugate or shorter axis of the ellipse coincides with the hour line marked XII, and the transverse or longer axis with the hour line marked VI.

The gnomon or stile is a straight wire in a vertical position, and its foot is made to slide in a groove formed in the direction of the conjugate axis of the ellipse. On the sides of the groove are scales graduated to exhibit the tangents of the sun's declination on as many days in the year as can be introduced; and the numbers of the corresponding days of the months are marked on the scales. The zero of the declinations (March 21 and Sept. 24) coincides with the centre of the ellipse; and the radius of the circle for which the tangents are computed is equal to its eccentricity.

In using the dial, the gnomon is moved till its foot is at the given day of the month, when, the hour line marked XII being made to lie in the direction of the meridian, the gnomon will indicate the time of the day, when the sun shines, by the hour line on which its shadow falls.

AZINCOURT. [AGINCOURT.]

AZINEPHORA, in Entomology, a genus of the order Lepidoptera and family Geometridæ.

AZOF, or AZOV, called by the Turks Assak, a town of southern Russia, and once a fortress of great celebrity, gives its name to the adjacent gulf of the Black Sea: it is situated on an eminence, washed by one of the principal arms of the Don, at a distance of 20 miles from its mouth, and 360 miles to the south-east of Ekaterinoslaf, the capital of the Russian province to which it belongs. In ancient times it was known to the Greeks under the name of Tanais. From the 12th to the 18th centuries it changed owners frequently; but it finally became annexed to Russia in the year 1774. It has now lost all traces of its former importance. The town, which was described by Strabo as being in his day a centre of traffic between Asiatics and Europeans, is become a cluster of filthy miserable cabins, its fortifications are gone to decay, the branch of the river is choked with sand, and its once busy port has sunk into a deserted haven.

AZOF, THE SEA OF, is commonly considered as a part of the Black Sea; but being a close sea, united to the Black Sea by a narrow strait of considerable length, and differing from it in many peculiar features, it is rather to be considered as an independent piece of water.

This sea extends from the eastern shores of the Peninsula of Crimea in an east-north-east direction to the embouchure of the river Don. If the outlet of the Don, and the most western creek formed by the Putrid Sea, near Perekop, on the Isthmus of Crimea, are considered as its two extremities, it extends from 33° 40′ to 39° E. long. Its whole length, therefore, is upwards of 200 miles. From S. to N. it extends from 45° 20′ to 47° 20′ N. lat., but its breadth varies in different places. The north-eastern portion of it is a long bay, which may be called the Bay of Taganrog. The entire sea covers a surface of upwards of 14,000 square miles.

In the centre of the main body, where the depth is greatest, in a few places it is seven fathoms and a half, but on an average only between six and seven; and this depth continues to the Strait of Yenikalé, by which it is united with the Black Sea. Towards all the other shores, its depth decreases to five fathoms, and even four and a half; and within the Bay of Taganrog the water is so shallow as greatly to impede navigation. This shallowness was well known to the Greeks; and it was the prevailing opinion, in the time of Aristotle, that the sea was rapidly filling up by the earthy matter brought down by the rivers which discharge into it. (Aristotle, 'Meteorologica,' i. 14; also Polyb. 'Hist.' iv. 42.)

The bottom of the sea is partly swampy, but mostly sandy. Its waters are drinkable, but have always a disagreeable flavour. After south-westerly winds have prevailed for a time, it becomes brackish by being mixed with the water of the Black Sea. It is usually frozen every year from November to the beginning of March. There is perhaps no equal extent of water on the whole surface of the globe which abounds in fish so much as this sea. The most important fisheries are along the southern coast, between Cape Dolgava and the Strait of Yenikalé; the sturgeon, the sterlet, the bugael, and the singa, are caught in great numbers; and great quantities of caviar and isinglass are prepared.

The most western part of the Sea of Azof, which was named the Putrid Sea by the Greeks, and by the Russians Siwash, is separated from the main body by a narrow sandy stripe of low land, which, at its northern extremity, leaves a narrow opening as a channel of communication with the sea itself. During the greater part of the year it is a noxious swamp or quagmire. The strait which unites the Sea of Azof with the Black Sea, was called by the Greeks the Cimmerian Bosporus. This strait is about ten miles and a half long, and at the narrowest parts nearly four miles broad; but the navigable channel does not exceed a mile. Its entrances are shallow and extremely intricate, with a depth of water seldom exceeding twelve feet. On each side it is lined by low sandy hills, and is frequently frozen over, though the water is always brackish.

The country surrounding this sea indicates that it is one of those lakes which are designated by

the name of steppe-lakes, and that it ought to be compared with the northern part of the Caspian Sea and with the Sea of Aral. To the north of the Sea of Azof extends the desert which is known under the name of the Steppe of Nogai, and which continues farther to the great central plain of Asia. The northern shore of the lake is mostly formed by a narrow and low belt of sand; but the southern has more of a marshy character. The Strait of Yenikalé is bounded on the Asiatic side by a part of the island of Taman, and on the European side by the Peninsula of Kersch.

No considerable place is situated on the shores of the Sea of Azof, except Taganrog. On the Strait of Yenikalé stands the town of Kersch, which is considered as having been the residence of Mithridates of Pontus in the latter unhappy part of his life.

(Pallas; Captain Jones; Rennell's *Atlas of Western Asia;* Strabo (Casaub.), p. 308, &c.)

AZORES, are a group of islands situated in the North Atlantic, about 795 miles from the west coast of Portugal. They consist of nine islands in three distinct groups, lying in the direction of W.N.W. and E.S.E., and extending about 330 miles. The north-western group contains the small islands of Corvo and Flores, distant about 114 miles from the central group, which includes Terceira, St. George, Pico, Fayal, and Graciosa. The third group, 69 miles to the S.E. of the second, is composed of the two islands of St. Michael and St. Mary, and the Formigas Rocks.

The geographical position of the group is included between the parallels of 36° 57′ and 39° 45′ N. lat., and the meridians of 24° 55′ and 31° 15′ W. long. The chief islands are noticed under their names.

The history of these islands is obscure, and the exact date of their discovery uncertain: they appear, however, to have been discovered about the year 1430, by Joshua Vanderberg of Bruges, who in a voyage to Lisbon was driven thus far to the westward by stress of weather. Boasting of his discovery on his arrival at Lisbon, the Portuguese government immediately fitted out an expedition and took possession of these islands, to which they gave the name of Açores, from the number of hawks or falcons found on them, the Portuguese word *Açor* (Latin, *Accipiter*) signifying a bird of prey or hawk. They were then entirely destitute of inhabitants, and of every animal except birds, which were numerous and of various species. So much importance was attached to the acquisition of these islands, that in 1449 Don Henry, prince of Portugal, proceeded there in person to take a more formal possession of them. In 1466 they were given by Alphonso V. to his sister the Duchess of Burgundy, and colonized by Flemings, who however appear always to have recognized the authority of the King of Portugal. They fell under the dominion of Spain when Philip I. seized the vacant throne of Portugal in 1580, and continued so till the restoration of the house of Braganza in 1640; since which time they have remained in undisturbed possession of the Portuguese.

All the islands are of volcanic origin. Though there is no visible volcano now in operation, the effects of internal heat and disturbance are seen not only in the caldeiras, or fountains of boiling water that exist in many parts, but in the frequent and disastrous earthquakes to which the islands are subject. The most formidable on record occurred in 1591; it continued twelve days without intermission, and entirely destroyed the flourishing town of Villa Franca in the island of St. Michael. The last eruption that took place was in 1808, in the island of St. George; on which occasion about sixty persons and a number of cattle and buildings were destroyed. There have frequently also been submarine volcanoes, throwing up rocks and islands from the bottom of the ocean. The first on record is that mentioned by Kircher in 1538; another in 1720; and in 1811 a volcano burst forth off the west end of St. Michael, throwing up from the depth of forty fathoms a very dangerous shoal.

The soil, which is formed entirely of volcanic substances, is very fertile: the lava districts are cultivated with vines, oranges, and lemons; but, where decomposition has afforded richer land, it yields wheat, Indian corn, beans, &c. Both European and tropical fruits arrive at the greatest perfection; and the face of the earth is so diversified as in many places to exhibit within a small extent gardens of aromatic flowers, pastures, vineyards, orangeries, &c. The islands, though still abounding in uncultivated lands, produce much more than sufficient for the supply of their present population, not only of the necessaries but also of the luxuries of life. Vessels touching at any of them are certain of being able to procure an abundant stock of refreshments; and the cattle are equal to any in the world.

The general character of the islands is mountainous, of a conical form, and great bulk. The most remarkable among them is the Peak of Pico, of which the height has been variously computed by the French at 7032 English feet, and by the Spaniards at 6618. The sides of this mountain produce the finest wines, which, though inferior to those of Madeira, being much cheaper, find a good market both in Europe and America.

St. Michael is the largest island, and the residence of the bishop; but Angra, in Terceira, is considered the capital of the group, and the seat of the civil government. Terceira itself is one of least fertile, and is often supplied from the neighbouring islands; from the nature of its coasts it may be deemed almost impregnable, every accessible point being defended by batteries. There is not one good port among the islands; and the currents, squalls, and eddy winds, are adverse to navigation. The inhabitants import woollens, hardware, boards, staves, pitch, tar, iron, &c.; in return for which wine and fruit are the chief payments. From the mother country the payment of its imports consisted principally in dispensations, indulgences, images of saints, sacred relics, &c.

The climate is mild and pure. A residence in these islands has often been recommended to those afflicted with pulmonary complaints, as they have a more equable temperature than continental regions. The winter, though attended with heavy

storms, is not severe, nor are the heats of summer oppressive, surrounded as these islands are by such an expanse of ocean. The Portuguese settlers naturally introduced their own religion, manners, and customs, which their almost undisturbed possession, and a similarity of climate to that of their own country, have contributed to maintain. Regularly built towns, handsome churches, large convents and monasteries, and the prevalence of white-washing their buildings, are the same features as are found in Portugal.

AZOTE. English chemists now mostly concur in giving the name of *Nitrogen* to the gaseous element which used to be called *Azote*. The symbol for it too is always N, never A. [Atomic Theory; Nitrogen.]

AZO'TUS. [Ashdod.]

AZTECS is the name of a tribe who settled last in that part of America now called Mexico, or New Spain. They were living as a tribe about the year 1160 of our æra, in Aztlan, a country situated to the north of the Gulf of California. About this time they crossed the Rio Colorado, or Red River, at a point beyond 35° N. lat., and proceeded south-eastward to the river Gila, where they lived for some time, as appears from the ruins of certain ancient buildings found on the banks of that river. After occupying an unimportant place among the various tribes for many years, they gradually acquired, by the early part of the 14th century, a paramount influence, and their chiefs became the rulers of the whole country.

The government of the Aztecs was at first aristocratical. A body of twenty men of the most distinguished in the tribe presided over the affairs of the nation. In 1352 they altered this form of government, and chose for their king Acamapitzin, a noble chief of their own tribe. On the death of Huitzilihuitl, the second king of Mexico, it was established as a law, that four of the nobles should elect the king out of the collateral relations of the deceased monarch, to the exclusion of his children. This law continued till the destruction of the empire. Motezuma-Ilhuicamina, the first of that name, was the great legislator of the Aztecs. He also erected the great teocalli of Mexico, made several important conquests, and after the great inundation, which took place in 1446, ordered the construction of a magnificent dyke, nine miles long and sixteen feet and a half wide. In a succession of wars with the surrounding states, the Aztecs extended their dominion over all the country comprising the modern districts of Vera Cruz, Oaxaca, Puebla, Mexico, and Valladolid, an extent, according to Humboldt, of from 18,000 to 20,000 square leagues.

Until the latter times of the empire the royal authority was restrained within very narrow limits. The emperors were not allowed to undertake any affair of importance which could affect the community without first consulting the three supreme councils of the nation. These councils were composed of the nobility. With the power acquired by conquests the emperors gained every day more ascendancy over the nation, until, under the Emperor Motezuma II., the Aztec government degenerated into a complete despotism. When war had been decided upon against any nation by the king and his councils, an ambassador was sent to the chief of that nation, to signify to him the motive of the war and to propose the means of avoiding it. Their knowledge of war, however, and their weapons, were of a very imperfect character; their arms consisting of shields of reeds, cuirasses of cotton, wooden swords edged with obsidian, clubs, slings, bows, and spears. Their principal fortifications were their teocallis or temples.

The judicial system of the Aztecs was this. A supreme judge, called cihuacoatl, decided definitely in all matters, both civil and criminal, and appointed some of the inferior judges and also the collectors of the revenues. A tribunal composed of three judges, called tlacatecatl, decided upon all the cases in the first and second instance. These judges sat every day to hear all the causes brought before them. In civil matters there was an appeal from this tribunal to the cihuacoatl, but not in criminal causes. In every quarter or division of the city there was a certain magistrate elected annually by the people, called teuctli. This magistrate judged in the first instance, and was obliged to give an account every day to the tlacatecatl of everything that had happened in his peculiar district. These teuctli had other inferior officers under them. In every commune there were municipal officers elected by the inhabitants. There were also officers who patrolled and watched during the night. In matters of importance the judges were bound to consult the king. Every month, or rather every twenty days, all the different judges assembled before the king, when all the causes still left undecided in their respective tribunals were finally settled. Their criminal laws were very severe. Treason, voluntary homicide, robbery of gold or silver, theft in the market-place, adultery, and incest, were the crimes visited with the utmost rigour of the law. Drunkenness in a young man was punished by hanging, and throwing the body afterwards into the lake, if the offender was of a noble family; if he was one of the common people, he was made a slave for the first offence, and hung for the second. At the age of seventy a man or a woman might get intoxicated with impunity. No advocates were in use among the Aztecs: the criminal himself conducted the defence of his own cause. No other proof could be adduced except witnesses, and in the absence of witnesses the criminal was allowed to clear himself by an oath. They swore by the sun: the form of taking this oath was to touch the ground with two fingers and then carry them to their mouths.

Among the Aztecs lands were held by different tenures: some possessed them in full ownership, and were allowed to transfer them either by sale or devise; others held them along with certain offices, and consequently could not dispose of them. The lands were apportioned among the king, the priests, the nobles, and the people. Of these the nobility alone were full owners; the other three merely enjoyed the use. The common lands were cultivated in common, and the

produce was deposited in storehouses, from which all the inhabitants were supplied gratis according to their wants. In their paintings the lands of the king were painted red, those of the nobility scarlet, and those of the people light yellow. All the inhabitants of the conquered countries were obliged to pay a tribute in kind to the king, both of the produce of the field and of their industry; and there was a storehouse in every town in which the produce of this tax was deposited, and proper officers were appointed to collect it. Slavery was admitted among the Aztecs. Slaves were either bought, or persons became so as a punishment for certain crimes, but the son of a slave was in all cases a free man.

The Aztecs had some imperfect idea of a Supreme Being, absolute and eternal, to whom worship was due. They believed him to be invisible and incorporeal, and therefore no representation of him was either painted or sculptured. They gave to this being the name of Teotl. They also believed in the existence of an evil spirit, called by them Tlacatecolototl, whom they supposed to be always employed in causing evil to mankind. The souls, both of man and beast, they believed to be immortal. According to their notions of a future state, there were three different mansions where men enjoyed a future state of existence. The Aztecs also supposed that four successive revolutions had at different epochs destroyed mankind.

Besides the Supreme Being the Aztecs worshipped innumerable divinities. These divinities were worshipped by offering to them sacrifices of human victims, of animals, plants, flowers, and fruits; by prayers, hymns, fastings, and other rigorous penances, in which the worshippers frequently shed their own blood. The human sacrifices were so horrible, that the simple recital of them excites disgust; and so frequent and numerous, that the Mexican historians calculate that no less than 20,000 victims perished every year; but this must be a great exaggeration.

The priests were very numerous. Besides serving in the temple, they were employed in educating the youth, in painting the annals of the empire, in forming and regulating the calendar, in composing hymns, and in other scientific and literary pursuits. There were also persons of both sexes devoted to the service of the gods, who lived in retirement, practising very severe austerities.

The Aztecs attended very assiduously to the instruction of their children. From their third to their fifteenth year they were instructed in their houses by their parents. At the age of fifteen they were sent to the temples or to some private school, to be taught those acquirements which their parents were unable to impart to them. Their marriage and burial ceremonies were regulated by law.

The manner adopted by the Aztecs of computing time shows that they had attained a certain degree of astronomical knowledge. They had a solar year of 365 days divided into eighteen months, of twenty days each. The five complementary days, which they called nemontemi, or useless, were added to the last month. The year was represented in their paintings by a circle, in the centre of which they placed a figure intended to represent the moon illuminated by the sun; and in the circumference they placed the symbols of the eighteen months. The month was divided into four periods of five days each. Thirteen of their years formed a period analogous to the Roman Indiction, which they called tlalpilli; four tlalpilli formed a xiuhmolpilli, or ligature of years; and two xiuhmolpilli a huehuetiliztli, or old age of a hundred and four years. Instead of adding one day every fourth year as we do, they added thirteen days every fifty-two years. They had also a lunar year, by which they regulated their sacred festivals. They ascertained the hour in the daytime by the sun, and at night by the stars. The names of the different months were taken from some festival or from some circumstance which usually happened in the month, and the same was observed with regard to the names of the days. The days were all designated by a particular name. At the end of every xiuhmolpilli they held a religious festival, somewhat analogous to the sabbatic year of the Jews.

The Aztecs had made some progress in the arts of social life. The monuments of architecture, sculpture, and painting which still exist, though very far behind that degree of perfection which these arts had obtained among some of the nations of the old continent, are not devoid of merit. The Aztec painters had no knowledge of perspective, nor of light and shade. Their designs are coarse and uncouth; their figures are fantastical, and only drawn in profile, but they are remarkable for the brilliancy and durability of their colours. Their works of architecture and sculpture evince a far superior degree of excellence. The dress of the men consisted merely in a sash tied round the waist, with the two extremities hanging before and behind, and a square mantle, four feet long, the two extremities of which were tied upon the chest. This mantle covered the shoulders and all the body behind. The women wore a square piece of stuff tied round their waists, which descended down to their ankles, and a sort of waistcoat without sleeves. The stuff used by the poor was made of the aloe, and that of the nobles of cotton embroidered with feathers or rabbits' hair. Their shoes consisted in a sole cut out of the leaves of the aloe, fastened to the foot with a cord. The kings wore instead thin plates of silver, gold, or copper. None of the Aztecs ever cut their hair, with the exception of the virgins who were consecrated to the service of the temples; the men tied it on the crown of their heads, and the women let it hang down their shoulders. Both men and women wore rings and other ornaments in their ears, nose, and under lip, as also collars and bracelets. They had public roads and inns, also bridges, some of which were suspended over the torrents. These suspension-bridges consisted in a sort of hammock, made of strong ropes of aloe, and suspended from two trees on each side of the stream. In their traffic with each other they made use of the bean of the cacao-nut (*Theobróma cacao*), a bag of which represented

8000 units; a feather or quill full of gold, which represented 400; and a sort of coin, the value of which is not known, made of copper, cut in the form of a T.

The Aztec language wants the sounds corresponding to the letters *b*, *d*, *f*, *g*, and *r*, and abounds in those expressed by *t*, *x*, *l*, *tl*, *tz*, and *z*. The letter *l*, though occurring so often in that language, is never found at the commencement of a word. The language is very copious. It has very few monosyllabic words, and although it allows great freedom in the compounding of words, even to the extent occasionally of no less than sixteen syllables, yet few are monosyllables in their roots. It abounds in diminutives, like the Italian, and there is no verb from which many verbal nouns are not derived, and few substantives that cannot be converted into verbs.

The Aztecs were not acquainted with the art of alphabetic writing, but represented past events by means of certain hieroglyphics. The objects were represented either in full or by such a part of them as was considered sufficient to convey the meaning of the painter. To record the events of their history they painted round the canvass signs of the days or years, and close by each sign the hieroglyphics representing the event which at that period had taken place.

(Clavigero, *Storia Antica del Messico*, Cesena, 1780; Humboldt, *Histoire Politique du Royaume de la Nouvelle Espagne; Atlas Pittoresque, ou Vues des Cordillères;* Aglio, *Antiquities of Mexico;* Kingsborough, *On the Antiquities of Mexico.*)

AZU'NI, DOMENI'CO ALBERTO, was born at Sassari, in Sardinia, about 1760. He applied early to the study of the law, and paid particular attention to the maritime regulations, which have often been matter of dispute between nations. Azuni was made a senator and judge of the tribunal of commerce of Nizza, in the continental states of the King of Sardinia. In 1795, after the French had taken possession of Nizza, Azuni published his 'Sistema Universale dei Principii del Diritto Marittimo dell' Europa,' in which he endeavoured to reduce the maritime laws to fixed principles. He afterwards recast his work, and published it in French at Paris, with the title of 'Droit Maritime de l'Europe,' 2 vols. 8vo, 1805. This work recommended Azuni to Napoleon's ministry, who appointed him one of the commissioners for the compilation of the new commercial code, and intrusted him with the part relative to maritime affairs.

In 1807 Azuni was appointed president of the Court of Appeal at Genoa, which city and territory had been annexed to France. He was afterwards elected member for the same to the legislative corps sitting at Paris, where he published his 'Essai sur l'Histoire, Géographique, Politique, et Morale, de la Sardaigne,' 2 vols. 8vo., accompanied by a map of that island. The second volume is entirely occupied by the natural history of Sardinia. He continued his functions in the tribunal of Genoa until the fall of Napoleon, when he lost his situation. He was afterwards appointed, by the late King Charles Felix, judge of the consulate of Cagliari, and librarian to the university of the same city. He died at Cagliari in January 1827. His 'Dictionary of Mercantile Jurisprudence' is much esteemed.

(*Biografia degli Italiani Viventi.*)

AZURITE. [LAZULITE.]

B is the medial letter of the order of labials. It readily interchanges with the letters of the same organ.

1. With *v*, as *habere*, Latin, *avere*, Italian, to have; *habebam*, Latin, *aveva*, Ital., I had. In Spain, and the parts of France bordering upon Spain, the letter *b* often occurs in words which in the kindred languages prefer the *v*.

The modern Greeks pronounce the *b*, or second letter of their alphabet, like a *v*: thus *βασιλευς* is pronounced *vasilefs*. When they write foreign words, or words of foreign origin, it is not unusual for them to express our sound of *b* by *μπ* (*mp*). It appears probable that the ancient Greeks pronounced the *b* more like the Spaniards and modern Greeks than we do; for they sometimes wrote the Roman names *Varro*, *Virgilius*, thus—*Βαρρων*, *Βιργιλιος*. The Macedonian Greeks wrote *Φιλιππος* thus—*Βιλιππος*.

2. The interchange of *m* and *b* takes place very frequently, especially when they are followed by the liquids *l* or *r*. Thus *μαλακος* and *βλαξ* are two Greek nominatives, signifying *soft:* and *βροτος*, the Greek for mortal, and *mor-i*, the Latin for to die, contain a common root. An interchange of a similar nature marks the difference between the Greek *μολυβος* or *μολυβδος*, lead, and the Latin *plumbum*. If an *m* in the middle of a word be followed by either of these liquids, the *m* is retained, but is strengthened by the addition of a *b*, just as a *d* inserts itself between *n* and *r*. Instances are to be found in nearly all languages: *μεσημερια*, mid-day, was reduced by the Greek ear to *mesembria;* the Latin *cumulare*, to heap, has been changed to the French *combler;* the Latin *numerus*, number, to the French *nombre*, &c. The Spanish language has examples of a still greater change. Thus, if a Latin word contain the letters *min*, after an accented syllable, we find in the corresponding Spanish term the syllable *bre* or *bra: homine*, Latin, *hombre*, Spanish, man; *femina*, Latin, *hembra*, Spanish, female; *famina* (Middle-age Latin), *hambre*, Spanish, hunger. This corruption arises from a previous interchange of the *n* into an *r*, as in *diaconos*, Greek, deacon, *diacre* in French. The Spaniards have carried this corruption even further, by changing the Latin suffix *tudine* (*tudo* nom.) into *tumbre* or *dumbre: consuetudine*, Latin; *costumbre*, Spanish; *coutume*, French, custom; *multitudine*, Latin; *muchedumbre*, Spanish, multitude.

3. *B* interchanges with *p*. Of this the pronunciation of the English language by the Welsh and Germans presents sufficient examples.

4. With *f*. Thus the term *life*-guards appears to have meant originally *leib*-guards, *body*-guards, from the German *leib*, body.

5. *Du* before a vowel in the old Latin language became a *b* in the more common forms of that language. Thus, in the old writings of Rome, we find *duonus*, good; *duellus*, fair; *duellum*, war, &c., in place of *bonus*, *bellus*, *bellum*. The Roman admiral Duilius is sometimes called Bilius; and in the same way we must explain the forms *bis* (*duis*), twice, and *viginti* (*dui-ginti*), twenty (*twain-ty*), compared with thir-ty, &c.

6. *Bi* before a vowel has taken the form of a soft *g* or *j* in several French words derived from the Latin: *cambiare* (a genuine Latin word), *changer*, French; *rabies*, *rage*, French; *Dibion*, *Dijon;* so *rouge* has for its parent some derivative of *rubeo*, and *cage* is from *cavea*.

7. In some dialects of the Greek language a *b* exists (apparently as a kind of aspirate) before the initial *r*, where the other dialects omit it: as *βροδιν*, a rose, &c. Again *bl* and *gl* are interchanged in dialects of the same language. Thus *βλανος*, Greek, and *glans*, Latin, are perhaps related words; as well as *blandus*, Latin, signifying 'soft, mild, calm,' and *γλανος*, Greek, which has the same signification.

There is a law (Grimm's 'Deutsche Grammatik,' i. 581) which to a great extent governs the interchange of the mute letters between the Gothic and old High German, viz. that the Gothic tenuis corresponds to the German aspirate, the Gothic medial to the German tenuis, and the Gothic aspirate to the German medial; which may be represented by placing the convertible letters below each other:—

Gothic	.	.	.	P.	B.	F	T.	D.	Þ	K.	G.—
Old High German				F.	P.	B	Z.	T.	D	CH.	K.	G.

Similarly it will be found that the classical languages stand to the Saxon part of our own tongue still more strictly in the same relation, viz.:—

Latin and Greek	P.	B.	F	T.	D.	Θ	K.	C.	G.	H or X.
English	.	.	.	F.	P.	B	TH.	T.	D	H.	K.	G.

B, in Music. [DIATONIC; GAMUT; SCALE.]

BAAL means literally *lord*, *owner;* hence also *husband*. The worship of Baal, together with that of Astarte, was frequently introduced among the Israelites, especially at Samaria. As the Greeks, Germans, and other nations frequently form the names of men by compounding them with the names of God (for example, *Gottlieb*, *Gotthold*, *Fürchtegott*, *Θεοφιλος*, *Θεοδωρος*, *Τιμοθεος*, &c.), so the Phœnicians and Carthaginians frequently formed names by composition with Baal, as *Ethbaal*, 'with Baal,' the name of a king of the Sidonians (1 Kings xvi. 31); *Jerubaal*, 'Baal will behold it.' Hannibal is written in Punic in-

criptions in a form which contains the termination Baal, 'grace of Baal;' and also Hasdrubal, 'help of Baal.' In Hebrew also many names of cities occur, compounded with Baal; as Baal-Gad, Baal-Hammon, Baal-Thamar, &c.

The statues erected to Baal were called Baalim, or rather B'alim. The temples and altars of Baal were chiefly built on the tops of hills under trees, and also on the roofs of houses.

The worship of Baal gave employment to a numerous priesthood, who burned incense, sacrificed children, danced round the altar, and, if their prayers were not heard, cut themselves with knives and lancets till the blood gushed out.

The Phœnicians worshipped the sun as the only lord of heaven, under the name of Beelsamen, whence probably came the notion of Baal being the same as the sun.

To worship Baal signifies frequently, in the phraseology of the Jewish writers of the middle ages, to practise the rites of the Christian religion. Rabbi Joseph Ben Josua Ben Meir tells us, in his 'Chronicles,' that Clovis forsook his God and worshipped Baal, and that a high place was built at Paris for Baal Dionysius, *i.e.* the cathedral of St. Denis.

BAALBEC, or BALBEC, called by the Greeks Heliópolis, or the City of the Sun, is in Cœle-Syria, in 33° 57′ N. lat., 36° 2′ E. long. Major Rennell ('Treatise on the Comparative Geography of Western Asia,' vol. i. p. 75) makes the distance from Tripoli 38¾ geographical miles, and from Palmyra 109 geographical miles.

Baalbec signifies, in the Syrian language, the City of Baal, or the Sun; the Greeks, in changing it into Heliopolis, translated the oriental name, which the Romans appear to have retained, until it was again changed into its original Syriac name Balbec. [BAAL.]

The city is pleasantly situated on a rising ground, near the north-east extremity of the plain of Bocat*, and immediately under the mountain-range called Anti-Líbanus. This plain extends from Balbec almost to the sea, in the direction of N.E. by N. to S.W. by S.: the width appears to be in few places more than four leagues, and not in any less than three.

Two rivers, the Litane and the Bardouni, flow through the plain of Balbec, which is well supplied with water.

It is probable that the advantages arising from its commerce with Tyre, its connection with Palmyra, and the traffic with India, may have been the source of the ancient wealth of Balbec, and the means of erecting those edifices the ruins of which still exist. The ruins in front of the great temple were most probably designed for fora (markets or places of business), and are therefore provided with suitable shady porticoes and exhedræ, in which the merchants could conveniently transact their affairs. The history of the place itself is very obscure; but two Roman inscriptions of the time of Antoninus Pius show that it was then a place of some importance, under the name of Heliopolis.

* Bocat is variously written—Bocat, Bekka, Beka, Bquaa, and Bokah. (See Wood and Dawkins, Bruce, De la Roque, Rennell, &c.)

At what time and by whom the city was first founded is wholly unknown; the style of the temples proves that they belong to the Roman period. Heliopolis appears to have been made a colonia by the Dictator Cæsar; and to have received the Jus Italicum from Septimius Severus. (Dig. 50, tit. 1, s. 1.) Its subsequent history is very obscure. Theodosius is said to have destroyed some of the temples, and to have converted the great temple into a Christian church. The names of some bishops and martyrs of Heliopolis appear in church history.

The area inclosed by the walls of Baalbec contains the great temple, with its courts or fora; and the smaller temple, or perhaps basilica, which is in the best condition of all the buildings. There is also a very singular and unique circular temple, and a curious column, on the highest situation within the walls, which possibly may have been a clepsydra, or water-dial. The circuit of the city walls, according to the plan of Wood and Dawkins, is somewhat less than four miles.

The great temple appears, from the plan of Wood and Dawkins, to have been a peripteral pycnostyle temple, having ten columns in front and nineteen on the flank, the columns being 7 feet 10 inches in diameter, and 8 feet 1 inch apart, except in the centre intercolumniation of the portico. The length of the temple is near 290 feet, and the width 160: in its perfect state, the height from the ground to the top of the pediment was 120 feet; the columns with the pedestals are 71 feet 6 inches high. The walls of the cella are restored by F. L. Cassas, ('Voyage Pittoresque de la Syrie'), with an internal arrangement of columns. It appears that a *certain* Thevet, in 1550, saw twenty-seven columns of the great temple, and esteemed them the greatest wonders of Balbec. ('Cosmographie Universelle,' l. 6, c. 14.) Subsequent travellers mention only nine columns, with an entablature over them; and Volney, in 1785, saw only six standing. The shafts of these columns consist of three pieces, united so exactly, that the blade of a knife cannot be inserted between the joints.

The smaller building, called by Mr. Wood 'the more entire temple,' but which appears in some respects to resemble an ancient basilica, is very near the large temple, but built on a lower level, the bottom of the basement of the great temple being nearly as high as the top of the basement of the smaller edifice. The site of these buildings being very uneven, the basement on the south side is raised considerably, with a solid foundation of large stones. This building is peripteral; the columns are also pycnostyle, and the portico is dipteral with a pseudo-intercolumniation before the antæ of the pronaos. We conjecture this building to have been a basilica, from the similarity of its internal arrangement to the basilica in the forum of Pompeii: it has, among other features of the basilica, the raised platform at the end, with the vaults below it and steps descending into them.

The circular building may be considered unique. Travellers have called it a temple. It is of the Corinthian order, with niches on the exterior of

the cella, and decorated with twelve columns, eight of which form a dipteral portico, which has a flight of twenty-one steps in front. From the two lateral columns of the portico commences the circular peristyle of the building. The entablature of the dipteral portico is carried in a straight line, and that of the peristyle is curved on the perpendicular face, and sweeps in an elegant line from column to column, the centre of the curved architrave being bedded on the circular wall of the building. This edifice is decorated in the interior with an Ionic order of columns, above which is another decoration, consisting of niches with pediments, and between each there is a single column with a small portion of an entablature over it; the roof was a dome probably open at the top, like the Pantheon at Rome. This building has been converted into a Greek church called St. Barbe.

The order most frequently used throughout these buildings is the Corinthian. The Ionic occurs in the interior of the circular building only; and in the niches which decorate the interior of the fora, as well as in the building which we have called the basilica, the Composite is employed. The niches are decorated with columns and pediments, and form the principal feature of these edifices in their ruined state; they were intended for statues and busts, the pedestals for which still remain; and, if we can credit De la Roque, there were quantities of statues and busts with inscriptions on their pedestals, but so much obliterated, that only one could be distinguished.

Without the walls there are also several ruins. The most remarkable is a Corinthian column in the plain, about two leagues from the city, and one from Mount Libanus, called Hamoudiade: the shaft consists of fourteen stones, each about three feet thick (high), and stands on a base of five steps, six feet three inches high; on the north side there is a square compartment, probably for an inscription, but no traces of any now remain. To the south-east of the famous temple there are fragments of columns of red granite. There is also a Mohammedan sepulchre, of an octagonal form, to the south-east of the city, on the way to Damascus, the dome of which is supported by granite columns of the same kind, which were probably brought from the ruins to the south-east of the great temple. These columns are about twelve feet long and five feet in circumference: the granite is of a most beautiful kind, with large spots, and is finely polished. (Pococke's 'Travels in Syria,' &c. vol. ii.)

The city walls appear to be a confused patchwork, put together in haste; with the rough stones are fragments of capitals, entablatures, and reversed Greek inscriptions. The walls are from ten to twelve feet in height, with large square towers at intervals. The gates are also built in a rude style, with the exception of one on the north side, where there are the ruins of a large substasement, with pedestals and bases for four columns, in magnificent taste, and of a much higher antiquity. Both within and without the walls are confused heaps of rubbish, which appear to be the ruins of ancient buildings. In contemplating these ruins, we are struck by the immense size of the stones. Among others there are at least twenty of enormous dimensions. On the west side of the basement of the great temple even the second course is formed of stones which are from 29 to 37 feet long, and about 9 feet thick; under this, at the north-west angle, and about 20 feet from the ground, there are three stones which alone occupy 182 feet 9 inches in length, by about 12 feet thick; two are 60 feet, and the third 62 feet 9 inches in length. (Pococke's 'Travels in Syria.') The material is a white granite, with large shining veins like gypsum. (Volney.) This stone abounds on the spot and in the adjacent mountains. Quarries have been opened in several places. In one called St. Elias, there is still, among other stones of a vast size, one worked on three faces, which is nearly seventy feet long, and about fourteen feet in thickness each way. The more ornamented parts of these buildings were carved out of a coarse white marble, which was brought from a more distant quarry west of the city. Recent accounts state that many of the pillars and other portions of these ruins have been removed by Mehemet Ali, to be used in new structures.

When Wood and Dawkins visited Balbec in 1751, only a small part of the city was inhabited, towards the south and west, near the circular building. The houses were mean, with flat roofs, on which, during the summer months, the inhabitants often pass the night. A large portion of the space within the walls is entirely neglected, while a small part is employed for gardens. In 1751 the number of inhabitants amounted to about 5000, of whom a few were Greek and Maronite Christians, and some Jews, and all without trade and manufactures. The bad government of the emirs of the house of Harfouche, the earthquake of 1759, and the wars of the Emir Yousef and of Djezzar, had reduced the population to 1200 at the time Volney visited Balbec in 1785. The ground immediately about the wall is rocky, and little advantage is taken of a command of water which might be usefully employed to irrigate the gardens. A little cotton, a small quantity of maize, and some water-melons, was all that the wretched inhabitants cultivated when Volney was there.

(*The Ruins of Balbec*, by Wood and Dawkins, 1 vol. folio; *Journey from Aleppo to Jerusalem*, by Henry Maundrell; M. de la Roque's *Travels;* Volney, *Voyage Pittoresque dans la Syrie.* Mr. Bruce also visited Balbec, and made four drawings of the ruins, which he presented to George III.)

BABA', CAPE, is the Cape Lectum of the Greeks. It is a rocky bold headland of Anatolia, north-west of the northern extremity of the Gulf of Adramyti, the ancient Adramittium, and between the islands of Lesbos, now Mitylene, and Tenedos, which preserves its ancient name. The cape, which is scarcely 12 miles distant from the northern extremity of Lesbos, is in 39° 30′ N. lat., and 26° E. long. It is a shelving continuation or offshoot of Mount Ida, the numerous tops of which are seen in the distance. The whole line of coast from the head of the Gulf of Adramyttium to Cape Babà is very rocky and steep, and inland from the bleak cliffs there runs

a continued chain of mountains that gradually increase in elevation as they recede from the sea and approach the summits of Mount Ida. After the cape is fairly doubled, the long level of the plain of Troy presents itself in striking contrast; for it is so flat and low that, when observed from a short distance at sea, it looks like a mere line nearly all the way from Cape Babà to the promontory of Sigeium and the Hellespont. Projecting from Cape Babà there is a curious group of small islets, called anciently, from their number, Hecatonnesoi, or the Hundred Islands, but named by the modern Greeks Muskonisi. A small town called Babà stands on a shelving point of Cape Babà, immediately above the sea. It contains a mosque and a half-ruined castle: the dwelling-houses, occupied by Turks and Asiatic Greeks, are built of sun-dried bricks, and are mean in the extreme. In front of the town of Babà there is a little port formed with massive fragments of rock; but it is only capable of receiving the small country fishing-boats.

BABEL. [BABYLON.]

BAB-EL-MANDEB ('the Gate of Danger') is the name of the straits by which the Red Sea or Arabian Gulf is joined to the Bay of Aden and the Indian Ocean. It is formed by two projecting angles of the Asiatic and African continents, or, more precisely, the two angles of Arabia and Abyssinia. Cape Bab-el-Mandeb (12° 40′ N. lat.) rises to a great height, and projects a great way from the main land, which here is low, so that, when seen from a distance, it has the appearance of an island. The much more elevated land on the African side runs in a straight line. Opposite Cape Bab-el-Mandeb the coast of Abyssinia may be distant upwards of 15 or 16 miles, and here both continents approach nearest one another and form the straits. Within the straits, but much nearer to the Arabian shores, is an island called Perim. The strait to the east of this island is called the Little Strait, and that to the west of it the Large Strait. The Little Strait is most frequented by vessels, because its moderate depth allows anchorage, if circumstances render it necessary. The depth here varies from 9 to 14 fathoms. This strait is 4 miles wide, but contracted by shoal water extending from the Cape of Bab-el-Mandeb to a small island about a mile from it, called Pilot *Islot*. The Island of Perim is rocky, low, and barren. On the S. W. side it has an opening into an excellent harbour or cove, which affords shelter against nearly every wind, and a good anchorage in from 4 to 6 or 7 fathoms water. The Large Strait is from 9 to 10 miles wide, and to the south of it, near the coast of Africa, are eight small islands, or rather rocks, called the Eight Brothers. In the midst of the strait no soundings are found with 100 fathoms of line; but close to the Eight Brothers, along the coast of Abyssinia and near the Island of Perim, the depth of the sea varies from 16 to 30 fathoms. The Eight Brothers are of moderate height, rocky, and barren.

BABER, or BABUR, with his complete name *Zehir-ed-din Muhammed Baber*, the celebrated founder of the Tatar, or, as it is often improperly called, the Mogul empire in Hindustan, was born on the sixth of Moharrem, A.H. 888 (14th of February, 1483). His father, Sultan Omar Sheikh Mirza, a great-great-grandson of the celebrated Timur, or Tamerlane, was sovereign of Ferghâna, a province situated on both sides of the river Sir, the Jaxartes of the ancients. Baber was in his twelfth year when his father died (9th of June, 1494). He succeeded in securing possession of his paternal dominions, though opposed by his paternal uncles; but the history of Baber's reign till the twenty-third year of his age is a continuous succession of vicissitudes, in which we find him alternately conquering and losing Samarcand, Andijan, Khojend, and other places in or near his paternal dominions. In the year 1503, Sheibâni Khan, a descendant of Gengis Khan by his eldest son, Tushi or Jûjikhan, the sovereign of Kipchak, conquered not only Samarcand and Bokhara, but also the countries of Ferghâna and Uratippa; and Baber quitted his native country and resolved to try his fortune in Khorasan (1504), which was at that time held by Sultan Hussain Mirza, a prince of the family of Timur. He did not receive from Hussain Mirza the support which he had anticipated; but he succeeded in obtaining possession of Badakhshan, and in the ensuing year (1505) he made an irruption into Hindustan, whence he was recalled by the death, in 1506, of Hussain. It was not till September that Baber could set out on another march against Hindustan, which was again unsuccessful, owing to the opposition of the predatory Afghan tribes between Kabul and Lemghan.

In 1510, the death of his old enemy Sheibâni Khan seemed to open to him a hope of recovering his dominions. In the succeeding year he gained possession of Hissar, Bokhara, and Samarcand: but an invasion of the Uzbeks under Mohammed Timur Sultan, the son of Sheibâni Khan, brought him into imminent danger, and, unable to preserve his conquests, he returned to Kabul (probably in 1515).

In 1519 Baber undertook another expedition with a view to conquer Hindustan, and now he was successful, subduing the Panjab, Afghanistan, and Delhi. But his acquisitions from the Indus to the mouths of the Ganges, were made so rapidly, and they comprehended so wide an extent of countries, and so great a variety of population, that to cement them into a firm union would have required a much longer reign than what he himself was destined to enjoy. Even his son Humâiûn could but with difficulty maintain possession of these extensive territories; and it was not till the reign of Baber's grandson, Akbar, that a regular administration of the whole empire was established.

Baber died at the Charbagh, near Agra, on the 26th of December, 1530, and was succeeded by his son Humâiûn. Of his literary accomplishments and general information, the autobiographic memoir written by himself in his native language, the Jaghatai Turki, gives us a most advantageous idea.

(*Memoirs of Zehir-ed-din Muhammed Baber*,

translated by John Leyden and William Erskine, London, 1826, 4to.)

BA'BER, or BABBER, Island. [SUNDA ISLANDS, LESSER.]

BABIA'NA, a genus of Cape plants belonging to the natural order Irideæ. It derives its singular name from *Babianer*, by which the Dutch colonists call these plants, because their round subterranean stems are greedily eaten by baboons. It differs from Gladiolus in its round leather-coated seeds, and in the flowers having the tube of Ixia, and from Ixia in their having the irregular limb of Gladiolus. Fourteen or fifteen species are known, among which are some of the handsomest of the Cape bulbous plants, as they are commonly though incorrectly called.

The flowers of babiana are yellow, purple, and even scarlet, of considerable size, and extremely handsome. They are produced in perfection, provided the plants are so cultivated as to be exposed abundantly to air, light, warmth, and moisture, when in a state of growth, and preserved cool and dry while in a state of repose. These plants are found at the Cape of Good Hope.

BABINGTON, WILLIAM, a distinguished physician, was born in June 1756, at Portglenone, a village on the Ban, near Coleraine, in the north of Ireland. His father was a clergyman, who, having a numerous family, determined that one of his sons should be brought up to medicine: his choice fell upon William, and he, after acquiring the usual elements of general education, was apprenticed to a medical practitioner at Londonderry. At the end of his apprenticeship, he proceeded to London to complete his medical education. Being provided with an introduction to Mr. Frank, surgeon to Guy's Hospital, he became his dresser at that institution. Thence he went to Haslar Hospital, and afterwards, for a short time, to Winchester Hospital. Having made a most favourable impression with respect to his talents, application, and steadiness during his studies at Guy's Hospital, he was, upon the occurrence of a vacancy in the office of apothecary, appointed to that office. Soon afterwards he was selected to assist Dr. Saunders at the hospital in his lectures on chemistry; and, while still there, he purchased the valuable collection of minerals which had belonged to the Earl of Bute, the finest perhaps which at that time existed in England. Upon obtaining possession of his purchase, he proceeded to class the minerals and to catalogue them. He also divided the cabinet into several portions, which he disposed of at different times. In 1795 he published a 'Systematic Arrangement of Minerals,' reduced to the form of tables, which was preceded by a smaller work.

In 1797 he resigned his office at Guy's Hospital, and, having obtained the degree of Doctor of Medicine, he commenced private practice as a physician in the City of London. Soon after he was elected one of the physicians to Guy's Hospital, where he had continued to lecture on chemistry, in which duty he was joined by Mr. William Allen. In 1799 he published his 'New System of Mineralogy,' which may be considered a continuation of the former work. In 1802 he published a 'Syllabus of the Course of Chemical Lectures.' In 1796, previous to leaving Guy's Hospital, he had become a Fellow of the Medical Society of London, and exerted himself zealously to promote the advancement of the science of medicine, which is the chief object of that society. From this time he rose rapidly in public estimation as a physician. From a friendly meeting of those interested in mineralogy at Dr. Babington's house sprung the Geological Society. In 1822 he was elected president of the society, having been vice-president in 1810 and the three subsequent years. He enriched the museum and library with liberal donations, and the Transactions of the society contain several papers by him.

The interests of medicine were not neglected by Dr. Babington; and, in order to promote its advancement, he was the chief means of instituting, in the immediate neighbourhood of his residence, a society called the Hunterian, for the purpose of friendly meetings and the discussion of medical topics. He also became a member of the Medico-Chirurgical Society; and the first volume of their Transactions contains a paper by him: 'A Case of Exposure to the Vapour of Burning Charcoal,' 1809.

While his mornings were devoted to the practice of his profession, his evenings were dedicated to study, or social intercourse with individuals distinguished by their attainments or love of science. He was the personal friend of nearly all the most eminent scientific men of his day, by whom he was as highly appreciated as he was justly esteemed by the public as an able and enlightened physician.

The Royal Society admitted him as one of its fellows, and the Royal College of Physicians testified their sense of his character by electing him from among the ranks of the licentiates into the number of the fellows. During the prevalence of the fatal influenza in the spring of 1833, he zealously attended his patients, till at last, from exposure to the evening air, after being present at a crowded scientific meeting, he was attacked by that disease, and on the 29th of May expired at his house in Devonshire Street, in the seventy-seventh year of his age. The general expression of regret which followed the announcement of Dr. Babington's death proved the estimation in which he was held. Not only his numerous private friends, but all the public scientific bodies to which he belonged, lamented the loss which they had sustained in the most feeling and honourable manner.

BABINGTONITE occurs crystallized. Primary form a doubly oblique prism. Colour black or greenish black. Hardness 5.5 to 6.0. Lustre vitreous. Specific gravity 3.5. Found at Arendal in Norway, the Shetland Isles, and United States at Charlestown, Massachusetts. Analysis of a specimen from Arendal:—Silica, 54.4; protoxide of iron, 21.3; lime, 19.6; magnesia, 2.2; protoxide of manganese, 1.8; alumina, 0.3; volatile matter, 0.9.

BABIROUSSA, or BABYROUSSA. [SUIDÆ]

BABOON (*Cynocéphalus*, Cuv.), a genus of the quadrumanous order of mammalia, or *Simiæ* of

Linnæus. The term *Cynocephalus* was applied by Aristotle to an Egyptian or Arabian species, in allusion to the dog-like form of the head, and has been happily selected by Cuvier as the generic term of a group of which this is one of the most marked characters. With respect to the common name of baboon given to these animals, it is evidently identical with the German *Bavian*, the Dutch *Baviaan*, the French *Babouin*, and the Italian *Babbuino*, from which latter, according to Adrovandus, the barbarous Latin term *papio* is derived, which was applied by the writers of the 15th and 16th centuries to these animals.

The species included in the genus *Cynocephalus* are among the largest, the most ferocious, and the most disgusting of the *Simiæ*. The neck is short and thick, and well adapted for the support of the huge head, the jaws and facial portion of which are enormously developed, so as to form a thick heavy truncated muzzle, at the end of which the nostrils open as in the dog. This great enlargement of the muzzle detracts from the volume of the skull—the organs of mastication are developed to the prejudice of the brain and intellectual functions—while from the weight and anterior preponderance of the muzzle, and the position of the skull with respect to the spine, the muscles required for supporting the burden, viz. the trapezii, serrati, rhomboidei, and others inserted into the occipital bone, are not only necessarily developed, but are extensively attached to bold rugosities, or a bony occipital ridge. These animals usually go on all fours like a dog. They can scarcely assume, and not at all maintain an erect attitude; they are to a great degree terrestrial in their habits, taking up their abode in rocky and mountain districts rather than forests, except in the instance of one or two species. As a general rule, however, though they climb trees with facility, they prefer craggy rocks and precipices, among which they dwell in security. Of all the quadrumana, the baboons are the most frightful; the eyes are fierce, scowling, and malicious, and beetled over by a strongly marked superciliary ridge, which in concert with the swollen appearance of the superior maxillary bones, and the sudden fall and narrowness of the forehead, gives an expression of brutal ferocity. As these animals sit crouched up, gazing with mingled suspicion and hatred on all who approach them, they never fail to excite disgust and apprehension. Nor are these feelings lessened by the contemplation of their powerful frame. The shoulders are thick and massive; the chest though narrow is very deep; their limbs, more equal in comparative length than those of the Simiæ generally, and especially of the orangs and gibbons, are extremely muscular; and the enormous size of the canine teeth, which remind us of those of the tiger, and which they are ever ready to display, only serve to complete a picture of malignity conjoined with courage and tremendous physical force.

During youth they are tolerably tractable, but as they become adult their playfulness is exchanged for moroseness, and their docility for distrust and maliciousness. A look or movement throws them into ungovernable transports of rage, in which they appear like infuriated demons, and woe to the person then in their power. Fatal accidents have resulted from want of caution.

In their wild state the baboons congregate in troops, and are bold and skilful in their predatory excursions. When forced to retreat, the old males form a rear-guard, and cover the flight of the females and their young.

Their food consists of bulbous roots, fruits, berries, and grain, together with eggs, scorpions, insects, and reptiles; indeed, they are to a certain extent carnivorous, and in domestication relish cooked meat, and even devour raw flesh with avidity. They do not arrive at maturity till the seventh or eighth year of their age.

The baboons are all African; one species, indeed, is found in Arabia, as well as in Abyssinia: some are peculiar to Western Africa, and one to the country of the Cape of Good Hope. All have large cheek pouches. The tail is short or moderate. The posterior molar of the upper jaw has a fifth tubercle. Callosities large.

The following are well-defined species:—

1. The Chacma (*C. porcárius*, Desmarest).—This animal is the Singe Noir of Le Vaillant, the Cheak-Kama of Kolbe, the T'chacamma of the Hottentots. It is a native of the mountains throughout the colony of the Cape of Good Hope, where in the remoter districts it is very abundant, and well known to the farmers from the devastations it commits on their cultivated lands. It associates in troops, which in the fastnesses of the rocks may be frequently seen on the overhanging cliffs, gazing at the traveller as he and his party pursue their course through the mountain passes.

The Chacma.

The old male Chacma is a large, powerful, and savage animal, and more than a match for two good dogs, being equal in size, and superior in strength, to the largest mastiff. About the shoulders and neck the hairs are long and mane-like; the general colour is dusky brownish black, mixed throughout with a green shade, deepest on the head, and along the ridge of the back, paler on the sides; the hairs generally are grey at the root, and then

annulated with distinct rings of black and dark green. The skin of the face is black, with a hue of violet; the upper eyelids are white. The tail is rather more than half the length of the body, and tufted at its extremity; it is carried elevated at the root, and then arched down, as the animal gallops along on all fours. The food of this animal consists of bulbous roots, and particularly of the *Babiana* [BABIANA]; and it is customary for the troops to descend into the rich secluded valleys, where these plants flourish, in quest of food. When suddenly surprised the cry of alarm is raised, and the troop ascend the rocky cliffs, often several hundred feet in height, with astonishing agility, the young clinging to the mothers, and the old males bringing up the rear. Besides bulbs and grain, these animals are very fond of eggs, and greedily devour scorpions, which they seize, and nip off the sting with so rapid an action, as to prevent their hands from being wounded. The devotion of the females to their young is very great, and they brave every danger in their defence.

Some idea of the risk in attacking one of these baboons may be conceived from the account given of their prowess by Mr. Burchell. On one occasion a small company of them, being chased by his dogs, suddenly turned round and defended themselves most effectually. One dog was killed on the spot by a bite through the great blood-vessels of the throat, and another was disabled in consequence of a lacerated wound which laid its ribs bare. Even the leopard, hyæna, and wild-dog, are sometimes mastered by a troop of these animals, although the leopard, surprising individuals, destroys numbers.

In captivity, the horrible and revolting frenzy which the males display, upon the occasion of any particular attention being offered to a young woman in their presence, and the agitation into which they are thrown even by the appearance of young females, are notorious. But all the baboons exhibit the same horrid feelings.

2. The Derryas (*C. hamadryas*, Linn.).—This species inhabits Arabia and Abyssinia, but is not found in Nubia. Hemprich and Ehrenberg observed it in large troops at Wadi Kanun, and in the mountains near the city of Gamfud, in the country of the Wahabees, as well as in the mountains above Arceko, on the Red Sea; and we learn from Salt and Pearce that these animals are extremely common upon all the highlands in Tigré. The travellers above mentioned saw them in troops of above a hundred, in the neighbourhood of Eilet, in the chain of the Taranta. The Arabic name of this animal is Robah or Robba. The Abyssinians call it the Derryas.

In size the Derryas equals a large pointer dog: the face is elongated, naked, and of a dirty flesh colour, with a lighter ring surrounding the eyes. The callosities are dark. The tail is about half the length of the body, and tufted at the tip. The general colour of the fur is of a cinereous gray, with a tinge of brown, deepest along the back. In the male, the head, neck, shoulders, and fore part of the body as far as the loins, are covered with a lion-like mane of long flowing hairs, contrasting with the clipped appearance of the rest of the body. This mane is wanting in the female, and her uniform and coarse fur is of a deep greenish or olive brown.

3. The Thoth (*C. Thoth*, Ogilby; 'Proceed. Zool. Soc.' 1843, p. 11).—This species, a native of Abyssinia, was first recognised by Mr. Ogilby as distinct from any other yet described, and he regards it as the sacred baboon of the ancient Egyptians, which he contends was not the Hamadryas or Derryas, as was supposed by Ehrenberg. The description was taken from an old male of large size in the gardens of the Zoological Society, which exhibited the usual ferocity of its tribe.

This baboon has been confounded with the *C. Sphinx*, or *Babouin*, by some naturalists, and was regarded by Mr. Ogilby himself as identical with the *C. Anubis*, till opportunities of comparison were afforded him; hence the latter, an inhabitant of the coast of Guinea, was supposed to be also Nubian and Abyssinian.

For the characters of the Thoth we refer to the 'Proceeds. Zool. Soc.' (in loco cit.), where they are given in detail.

4. The Sphinx (*C. Sphinx*).—This species is a native of Dongola and Sennaar. It is of a dark greenish colour dashed with black. The callosities are blood red; in the Thoth, dark purple.

5. The Anubis (*C. Anubis*).—A native of Guinea, not of Nubia and Abyssinia, with slender limbs, of a dull sombre green, with a longer muzzle and flatter skull than the preceding. Callosities blood red.

6. The Choras (*C. Choras*, Ogilby, in 'Proceeds. Zool. Soc.,' 1843, p. 12).—In the Proceedings already referred to Mr. Ogilby describes a species allied to *Anubis*, yet still distinct, which was brought from the Niger Expedition and presented to the Zool. Soc. by Lieut. Webb, R.N. It was covered above and below with long shaggy hair of a deep russet brown colour, annulated with black rings; face slender; skin black, excepting the upper eyelids, which are flesh coloured; callosities flesh coloured. For this species Mr. Ogilby proposed the scientific name of *C. Choras*.

7. The Common Baboon (*C. Papio*, Desm.).—This species, a native of Guinea, is very often brought to Europe. It is of a uniform reddish brown colour, slightly shaded with sandy or light red upon the head, shoulders, body, and limbs; whiskers, light fawn; face, black; upper eyelids, white. Cheeks swollen under the eyes. Tail not tufted.

8. The Mandrill (*C. Mormon* and *Maimon*, Linn.).—This formidable species, the *Choras* of Buffon, the Ribbed-nosed Baboon of Pennant and others, is a native of Guinea and other parts of Western Africa, where it is greatly dreaded by the natives, who assert that it frequently attempts to carry off women into the forests, and occasionally succeeds. Its history has been greatly confounded with that of the Chimpanzee [APE], and the names of Smitten, Choras, Baggo, Barris, &c., according to the dialects of different tribes, appear to be applied by the older travellers to both animals without any distinction. Of all the baboons the Mandrill is the largest, the most fero-

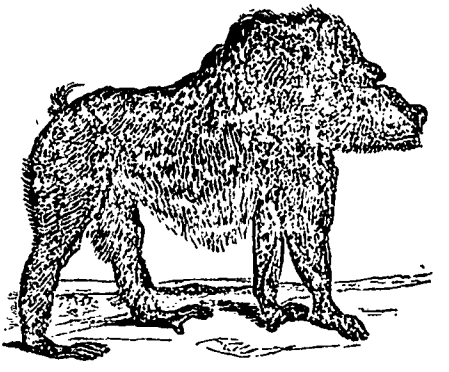
cious, and the most disgusting. In its native forests it associates in troops, which are more than a match for the most powerful beasts of prey, and which are said even to attack and drive away the elephants from the precincts of their residence. Though quadrupedal, their activity is very great, and they leap and climb with the utmost facility. Not only do they make incursions into cultivated fields, but are said to watch their opportunity and enter the villages, which they plunder of everything eatable, leisurely retreating with their booty. The natives dread them, and, unless in strong bodies and well armed, fear to pass through the forests frequented by them. Their voice is deep and guttural, consisting of abrupt hoarse tones, indicative of fury or malevolence. In captivity the Mandrill is dangerous from its great strength; and by its manners, its jealousy, and its manifestations of brute passion, leads us to believe that there are some grounds for the assertions of the negroes, though the details may be exaggerated relative to its abduction of women.

The Mandrill.

Before the Mandrill arrives at maturity it undergoes several changes, particularly remarkable in the male, and which have led to the multiplication of species. When adult, the general colour of the male is olive brown, passing into whitish on the under parts. A golden yellow beard hangs from the chin; the hair of the forehead converges to a peak. The nostrils have a broad disc rim round them at the extremity of the muzzle. The tail is short and nearly hid by the fur; callosities, red. The cheek-bones are enormously swollen, rising like two ridges; the skin obliquely marked by deep furrows; the colour a fine blue, passing into rich scarlet down the furrows; a streak of brilliant vermilion commencing on the beetling superciliary ridge runs down the nose, and is diffused over the muzzle. In the female the cheeks are much less swollen, and the scarlet is either pale or wanting.

In the young males the cheeks are little, if at all, swollen; the furrows barely perceptible, and the colour black. It is not until the fourth or fifth year, when the second dentition is complete, that the characters of maturity are assumed; and to this point the process is gradual, the bones of the face developing, the colour of the skin changing, and the muzzle becoming broader and thicker, and the furrows more and more marked. The acquisition of the huge permanent canines is in captivity a season of trial, and few young specimens survive this epoch.

9. The Drill (*C. leucophæus*, F. Cuv.).—Like the former this species is a native of Guinea, and when adult approaches the Mandrill in size, agreeing with it also in habits and disposition. Adults are rare in our menageries, but young specimens are not uncommon; these, however, seldom survive the complete acquisition of the permanent teeth. In this species the head is large; the muzzle thick, with elevated maxillary protuberances, which are not furrowed; the face and ears are glossy black, the tail is short and carried erect; the general colour is greenish olive above, grey beneath; the beard is short and orange-coloured.



The Drill.

The female is smaller, with a shorter muzzle and a paler tint of general covering. It would appear that the Wood Baboon, the Cinereous Baboon, and the Yellow Baboon of Pennant, are the young of the Drill at different stages of growth.

BA'BRIAS, or BA'BRIUS, according to Suidas, wrote a collection of Æsopian fables in ten books, which he turned from prose into choliambics. Avianus, in the preface to his Fables, states that the Fables of Babrius were contained in two volumes, by which he means rolls of papyrus. The ten books mentioned by Suidas were divisions of the fables themselves. Nothing is known of Babrius, and the time at which he lived is uncertain. The fables of Babrius were used by the transcribers and *rédacteurs* in the middle ages, as the foundation of their versions of Æsopian fables. In some cases the copyist was fortunately contented to transcribe, with only a few variations, the metrical original of Babrius. A few fables have likewise been preserved accidentally in an entire form, and several fragments are cited in the Lexicon of Suidas. Collections of the extant fables and fragments of this poet have been made by several scholars. An article in the 'Philological Museum,' vol. i. pp. 280-304, contains an account of the versification of Babrius, and an amended edition of the Fables. The language of Babrius is extremely terse and elegant, and his style of narration lively, pointed, and simple. He is in our opinion to be put on the

same level with La Fontaine, the best fabulist of modern times.

A recent discovery has added to the number of the fables of Babrius. Among the numerous MSS. which M. Minoides Minas found in the convents of Greece, there was one containing the choliambic fables of Babrius, which was found in the convent of St. Laura on Mount Athos. He took a copy of it (the price which the monks asked for the original being too exorbitant), and brought it with the rest of his treasures to Paris in 1842. M. Villemain entrusted the office of editing the fables to M. J. F. Boissonade, and the work appeared towards the end of 1844. The Greek fables which were thus rescued are 123; they are arranged in alphabetical order, that is, according to the initial letters of the fables, and the present collection does not go further down than the letter O. A considerable number of fables is therefore still wanting. Boissonade has added a critical commentary and a Latin translation: the title of the edition is Βαβρίου Μυθίαμβοι. 'Babrii Fabulæ Iambicae CXXIII., nunc primum editæ. J. F. Boissonade recensuit, Latine convertit, annotavit,' Paris, 1844, 8vo.

(*Classical Museum*, part vi. p. 412, &c.)

BABUYANES ISLANDS, a cluster of small islands and islets lying to the north of Luzon, the largest of the Philippines. Babuyan, the most northern of the cluster, is in 19° 43′ N. lat., and 122° E. long., and is about 25 miles in circumference: there are four others of about the same size. The inhabitants carry on trade with the Chinese, whom they supply with gold, wax, cassia, and cocoa-nuts.

BA'BYLON. *History.*—The Babylonians belonged to the Semitic race, and their language was an Aramaic dialect. In the tenth chapter of Genesis, Babel is mentioned as having formed part of the dominions of Nimrod, and Josephus ('Ant. Jud.' i. 6) calls him the founder of the town of Babylon. The building of the city and tower of Babel, and the subsequent confusion of tongues, are recorded in Genesis (xi. 1—9). Diodorus (ii. c. 7), on the authority of Ctesias, attributes the foundation of the city of Babylon to Semiramis.

Herodotus (i. c. 184) says that the building of Babylon was the work of several successive sovereigns; but among them he distinguishes the two queens, Semiramis and Nitocris. We are almost entirely ignorant of the history of Babylon under the successors of Semiramis. After the overthrow of the Assyrian monarchy and the death of Sardanapálus (B.C. 888), Bélesis, a skilful priest and astrologer, assumed the government of the Babylonian state. (Diodor. ii. c. 24, &c.) He was succeeded by his son Nabonassar, and the regal dignity became hereditary in his family. The æra of Nabonassar, beginning the 26th of February, 747 B.C., is supposed to have been so called, because the Chaldæans, during the reign of this king, might have begun to avail themselves in their astronomical observations of a movable solar year. This æra was, however, never used in common life, and for all ordinary practical purposes the Chaldæans counted by lunar years. (Ideler, 'Lehrbuch der Chronologie,' p. 89.)

We know nothing of the four immediate successors of Nabonassar. The fifth, Merodach-Baladan, or Berodach-Baladan, the son of Baladan, is mentioned in the Old Testament (2 Kings xx. 12, 13; Isaiah xxxix. 1) as being on friendly terms with Hezekiah, the king of Judah, at a time when both dreaded the ascendancy of Sennacherib, the king of Assyria. Soon afterwards the Assyrian monarch, Esarhaddon, incorporated Babylon into his empire. But we again find Babylon under Nabopolassar (627—604 B.C.) an independent and powerful state, and as such it continued till its destruction by Cyrus. In the battle of Circesium (604) the independence of the Babylonian state was vindicated against the ambitious designs of Nekos, king of Egypt, who had sent an army to conquer it. Nebuchadnezzar, or Nabuchodonosor (604–561 B.C.), increased his dominions by the conquest of Palestine, Tyrus, and Jerusalem. (2 Kings xxv. 1; 2 Chron. xxxvi. 17.) He subdued the Idumæans (the Edomites) and the Ammonites, and his empire extended from the Caucasian mountains to the African desert. The name of Nebuchadnezzar is apparently unknown to Herodotus, though we are told by Josephus that it was familiar to Megásthenes and other Greek historians.

After the death of Nebuchadnezzar the empire began rapidly to fall into decay. His son Evil-Merodach (561—559) permitted King Joacim, of Judah, to return home out of his captivity at Babylon, whither Nebuchadnezzar had brought him. Evil-Merodach was killed in the second year of his reign by his brother-in-law Neriglissar, who occupied the throne during the four succeeding years (559—555). He was followed by his youthful son Laborosoarchod, or Labassoarascus, who had been only nine months on the throne when he was dethroned and killed. Nabonnedus (the Labynétus of Herodotus, i. 74—77, and the Belshazzar, or Balthasar, of the Old Testament) followed him, and reigned seventeen years (555—538 B.C.), at the end of which he was attacked and defeated by Cyrus (Daniel v. 30, 31), and Babylon became subject to the Persian empire. [CHALDÆANS.]

Cyrus did no injury to the town of Babylon: on the contrary, he made it his winter residence, and the third capital town of his kingdom, after Susa and Ecbatana. But, in consequence of a revolt under Darius I., the walls and gateways of the town were broken down, and the population soon decreased in such a degree that a supply of women from the surrounding country became requisite. (Herod. iii. 159.) Xerxes carried away the golden statue of Belus (Zeus, Herod. i. 183), and Alexander the Great found the temple of that deity in ruins. (Arrian. 'Anab.' vii. 17.) Soon afterwards Seleucus founded the town of Seleuceia in the neighbourhood of Babylon, which further contributed to its downfall. In the time of Diodórus and Strabo, the greater part of Babylon lay in ruins, and there were corn-fields within its ancient precincts. Philo and Josephus observe, that a considerable proportion of the inhabitants were Jews.

Ruins.—Mr. Rich, following Rennell in his

'Geography of Herodotus,' is of opinion that the site of Babylon is near Hillah, a town on the east bank of the Euphrates, which was built out of the ruins of the old city, A.D. 1101: it is about 48 miles S. of Bagdad. This opinion is founded on, 1, the latitude of the place as given by Abulfeda, Ebn Haukal, Edrisi, and other oriental geographers, compared with the situation of Babylon as recorded by classical writers; 2, the magnitude and extent of the ruins at and near Hillah; 3, its vicinity to the bituminous fountains of Is, or Hit, mentioned by Herodotus (i. 179) as being eight days' journey above Babylon, upon a stream of the same name, which falls into the Euphrates; and, 4, the circumstance of the whole surrounding district having been, from the remotest historical time to the present day, distinguished by the name of Babel. Ebn Haükal, who wrote in the tenth century, calls it Babel. (Maurice's 'Observations on Mr. Rich's Memoir.') Niebuhr fixed the latitude at 32° 28′ 30″.

Herodotus, who visited Babylon, has given a description of it (i. 178-186). The city was a square, each side of which was 120 stadia, and the whole consequently was 480 stadia, or above 50 miles, in circuit. It was surrounded by a deep and wide ditch full of water; the walls were 50 royal cubits thick and 200 high. The walls were of brick and the cement was hot bitumen. There were one hundred gates of brass. The Euphrates ran through the city and divided it into two parts. In one division of the city was the palace; and in the other the temple of Belus, a building of enormous size, consisting of eight stages, arranged so as to make a pyramidal form; on the highest tower was a large temple. The base or lowest stage of this temple was a square, the side of which was a stadium, or 600 Greek feet. There was a winding ascent to the top, round the exterior of the different stages.

A bridge made of stone piers, over which wooden planks were laid during the day-time, connected the two parts of the city.

The ruins of Babylon consist of mounds of earth formed by the decomposition of buildings, channelled and furrowed by the weather; the surface of them is strewed with pieces of brick, bitumen, and pottery. (Rich's 'Memoir on Babylon.' See also the view of the ruins in Sir Robert Ker Porter's 'Travels.')

'The ruins of the eastern quarter commence about two miles above Hillah, and consist of two large masses or mounds, connected with and lying north and south of each other, and several smaller ones which cross the plain at different intervals. These ruins are terminated on the north by the remains of a very extensive building called the Mujelibè, from the south-east angle of which proceeds a narrow ridge or mound of earth wearing the appearance of having been a boundary wall. This ridge forms a kind of circular inclosure, and joins the south-east point of the most southerly of the two grand masses.' (Sir Robert Ker Porter lays down these walls differently. See his plan, vol. ii. of his 'Travels.') 'The river-bank, on the south-west of the tomb of Amran, is skirted by a ruin (B), extending from K to B nearly 800 yards; it is, for 300 yards, at B, 40 feet perpendicular; a little above this is a piece of ground, D, formerly the bed of the river; here earthen vases with bones were found. From the east angle of the ruin B commences another mound, similar to that marked A, but broader and flatter; this mound is the most southerly of all the ruins.'* (Rich's 'Memoir' and 'Plan.')

'On taking a view of the ruins from south to north, the first object that attracts attention is the low mound connected with the ruin B: on it are two small walls close together, and only a few feet in height and breadth. This ruin, which is called Jumjuma, and formed part of a Mohammedan oratory, gives its name to a village a little to the left of it. To this succeeds the first grand mass of ruins, which is 1100 yards in length and 800 in its greatest breadth; its figure nearly resembles that of a quadrant; its height is irregular; but the most elevated part may be about 50 or 60 feet above the level of the plain, and it has been dug into for the purpose of procuring bricks. Just below the highest part of it is a small dome, in an oblong inclosure, distinguished by the name of Amran Ibn Ali. On the north is a valley of 550 yards in length, the area of which is covered with tussocks of rank grass, and crossed by a line of ruins of very little elevation. To this succeeds the second grand heap of ruins, the shape of which is nearly a square of 700 yards' length and breadth, and its south-west angle is connected with the north-west angle of the mounds of Amran by a ridge of considerable height and nearly 100 yards in breadth.' (Rich's 'Memoir.')

Mr. Rich considers this the most interesting part of the ruins of Babylon; and that the buildings here were far superior to those which are situated to the north-east. 'Not more than 200 yards from the northern extremity of this mound is a ravine, G, hollowed out by those who dig for bricks, in length 100 yards, and 10 feet wide by 40 or 50 deep. On one side of it a few yards of wall remain standing, the face of which is very clean and perfect, and appears to have been the front of some building. Under the foundations at the southern end an opening is made, which discovers a subterranean passage, floored and walled with large bricks laid in bitumen, and covered over with pieces of sandstone, a yard thick and several yards long. The weight above has been so great as to have given a considerable degree of obliquity to the side-walls of the passage. The opening is nearly 7 feet in height, and its course is to the south. The superstructure over the passage is cemented with bitumen, other parts of the ravine with mortar, and the bricks have all writing upon them. The northern end of the ravine appears to have been crossed by an extremely thick wall of yellowish brick, cemented with a brilliant white mortar.' A little to the west of the ravine at H is the Kasr, or palace, by which appellation Mr. Rich designates the whole mass. It is a very remarkable ruin, and from its being uncovered and in part detached from the

* Sir Robert Ker Porter, however, shows, in his plan of Babylon, a continuation of this wall from the tomb of Jumjuma to the river in a south-westerly direction.

rubbish, is visible from a considerable distance, but so surprisingly fresh in its appearance, that it was only after a minute inspection that Mr. Rich was satisfied of its being in reality a Babylonian

North face of the Kasr, from Rich's Memoir on Babylon.

remain. 'It consists of several walls and piers, which face the cardinal points, 8 feet in thickness; in some places ornamented with niches, and in others strengthened by pilasters and buttresses, built of fine burnt brick still perfectly clean and sharp, laid in lime-cement of such tenacity that it is almost impossible to extract a brick whole. The tops of these walls are broken, and may have been much higher; on the outside they have in some places been cleared nearly to the foundations; but the internal spaces formed by them are yet filled with rubbish, in some parts almost to their summit. One part of the wall has been split into three parts, and overthrown as if by an earthquake. Some detached walls of the same kind, standing at different distances, show what remains to have been only a small part of the original fabric; indeed it appears that the passage in the ravine, together with the wall which crosses its upper end, were connected with it. Near this ruin is a heap of rubbish, the sides of which are curiously streaked by the alternation of its materials; the chief part of which, it is probable, was unburnt bricks, as some were found here.' Mr. Rich did not find any reeds in the interstices of these bricks, though Herodotus says that a layer of reeds was used at every thirteenth layer of bricks in the walls (i. 179.) 'A little to the N.N.E. of this ruin is the famous tree (I), which the natives called Athelà, and which they maintain to have been flourishing in ancient Babylon. It stands on a kind of ridge; one side of its trunk, with verdant branches at the top, only remains: the branches waving in the wind produce a melancholy rustling sound. It is an evergreen, something resembling the lignum vitæ, and not common in Babylon. A tree of the same kind is said to grow at Bassora.' (Rich's 'Memoir.')

'A mile to the north of the Kasr, or palace, 5 miles from Hillah, and 950 yards from the river-bank, is a ruin called the Mujelibè, meaning the *overturned:* its shape is oblong, and its height, as well as the measurements of its sides, irregular. The sides face the cardinal points; the northern is 200, the southern 219, the eastern 182, and the western 186 yards in length; and the elevation of the south-east, or highest angle, is 141 feet.' Two hundred years before, when De la Valle saw it, this building was 200 feet high, and the base, including the ruins of surrounding buildings, about 700 feet on each side. 'The western face, which is the least elevated, is the most interesting, on account of the appearance of building it presents. Near the summit of it appears a low wall, with interruptions, built of unburnt bricks mixed up with chopped straw or reeds, and cemented with clay-mortar of great thickness, having between every layer a layer of reeds; and on the north side are also some vestiges of a similar construction. The south-west angle is crowned by something like a turret or lantern: the other angles are in a less perfect state, but may originally have been ornamented in a similar manner. The western face is lowest and easiest of ascent; the northern the most difficult. All are worn into furrows by the weather; and in some places, where several streams of rain-water have united together, these furrows are of great depth, and penetrate a considerable way into the mound. The summit is covered with heaps of rubbish, in digging into some of which layers of broken burnt brick cemented with mortar were discovered, and whole bricks with inscriptions are sometimes found. The whole is covered with innumerable fragments of pottery, brick, bitumen, pebbles, vitrified brick or scoria, and even shells, bits of glass, and mother-of-pearl. In the northern face of the Mujelibè, near the summit, is a niche or recess, high enough for a man to stand upright in, at the back of which is a low aperture leading to a small cavity, whence a passage branches off to the right, sloping upwards in a westerly direction till it loses itself in the rubbish.' Mr. Rich, after digging into a shaft or hollow pier, sixty feet square, lined with fine brick laid in bitumen and filled up with earth, found a brass spike, some earthen vessels, and a beam of date-tree wood; one of the vessels was remarkably thin, and had the remains of fine white varnish on the outside. After carrying on the excavation some way further, a narrow passage was discovered, nearly 10 feet high, flat on the top, exhibiting both burnt and unburnt bricks, the former with inscriptions on them, and the latter laid with a layer of reeds between every row, except in one or two courses near the bottom, where they are cemented with bitumen. The hollow pier just alluded to corresponds exactly to Strabo's description (p. 738) of the hollow brick piers which supported the hanging-garden (κρεμαστὸς κῆπος): in the hollow thus filled with earth the largest trees grew.

It appears that the walls were lined with a fine burnt brick to conceal the unburnt bricks, of which the body of the building was principally composed; there is a continuation of this passage to the eastward, choked up with earth. Here Mr. Rich discovered a wooden coffin containing a skeleton in high preservation. Under the head of the coffin was a round pebble; attached to the coffin, on the outside, was a brass bird, and inside an ornament of the same material, which had apparently been suspended to some part of the skeleton. A little further, the skeleton of a child was found; and Mr. Rich was of opinion that the whole passage was occupied in a similar manner.

It may therefore be conjectured, that the Mujelibè was a great brick pyramid for the dead.

'About 70 yards to the north and west of the Mujelibè are traces of a very low mound of earth, which may have formed an inclosure round the whole.'

Mr. Rich could not perceive any ruins on the western side of the Euphrates, except a large ruin, supposed to be the Tower of Belus, and some trifling mounds called Anana, near the bank of the river; Sir R. K. Porter shows, in addition, some extensive ruins between these. The great ruin, supposed to be the Temple of Belus, is the most stupendous mass of all the ruins of Babylon. 'It is situated about six miles to the south-west of Hillah, and is called by the Arabs Birs Nemroud, and by the Jews Nebuchadnezzar's Prison.' Mr. Rich describes it in the following terms:—'The Birs Nemroud is a mound of an oblong form, the total circumference of which is 762 yards. At the eastern side it is cloven by a deep furrow, and is not more than 50 or 60 feet high; but at the western side it rises in a conical figure to the elevation of 198 feet, and on its summit is a solid pile of brick, 37 feet high by 28 in breadth, diminishing in thickness to the top, which is broken and irregular, and rent by a large fissure extending through a third of its height. It is perforated by small square holes disposed in rhomboids. The fine burnt bricks of which it is built have inscriptions on them, and so excellent is the cement, which appears to be lime-mortar, that it is nearly impossible to extract one whole. The other parts of the summit of this hill are occupied by immense fragments of brick-work of no determinate figure, tumbled together and converted into solid vitrified masses, the layers of brick being perfectly discernible. These ruins stand on a prodigious mound, the whole of which is itself a ruin, channelled by the weather, and strewed with fragments of black stone, sandstone, and marble. In the eastern part, layers of unburnt brick, but no reeds, are to be seen. In the north side may be seen traces of building exactly similar to the brick pile. At the foot of the mound a step may be traced scarcely elevated above the plain, exceeding in extent, by several feet each way, the true or measured base; and there is a quadrangular inclosure round the whole as at the Mujelibè, but much more perfect, and of greater dimensions. At a trifling distance, and parallel with its eastern face, is a mound not inferior to that of the Kasr in elevation, but much longer than broad; on the top of it are two koubbès, or oratories; round the Birs are traces of ruins to a considerable extent.' (Rich.)

It has been disputed whether the Mujelibè or the Birs Nemroud is the remains of the Temple of Belus. Mr. Rich thinks that, in some respects, the Mujelibè would answer sufficiently well to the accounts of the Hanging Garden, which, according to Strabo, formed a square of four plethra, or 400 Greek feet, on each face, and stood upon the river from which it was supplied with water. As to the various opinions on the subject, see Niebuhr, D'Anville's 'Geography,' Rennell's 'Geography of Herodotus,' the 'Memoir' of Rich, and the 'Travels' of Sir Robert Ker Porter.

Architecture.—The ruins of Babylon do not contain any entire building. The great Temple of Belus, as described by Herodotus, would have a pyramidal form, and would be similar, in some respects, to the Hindu temple at Tanjore, and the great Mexican temples.

Buttresses and pilasters were component parts of Babylonian buildings, which were sometimes decorated with niches; the edifices generally were of bricks, either dried in the sun or burnt in a kiln or furnace. Tiles were also painted and glazed for the purpose of decorating buildings, and a very fine sort of brick was employed to case thick walls built of common bricks or rubbish. These bricks were impressed with characters. The clay of which they were formed appears to have been mixed up with chopped straw or reeds. When baked or dry they were laid in hot bitumen, sometimes in clay-mortar, and sometimes also in a fine lime-mortar. In the bridge over the Euphrates hewn stones were employed for the piers, and were firmly connected with iron and lead. The Babylonians actually did use the arch in forming the substructure of the Hanging Garden, if we take the testimony of Strabo (p. 738): whether the geographer reports the circumstance truly or not may be a question; but his words will bear only one meaning.

Statues were employed by the Babylonians. Rich saw a colossal lion of white granite. The inhabitants who excavate in the ruins call all statues which they discover idols; and, as they are of no value to them, they throw them back among the rubbish while excavating for bricks.

For columns they used thick piers: on such piers the Hanging Garden was formed, and the floor laid on the piers was covered with stone (Curtius, v. 1), on which the earth was laid. Timber was scarce, and the wood-work of the houses, which were sometimes of three and four stories, was made of the date-tree. Round the posts reeds were twisted, on which a coat of paint was laid.

Semiramis is said to have made a tunnel under the Euphrates. The tunnel, according to Diodorus, was made like a vaulted passage, not by digging under the bed of the river, but by turning its course, which was done when the piers of the bridge were built. (Diod. ii. 9.) It was 12 feet high and 15 broad; it served as a communication between one palace and the other, which were built, according to the same authority, at each end of the bridge. Semiramis is also said to have erected a stone obelisk 125 feet high. There is abundance of this material above Hit.

The bitumen used in the building of Babylon is not by any means so tenacious as the mortar. Mr. Rich thinks that lime-cement was most generally employed.

In the British Museum there are many specimens of Babylonian bricks. Stones, elegantly engraved, and seal-rings were in general use among the Babylonians. Heeren is of opinion that these stones and the engraved cylinders served for signatures. These cylinders were made not only of clay, but of the hardest stones, and the Babylonians had brought the art of cutting these

stones to a very high state of perfection. Heeren mentions a cylinder of jasper, and Sir R. K. Porter another of white agate. Sir R. K. Porter gives some representations of cylinders and Babylonian sculpture, as well as two curious coins, which were found in an earthen vessel fished up from the Euphrates close to the ruins of the palace: in it were also found some coins of Alexander and his successors. The cylinders are engraved with hieroglyphics and groups of men and beasts, and combinations of beasts and men: they are exceedingly curious. (See plates 79 and 80, vol. ii. of Sir R. K. Porter's 'Travels.') There is also in plate 80 a representation of a woman with a child, and two curious figures in bronze: the cylinders are all perforated.

BABYLO'NIA, the territory so named from the city of Babylon on the Euphrates. It was considered by the ancient geographers as a part of Assyria; but its boundaries cannot be fixed. The physical character of the Babylonian Plain is described in the articles BAGDAD (Pashalic) and TIGRIS.

BACCA, the technical name by which botanists distinguish the fruit commonly called a berry. It designates those fruits which have a thin skin, are pulpy internally, and have several seeds lying loose in the pulpy mass. Such are the gooseberry, currant, vine, potato-apple, &c.

BACCARAT. [MEURTHE.]

BACCHA, in Entomology, a genus of the order *Diptera*, and family *Syrphidæ*. The species of this genus of two-winged flies are peculiar in having the two basal joints of the abdomen remarkably long and slender, but with the remaining joints depressed, and suddenly increased in breadth. They are generally of a black or bronze colour, with yellow spots or markings. They are met with near London, and frequent flowers.

BACCHANA'LIA, feasts or festive rites in honour of Bacchus, at which a mixed crowd of men and women, intoxicated with wine, clothed in deer-skins and Asiatic robes, and carrying thyrsi in their hands, ran up and down the country shouting, beating drums and cymbals, and crying, 'Evoe! Io Bacche! Evan!' &c. They were introduced at Rome B.C. 187. (Livius, xxxix. 8.) These rites were celebrated every third year, and were hence called Trieterica. They must be distinguished from the vintage festivals, on which see the article DIONYSIA.

BACCHIGLIO'NE, a river in the Venetian States, which has its source in the Alps; it passes the cities of Vicenza and Padua, and about 30 miles below the latter enters the Adriatic at Brondolo, opposite to the island and town of Chioggia. The Bacchiglione is navigable for large boats from Vicenza down to the sea. Its whole course is about 90 miles.

BA'CCHIUS, sometimes incorrectly called Vacceus, is a Greek writer on music. His work is entitled Εἰσαγωγὴ Τέχνης Μουσικῆς, 'An Introduction to the Art of Music,' in questions and answers. Bacchius follows in general the system of Aristoxenus. His epoch is uncertain. The work of Bacchius is contained in the collection of Meibomius.

BA'CCHUS was, according to the common traditions of the ancient Greeks, one of the personages worshipped under the generic name of heroes; according to the more systematic mythologers he was a dæmon or genius. The common story of the birth of Bacchus, his mother Semele's fatal wish, his imprisonment in the thigh of his father Jupiter, and the various adventures attributed to him, are well known. The southern coast of Thrace seems to have been the original seat of the religion of Bacchus, and it was thence introduced into Greece shortly after the colonization by the Æolians of the Asiatic coast of the Hellespont.

The worship of Bacchus is intimately connected with that of Deméter. Under the name of Iacchus he was worshipped along with that goddess at Eleusis. [DEMETER.]

On the form and dress of Bacchus almost all the ancient testimonies have been collected by F. G. Schön in an ingenious dissertation on the costume of the characters in the Bacchæ of Euripides. From these it appears that he was represented as a young man with an effeminate face, with long blond hair, with a fillet on his head, or an ivy crown, with a long purple robe and a nebris (deer-skin), and with a thyrsus in his hand. His attendants were the Bacchantes, the Lenæ, the Naiades and Nymphs, the Thyades, the Mimallones, the Tityri, Pan, Silenus, the Fauns, and the Satyrs.

BACCHY'LIDES, a Greek poet and a nephew of the elder Simonides, was a native of the island of Ceos. He probably lived in the first half of the fifth century before the Christian æra, was a contemporary of Pindar, though younger than that celebrated poet, and is said to have visited Hiero, king of Sicily. His compositions were very various, consisting of hymns, dithyrambic poems, odes in celebration of the Pythian victors, amatory poems, &c., all of which are now lost except twenty small pieces. The fragments of Bacchylides were published separately by C. F. Neue, Berlin, 1822, 8vo. They are translated in Merivale's edition of Bland's *Anthology*, pp. 75 80.

BA'CCIO DELLA PORTA, more generally recognized by the name of Frate Bartolomeo di S. Marco, was a native of the district of Savignano, and born in the year 1469. He passed some years under the tuition of Cosimo Rosselli at Florence, but it was from the great father of modern art, Leonardo da Vinci, that he obtained the first idea of that effective style of colour and chiar' oscuro by which his subsequent works are distinguished. His early works were of small dimensions, and distinguished by graceful composition and high finishing; but it was in the fresco of the Last Judgment, painted for the chapel of Santa Maria Nuova, that the grandeur of his style and the extent of his powers were first manifested. The persecution and sacrifice for his opinions of the celebrated Savonarola, who had acquired a considerable influence over the mind of Bartolomeo, affected him so strongly, that he determined on devoting himself to the cloister, and in 1500 he took the habit of St. Dominic. In 1504 Raffaelle made a visit to Florence, and

an intimacy commenced between him and Bartolomeo, who communicated to his great contemporary his own principles of colouring, and received from him in return some instructions in perspective. Shortly afterwards Bartolomeo went to Rome, where his mind, naturally timid and sensitive, appears to have been so overwhelmed by the contemplation of the great works of Michael Angelo and Raffaelle, that it was with difficulty he persuaded himself to make any practical effort; he painted, however, two single figures of St. Peter and St. Paul, which were long preserved in the palace of the Quirinal. Some altar-pieces and other works, nevertheless, executed shortly after his return to Florence, showed that he had profited largely by his visit to the Vatican; the sublime figure of St. Mark (now in the gallery of Florence) was alone a sufficient proof that he had no reason to shrink from any competition. Bartolomeo died in the convent of St. Mark, in 1517, aged 48.

BACH, JOHANN SEBASTIAN, was born at Eisenach, Upper Saxony, in 1685. His ancestor in the fourth degree, Veit Bach, was a miller and baker at Presburg in Hungary early in the sixteenth century, but, being obliged to quit his country on account of religious troubles, he settled at a village near Saxe Gotha. In his leisure hours he amused himself with his guitar, and communicated his taste for music to his two sons, who made it their profession, and taught it to their children, by whom it was handed on, till by degrees six generations, including the founder, practised the harmonic art, and held among them nearly all the offices of chanters and organists in Thuringia.

John Sebastian lost his father before he had completed his tenth year. His elder brother then maintained and instructed him; but his death soon left the boy destitute. His fine voice obtained him a livelihood, till that changing he was again left without resource. At last his great musical talent procured him employ at the court of Weimar; and the remainder of his life was spent in the service of various German princes. He died in his 66th year, leaving eleven sons and nine daughters.

So great was Sebastian Bach as an organ-player, that he had only one rival; but this was Handel. Bach's compositions, in almost every class, are very numerous; of these scarcely any are known out of Germany, except his 'Clavecin bien Tempéré,' or Preludes and Fugues in all the tones and semitones, major and minor. His vocal works are considered much more likely to convey his name to distant ages than those of the instrumental kind. Three of the sons of Sebastian Bach were distinguished as musicians:—*Friedemann*, the eldest, died at Berlin in 1784; *Carl Philipp Emanuel*, the second, composed much for the pianoforte, and died in 1788; and *Johann Christian*, called Bach of Milan, came to England in 1763, to compose for the King's Theatre, and produced some operas, which were superior to most of the works then produced; but hardly a vestige of any one of them remains. He died in London in 1782.

BACHELOR, an unmarried man. The legislation of the Romans placed unmarried persons (caelibes) under certain disabilities, the chief of which were contained in the Lex Julia et Papia Poppæa (A.D. 9). One object of the Lex was to encourage marriage. An unmarried person (caelebs), who was in other respects qualified to take a legacy, was incapacitated by this lex, unless he or she married within one hundred days. (Ulpian, 'Frag.' xvii. 1.) The law was the same if the whole property (hereditas) was left to a caelebs. (Gaius, ii. 111, 144, 286.) It was always a part of the Roman policy to encourage the procreation of children. The object of the English law, which imposes extraordinary payments on bachelors, and relieves to a certain extent married persons with children, was to raise money, though a certain vague notion of encouraging marriage seems also to have occurred to the law-maker. A constitution of Constantine ('Cod.' viii. tit. 58) relieved both unmarried men and women from the penalties imposed on caelibes and orbi, and placed them on the same footing as married persons. This change was made to favour the Christians, many of whom abstained from marriage from religious motives.

In 1695 an act was passed (6 & 7 Will. III. c. 6), entitled 'An Act for granting to his Majesty certain rates and duties upon marriages, births, and burials, and upon bachelors and widowers, for the term of five years, for carrying on the war against France with vigour.' Bachelors above the age of twenty-five, and widowers without children, paid 1*s.* yearly, and further according to their rank. Thus, for a bachelor duke, the tax was 12*l.*, and other ranks in proportion. An esquire was charged 35*s.* a year, and a person of the rank of gentleman 5*s.* Persons possessed of real estate of 50*l.* a year, or personal property of 500*l.* value, paid 5*s.* A supplementary act was passed two or three years afterwards (9 Will. III. c. 32), to prevent frauds in the collection of the taxes imposed by the former act, but the tax was allowed to expire in 1706. The number of servants charged at this differential or higher rate in 1842 was 11,831, or rather more than one-tenth of the whole number charged. Roman Catholic clergymen are exempt from additional duty. As the law stands at present, the tax on male servants is augmented to bachelors by 1*l.* in addition to the tax imposed on others. When the income-tax was imposed by Mr. Pitt, in 1798, deductions were allowed on account of children, and an abatement was made of 5 per cent. to a person with children, when the income was above 60*l.* and under 400*l.*; and other rates of abatement were allowed according to the amount of income and the number of children: this indulgence extended to incomes of 5000*l.* a year and upwards.

There does not appear to be a tax on bachelors in any country in Europe. In the city of Frankfort an income-tax is paid by journeymen who work in the city, 'if they are foreigners, and not married.'

BACHELOR OF ARTS. [ARTS, DEGREES IN.]

BACILLA'RIA, a large family of infusorial

animalcula, constituted by Ehrenberg, who includes in it upwards of thirty genera. The siliceous shields of these animalcula are amongst the most numerous of the forms of Microzoaria in the *cretaceous, tertiary, and superficial deposits*. Xanthidia occur in the chalk and its included nodules of flint: Gaillonellæ, Naviculæ, Actinocycli, Coscinodisci, Gomphonemæ, and other genera, abound in the white tertiary marls of Greece, Italy, Bohemia, England, and North America. The siliceous beds of Bohemia (Polierschiefer), which are fourteen feet in thickness, contain innumerable shields of Naviculæ, and probably few of the superficial lacustrine deposits of Europe are wholly devoid of these exuviæ. [INFUSORIA, FOSSIL.]

BACIOCCHI, MARIE ANNE ELISA, the eldest of the sisters of Napoleon Bonaparte, was born at Ajaccio in Corsica, in 1777, and received her early education in the Royal School of St. Cyr, near Paris. She married, in 1797, her countryman Captain Baciocchi, a retired officer of the former Royal Corsican regiment. After her brother's assumption of the imperial crown, Napoleon made Baciocchi and his wife Princes of Piombino, and soon after of Lucca. On that occasion Marie Anne assumed the more euphonious name of 'Elisa,' 'Princess of Lucca and Piombino.' In 1806 the principality of Massa and Carrara was added to her dominions. In March 1809, Napoleon by a decree appointed the Princess Elisa to be Grand Duchess of Tuscany, and to administer in his name the three departments into which that country was divided as a part of the French empire. On the downfall of Napoleon, after some wanderings, she took up her abode in Bologna in the Papal States, where she went by the name of Countess of Campagnano, and there she died, of a nervous fever, in August 1820.

BACKERGUNGE, a district in the province of Bengal, situated on the eastern side of the Sunderbunds, and forming, with that tract, a part of the labyrinth of creeks and rivers which characterize the delta of the Ganges. Until the beginning of the present century, Backergunge formed part of the large district of Dacca Jelalpoor. The population in 1801, when the separation took place, amounted to 926,723, of whom rather more than one-half were Hindoos, and the rest Mohammedans and others; and the area of the new district comprehended 4564 square miles.

The town of Backergunge, which is situated in 22° 42′ N. lat., and 89° 20′ E. long., is about 120 miles E. of Calcutta. The courts of justice and of revenue under the British government were formerly stationed here, but when the separation of the district from Dacca Jelalpoor took place the courts were removed to Burrishol.

(Hamilton's *East India Gazeteer;* and *Reports* of Committees of House of Commons *on the Affairs of India.*)

BACKGAMMON, a game played by two persons with dice, upon a table divided into two parts, upon which there are twelve points of one colour and twelve of another. It appears to have been invented about the tenth century. The etymology of this word is doubtful. Strutt, in his 'Sports and Pastimes,' says that it was a very favourite amusement at the commencement of the 18th century among persons of opulence, and especially among the clergy.

BACKHUYSEN, LUDOLPH, a celebrated marine-painter, born at Embden in 1631. Having been placed in the counting-house of a merchant at Amsterdam, his latent talent for painting was stimulated by the picturesque objects which the sea presented before the windows of his office, and his first delineations were of shipping, done with a pen in a style of extraordinary beauty and correctness. These drawings excited such surprise and admiration, that it became a fashion to possess them, and they were sold at high prices. Backhuysen now determined on relinquishing his commercial pursuits, and devoting himself to art, of the executive part of which he soon acquired a full mastery. Those subjects to which his genius particularly directed him were not to be found in the apartments of painters, or in the silence of academies. It was his practice to induce boatmen, by large rewards, to put to sea at times when no other person would venture from shore. Amidst the dash of waves, the roaring of breakers, and the danger of vessels, he sat making his sketches with perfect composure. He stamped, by this mode of study, a character of truth on his works which could have been obtained by no other means; and he acquired the rare distinction of forming a style peculiarly his own, which no rivalry has approached. His works possess, in the highest degree, the peculiar excellencies of the Dutch school,—richness, transparency, delicate handling, and appropriate colour. Backhuysen had the good fortune to be appreciated in his own time. His works were eagerly sought after. He died in 1709, aged 78.

BACON, ROGER, died in 1292, in about the 78th year of his age, which places his birth near the year 1214. His age is that of Cardinal Cusa, Thomas à Kempis, Matthew Paris, Albertus Magnus, Raymond Lully, Sacrobosco, &c.

Roger Bacon was born near Ilchester in Somersetshire, of a respectable family. He was educated at Oxford, and at Paris, which was then the first university in the world. The course of study in vogue did not give so great a preponderance to the works of Aristotle as was afterwards the case. The theology of the day had set strongly against philosophy of every species. In 1209, a council at Paris condemned and burnt, if not the works of Aristotle, at least the mutilated and interpolated translations from the Arabic which then existed. But when, towards the middle of the century, Latin versions from the Greek began to appear, the reputation of Aristotle advanced so rapidly, that he had gained the exclusive title of 'the Philosopher' by the time Roger Bacon wrote his 'Opus Majus.' But Bacon in no sense became an Aristotelian, except in that which comprehends all who are acquainted with the opinions and methods of the Greek philosopher. Better versed in the original than most of his contemporaries, he freely criticises all he meets with (especially the merit of the translations, all which he says he would burn, if he

could), and is himself an early and sufficient proof that the absurdities of his contemporaries ought not to be called 'Aristotelian,' any more than Aristotle himself 'the Philosopher.'

After his return to Oxford, with a doctor's degree granted at Paris, which was immediately also confirmed by the former university, he took the vows of a Franciscan in a convent possessed by that order at Oxford, on the persuasion, it is said, of Robert Greathead or Grostête, bishop of Lincoln. From the time of his return, which is stated to have been A.D. 1240, he applied himself closely to the study of languages, as well as to experimental philosophy.

The enmity of his brethren soon began to show itself; the lectures which he gave in the university were prohibited, as well as the transmission of any of his writings beyond the walls of his convent. The charge made against him was that of magic, which was then frequently brought against those who studied the sciences, and particularly chemistry. The following detached passages of the 'Opus Majus' no doubt contain opinions which its author was in the habit of expressing:—

'Most students have no worthy exercise for their heads, and therefore languish and stupefy upon bad translations, which lose them both time and money. There are four principal stumbling-blocks in the way of arriving at knowledge—authority, habit, appearances as they present themselves to the vulgar eye, and concealment of ignorance combined with ostentation of knowledge.—Men presume to teach before they have learnt, and fall into so many errors, that the idle think themselves happy in comparison—and hence both in science and in common life we see a thousand falsehoods for one truth.—And this being the case, we must not stick to what we hear and read, but must examine most strictly the opinions of our ancestors, that we may add what is lacking, and correct what is erroneous, but with all modesty and allowance.—We must, with all our strength, prefer reason to custom, and the opinions of the wise and good to the perceptions of the vulgar: and we must not use the triple argument; that is to say,—this has been laid down, this has been usual, this has been common, therefore it is to be held by. For the very opposite conclusion does much better follow from the premises. And though the whole world be possessed by these causes of error, let us freely hear opinions contrary to established usage.'

As might be supposed, Roger Bacon cultivated the acquaintance of men who held sentiments similar to the above, which could not please his brethren. Among them we have mentioned Grostête, bishop of Lincoln, who usually resided at Oxford, and who was obnoxious both to pope and clergy.

In the meantime a pope was elected, to whom we owe the production of the 'Opus Majus.' This was Clement IV. (elected 1265), who had previously, when cardinal-bishop of Sabina, been legate in England. Here he had heard of Bacon's discoveries, and earnestly desired to see his writings; but, as before stated, the prohibition of the Franciscans prevented his wish being complied with. After his election as head of the church, Bacon, conceiving that there would be no danger or impropriety in disobeying his immediate superiors at the command of the pope, wrote to him, stating that he was now ready to send him whatever he wished for. The answer was a repetition of the former request; and Bacon accordingly drew up the 'Opus Majus,' of which it may be presumed he had the materials ready. It appears that he had mentioned the circumstances in which he stood; for Clement's answer requires him to send the work with haste, any command of his superiors or constitution of his order notwithstanding, and also to point out, with all secresy, how the danger mentioned by him might be avoided. The book was sent in the year 1267.

Before the 'Opus Majus,' Bacon, according to his own account, had written nothing except a few slight treatises, 'capitula quædam.' Before he took the vows he wrote nothing whatever; and afterwards, as he says to Clement, he would have composed many books for his brother and his friends, but when he despaired of ever being able to communicate them he neglected to write.

With the 'Opus Majus' he sent also two other works, the 'Opus Minus' and the "Opus Tertium,' the second a sort of abstract of the first, and the third a supplement to it. These exist in manuscript in the Cottonian Library, but have not been printed. It appears that, after the death of Clement, which took place in November 1268 (not 1271, as stated by some; the latter date is that of the election of Clement's successor, the see having been vacant two years and three quarters), he revised and augmented the second of these works. What reception Clement gave them is not known; some say he was highly gratified, and provided for the bearer; others, that he at least permitted an accusation of heresy against the writer. Both stories are unlikely; for Clement could hardly have received the work before he was seized with his last illness.

Till the year 1278 Bacon was allowed to remain free from open persecution; but in that year Jerome of Ascoli, general of the Franciscan order, afterwards pope, under the title of Nicholas IV., being appointed legate to the court of France, this was thought a proper opportunity to commence proceedings. Bacon, then sixty-four years old, was accordingly summoned to Paris (Dr. Jebb implies that he had already removed his residence there, to another convent of his order), where a council of Franciscans, with Jerome at their head, condemned his writings, and committed him to close confinement. According to Bale the charge of innovation was the pretext, but of what kind was not specified: according to others, the writings of Bacon upon astrology were the particular ground of accusation. We cannot learn that any offer of pardon was made to the accused upon his recantation of the obnoxious opinions, as usual in such cases; which, if we may judge from the 'Opus Majus,' Bacon would have conceived himself bound to

accept, at least if he recognized the legality of the tribunal. A confirmation of the proceeding was immediately obtained from the court of Rome. During ten years, every effort made by him to procure his enlargement was without success. The two succeeding pontiffs had short and busy reigns; but, on the accession of Jerome (Nicholas IV.), Bacon once more tried to attract notice. He sent to that pope, it is said, a treatise on the method of retarding the infirmities of old age, the only consequence of which was increased rigour and closer confinement. But that which was not to be obtained from the justice of the pope was conceded to private interest, and Bacon was at last restored to liberty by the intercession of some powerful nobles, but who they were is not mentioned. Some say he died in prison; but the best authorities unite in stating that he returned to Oxford, where he wrote a compendium of theology, and died some months, or perhaps a year and a half, after Nicholas IV. (who died April, 1292). We have adopted 1292 from Anthony-à-Wood, as the most probable year of his death, though foreign works frequently state that he died in 1284. He was buried in the church of the Franciscans at Oxford. The manuscripts which he left behind him were immediately put under lock and key, and they are said to have been eaten by insects.

Of the asserted works of Bacon there is a very large catalogue, cited mostly from Bale and Pits, in the preface to Dr. Jebb's edition of the 'Opus Majus.'

It only remains for us to take a general view of the character of Roger Bacon's writings, and of the contents of the 'Opus Majus.' It is surprising how little is known of this work, the only one to which we can appeal, if we would show that philosophy was successfully cultivated in an English university during the 13th century. It is of course in Latin, but in Latin of so simple a character, that we know of none in the middle ages more easy to read: and it forms a brilliant exception to the stiff and barbarous style of that and succeeding times. We think we see the thoughts of the author untranslated, though the idiom is often that of an Anglo-Norman; by which we mean that we frequently find Latin words used in their modern English sense, as, for instance, *intendere* for *in animo habere*, meaning the same as our word to *intend; præsumere* for *sibi arrogare* in the sense of to *presume*.

The charge of heresy appears to be by no means so well founded as a Protestant would wish. Throughout the whole of his writings Bacon is a strict Roman Catholic, that is, he expressly submits matters of opinion to the authority of the church, saying (Cott. MSS. cited by Jebb) that if the respect due to the vicar of the Saviour, 'vicarius Salvatoris,' alone, and the benefit of the world, could be consulted in any other way than by the progress of philosophy, he would not, under such impediments as lay in his way, proceed with his undertaking for the whole church of God, however much it might entreat or insist. His zeal for Christianity, in its Latin or western form, breaks out in every page; and all science is considered with direct reference to theology, and not otherwise. But at the same time, to the credit of his principles, considering the book-burning, heretic-hunting age in which he lived, there is not a word of any other force except that of persuasion. He takes care to have both authority and reason for every proposition that he advances: perhaps, indeed, he might have experienced forbearance at the hand of those who were his persecutors, had he not so clearly made out prophets, apostles, and fathers, to have been partakers of his opinions. 'But let not your Serenity imagine,' he says, 'that I intend to excite the *clemency* of your Holiness, in order that the papal majesty should employ force against weak authors and the multitude, or that my unworthy self should raise any stumbling-block to study.' Indeed the whole scope of the first part of the work is to prove, from authority and from reason, that philosophy and Christianity cannot disagree; a sentiment altogether of his own revival, in an age in which all philosophers, and mathematicians in particular, were considered as at best of dubious orthodoxy.

The reasoning of Bacon is generally directly dependent upon his premises, which, though often wrong, seldom lead him to the prevailing extreme of absurdity. Even his astrology and alchemy, those two great blots upon his character, as they are usually called, are, when considered by the side of a later age, harmless modifications, irrational only because unproved, and neither impossible nor unworthy of the investigation of a philosopher, in the absence of preceding experiments. His astrology is *physical*. 'With regard to human affairs, true mathematicians do not presume to make certain, but consider how the body is altered by the heavens; and, the body being altered, the mind is excited to public and private acts, free will existing all the same.' An age which is divided upon the question of the effect of the moon upon lunatics, and of which the philosophers have collected no facts decisive against many alleged effects of the same planet upon plants, can ask no more of a philosopher of the 13th century than that he should not be too positive.

This planetary influence appears to have been firmly believed in by Bacon, and in particular the effect of the constellations on the several parts of the human body. Perhaps he was rather prejudiced in favour of a doctrine which was condemned by the same men who thought mathematics and philosophy savoured of heresy. And it must be remembered that the pretended science was almost universally allowed existence, even by those who considered its use unlawful: nor can we infer that the church disbelieved it, because that body discouraged it, any more than that it rejected infernal spirits, because it anathematized magic.

We must draw a wide distinction between the things which Bacon relates as upon credible authority, and the opinions which he professes himself to entertain from his own investigations. In almost every page we meet with something now considered extremely absurd, and with rea-

son. But before the day of *printing* there was very little *publishing;* a book which was written in one country found its way but slowly into others, one copy at a time; and a man of learning seldom met those with whom he could discuss the probability of any narrative. The adoption of the principle, that a story must be rejected because it is strange, would then have amounted to a disbelief of all that had been written on physics; a state of mind to which we cannot conceive any one of that age bringing himself. Nor can we rightly decide what opinion to form of Bacon as a philosopher, until we know how much he rejected, as well as how much he believed. These remarks apply particularly to his alchemy: he does not say he had made gold himself, but that others had asserted themselves to have made it; and his account of the drink by which men had lived hundreds of years is a relation taken from another. Voltaire, in his philosophical dictionary, has overlooked this distinction, and has much to say in consequence. It was, however, no very strange matter that Bacon, who (if the 'Speculum Alchemiæ' be really his, of which, from the style, we doubt) believed with many others that sulphur and mercury were the first principles of all bodies, should endeavour to compound gold, or should give credit to the assertions of those who professed to have done so. But there is not in Bacon's alchemy any direction for the use of prayers, fasting, or planetary hours.

The great points by which Bacon is known are his reputed knowledge of gunpowder and of the telescope. With regard to the former, it is not at all clear that what we call gunpowder is intended, though some detonating mixture, of which saltpetre is an ingredient, is spoken of as commonly known. The passage is as follows:—

'Some things disturb the ear so much, that if they were made to happen suddenly, by night, and with sufficient skill, no city or army could bear them. No noise of thunder could compare with them. Some things strike terror on the sight, so that the flashes of the clouds are beyond comparison less disturbing; works similar to which Gideon is thought to have performed in the camp of the Midianites. And an instance we take from a childish amusement, which exists in many parts of the world, to wit, that with an instrument as large as the human thumb, by the violence of the salt called saltpetre, so horrible a noise is made by the rupture of so slight a thing as a bit of parchment, that it is thought to exceed loud thunder, and the flash is stronger than *the* brightest lightning.' ('Opus Majus,' p. 474.)

With regard to the telescope, it must be admitted that Bacon had *conceived* the instrument, though there is no proof that he carried his conception into practice, or *invented* it. His words are these:—'We can so shape transparent substances, and so arrange them with respect to our sight and objects, that rays can be broken and bent as we please, so that objects may be seen far off or near, under whatever angle we please; and thus from an incredible distance we may read the smallest letters, and number the grains of dust and sand, on account of the greatness of the angle under which we see them; and we may manage so as hardly to see bodies, when near to us, on account of the smallness of the angle under which we cause them to be seen: for vision of this sort is not a consequence of distance, except as that affects the magnitude of the angle. And thus a boy may seem a giant, and a man a mountain,' &c. The above contains a true description of a telescope; but, if Bacon had constructed one, he would have found that there are impediments to the indefinite increase of the magnifying power; and still more that a boy does not appear a giant, but a boy at a smaller distance.

That the remarks of Bacon are derived from reflection and imagination only, is further apparent from his asserting that a small army could be made to appear very large, and that the sun and moon could be made to descend, to all appearance, down below, and stand over the head of the enemy.

The question has been agitated whether the invention of spectacles is due to Bacon, or whether they had been introduced just before he wrote. He certainly describes them, and explains why a plane convex glass magnifies. But he seems to us to speak of them as already in use. 'Hence this instrument is useful to old persons and those who have weak eyes.'

The 'Opus Majus' begins with a book on the necessity of advancing knowledge, and a dissertation on the use of philosophy in theology. It is followed by books on the utility of grammar and mathematics; in the latter of which he runs through the various sciences of astronomy, chronology, geography, and music. The account of the inhabited world is long and curious, and, though frequently based on that of Ptolemy, or the writings of Pliny, contains many new facts from travellers of his own and preceding times. His account of the defects in the calendar was variously cited in the discussions which took place on the subject two centuries after. The remainder of the work consists of a treatise on optics and on experimental philosophy, insisting on the peculiar advantages of the latter. The explanation of the phenomena of the rainbow, though very imperfect, was an original effort of a character altogether foreign to the philosophy of his day. He attributes it to the reflection of the sun's rays from the cloud; and the chief merit of his theory is in the clear and philosophical manner in which he proves that the phenomenon is an appearance, and not a reality. Between the two last-mentioned books is a treatise 'De Multiplicatione Specierum,' entirely filled with discussions somewhat metaphysical upon the connection and causes of phenomena.

BACON, SIR NICHOLAS, father of Sir Francis Bacon, and Lord Keeper of the Great Seal of England during the first twenty years of the reign of Elizabeth, was the second son of Robert Bacon, of Drinkston, in Suffolk, by Isabel, daughter of John Gage, of Pakenham, in the same county, and was born in the year 1510 at

Chiselhurst, in Kent. He received his scholastic education at Bene't (Corpus Christi) College, Cambridge, and spent a considerable time abroad, particularly at Paris, for the purpose of completing his education. On his return to England, he kept his terms at Gray's Inn, and was called to the bar in that society. In 1537, at which time he was only twenty-seven years of age, he was appointed solicitor to the Court of Augmentations, and nine years afterwards was promoted by Henry VIII. to the office of attorney of the Court of Wards. He continued to hold this latter office during the reign of Edward VI., his patent being renewed immediately upon the accession of that prince. Upon the dissolution of the monasteries, in 1539, Sir Nicholas Bacon prepared and presented to Henry VIII. a written project for the formation of a college for the study of politics and diplomacy, to be endowed with part of the property of the dissolved religious houses. Having adopted the Protestant faith, Sir Nicholas Bacon was of course excluded from all favour or public employment during the reign of Mary; but in December 1558 Queen Elizabeth, having displaced the Lord Chancellor Heath, who was also Archbishop of York, gave the Great Seal to Sir Nicholas Bacon.

On the 25th of January, 1559, Sir Nicholas Bacon opened the first parliament of Elizabeth, and was employed and trusted by her till 1564, when he was suspected of having approved, and even assisted in writing, a book, published by one Hales, which questioned the title of Mary, Queen of Scotland, to succeed, after Elizabeth, to the English throne. Hales was committed to the Tower, and the Lord Keeper, who is said not to have had more hand in the book than Sir William Cecil (who was his brother-in-law, they having both married daughters of Sir Anthony Cooke), was dismissed from the privy council and from court, and discharged from all interference with public affairs except in the Court of Chancery. At length, however, by the assistance of Cecil, who continued through life his firm friend, Bacon succeeded in reinstating himself in the good opinion of the queen; and he from this time until his death appears to have enjoyed her favour and full confidence without interruption.

Sir Nicholas Bacon died on the 20th of February, 1579, in the 70th year of his age. The character of his mind, as given by his son, Lord Bacon, appears to be just and accurate, and is quite consistent with all the facts which are recorded of his life and conduct. 'He was,' says he, 'a plain man, direct and constant, without all finesse and doubleness, and one that was of a mind that a man, in his private proceedings and estate, and in the proceedings of state, should rest upon the soundness and strength of his own courses, and not upon practice to circumvent others.'

(*Biographia Britannica;* Granger's *Biographical History of England.*)

BACON, FRANCIS, the youngest son of Sir Nicholas Bacon, was born at York House in the Strand, on the 22nd of January, 1561. Nothing is known of his early education. Having, however, parents of a superior order,—a father distinguished as a lawyer and a statesman, and a mother gifted with uncommon abilities, and eminent for her learning and piety, Bacon was placed favourably, from the first, for the formation of a learned and a virtuous character. In his thirteenth year he was sent to Trinity College, Cambridge. Here Bacon studied with diligence and success.

On leaving Cambridge, he entered Gray's Inn as a student of law. His attendance in London not being required for some years, by the regulations of his inn, Bacon went in the suite of Sir Amias Paulet, the British ambassador to the court of France. His work 'Of the State of Europe,' in which he arranged and estimated the information he collected during his visit to France, and which was written when he was nineteen years of age, displays conspicuously the industry, guided by deep penetration, which characterised his youthful mind.

Returning to London on the death of his father, in 1579, he found himself the only one of his family left unprovided for. But his knowledge and industry soon worked out a course for his ambition.

On the 27th of June, 1582, he was called to the bar. His practice soon became considerable. In 1586, four years after, he was made a bencher. In his 28th year he became counsel extraordinary to the queen. In 1588 he was appointed a reader to his inn; and again, in 1600, the Lent double-reader; appointments which showed the opinion of his professional acquirements held by those who were best able to judge of them.

Although connected with the most powerful family of Elizabeth's reign,—the nephew of Lord Burleigh, and the cousin of Sir Robert Cecil,—his advancement corresponded neither to the natural influence of his talents nor the apparently favourable position in which he was placed by his connections. All that the Cecils ever procured for him was the reversion of the office of Registrar of the Star Chamber; an appointment which, to use Bacon's comparison, 'mended his prospect, but did not fill his barn.' It was twenty years before he received the salary of 1600*l.* per annum, connected with this situation. The exertions of Essex in behalf of Bacon were more hearty, but less efficient. The office of solicitor-general becoming vacant, Essex endeavoured to procure the place for his friend, and, when baffled by the superior influence of the Cecils, he generously made him a present of Twickenham Park, worth about 1800*l.*, and so beautiful a spot, that Bacon called it 'a Garden of Paradise.' Essex made him this liberal present because he knew that Bacon's friendship for him had been a bar to his promotion. Bacon's zeal also in attaching his eldest brother to the interests of Essex, and braving the opposition of his own powerful relations in his cause, proves that, in this instance at least, selfish feelings did not influence his conduct. A coldness came over their friendship owing to difference of policy and opinion. Bacon in vain entreated Essex to desist from the proceedings which caused his ruin. They parted on bad terms in consequence. Bacon reckoned

the last act of Essex no better than madness. His subsequent conduct to Essex has been held by some as utterly base; by others as the result of a stern necessity. It is difficult to explain away the fact that he appeared as counsel against his friend and benefactor.

In 1592 Bacon was returned to parliament for the county of Middlesex, and distinguished himself in the debates by taking the popular side. In 1596 his most popular work, 'Essays or Counsels, Civil and Moral,' was published, and about the same time his 'Maxims of Law.' His circumstances at this time were very bad: he was disappointed in his attempts at forming a lucrative matrimonial connection, and twice arrested for debt. Upon the accession of James I. the fortunes of Bacon brightened. He had employed every art in order to make sure of his interest with the new king, writing to all the Scottish gentlemen of whom he possessed any knowledge to engage their influence and services in his behalf. His vigilance had its reward. On the 23rd of July, 1603, he was one of 237 gentlemen who received the honour of knighthood. His eloquence and information gave him great weight in the House of Commons. He continued to rise in spite of the opposition of Cecil, now Earl of Salisbury, and the powerful rivalry of Sir Edward Coke, the attorney-general. 'The Advancement of Learning' was published in 1605. Two years afterwards he was made solicitor-general. Though engrossed with the affairs of public life, his engagements did not turn him aside from his great design—formed in his early youth and cherished in his maturer years—the development of his improved plan for studying the sciences. He published the groundwork of his 'Novum Organon Scientiarum,' his 'Cogitata et Visa,' and sent copies of it to his learned friends for examination and criticism. His next work, 'The Wisdom of the Antients,' was published in 1610.

In 1613 he was appointed attorney-general, and made a member of the privy council; on the 7th of March, 1617, he was made lord keeper of the great seal. On the 4th of January, 1618, he reached the summit of his ambition in being appointed lord high chancellor of England, and by letters patent dated Wanstead, 11th July, 1618, he was created Baron Verulam, and took his seat among the peers. Next year he was made Viscount St. Alban's. In the beginning of 1620 he kept his birthday with great state. Bacon chose this favourable moment for the publication of his 'Organon.' We have seen that it was the chief concern of his early thoughts and of his matured mind. In the midst of a rising career of professional, political, and literary effort, Bacon was moulding and shaping his great work. It was wrought up and polished with the sedulous industry of an artist who labours for posterity. The reception of the work was such as, in the nature of things, must always be given to a production of its class—mingled ridicule and admiration.

After this the name of Bacon becomes tarnished with infamy. The ordinary apologies for his conduct, the rapacity of his servants and his connection with Buckingham, fail entirely in washing out the foul blot fixed upon him by the facts of his conduct. He was the victim of improvidence, a vice which gave him a perpetual craving for money to supply the wants which it created. Shortly after his elevation to the woolsack, one Wrenham, against whom he had decided a case in chancery, complained to the king, and though, when inquired into, the circumstances turned out in Bacon's favour, the industry and pertinacity of this individual excited suspicions in several quarters of the integrity of the chancellor. The House of Commons appointed a committee to inquire into the proceedings of the courts of law. On the 15th of March, 1620, Sir Robert Phillips reported, in a manner full of delicacy and respect to the high station and illustrious talents of Bacon, that two charges of corruption had been brought against the lord-chancellor. The cases were sifted immediately. Eager to ascertain the exact particulars, to elicit the just amount and kind of blame attached to a personage so elevated, the committee sat every day on the case, and made daily reports to the House on the evidence brought before them.

The discussion in the Commons issued in referring the whole of the case to the Peers, the only authority competent to subject him to trial. The spirit of Bacon was crushed within him. There is something inexpressibly touching in the contrition which he expressed in the general confession which he first sent to the lords appointed to try him. This, however, did not satisfy the indignation of his judges. They demanded a particular confession of each charge by itself, a specification of the minute details of his meanness and guilt. This Lord Bacon sent, and when a deputation of the Lords waited upon him to inquire if this paper was his own voluntary act, he replied, 'It is my act—my hand—my heart. O, my Lords, spare a broken reed.' He was stripped of his offices, disqualified for public life, banished beyond the precincts of the court, subjected to a fine of 40,000*l.*, and to imprisonment in the Tower during the king's pleasure.

He was confined for a short time in the Tower, and then discharged. In the course of a few months he obtained a license to come for a time within the verge of the court. And, though this sentence was afterwards commuted by the king, his ruined fortunes were never repaired, and we have seldom felt the degradation into which Bacon had sunk himself so painfully as when reading the words of his pardon for all the frauds, deceits, impostures, bribes, corruptions, and other malpractices of which he had been found guilty. He was summoned to attend parliament before he died; but the remainder of his days were spent chiefly in scientific pursuits, and the society of the friends whom adversity had left him. Bacon's works on natural history, his 'History of Henry VII.,' and some others, were published after his disgrace. He died in the house of the Earl of Arundel at Highgate, on the 9th of April, 1626, in his sixty-sixth year. In his will he says, 'My name and memory I leave to foreign nations, and to my own countrymen, after some time be passed over.' Lord Bacon left no children.

The accomplishments of Lord Bacon were unri-

valled in his day, and his character displayed the phenomenon of great originality combined with a most extensive range of acquirements. He was a poet and an orator, a lawyer and a statesman. In the philosophy of experiment and of observation he was pre-eminent. The metaphysical and the physical were both congenial to his genius; and although the taint of his immorality has induced many to doubt the extent and to depreciate the excellence of his knowledge and ability in every department, except his method of studying nature, an impartial and searching examination will fill us with admiration as we successively trace his steps in almost every branch of intellectual exertion.

The greater part of Bacon's works were written in English, but some were written in Latin, of which there are translations. The most complete edition of Bacon's works is that by Mr. Basil Montague; but a good edition, with a suitable commentary and references to the authorities which Bacon often quotes, yet remains to be produced by some competent scholar. There is an excellent Analysis of all Bacon's Writings, by Mr. Craik, forming three small volumes.

BACON, JOHN, sculptor, was born in 1740, in Southwark, London. He was apprenticed to a porcelain manufacturer, with whom he learned the art of painting on china, and also of making little ornamental figures. The transition from modelling to sculpture was natural, and Bacon's profession was soon determined. It was the practice of sculptors at that time to send their clay models, for the purpose of being burnt, to the pottery where he was employed, and in these works he soon discerned a style far superior to that to which he had been accustomed. The next step was to imitate what he admired, and from this time his leisure was zealously devoted to his new pursuit.

The discovery of the art of making statues in artificial stone has been ascribed to Bacon; but, although there is reason to believe that the invention was of prior date, he is unquestionably entitled to the praise of having facilitated the process of that art and of rendering it popular. He laboured during a considerable time in Coade's manufactory, Lambeth, where not only figures, but every species of architectural and monumental ornaments were made in stone, and by his exertions retrieved the credit of the declining establishment. On the institution of the Royal Academy in 1768, he entered himself as a student, and the next year gained the first gold medal for sculpture which was awarded by that society. In 1770 he was elected an associate of the same corporation. He soon obtained the patronage of George III.; he was employed by public bodies as well as by various private individuals, and his profits were greatly augmented by the use of an ingenious instrument of his own invention, which facilitated the process of copying the clay model in marble, and by which he was enabled to execute his figures in half the time previously required. So numerous are his works, that to enumerate them all, or to specify the precise order in which they were executed, would be difficult. Among the principal may be reckoned the monument to Lord Halifax in Westminster Abbey, the monument to Lord Chatham in Guildhall, the statue of Blackstone at All Souls' College, Oxford, that of Henry VI. in the Ante-Chapel at Eton, and those of John Howard and Dr. Johnson in St. Paul's Cathedral.

Bacon died on the 4th of August, 1799. He was twice married, and left two sons and three daughters by his first wife; by his second wife, three sons. His wealth, amounting to 60,000*l.*, he divided equally among his children. He was buried in Whitfield's Chapel, Tottenham Court Road, London; and the following inscription, by himself, was placed on a plain tablet over his grave:—'What I was as an artist seemed to me of some importance while I lived; but what I really was as a believer in Jesus Christ is the only thing of importance to me now.'

(Cecil; Allan Cunningham.)

BACS, or BATS-BODROGH, a circle in Hungary, bounded W. and S. by the Danube, E. by the Theiss, and N. by the circles of Pesth and Csongrád. Its surface, with the exception of a semicircular and rather elevated plateau, arching to the south, between Szatanisits above Zombor and Maria-Theresiopel, is an uninterrupted plain, and contains 3455 square miles, and a population of 366,522. The plateau just mentioned, termed the Teletskan Hills, is situated immediately north of what are called 'the lesser and greater Roman intrenchments,' which extend from Apatin near the Danube to Földvar on the Theiss. Between these entrenchments and the Teletskan Hills runs the Francis Canal, which unites the Danube and the Theiss, and is 62 miles long: it was cut between 1796 and 1802, to avoid the tedious navigation of the great bend of the Danube. About 700 laden vessels navigate it annually, many of which are from 250 to 300 tons burthen, besides upwards of 300 vessels in ballast. The circle contains no stream of note besides the Mosztonga, which flows with a sluggish current, forming numberless swamps in its course, into the Danube near Bukin. There are several large sheets of water in this circle, such as the salt lake of Polity, near Maria-Theresiopel, and the adjoining lake, Ludasto. The soil is in parts of such great natural fertility as not to require manuring; in others it is so arid and sandy as to be scarcely available for any useful purpose. In consequence of the swamps the climate is in general insalubrious. Though husbandry is not carried on with any degree of energy, Bacs seldom produces less than 450,000 quarters, and, in favourable seasons, 650,000 quarters of grain; its wheat in particular is in great request, from the excellence of its quality, and is exported in large quantities. The vineyards occupy 88,120 acres, and abundance of wine is made. Fruit, hemp, tobacco, madder, and woad are largely produced. Woods, particularly of oak, abound along the Danube, but their whole extent does not exceed 172,170 acres; hence the lower classes are compelled to use straw, dried rushes, and cattle-dung, for their fuel. Cattle, horses, swine, and sheep, are numerous and of excellent breeds: the traffic in these animals, as well as in wool and hides, is carried on to a large

amount. Silk is raised in the environs of Apatin, and the fisheries on the Danube and Theiss are a source of considerable wealth to the inhabitants. Water-fowl are likewise abundant.. Bacs contains neither metals nor stone. The chief towns are—ZOMBOR, the capital of the circle: THERESIENSTADT: and Neusatz or Uj-Videk, which is the seat of the Bishop of Bacs, and has a population of 16,660; the town stands on the left bank of the Danube, opposite Peterwardein, to which it is joined by a bridge of boats 847 feet long; it is a place of considerable traffic, and has some silk factories. The other towns with their populations are—Bacs, 7500: Bezdan, on the Danube, 6200: Apatin, 5400: Temerin, 8740: Kanisa, on the Theiss, 7400: Ratz-Betse, also on the Theiss, 8330: Szenta, also on the Theiss, 13,000: Baja, not far from the Danube, 11,250: St. Thamas, 6500: and Palanka, 6000.

BA'CTRIA, or BACTRIA'NA (now BOKHARA). The province of Aria was bounded partly on the north, and to a greater extent on the east, by Bactria. The river Oxus was the boundary between Bactria and Sogdiana, which lay to the east of Bactria, and was possessed by the Greek kings of this province. (Strabo, p. 517.) The northern boundary of Bactria was indefinite, and the western was Margiana. These limits, which mark the extent of Bactria as a province or satrapy, do not of course correspond with the more extended limits of the Greek Bactrian kingdom. The province of Bactria was a territory of great extent, partly barren and waste, but in many parts of great fertility, watered by the Oxus and its tributary streams, and peopled by a brave and hardy race, who were reckoned among the best soldiers in the service of Persia after Bactria became a Persian province. The chief city was Bactra, called also Zariaspa, situated on the Bactros, one of the tributary rivers of the Oxus. Of Bactria little is known prior to its subjugation by the Macedonians under Alexander the Great. In the reign of Darius I. the Bactrians paid a tribute to that monarch of 360 talents. In the time of Xerxes there were Bactrians in the army which he led against Greece, who were under the command of Hystaspes, a son of Darius by Atossa, a daughter of Cyrus. The province continued to be governed by the satraps of Persia down to the time of Darius Codomannus. In the final overthrow of that king by Alexander the Great, at the battle of Arbéla, there was a body of Bactrians in his service who were under the command of Bessus, the satrap of Bactria. After the conquest of Bactria by Alexander, he built a city which he gave to his Greek mercenaries and to such of the Macedonians as were unfit from age or wounds for longer service. Such was the foundation of the Greek colony of Bactria, to which volunteers from the neighbouring countries were admitted. This, however, was not the earliest settlement of Greeks in Bactria; for the first Darius transplanted there a number of Greeks from Barce, in Africa (Herod. iv. 204); and the Branchidæ also, from Ionia, were planted here by Xerxes I. (Strabo, p. 517.) From the death of Alexander, 323 years B.C. to 255 B.C., Bactria constituted part of the possessions of Seleucus and his successors, and was governed by their satraps. About the last-mentioned date Theódotus, in the reign of Antiochus II., of Syria, assumed the government, and founded an empire which lasted about 120 years. A difference of opinion exists as to the names and number of the Greek kings of Bactria during this period. We here give a list of them according to Bayer and Schlegel. Little dependence can be placed on some of the dates which are here given; and there is by no means a unity of opinion on this and other matters connected with Bactrian history.

B.C.	*Bayer.*	B.C.	*Schlegel.*
255	Theodotus I.	255	Theodotus I.
	(or Diodotus)	243	Theodotus II.
243	Theodotus II.	220	Euthydemus
220	Euthydemus	195	Apollodotus Soter
196	Menander		Menander Nicator
181	Eucratides I.		
146	Eucratides II.		Heliocles Dikaios
			Demetrius
		181	Eucratides I.
		146	Eucratides II.

The history of these Greek kings of Bactria is very imperfectly known from the scanty notices of ancient writers.

(Arrian, *Anabasis;* Quintus Curtius; Strabo, lib. xi.; Justin, lib. xli.; T. F. Bayer, *Historia Regni Græcorum Bactriani*, Petropol. 1738, and the authors quoted by him.)

BACTRIAN COINS. In the beginning of the present century the late Colonel Tod made a collection of coins during his long residence in India, of which several are of high interest for the history of Bactria. A description of them was given with engravings in the first volume of the Transactions of the Royal Asiatic Society, 1824. Two of these coins bore the names of Apollódotus and of Menander, both Bactrian kings. Their historical value, says Wilson, is undiminished; but nothing is calculated to exhibit the rapid progress of numismatic discovery in respect to Bactrian coins more strikingly than the diminution of their value as objects of rarity within the last twelve years. The cabinets of Paris and London now possess nearly two thousand of the coins of Menander and Apollodotus, of silver and copper, of a great variety of types, and mostly in excellent preservation. The country on both sides of the Indus and north of the Hindu Koosh has been explored with a view of searching for coins, and great discoveries were made. Generals Ventura, Alard, and Court, Dr. Swiney, James Prinsep, Sir Alexander Burnes, Masson, and many others, mostly British residents in India, have made collections of Bactrian coins, which enable us to make out a complete series of Bactrian kings, of Greek and barbaric descent.

Under the term Bactrian coins are here understood only such medals as were struck by kings of either Greek or barbaric descent who ruled over the ancient kingdom of Bactria or parts of it; but not coins of Hindoo, Afghan, or foreign Mohammedan princes who

reigned at Cabool and other places in Afghanistan. The Greek coins may be divided, with respect to their inscriptions, into pure Greek and bilingual coins. The first class comprehends the names of five kings, Theodotus I., Theodotus II., Euthydemus, Demetrius, and Eucratides, who ascended the throne in B.C. 181. Of Theodotus I. two coins are known. One, a gold medal, was bought at the fair of Nishni-Novgorod in Russia, and is now in the Royal Cabinet of Paris. It corresponds in weight and style with the gold coins of Antiochus II., and the portrait bears so close a resemblance to that of Antiochus, that it is supposed the artist copied the head of that prince. The second coin is a silver tetradrachm, presented by Sir Alexander Burnes to the British Museum, where there are also many coins belonging to the other Greek kings of Bactria. The bilingual class begins with Heliocles, who reigned about B.C. 147, but bilingual inscriptions are also found on the square copper coins of his predecessor Eucratides. The two languages are Greek and Pracrit, a Hindoo dialect written with particular characters forming the Arian or Arianian alphabet. The oldest bilingual coins are all square, the barbaric inscriptions having been adopted together with the barbaric shape, but the latter coins are both square and round. Fourteen kings with Greek names are ascribed to this class, the last of whom is Pantaleon, who reigned about B.C. 120. The Greek letters on these coins are nail-headed; the design is generally good, on some very fine, and probably done by Greek artists; but there are also many of apparently barbaric execution, and in the whole the appearance of Eastern emblems of royalty, and different Indian animals and other figures, betrays the decline of Greek civilization. Among the animals, the elephant and the elephant's head, which we find on the coins of Demetrius, Menander, Apollodotus, Lycias, and Heliocles, and the humped bull on the coins of Philóxenus, Diomédes, and several other kings, are supposed to indicate dominion in India. The wild horse, however, and the double-humped camel, are believed to have exclusive reference to Bactria. Barbaric dynasties reigned over Bactria from the end of the second century before Christ. The coins struck by them are bilingual, and betray the decline of art and prevalence of Eastern influence. To this class belong the coins of several kings of the Arsacidan dynasty, such as Vonones, Undopherres, Abagasus, and others, who seem to have been independent of the Arsacidæ in Parthia. These coins are rare, and they are bilingual.

Only two Bactrian gold coins are known, one of Theodotus and one of Euthydemus: all the others we know of are of silver, of billon, or of copper.

As early as the beginning of our æra parts of Bactria were conquered by princes of Scythian (probably Turkish) descent, whose seats were at Cabool and Jellalabád, and who were finally subdued by the Arabs. The coins of these Scythic princes are exclusively of gold and silver, and bilingual,—a proof that Greek civilization, although on its decline, had still some influence upon the people, as was the case in Parthia under the Arsacidæ. There are also many Sassanian coins found in Afghanistan; a fact by no means extraordinary, as the power of the Sassanians in Persia extended occasionally as far as the Indus, so that those Scythian kings were not always independent, but paid tribute to the Persians. The prince of Iskardo, in the upper valley of the Indus, pretends to be descended from Alexander. As the Greek power in Bactria was maintained in some parts of the Hindu Koosh after the Scythian conquest, the principality of Iskardo may be a remnant of the Bactro-Greek empire, and a closer investigation into the history of Iskardo and the whole upper valley of the Indus would perhaps lead to interesting results.

(Wilson, *Ariana Antiqua;* Lassen, *Zur Geschichte der Griechischen und Indo-Skythischen Könige in Bactrien*, &c.; Grotefend, *Die Münzen der Griechischen, Parthischen, und Indo-Skythischen Könige von Bactrien*, &c.; H. T. Prinsep, *Note on the Historical Results deducible from Recent Discoveries in Afghanistan.*)

BA'CTRIS, a genus of palms, consisting of a considerable number of species found about rivers, and in marshy places in America, within the tropics, especially near the line. Their trunks are usually of moderate height, or even dwarfish, never exceeding twenty feet; sometimes having the stout tree-like aspect of palms in general, but often being more similar to reeds. They often grow in dense patches, forming impassable thickets, on account of the numerous, long, hard, black spines with which the stem is protected. Their wood is generally hard and black towards the outside, but pale yellow internally, with black fibres. Their leaves usually grow all over the surface of the stem, instead of being confined to the summit only. They have extremely spiny stalks, and are either pinnated after the manner of the date-palm, or merely consist of two broad, sharp, diverging, plaited lobes. The fruit is small, soft, with a subacid rather fibrous pulp, inclosed in a bluish-black rind, and affords a grateful fruit to small birds. Martius mentions seventeen species.

BACULI'TES (Zoology), a genus of Lamarck's polythalamous or many-chambered cephalopods, belonging to the family of *Ammonites*, or, as they were formerly called, *Cornua Ammonis*, horns of Ammon, from the resemblance of the shell of the typical genus Ammonites to the ram's horn, said to be characteristic of Jupiter Ammon. *Baculites*, which was first discovered by Faujas de St. Fond in the limestone of Maastricht, is only known in a fossil state, and is comparatively abundant in the limestone of Valognes, in Normandy. The shell is straight, more or less compressed, conical, or rather tapering to a point, and very much elongated. The chambers are sinuous and pierced by a marginal siphon, and the last chamber is several inches in length. *Baculites vertebralis*, Montfort, affords a good example of the genus. [CEPHALOPODA.]

BADAKHSHAN is the name of one of the numerous khanats or principalities into which the country of Turkistan is divided. It is situated between 69° and 73° E. long., and 36° and 38° N. lat. The country is exceedingly mountainous,

and filled with highlands connected in the east with the Belur Tagh, and in the south with the high range of the Hindu Koosh. The river Kokcha, one of the principal tributaries of the Oxus, flows through the middle of the country, and joins the Oxus about 30 miles E. from Hazrat Imam. [TURKISTAN.]

The climate of Badakhshân is healthy, and the valleys and small plains are described as fertile. The part of Belur Tagh within Badakhshân produces iron, salt, sulphur, and lapis lazuli.

The celebrated ruby mines of Badakhshân, often alluded to by Persian poets, are situated at a place called Gharan, near Shughnân, near the Oxus. They are at present worked by the command of the chief of Kundûz, who has conquered this part of the country. The rubies are said to be found like round pieces of pebble or flint, and imbedded in limestone.

The capital of Badakhshân is Feizâbâd, a considerable town situated on the Kokcha river, but much reduced in consequence of the invasion of the country by the chief of Kundûz.

The countries of which Badakhshân forms a portion are described under TURKISTAN.

BADAGRY is the name of a small state and town on the coast of Guinea. The town stands in about 6° N. lat., 3° 30′ E. long. It is 6 or 7 miles from the shore, on the banks of the western branch of the Lagos, which a natural canal unites with the sea. The town contains about 10,000 inhabitants, who formerly dealt in slaves to a great extent. The houses, except that of the king, are constructed of bamboo cane, and are only of one story. The market is well supplied with poultry, yams, maize, palm-wine, country cloth, &c. The King of Badagry is said to be tributary to the King of Yarriba. Captain Clapperton and Richard Lander set out from Badagry on their expeditions into the interior of Africa.

BADAJO'Z, a city in Spain, the capital of Estremadura. It is situated in a vast plain, at the confluence of the Guadiana and a small stream called Rivillas, in 38° 52′ N. lat., 6° 12′ W. long.; population 13,000. Badajoz is a fortified town, opposite to Elvas in Portugal, from which it is distant about 12 miles. The town is the seat of a bishop and the residence of the Captain-General of Estremadura. There are no fountains in the town, but a great number of wells and cisterns. The streets are regular and clean, but very narrow. The soil of the surrounding country is very fertile, and produces abundantly grain, fruit, wine, and oil. Leather, soap, and coarse woollens are manufactured.

The castle or tower, which is built on a calcareous rock, 300 feet above the level of the Guadiana, and on the south side of it, commands both the town and the confluence of the two rivers. On the north-west side of the town a granite bridge crosses the Guadiana; it has 28 arches, and is 1874 feet in length, and 23 wide. The fortifications are strong, as are the outworks. Several forts surround the town; one, San Christoval, on the opposite side of the Guadiana, stands upon a rock overlooking the interior of the town, and is connected with the bridge-head.

Badajoz, as a frontier fortress, has been often subjected to sieges, and more than once changed masters with the Moors, Portuguese, and Spaniards.

In 1808, on the rising of the people at Madrid against the French, Badajoz was garrisoned and held against the French, who summoned it to surrender in 1808 and 1809, but in 1811 Marshal Soult besieged it from January till March 2, when the governor, Menacho, being killed, his successor gave it up in a cowardly manner within ten days. In the course of that year two attempts were made by the allied English and Portuguese army to storm the place, but both failed.

On the 16th of March, 1812, it was again invested by the Duke of Wellington. The attack was carried on with unremitting vigour and most consummate skill till the 6th of April, when, breaches having been made which were declared practicable, a general assault was ordered, which, after a most destructive and desperate conflict, was successful, though at an expense in killed and wounded on the British side of nearly 5000 men. Unhappily the lustre of this brilliant action was tarnished by the desperate and wild rage of the soldiers. 'Shameless rapacity,' says Colonel Napier, 'brutal intemperance, savage lust, cruelty and murder, shrieks and piteous lamentations, lasted for two days and nights, and the tumult rather subsided than was quelled.'

(Colonel Napier's *History of the Peninsular War.*)

BADALO'CCHIO, SISTO, an Italian painter and engraver, born at Parma towards the close of the 16th century. He was the pupil and for some time the assistant of Annibal Carracci, at Rome. He was highly valued by Annibal as a draughtsman, who confessed that he surpassed himself; but in painting he was much inferior to Guido or Domenichino. His engravings are not numerous: the most celebrated are the so-called Bible of Raphael, which he executed in company with Lanfranc, and the six prints from Correggio's cupola at Parma. The date of his death is not known.

(Lanzi, *Storia Pittorica*, &c.)

BADEN. The grand-duchy of Baden extends with very irregular breadth along the right bank of the Rhine in its upper course, from S. to N., and is situated between 47° 31′ and 49° 47′ N. lat., and 7° 30′ and 9° 40′ E. long. It is more than equal to Saxony in extent, but much below that kingdom in point of population. The length of the Baden dominions is about 180 miles in a straight line from N. to S.; the breadth varies from 14 to 100 miles. Its southern limits on the side of Switzerland are formed by the Boden-See, or Lake Constanz, and the Rhine; on the W. the Rhine separates it from France and from some of the Rhenish provinces; on the N. and E. it is bounded by Hesse Darmstadt, Bavaria, and Würtemberg. The area of Baden is stated by Tulla at 5712 square miles. Its political distribution, as re-constituted in the year 1832, is the following:—The Circle of the 'Lake,' 1029 square miles; of the 'Upper Rhine,' 1659; of the 'Central Rhine,' 1680; and of the

'Lower Rhine,' 1344. According to the enumeration made in 1832, the population was 1,175,309, but in 1843 it had increased to 1,335,200.

Physical Character and Climate.—The larger part of this state is of a mountainous or hilly character; it is interspersed with fertile and pleasant valleys, but contains no considerable plain, except the almost uninterrupted rich and beautiful level, which, lying on the right bank of the Rhine, and in its sweep northward, between that river and the Black Forest, has the Boden-See for its southern extremity and the Main for its northern extremity. The general face of the country has a uniform descent from E. to W. towards the Rhine, into which there is scarcely a river in the Baden territory which does not discharge its waters. The soil is generally productive; but more particularly in the Valley of the Rhine, and the land adjacent to the Neckar. Even the sandy region about the capital (Carlsruhe) has been worked into fertility by persevering cultivation; and there are few tracts, in the more elevated districts, where the luxuriant growth of timber is impeded by climate or positive barrenness. Of the productive land, rather more than one-third is arable, and about an equal quantity woods and forests.

Of the mountain forests the most remarkable is the Schwarzwald, or Black Forest, which runs parallel to the Rhine from S.S.W. to N.N.E.; it forms a connected chain rather than a series of isolated groups, and, in its course from the vale of the Wutach towards the left bank of the Neckar, throws out its arms into the neighbouring districts, where its wild and wooded heights subside into slopes covered with vineyards and orchards, thickening in proportion as they approach the Rhine. Its length is about 83 miles; it contains much mineral wealth; and its surface is clothed with fine timber trees; it has three summits about 4000 feet high; and it gives rise to many rivers. Immediately opposite to the Black Forest, but on the northern or right bank of the Neckar, rises the Odenwald, a range of inferior elevation, which is sometimes considered as a prolongation of the Black Forest. It spreads through that portion of Baden which lies north of the Neckar, and takes a north-easterly bend towards the Tauber and Main; in the west it has an abrupt descent to the valley of the Rhine. It is densely covered with forest trees; and its valleys are fertile and populous. The Kaiserstuhl, or Emperor's Seat, a volcanic mass, nearly ten miles in length and five miles in breadth, which lies between the Rhine and Treisam, and is wholly isolated from the Black Forest, may be looked upon as an independent group.

Baden contains three springs, which are the source of the second in rank of European rivers. These are the Brigach, the Brege, and a smaller stream, which, when they meet at Donaueschingen, form the Danube. The Danube flows for a few miles through the southern part of Baden, before entering Würtemberg and Bavaria. The Rhine enters Baden west of Stein, in the canton of Schaffhausen, and forms its southern boundary, excepting where that boundary is twice, though but for a short distance, broken by the intervention of that canton; and after it has quitted the territory of Basle, where it turns to the north, it skirts the western districts of Baden until it enters the grand-duchy of Hesse immediately north of Mannheim. Its fall, between that town and the point where it issues from the Boden-See, is 916 feet; between Schaffhausen and Basle its breadth widens from about 340 to 750 feet, and at Mannheim it widens to 1200. Six flying bridges cross it at Kehl, Mannheim, Kaiserstuhl, Laufenburg, Seckingen, and Rheinfelden. Numerous islands stud the river; its waters abound with fish, and the shores contain a little gold-dust. The principal tributaries of the Rhine on the Baden side, and the places of junction, are—the Neckar, which joins it at Mannheim; the Main, at Mayence; the Kinzig, at Kehl; the Murg, at Steinmauern; the Wutach, at Thiengen; and the Elz, at Niederhausen.

Two projecting portions of the Lake of Constanz are considered to be in Baden. Their waters are full of fish, but of no great importance in a commercial point of view, though they facilitate the intercourse between the districts around them. The principal traffic on the Baden side is carried on by the ports of Constanz, Sernatingen, Ueberlingen, and Meersburg. Among the other lakes in the grand-duchy are the Mockinger See, the Illmen See, the Schlücht See, the Feld See, the Eichner See, and the Nonnmattweiher See—all of minor importance.

The climate throughout the levels and valleys, which are bounded by the Rhine, and lie deep embosomed by the mountains, is mild and conducive to health; but in the elevated regions of the Black Forest and Odenwald it is exceedingly raw and inclement. Here, indeed, where spring, summer, and autumn are crowded into the space of three months, the transition from the winter to the open season is so abrupt, that it is not uncommon to pass from frost and snow at once into the heat of summer, and from this into the depth of winter. The exposed parts of the Black Forest can scarcely be brought to produce oats or potatoes, nor does the cherry ripen before the month of September. Yet the atmosphere of Baden is everywhere characterized by salubrity,—a fact which is proved by the vigour of frame and longevity to which its inhabitants attain.

Natural Productions.—Baden possesses a soil favourable to the growth of grain, wine, and fruit, and is full of noble forests and navigable streams. Agriculture is the chief occupation of its inhabitants, and yields a surplus of produce for which Switzerland and France afford a ready market. Only six acres in a thousand are said to be waste land. On an average it is stated to produce about 1,358,000 quarters of all descriptions of grain, and exports between 75,000 and 93,000. It yields also hay and other fodder for horses and cattle in superabundance. The upper and lower districts produce rapeseed, hemp, flax, and opium; and the lower districts in particular, which include the former Palatinate of the Rhine, where the best husbandry prevails, considerable quantities of tobacco and hops. Potatoes and fruits are largely grown; and cyder, perry, and wine are

made in considerable quantities. The timber trees of the grand-duchy consist principally of the fir, pine, oak, beech, birch, alder, aspen, and ash.

Horned cattle are bred chiefly in the Breisgau, the Baar (about Donaueschingen, Furstenberg, Blomberg, &c.), and the parts adjacent to Lake Constanz. The breeding of sheep has much increased of late years, and the quality has improved by crossing with the Merino breed. Goats and swine are largely reared; horses are comparatively few. In several quarters honey and wax are obtained; and, in all, poultry and domestic animals are found in abundance. The wild boar, stag, roe, fallow-deer, fox, badger, marten, otter, and wolf (the latter being seen occasionally in the islands of the Rhine), the vulture, eagle, falcon, hawk, kite, and owl, are the principal wild animals. Most of the lakes and rivers, the Neckar being a peculiar exception, are rich in fish; trout, sometimes fifty pounds weight, are caught in Lake Constanz; and carp, weighing at times forty pounds, in the Rhine. Lake Constanz, as well as Lake Mockinger, and the Danube, produce the sturgeon.

Among the mineral productions we may enumerate the garnet, crystal, jasper, chalcedony, and onyx; marble, alabaster, gypsum, chalk, porcelain-earth, and potter's clay. Silver, copper, and lead are found along the valley of the Kinzig and Münster, and in the neighbourhood of Kork and Pforzheim. Iron ore is obtained from the mines at Stockach, Kandern, the Black Forest, Hauenstein, &c. Inconsiderable quantities of cobalt, manganese, zinc, sulphur, coals, alum, vitriol, and bismuth, are likewise raised. Salt is procured in great abundance in the Black Forest.

Baden is rich in mineral waters; the warm springs of Baden-Baden, impregnated with sulphur, salt, and alum, have acquired great celebrity; a spring of nearly the same quality exists in Badenweiler; acidulous waters are found at Griesbach, Antogast, Petersthal, and Rippolstau; and sulphur springs and baths at Salzbach, Langenbrücken and other places.

Religion and Education.—The inhabitants, with the exception of several families, descendants of French Huguenots, and about 18,000 Jews, are of pure German extraction. About three-fourths of the whole number are Roman Catholics. For the purposes of ecclesiastical government, the country is divided into sixty-four Catholic and thirty Protestant deaneries. The head of the Catholic church of Baden is the Archbishop of Freiburg, whose jurisdiction also extends over the principalities of Hohenzollern, and within whose metropolitan diocese, according to the settlement made in 1830, are included the bishoprics of Freiburg, Mainz (Hesse-Darmstadt), Fulda (Hesse-Cassel), Rottenburg, (Würtemberg), and Limburg, which constitute the ecclesiastical province of the Upper Rhine. The few nunneries which are allowed to exist are subject to rigid regulation, and their attention is principally directed to female education. The Protestant cures of souls are 392. Every individual, whatever his creed may be, possesses equal civil rights, provided his principles and conduct be not inimical to the allegiance which he owes to the sovereign, and the peace and well-being of the community at large: but the edict of the 14th of May, 1807, which established this liberal policy, excludes all but Catholics and Protestants who are Trinitarians from being employed in the public service.

The diffusion of sound instruction has long been an object of concern with the Baden government. With this view a seminary for the formation of Catholic teachers is established at Rastadt, and another for Protestant teachers at Carlsruhe. Besides elementary schools, Sunday schools, and schools of industry, for the lower classes in most towns and villages, there are numerous institutions of a superior class for all the religious communities; particularly the two universities, of which that of Heidelberg, founded in 1386, is more particularly designed for Protestants, and that of Freiburg, founded in 1460, for Catholics. The chief establishments for the superior education of females are those in the convents at Baden, Freiburg, Ottersweyer, and Rastadt, under the special superintendence of the public authorities: there are others at Mannheim, Carlsruhe, and Heidelberg. The principal libraries are those of Freiburg (above 100,000 volumes), Heidelberg (70,000), Carlsruhe (75,000), Mannheim (70,000), and Donaueschingen (30,000). The scientific and artistic institutions are numerous.

Manufactures and Trade.—The manufacturing industry of the grand-duchy does not rank high, either for its extent, or for the variety or superiority of its productions. Pforzheim, Carlsruhe, and Mannheim are the chief places. The government possesses eight iron-works; and there are others in private hands, but the produce is small. Fire-arms, iron wire, copper ware, nails, alum, vitriol, saltpetre, linen, woollen, cotton, silk, clocks, watches, jewellery, wooden ware, paper, tobacco, potash, white lead, smalt, glass, and earthenware, are manufactured in various parts of the duchy—mostly in small quantities.

The position of the country on the Rhine, Main, Neckar, and other streams, and the access which they give it to Switzerland, France, and Germany, have rendered Baden a country of extensive transit, and secured to it outlets for its own productions. The institution of free ports at Mannheim, Schröck on the Rhine above Carlsruhe, Ottenheim and Freistett on the same river, Ludwigshafen and Constanz on the Lake of Constanz, and Heidelberg on the Neckar, has been dictated by sound policy. The imports of Baden consist of French and other wines, colonial produce, drugs and dyes, iron, steel, cottons, silks, fine woollens, horses, cattle, &c., and its exports of timber, grain, meal, oil, skins and hides, wine, hemp, linen, tobacco, iron wares, jewellery, fish, &c.

Government.—The executive and judicial powers in Baden are vested in the grand duke, and the legislative are shared by him with an upper and a lower chamber of representatives. The ducal prerogative is defined by certain enactments contained in the 'Constitutional Record,' or charter, of the 22nd August, 1818. The legislature consists of an Upper Chamber, the members (standes-herrn) of which are certain princes, the Catholic arch-

bishop, one Protestant bishop, and a few others. The Lower House consists of sixty-four representatives of districts and towns, chosen for eight years, and elected by the male inhabitants. The relative duties and privileges of the three branches of the legislature are all exactly defined. The four circles of the duchy have each its own provincial government, and the circles themselves are subdivided into superior districts, land districts, and districts, each having its local functionaries, to whom are referred all affairs connected with the regular administration of justice, police, &c. Baden, being a member of the Germanic confederation, has a vote at the Diet, and furnishes a military contingent.

History.—The house of Baden is one of the oldest families in Germany, and is clearly traceable to Berthold, count of Breisgau, in the 11th century. His grandson, Hermann II., was the first Margrave of Baden. Their descendants gradually acquired considerable possessions in Swabia, Switzerland, and Burgundy, but they were from time to time much reduced by partitions among collateral branches, until Ernest, the second son of Christopher II., became founder of the line of Baden-Durlach in 1527, which acquired considerable celebrity from George Frederick, his son. The line of Baden-Baden becoming extinct in 1771, their scattered dominions, which lay between the Swiss frontier, the Rhine, and the Neckar, were united under one head, though even so late as the year 1801 they did not occupy a larger area than 1617 square miles, or contain more than 210,000 inhabitants. By the treaty of Luneville, Baden acquired an accession of 1260 square miles of territory, and 245,000 inhabitants, and a further and much more considerable accession under the treaty of Pressburg in 1805. Two years before this treaty, Charles Frederick, in whose person the two houses were united in 1771, exchanged the rank of margrave for that of an elector of the empire, in which character he forwarded Napoleon's views by joining the confederation of the Rhine. In 1806 he married Stephania, the adopted daughter of Napoleon, and again exchanged his title for the dignity of grand duke. The latest addition made to the grand-duchy is the earldom of Hohen-Geroldsek, which was united to the duchy of 'Zu and von der Leyen' in the Ortenau, by exchange of territory with Bavaria, to which Austria ceded it in 1819. It is 52 square miles in extent, and contains about 4600 inhabitants.

(Tulla's *Grand-Duchy of Baden;* Demian's *Geography and Statistics of Baden;* Dittenberger's *Geographical, Statistical, and Topographical Description of Baden;* Büchler's *Description of Baden according to its Circles;* Hassel's *Principalities and Republics of Germany;* Stein's *Manual* by Hörschelmann, &c.)

BADEN (also called BADEN-BADEN). This town, the 'Civitas Aurelia Aquensis' of the Romans, is situated in the centre of the grand-duchy of Baden, in 48° 46′ N. lat., and 8° 15′ E. long., about 5 miles from Rastadt, and 18 S.W. of Carlsruhe: it is built upon a hill which is crowned by the residence of the former Margraves; and it stands on the Os, or Oelbach, in a valley surrounded on all sides by heights covered with forests. The town is irregular and old-fashioned in its construction, and the walls were formerly protected by a ditch, which is now laid out in shady walks and grounds. It owes its celebrity to seventeen warm springs impregnated with salt, alum, and sulphur, which flow down from the hill on which the castle stands. The temperature of these springs varies, according to Stein, from 115° to 153° Fahrenheit. Even when other water is foul, that which flows from these hot springs is perfectly translucent and pure, and will remain so, though kept for several weeks in open vessels. The vapour arising from the hottest springs is collected, and used by invalids in the mode of vapour-baths. There are chalybeate springs also in the neighbourhood, which is as remarkable for the salubrity of its climate and the luxuriance of its vegetation, as the varied and picturesque scenery in which it abounds. The church, built on the site of some Roman ruins in the 17th century, contains the burying-place of the Margraves, and handsome monuments in memory of two of them, Lewis and Leopold-William; the hall of antiquities, built in the Doric style, and styled the Museum Palæotechnicum, is a depository for all the remains of Roman antiquity brought to light on this spot. There is a small Lyceum in the town, besides the school for females attached to the nunnery, eight hotels with baths, an hospital, and adjoining the town a handsome promenade house, with baths, and reading and assembly rooms, &c. for the recreation of the visiters. The population in 1843 was 4200. In addition to this population, the number of visitors in the bathing season amounts to about 9000. Baden has railway communication with the Mannheim and Heidelberg line, now in progress to Basle 1847).

BADEN, a town in the province of the Lower Ens, in the Archduchy of Austria, about 15 miles S. of Vienna, the 'Thermæ Cetiæ,' or 'Austriacæ,' of the Romans. It is much frequented on account of its hot springs and baths. The resident population of the town is about 4000, but in the bathing season the number is increased by visitors to as many as 8000 or 9000. The waters are sulphurous and flow from 11 springs into 15 reservoirs, at the rate of 80,640 cubic feet every 24 hours. The temperature of the hottest spring is 99°, and of the coolest 86° of Fahrenheit. The town contains a fine old gothic church and a great number of charitable establishments. In the environs stands the magnificent palace of Weilburg, erected by the late Archduke Charles: the extensive grounds are most tastefully laid out, and are freely open to all visiters.

BADEN. [AARGAU.]

BADENOCH. [INVERNESS-SHIRE.]

BADGER (*Meles*, Cuv.), a group of plantigrade carnivorous mammalia, included by Linnæus with the bears in a genus termed Ursus. Subsequent naturalists have subdivided this genus into several, as *Procyon* (Racoons), *Ailurus*, *Ictides*, *Nasua*, &c., which Cuvier has thrown together so as to form a tribe, under the title of *Les Plantigrades*. ('Règne

Anim.' vol. i. p. 134.) The plantigrade group, however, is not based on very natural principles; for it is not because certain animals 'marchant sur la plante entière,' walk on the whole flat of the sole, that they should agree in other parts of structure, or in general habits and economy. Hence, according to the more rigorous views of the first zoologists of our country, the bears form by themselves a natural family termed *Ursidæ*, while the plantigrade or semiplantigrade polecats, moufettes, ratels, gluttons, badgers, and others, come within the limits of a family section termed *Mustelidæ*. (See 'Pict. Mus. of Anim. Nat.' vol. i. p. 214, col. 3.) In a very admirable paper by Mr. Waterhouse, in the 'Proceedings of the Zoological Society,' 1839, p. 135, et seq., he thus writes:—'*Mustelidæ*. The genera contained in this family are *Mustela*, *Zorilla*, *Galictis*, Bell (which must not be confounded with the *Galictis* of Is. Geoffroy St. Hilaire, published in the 'Comptes Rendus' for October 1837, p. 581), *Mellivora*, *Ursitaxus*, *Helictis*, and *Gulo*, in which the true molar of the upper jaw is transverse; *Lutra* and *Mephitis*, in which this tooth approaches more or less to a square form; and *Taxidea*, in which it is triangular; and lastly, *Meles*, *Arctonyx*, and *Mydaus*, in which the true molar is longer than broad. This last-mentioned genus evinces an approach to the order 'Insectivora.'

If we restrict the term *Badger* to its legitimate meaning, a single species common to Europe will alone demand our notice; but it will be advisable that we here enter into some notice of those allied forms to which the same term has been applied, or indeed, may be, from their close alliance to the genus *Meles*:—

1. The Common Badger (*Meles vulgaris*).—Form, heavy; habits, nocturnal; limbs, plantigrade; a tenant of burrows; aliment in a great measure vegetable, not altogether to the exclusion of animal food, such as insects, reptiles, birds, eggs, and small quadrupeds. True molar single (in the *bear* double); limbs short and powerful; tail short, with a pouch beneath at the root, whence distils an unctuous fetid humour; claws of the fore feet adapted for burrowing.

The badger is extensively spread through Europe and Asia; it is nocturnal and recluse, frequenting dense woods and forests, where it makes a deep burrow, a single gallery leading to several chambers, of which one, the last, is comfortably lined with dried grass and other herbage. Here it spends the day in repose, till approaching darkness invites it to wander abroad in quest of food. It is said to attack the nests of wild bees, plundering the store of honey, and devouring the larvæ, without dread of the stings of the enraged insects, which cannot penetrate its thick rough hide. Quiet and inoffensive in its habits, the badger is at the same time bold and resolute, and defends itself with great resolution; it bites keenly, and maintains its gripe with extraordinary tenacity, for not only are the muscles of the jaws extremely powerful, but the articulating condyle of the lower jaw is locked firmly into the receiving cavity of the skull. The general strength of the animal, moreover, is very great, and the skin, which is loose and tough, is well protected by coarse deep fur. From its prowess and bodily qualifications, the badger was formerly in request for the brutal sport of baiting, in which the courage of the dogs was put to a severe test.

Secluded in her deep burrow, the female produces from three to five young in the spring. They are assiduously nursed by her for the first six or seven weeks, and then gradually learn to shift for themselves. Although the old badger, when made captive, never loses its indocility and distrust, yet the young, when taken soon, become as familiar and playful as puppies, and become exceedingly attached to those who feed and notice them.

The hide of the badger is not without value; when properly dressed, it makes the best pistol furniture. In some parts of France we have seen badgers' hides commonly used as a sort of cover or ornament to the collar and trappings of waggon-horses. The hair is used for painters' brushes, and brushes for other purposes. The hind-quarters, when salted and smoked, make excellent hams. In China, as Bell the traveller assures us, dozens of badgers may be seen hanging for sale, as food, in the meat markets of Pekin.

The badger measures about two feet three inches in the length of the head and body, that of the tail being upwards of seven inches. The head is long and pointed, the ears close, the body broad, stout, and low, and the general contour stout and heavy. The fur is full, coarse, and deep; its general colour above is brownish grey, lighter on the sides and tail; the under parts are black, as are also the legs and feet. The head is white with a black stripe extending from the shoulder over the ear and eye almost to the muzzle. From its colour this animal is in some parts called the Gray; its old Anglo-Saxon name is Broc, a word still retained in Scotland and the adjacent parts of England.

2. The American Badger (*Meles Labradorica*, Sabine; *Taxidea Labradorica*, Waterhouse, in 'Proceeds. Zool. Soc.,' 1838, p. 153 et seq.).—Although we cannot, without exceeding all reasonable limits, follow Mr. Waterhouse through the osteological details upon which he chiefly founds the generic distinction between this animal and the preceding, yet we may say that his conclusions appear to us to be perfectly correct, and worthy of adoption.

The American badger can scarcely be called the representative of our European species; it is, we acknowledge, a burrowing animal, but it is not a forest-haunting animal; it is a tenant of the sandy plains and prairies. This species is called *Brairo* and *Siffleur* by the Canadians; *Mistonusk* and *Awawteekwoo*, or the digging animal, by the Crees, and *Chocartoosh* by the Pawnee Indians.

According to the account given by Dr. Richardson ('Fauna Boreali-Americana'), the American badger frequents the sandy plains or prairies which skirt the Rocky Mountains as far north as the banks of the Peace River, and sources of the River of the Mountains in lat. 58°. It abounds on the plains watered by the Missouri, but its exact southern range is not very well known. It

inhabits Mexico, as appears from the detailed and correct description of Fernandez, who calls it by the native name of *Tlacoyotl* (or *Coyotlkumuli*), and a very fine skin was some time ago sent from California to the Zoological Society.

'The sandy prairies,' says Dr. Richardson, 'in the neighbourhood of Carlton House, on the banks of the Saskatchewan, and also on the Red River that flows into Lake Winipeg, are perforated by innumerable badger holes, which are a great annoyance to horsemen, particularly when the ground is covered with snow. These holes are partly dug by the badgers for habitations, but the greater number of them are merely enlargements of the burrows of the *Arctomys Hoodii* and *Richardsonii* (two species of marmot), which the badgers dig up and prey upon. Whilst the ground is covered with snow the badger rarely or never comes from its hole; and I suppose that in that climate it passes the winter from November till the beginning of April in a torpid state. Indeed, as it obtains the small animals on which it feeds by surprising them in their burrows, it has little chance of digging them out at a time when the ground is frozen into a solid rock. Like the bears, the badgers do not lose much flesh during their long hybernation, for on coming abroad in the spring they are observed to be very fat. As they pair, however, at that season, they soon become lean. The badger is a slow and timid animal, taking to the first earth it meets with when pursued; and, as it makes its way through the sandy soil with the rapidity of a mole, it soon places itself out of reach of danger. The strength of its fore-feet and claws is so great, that one which had insinuated only its head and shoulders into a hole, resisted the utmost efforts of two stout men, who endeavoured to drag it out by the hind legs and tail, until one of them fired the contents of his fowling-piece into its body. Early in the spring, however, when they first begin to stir abroad, they may be easily caught by pouring water into their holes; for the ground being frozen at that period the water does not escape through the sand, but soon fills the hole, and its tenant is obliged to come out. (The animal cannot be torpid at that time, whatever it may be in mid-winter.) The American badger appears to be a more carnivorous animal than the European one. (Doubtful.) A female which I killed had a small marmot nearly entire, together with some field mice, in its stomach. It had also been eating some vegetable matters.'

The American badger resembles the European species in size; but its muzzle is hairy at the tip, and its fore-limbs stouter than in the latter. It differs also in some points of colouring and marking.

3. The Indian Badger (*Arctonyx collaris*, F. Cuv.; *Meles collaris* Auctorum).—This animal was first described and figured by Bewick in his 'History of Quadrupeds,' under the title of 'Sand Bear,' from a living specimen kept in the Tower about the year 1790. Bewick at once recognized its affinity to the badger, but, ignorant of the country whence it was brought, regarded it as identical with the North American species described by Brisson. Subsequently Duvaucel saw two specimens at Barrackpore, in the menagerie of the governor-general; and ignorant that any individual had ever reached Europe, as he well might be, considered it as altogether new to science.

This animal is the Bhalloo-Soor, or Bear-Pig, of the Hindoos (perhaps Balloo-Soor, or Sand-Hog). In size it equals a full-grown badger, but stands higher on the legs; and its snout is elongated and truncated at the extremity like that of a hog; the ears are small, covered with hair, and surrounded by a circle of white. The muzzle is flesh-coloured and nearly naked; two black bands run on each side of the head and unite near the muzzle; the larger of these bands on each side passes round the eye, extending to the ear, and thence along the neck and shoulder to unite with the black colour prevailing on the fore-limbs. The general colour of the body above is yellowish white. The hair on the back is coarse, and tipped with black. The under surface is very thinly clothed, and the tail resembles that of a hog. The toes, five on each foot, are united together their whole length, and armed with large strong claws adapted for digging.

Indian Badger.

Of the habits of this animal in its natural condition little is known. The individuals, a male and female, observed by Duvaucel, were remarkably shy and wild. They passed the greater part of the time buried beneath the straw of their den in deep sleep. All their movements were remarkably slow. Though they did not altogether refuse animal food, yet they exhibited a marked predilection for bread, fruits, and other substances of a vegetable nature. When irritated, they uttered a peculiar kind of grunting noise, and bristled up the hair of their back; if still further tormented, they would raise themselves upon their hind legs like a bear, and appeared like that animal to possess a power in their arms and claws not less formidable than their teeth. This is confirmed by Mr. Johnson in his 'Sketches of Indian Field Sports.' 'Badgers in India,' says he, 'are marked exactly like those in England, but they are larger and taller, and exceedingly fierce, and will attack a number of dogs. I have seen dogs that would attack a hyæna or wolf afraid to encounter them. They are scarce, but occasionally to be met with among the hills. In their nature they resemble the bear.' This form appears to be an intermediate link between the bears and the true badgers.

BADI'STER, in Entomology, a genus of the order *Coleoptera* and family *Harpalidæ*. This genus, together with the genera *Trimorphus*, *Licinus*, *Rembus*, and *Dicælus*, form a conspicuous group among the carnivora of the beetle tribe. The type of this group is probably in the genus *Licinus*.

BÆ'TICA, one of the Roman divisions of Hispania (Spain), so called from its chief river, the Bætis, now the Guadalquivir.

According to the arrangements of Augustus, Bætica was bounded on the W. and N. by the Anas (Guadiana); on the S. by the Atlantic and Mediterranean; and on the E. by a line drawn from near Ciudad Real, near the Guadiana, through Jaen and Granada to Moxacar, on the coast of the Mediterranean. Consequently, it comprised Sevilla; part of the Portuguese province of Alentejo; Spanish Estremadura, S. of the Guadiana; the western part of La Mancha; Cordoba; the west part of Jaen; and the chief part of Granada.

BAETIS, in Entomology, a genus of the order *Neuroptera*, and family *Ephemeridæ*. This is one of the four genera of the British family of May-Flies; the generic characters are taken from the number of wings, and the setæ, or hair-like appendages to the abdomen. The genus *Ephemera* has four wings and three setæ; *Baetis* has four wings and two setæ; *Brachycercus* has two wings and three setæ; and *Cloëon* has two wings and two setæ. These setæ are of great use to the little animal in steering its way through the air whilst performing that beautifully undulating flight, which all must have observed. It is to the first of these genera (*Ephemera*) that the common May-Fly belongs. [EPHEMERA.]

BAE'ZA, the ancient *Beatia*, a city of Spain, in the province of Jaen, situated in a fertile plain which is watered by the rivers Guadalquivir and Guadalimar. The town contains many fine buildings, the remains of its former grandeur, when it was in the power of the Moors, from whom it was wrested by King San Fernando, in 1228. The population of Baeza is 15,000. It is 18 miles distant from Jaen, and stands in 37° 57′ N. lat., 3° 28′ W. long.

BAFFIN, WILLIAM, an enterprising English navigator of the 17th century. In 1612 he sailed in the fourth voyage of Hall on discovery to the north-westward, of which the only account we have was written by him: it is remarkable as being the first voyage on record in which a method is laid down (as then practised by himself) for determining the longitude at sea by observations of the heavenly bodies. In the following year he went on a voyage to the coast of Greenland, in the narrative of which he notices the extraordinary refraction of the atmosphere, the quantity of which he calculated to amount to 26′ as a maximum when a heavenly body is on the horizon. In 1615 he was appointed mate and associate to Robert Bylot on another voyage of discovery, for the account of which we are also indebted to Baffin; and again, the next year, he accompanied Bylot as pilot in an expedition which discovered and penetrated to the head of that extensive bay which bears his name. It appears rather strange that the bay was not named after Bylot, the commander of the expedition. Of this voyage Captain Ross observes that he found all the positions and descriptions of this able seaman remarkably accurate. In 1618 Baffin was mate on a voyage from Surat to Mocha; and in 1621 he engaged in an English expedition acting in concert with the Persians to drive the Portuguese out of the Persian Gulf, in the course of which he was killed at the siege of Kismis, a small fort near Ormuz, while employed in measuring the distance from the place, for the purpose of cannonading it. (Purchas's *Pilgrims*.)

BAFFIN'S BAY is an extensive gulf on the N.E. coast of America, between that continent and Greenland. It is comprised between 68° and 78° N. lat., 51° and 80° W. long., and lies in a N.N.W. direction. It is about 780 miles long, with a mean breadth of about 280 miles, thus giving an area of more than double that of the Baltic. It was first explored by Baffin in 1616, but his accounts of its extent to the northward were always much doubted until corroborated by Captain Ross in 1818.

Its shores are generally high, with perpendicular cliffs rising sometimes to the height of 500 and 1000 feet above the sea, and backed by ranges of mountains, always enveloped in snow. On the surface of the land above the cliffs is found a scanty appearance of vegetation, principally mosses and ground-berries. The cliffs are frequently rent into deep ravines, which become filled with snow: as the snow increases it projects into the sea, till, detached by its own weight, it forms the nucleus of those immense icebergs which are met with in these seas. A peculiar feature is the prevalence along the coast of small, high, and sharp conical rocks. It is remarkable how void of large islands this tract of sea is, all those which border its shores, except Disco, being very small, and the centre of the bay being entirely without them. The depth of water, wherever it has been tried, has been found very great. The shores are deeply indented with sounds and bays, few of which have yet been examined. The ice, which extended in a compact state several leagues from the shore, prevented Captain Ross from exploring those two large arms to the northward, called by Baffin Smith's Sound and Whale Sound; but the largest of these bays, formerly known as Sir James Lancaster's Sound, was passed through by Sir Edward Parry in 1819, who gave it the name of Barrow's Straits. The prevailing geological features of the coasts are granite and gneiss, abounding in garnets; there are also found porphyry, chalcedony, quartz, felspar, jasper, and a wood coal. Bears, black foxes, and hares; walruses and seals; ptarmigans, terns, gulls, eider and other ducks, auks, and petrels, are the principal animals. The bay abounds in black whales, which are very large, and a great number of English vessels are annually employed in this fishery. Natives were found as high up as 77° latitude in Prince Regent's Bay, by Captain Ross, near which place a very singular phenomenon was observed in the crimson colour of the snow on the shore. [SNOW, RED.]

(Ross's and Parry's *Voyages*.)

BAFFIN'S ISLANDS, a cluster of three small, barren, and uninhabited islands on the eastern shores of Baffin's Bay. They are mentioned by Baffin as the Three Islands, but obtained their present name from Captain Ross. They are resorted to by numerous birds of various kinds. The water between them and the shore is remarkably deep. They are in 74° 1′ N. lat., and 57° 25′ W. long.

BA'FFO, a small seaport town on the western coast of the island of Cyprus, in 34° 50′ N. lat., and 32° 15′ E. long. It has declined from its former importance; its harbour is unsafe, and only frequented in summer. It is the residence of a Turkish aga, and of a Greek bishop. The Church of St. George, built by the Venetians, is now in possession of the Greek clergy. The country around Baffo is fruitful, and well irrigated by springs; it produces cotton and silk. This place is called by geographers New Paphos, in contradistinction to Old Paphos, which stood farther to the south-east, near where the village of Conuclia now stands. Strabo (xiv. p. 683) speaks of New Paphos as a considerable place, having fine temples and a good harbour. Under the Romans, New Paphos was the chief town of the western division of the island. It was destroyed by an earthquake in the reign of Augustus, but soon after rebuilt. St. Paul (Acts xiii.) came to Paphos, and there made a convert of the Roman governor, Sergius Paulus. The name of Baffo is a corruption of that of Paphos.

BAGDAD (*Pashalic*). This important province forms the south-eastern part of the Turkish empire in Asia. The length from N.W. to S.E. is about 550 miles by 350 of extreme breadth, comprehending the principal part of the ancient Mesopotamia and Assyria, the whole of Babylonia and Chaldæa, and a considerable portion of Susiana. It lies between 30° 40′ and 37° 30′ N. lat., and between 40° 10′ and 46° 30′ E. long., and is bounded on the S. W. by the Arabian desert, and on the N. E. by Persia. The part of Mesopotamia which is comprehended in the modern Pashalic of Bagdad is now called Aljezirah, or the Island; Babylonia and Chaldæa form Irak Arabi; Assyria partly corresponds to Koordistan; and the present Khusistan was the ancient Susiana.

This extensive territory is traversed by the Euphrates and Tigris, which ultimately unite, and enter the Persian Gulf in a single stream. At Bagdad, the distance of the Tigris from the Euphrates is less than 30 miles. The Euphrates flows for about 950 miles through the Pashalic, and the Tigris about the same; the tide extends further up the Euphrates than the Tigris; but the actual rise in feet is greater in the latter. The banks of the Tigris are higher than those of the Euphrates; but both become shallow long before the junction of the rivers with the Persian Gulf. The Tigris joins the Euphrates at Korna, in 31° N. lat., 47° E. long., after which the united stream is called the Shatt-al-Arab, and falls into the Persian Gulf in 30° 26′ N. lat., 48° E. long. The Shatt-al-Arab is navigable, in midstream, for vessels of 500 tons burden; but towards the banks there is such a labyrinth of channels, shallows, and sandbanks, as renders its navigation sometimes difficult and perplexing. [TIGRIS.]

The country between the Euphrates and Tigris, from lat. 34° to Korna, is intersected by the dry beds of many natural and artificial canals. One or two of the latter in the vicinity of Bagdad might perhaps be made available for navigation without any enormous expense. The only canal now useful is the natural one of Shatt-al-Hie; it is about 100 yards in width where it opens into the Tigris, and is navigable during eight months in the year, but becomes nearly a dry bed in summer. Other channels may be traced which extend in a direction parallel to the Tigris and Euphrates, and might have been originally intended not only to serve the purposes of irrigation and to drain the marshes, but to avoid the delay and trouble which vessels have now to encounter in following the windings of the river.

In briefly describing the surface of the Pashalic of Bagdad, we shall consider separately the part to the east of the Tigris, that to the west of the Euphrates, and that between the two rivers. Of these three portions that to the east of the Tigris is the most fertile, especially Koordistan. The Koords who live within the limits of the Turkish pashalic are not migratory. They are principally cultivators; and are generally governed by chiefs of their own choice. Their plains and valleys produce rice, wheat, barley, sesame, tobacco, gall-nuts, and all sorts of fruits, particularly grapes. The inhabitants of the other parts of the pashalic draw largely upon Koordistan for their agricultural produce. Sulimanieh, Kerkook, and Erbil, or Arbil, are the principal towns of Turkish Koordistan: Sulimanieh is the capital of a pashalic of the same name, the territories of which are more extensive than those of any other chief in that part of the country; but the population of the town does not exceed 12,000. Khusistan, also eastward of the Tigris, although having a fertile soil, is little better than a desert; for extensive wastes have been formed on sites once inhabited, and the sands of positive deserts have encroached upon its once fertile plains. The spots that still retain a productive soil are chiefly in the neighbourhood of the rivers, and either afford good pastures or richly repay the labour of cultivation. The dates of Khusistan attain very high perfection, and those produced in the Mendeli district are considered the very best in the Bagdad pashalic; which is not much less than to say that they are the best in the world.

The portion of the pashalic of Bagdad which lies to the west of the Euphrates may be dismissed very briefly. Beyond the immediate vicinity of the river the whole territory is a desert of the most positive character — sandy, flat, without herbage, and without water. The banks of the river are, however, very fertile in many parts, and the annual overflowings of the river in its lower course form the most productive rice-grounds in the country.

That part of the pashalic which is comprehended between the Tigris and Euphrates is

divided into Aljezirah and Irak Arabi. The former is that portion which extends from the northern limit of the pashalic to the point where the rivers approach each other near Bagdad. It is almost wholly a desert, producing but few plants. Irak Arabi, the most fertile of countries in the time of Herodotus, is now almost a complete desert.

Among the vegetable productions of the pashalic are the tamarisk shrub, the liquorice plant, the willow, the poplar, the castor-oil plant, the carob plant, the crowfoot, the caper, and many others. Grapes, figs, pomegranates, and quinces are largely grown; but the plants best known in England are not much cultivated. Among the birds of this region are black partridges, snipes, and wild pigeons; the lakes and marshes abound with wild geese and ducks, widgeons, and pelicans. The common fowl and pigeons are the only domestic birds. There are no turkeys, and geese and ducks are not domesticated. The wild animals are gazelles, lions, jackals, hogs, and hares. The lions are not numerous, and their haunts are chiefly among the sepulchral barrows of the Tigris. The jackals are more abundant and troublesome, and when they find an opportunity enter the towns and villages during the night. The domestic animals are horses, asses, mules, buffaloes, single-humped camels, and dromedaries. The horse of the country is a most beautiful animal. As beef is not an article of food, oxen are not reared for slaughter; but they are much employed in agricultural labour.

It is not to be understood that the direct authority of the pasha of Bagdad extends over the whole of this territory of about 70,000 square miles. In the north the pasha of Mosul is appointed immediately by the sultan, and governs a small territory in some degree of independence, although he usually acts as if overawed by his great neighbour. In the north-east the Koords take care that the yoke of Bagdad shall not lie heavy upon them; and in later times the Persian government has much extended its influence and power in that direction. In the south, with the exception of the small districts around the few towns, the Arabs are the actual masters of all the country from Bagdad to the Persian Gulf, and from the mountains of Luristan to the frontier of Arabia Proper. The sheiks acknowledge a sort of dependence upon the pasha, with a sincerity proportioned to the strength of his government.

BAGDAD, a large city of Asiatic Turkey, formerly the capital of the great empire of the caliphs, and now of a pashalic of its own name. It is in 33° 20′ N. lat., and 44° 25′ E. long., on the banks of the Tigris, about 220 miles, in a direct line, above the junction of that river with the Euphrates, and 290 miles above the point where the united stream enters the Persian Gulf.

The external appearance of the city does not disappoint the expectations which may have been formed from eastern history and romance. It stands in a forest of date-trees, which conceal the meanness of its buildings from the approaching stranger, but allow such glimpses of its splendid minarets and domes as prevent him from suspecting that the ancient glory of Bagdad has entirely departed.

Bagdad is divided into two parts by the Tigris; of which the western, once the chief, is now the subordinate half. The whole city is surrounded by a high and thick wall of brick and mud, which is flanked at regular distances with round embattled towers. The citadel, which serves as arsenal and barrack, is on the eastern bank of the Tigris, at the point within the wall where it abuts on the river, to the north of the city. The whole city wall on both sides of the river is about five miles in circumference; but a large portion of the area which it incloses is laid out in gardens and plantations of date-trees. Under the wall there is a dry ditch of considerable depth, which may, when occasion requires, be filled from the river.

The interior of Bagdad miserably disappoints the expectations which the exterior view may have raised. It is built on no regular plan, and there are few towns, even in Asia, the streets of which are so narrow and tortuous. They are not paved; they are full of inequalities, occasioned by deposits of rubbish, and rendered disgusting by dead carcases and all manner of filth, which would endanger the public health, were not the most noxious part speedily removed by the numbers of unowned and half-savage dogs.

In general, the houses do not, as in Western Turkey, present any windows to the street. Instead of a regular front with windows, there are high walls pierced by low and mean-looking doors; but, in some of the better streets, the Turkish kiosk, or large projecting window, or else the Persian lattice, occasionally occur. The houses are mostly built of kiln-burnt bricks, which, when new, are not much unlike those employed in London, either in shape or colour. The houses have two floors besides the habitable cellars. The ground floor is occupied with baths, store-rooms, and servants' offices. The first floor contains the state and family rooms. The great height of the apartments on this floor makes the house as high as one of two stories in this country. The splendid and often elegant appearance of these rooms presents a striking contrast to the filthy and beggarly aspect of the streets. The rooms have often vaulted ceilings, which are decorated with chequered work and mouldings in very good taste. They are amply provided with windows of coloured glass, and the walls are so profusely ornamented with gilding, painting, and inlaid mirrors, as to make a stronger impression on a stranger than a detailed examination will perhaps be found to confirm. The buildings of a house in Bagdad commonly occupy two or three sides of the interior of a square court. In this court, which is paved with square stones, some date-trees are usually planted; and there is frequently a fountain in the centre. Access to the first floor is afforded by external stairs of stone, which conduct to the verandah, into which all the doors of that floor open. This verandah, which is supported by the walls of the ground floor, is generally wide, and paved with squared stones, and its boarded covering and carved screen are

supported by pillars of wood, the capitals of which are often very curious.

The only public buildings of note are the mosques, the khans or caravanserays, and the bazars. There are said to be about 100 mosques in the town; but not more than thirty are distinguished, in a general view of the city, by domes and minarets. The domes are remarkable not less for their unusual height than for being covered with glazed tiles, of various colours, chiefly green, blue, black, and white, disposed with considerable taste. The minarets are also glazed, and in still better taste than the domes, the colour being of a light brown, with a different colour to mark the lines formed by the junction of the bricks. The bazars are numerous and extensive, but are in appearance much inferior to those of some other oriental cities of less note. The baths and khans, or caravanserays, are numerous, but inferior to those of many other Asiatic towns.

The communication between the two parts of the city divided by the Tigris is by means of a bridge of thirty pontoons; and also by means of large round baskets, coated with bitumen.

The existing ancient remains in Bagdad are very few; but these few far exceed any of the modern structures in solidity and elegance. Three or four ancient mosques, a building which served as a college so far back as 1233, but now used as a khan, six gates in the wall, Zobeide's tomb, and a shapeless mass of brick-work supposed to have once served as an observatory,—are among the number.

The climate of Bagdad is salubrious, but intensely hot in summer. This heat is partly due to the prevalence, during part of the summer, of the hot wind, the *samiel*. This wind is popularly considered to prevail during forty days, but its actual duration is often twice as long; during which period it commonly rises about noon, or somewhat earlier, and continues until three or four o'clock in the afternoon. It is felt like a gentle breeze which has just passed over the mouth of a lime-kiln. The city would at that season scarcely be habitable but for two compensating circumstances: one of these is the bracing coolness of the nights, to enjoy which the people sleep upon the flat roofs of their houses from the middle of May to the latter part of September; the other is provided by the people themselves, who have under their houses spacious vaulted cellars, in which persons whose circumstances or occupations allow it live almost entirely by day during the summer season. Snow never falls at Bagdad, and hail very seldom. The cold of winter is never intense; but the inhabitants often suffer from it: this arises from their rooms being exclusively constructed for summer use, and from the temperature of the same rooms being very little heightened by the braziers or earthen pans of charcoal which, in the absence of stoves and fire-places, are employed.

A drop of rain rarely falls at Bagdad later than the beginning of May, or earlier than towards the end of September. After the end of September, the rains are copious for a time, but the winter is, on the whole, dry; the swollen state of the Tigris after the summer rains, and also after the melting of the snow on the distant mountains, frequently occasions great inundation. In 1831 nearly half the town was destroyed by such a flood.

The plague is observed to visit Bagdad at intervals of ten years; but the amount of destruction which it generally effects is light; there is also a very prevalent cutaneous malady, called the 'Aleppo malady,' from which the inhabitants suffer much.

The population of Bagdad is exceedingly mixed; and the very distinctive dresses of each people clearly indicate the component parts of the population. The Osmanli Turks, with their long loose gown and red cap; the Christians, with a somewhat similar costume; the Jews, with a yellow handkerchief tied round their red cap; the Arabs, with their sleeveless cloaks and shawl turbans; the Koords, with their parti-coloured and fringed turbans; and the Persians, with their black conical caps and tight-fitting gowns; give a very picturesque variety. Most of the Bagdad inhabitants are prejudiced, self-conceited, and bigoted, because they are profoundly ignorant. There is not among them that due proportion of informed and educated men which redeems the character of a people. The Armenians are decidedly the best-informed people in the city. Many of them have been in India, and several have spent much of their lives in that country. They have thus become acquainted with English manners, institutions, and modes of government; and through them much information is communicated to their countrymen who have not enjoyed a similar advantage.

The only women in Bagdad who exhibit any part of the face in the streets are the Arab females. Their dress consists in general of an exceedingly wide chemise of red or blue cotton, to which in winter is added one of the same cloaks that are worn by the men. They seldom wear shoes, and never stockings; but they are particular in their head-dress and personal ornaments. The Turkish and other women so muffle themselves up, when they go out, as to appear the most shapeless masses imaginable. Ladies of any consideration generally ride out astride on the backs of mares or asses.

Bagdad was formerly a great emporium of eastern commerce. Besides the traffic with its own manufactures, it was the entrepôt for the commodities of eastern and western Asia. But the political and commercial events of recent years have greatly reduced this commerce. The manufactures are not very numerous or extensive. The red and yellow leathers are excellent, and are held in high estimation throughout Turkey. Another principal manufacture consists of pieces of a sort of plush, in shawl patterns, often very rich and beautiful, and used by the Turks for covering the cushions which form their divans or sofas. A few other manufactures in wool and silk are carried on.

Bagdad was founded by the Caliph Abu Jaafer al Mansur, in the year 763 A.D., and was much improved by Harun al Raschid. It remained a

most flourishing metropolitan city until the year 1259, when the town was taken by storm by Hulaku, a grandson of Gengis Khan, and the dynasty of the caliphs was extinguished. Bagdad remained under the Tartars until the year 1393, between which time and 1470 it was alternately under different armies. In the year just named it was taken by Ussum Cassim, whose family reigned thirty-nine years in Bagdad, when Shah Ismael, the founder of the Suffide dynasty in Persia, made himself master of it. From that time to the present the town has been an object of occasional contention between the Persians and the Turks. It was retaken by the Turkish sultan, Solyman the Magnificent, and it was regained by Shah Abbas the Great, of Persia; but the Persians were ultimately obliged to surrender the place to the Sultan Murad IV., by whom it was besieged with an army of 300,000 men in the year 1638. It has since been nominally subject to the Porte; but the Pashas have, for the last hundred years, been nearly independent of the sultans, particularly since the government has been in the hands of the Georgian Mamelouks.

BAGGESEN, JENS, a writer of considerable distinction both in Danish and German literature, was born in Corsoer in the island of Zealand, February 15, 1764, and was educated at the University of Copenhagen. His first production, at the age of twenty, his 'Comic Tales,' obtained a favourable reception from the public. In 1789 he visited Pyrmont, and, meeting there with his countryman the young Count Moltke, he accompanied him to Switzerland, and returned home through France and Germany. Of this journey he has given a full narrative, or rather picture, in his 'Labyrinthen,' one of the most interesting of his works, it being, as he himself calls it, his 'Digtervandringer,' or 'Wanderings of a Poet,' in which he records his varied feelings, opinions, and contemplations, and portrays his own character. In 1790 he married Sophia Haller, the grand-daughter of the poet, and then returned to Denmark. His subsequent life was one of incessant change of situation and purpose; and, as a necessary consequence, his circumstances were not prosperous. On his health beginning to decline, he went, in 1825, to Carlsbad for the benefit of the waters, and was returning thence to Copenhagen when he died at Hamburg, October 3, 1826. His chief German poems, written during his long residence in France, obtained much celebrity at the time of their appearance. A complete edition, in twelve volumes, of his 'Danske Værker,' comprising all his Danish poems and other writings in that language, was published by his sons and C. J. Boye, 1827–32.

BAGHERME. [BEGHARMI.]

BAGLIO'NE, GIOVANNI, a Roman fresco and oil painter of the 17th century, at present better known for his 'Lives' of his contemporaries than for his paintings. He was born at Rome about 1573, and was for a short time the pupil of a Florentine painter, Francesco Morelli. He attracted the notice of the popes Sixtus V. and Paul V. In 1618 he was elected Principe of the Academy of St. Luke. The date of his death is not known; he was living in 1642. He executed a great many works in Rome, some at Naples, and some at Mantua; but he painted very few easel pictures.

BAGLIO'NI, an historical family of Perugia in Italy, which in the middle ages produced many warriors, distinguished in the tumults and civil and foreign contests of those ages. Several of them exercised supreme power over their native town, but they do not occupy a sufficiently important position in general history to require distinct notices. One, Gian Baglioni, was an ally of Cæsar Borgia in 1502. Another, Malatesta, was chosen Captain-General of Florence, but in 1530, after entering into correspondence with the besiegers, was dismissed, and Florence was obliged to capitulate and submit to the rule of the Medici. A third member of the family was governor of Famagosta in the island of Cyprus, when the Turks besieged the place in 1570. After a long and brave defence he was obliged to capitulate, in August 1571, on condition of being sent to Venice with his garrison. But Mustapha Pasha, disregarding the capitulation, caused Baglioni and the other Venetian officers to be beheaded, except Bragadino, who was flayed alive by order of the Pasha.

(Sansovino, *Della Origine e dei Fatti delle Famiglie Illustri d'Italia.*)

BAGLI'VI, GEORGE, was born in 1668, but at what place is not ascertained. Having early manifested an inclination to the study of medicine, he began his studies at the University of Naples, and continued them at Padua, where he took his degree of Doctor of Medicine. He endeavoured to increase his knowledge by visiting almost all the hospitals of Italy, Dalmatia, &c.; after which he settled at Rome. His merits and acquirements having been made known to Pope Clement XI., he was, though yet very young, by him appointed professor of surgery and anatomy at the college of La Sapienza, called the Roman Archilyceum.

He studied with great attention the works of Hippocrates; but such was his independence of mind, that, notwithstanding his respect for Hippocrates, he differed from him and all previous writers in discarding the doctrines of the humoral pathology, or that theory which ascribed all diseases to some altered state of the fluids of the body. He, on the other hand, not only from his own observation and reflection, but from learning the mode of treating diseases in India and other parts of the East, the success of which was entirely owing to an action on the solids primarily, maintained that the solids were, in most cases, first affected, and the fluids, when affected at all, only secondarily.

These opinions he published in 1696, and strengthened them by further observations and experience, which he made known in successive editions of his work, 'Specimen Quatuor Librorum de Fibra Motrice,' of which six appeared before 1704.

His opinion, that the fluids are affected secondarily in consequence of a previous affection of the solids, has been gradually gaining ground since the

time it was first promulgated. It received important additions from Hoffmann, in Germany (Hoffmann's 'Medicina Rationalis Systematica,' vol. iii. s. i. chap. iv.), and Cullen in England ('First Lines of the Practice of Physic'). Still the most candid pathologists of the present time admit that in a few cases, perhaps, the fluids are primarily affected; yet the opposite doctrine may be considered as the current hypothesis of the present day, and Baglivi the father of the modern system of *solidism*.

Baglivi died at Rome in 1706, at the early age of 38, worn out by his arduous exertions. The first complete edition of his works is that of Lyon, 1704, entitled 'Opera Omnia Medico-Practica et Anatomica,' 4to., and reprinted at the same place, 1710, 1715, 1745; also at Paris, 1711; Anvers, 1715; Basle, 1737; Venice, 1754. Pinel published an edition with notes, corrections, and a preface, 2 vols. 8vo., 1788. Baglivi was a Fellow of the Royal Society of London. His works have never been printed in this country, and copies of them are rare.

BAGNE'RES-DE-BIGORRE (the *Aquensis Vicus* of the Romans), a town in the department of Hautes Pyrénées, in France, is 481 miles S.S.W. of Paris, in 43° 3′ N. lat., 0° 8′ E. long. It stands on the left bank of the Adour, and has a resident population of 8448. The town is celebrated for its medicinal baths, which are much frequented from May to the end of October, during which time the population is increased to about 15,000. The town stands at the foot of a limestone hill, from the sides of which the medicinal waters flow which supply the public and private baths. There are about seventy baths, which vary in temperature from 90° to 135° Fahrenheit. The waters of all the baths differ only in temperature: they are clear and without any peculiar taste, aperient, and tonic. Bagnères is perhaps the neatest and best built town in the south of France: the streets are wide, well laid out, well paved, and watered by streams from the Adour. The environs are very beautiful and extremely fertile: there are delightful walks in the valley of Campan and along the banks of the Adour. The town contains a library and reading rooms, and the establishment of Frascati, where are accommodations for dancing, reading, bathing, gaming, theatrical performances, &c. There are a high school and a hospital for the poor. Some manufactures of woollen stuffs of different kinds and of good qualities, serges, crapes, and other fabrics, are carried on here; paper is also made. Quarries of fine marble are worked near the town.

BAGNE'RES-DE-LUCHON is a bathing town in the department of Haute Garonne, in France, 495 miles S. of Paris, 75 S.S.W. of Toulouse. Population, 2629. Bagnères is at the junction of the fertile valleys of Luchon and Larboust. The environs of the town are pretty, and there are many beautiful promenades. Early in the present century a splendid bathing establishment was commenced; and the town appears to be now increasing every year. There are twelve springs; the waters, which are sulphureous, are arranged in three classes, the hot, the tepid, and the cold. They are diuretic, and of great efficacy in cutaneous diseases, especially the ring-worm. The valley of Luchon, near Bagnères, is wide and very fertile. The view of the summit of Maladetta on the Spanish territory, and the cascades formed by the mountain torrents, give great interest to the surrounding country. Lead, slate, marble, and pyrites, are found near the town.

BAGNES, VAL DE, a valley in the Alps, which divides the Swiss canton of Valais from the Sardinian States. It extends on both sides of the river Drance to the ridge which unites Mount Combin and Mount Cervin, and opens, at its lower extremity, into the valley of the Rhone, in the neighbourhood of the town of Martigny. The whole length of the valley is about 30 miles, and its breadth, in the lower parts, is often more than 2 miles; but above the Getroz glacier, which it passes, it is much narrower. The upper part of the valley is covered by the Chermontane glacier, in which the river Drance rises. The valley is remarkable for its rapid ascent. Martigny is only 1603 feet above the sea, but St. Branchier, about 5 miles higher up, is 2457 feet. The climate of Martigny approaches that of Italy, and is favourable to the growth of all kinds of fruits, and the wine made here is much prized. At Bagnes, a few miles higher up, grain is raised with difficulty; the upper valley is too cold for agricultural purposes, and only adapted for rearing cattle. The cheese made here is in great demand.

The Val-de-Bagnes was the scene of great destruction of life and property in the year 1818. In 1811 the masses of ice, and the avalanches falling into the Val-de-Bagnes from the Getroz glacier, which occupies the upper part of Mount Mauvoisin, were of such a size that the summer heat did not dissolve them, and consequently a glacier was formed in the gorge of the valley, which is here about half a mile wide. This glacier increased every year, and in 1817 it occupied even the bed of the Drance, and stopped its course. The consequence was, that a lake began to form behind the ice barrier; but no danger was apprehended, as the water of the lake was discharged by an opening under the glacier. This opening was unfortunately shut up by the ice in 1818, and the lake soon increased to 8000 feet in length, and more than 200 in depth. The ice-barrier itself was 500 feet long, about 1000 broad, and where lowest 220 feet above the surface of the lake. The water, however, receiving supplies from the melting snow of the Chermontane glacier, increased rapidly, and from the 14th to the 24th of May the surface of the lake rose nearly 23 feet. The inhabitants of the lower valley, aware of their danger if the ice-barrier should give way, applied to the government of the canton, and measures were taken to prevent the dreaded disaster. A horizontal gallery was cut into the ice-barrier, 600 feet long, and 50 feet above the surface of the lake. The operation was difficult and even dangerous; but, as the danger was imminent, the work was pursued with great activity. The cut was finished on the 13th of June. No sooner was it terminated than the water, which had now risen to the level of the cut, began to flow off through it, and all danger

seemed to be averted. On the 16th the water of the lake had already sunk 40 feet, and the cut had been considerably deepened by its rush. But on the same day the water opened another vent near Mount Mauvoisin, at a place where the glacier rested on some loose pieces of rock, which suddenly gave way. The enormous mass of water rushed at once into the lower valley. In less than half an hour, it had overwhelmed the village of Bagnes, and in a still shorter period it flowed from Bagnes to Martigny, where it fell into the Rhone. Although signals were immediately made to acquaint the inhabitants with this event, about fifty persons lost their lives. Not only houses and barns were carried away, but even extensive forests and in some places the soil lying upon the rocks, was entirely washed off, so that nothing remained but the bare rocks. The damage was very great, and estimated at upwards of 1,100,000 francs in the districts of Bagnes, St. Branchier, Bouvernier, and Martigny.

BA'GNIO, a word formed from the Italian *bagno*, which means a bath, and also a bathing-house. It has been applied to the prisons in which the slaves or convicts, in Mahommedan and French towns, are shut up for the night. Bagnio is sometimes synonymous with brothel.

BAGNOLES. [ORNE.]

BAGNOLS. [GARD.]

BAGNOLS-LES-BAINS. [LOZE'RE.]

BAGO'US, in Entomology, a genus of the order *Coleoptera*, and family *Curculionidæ*. The little beetles composing this genus are all of a mud colour, and feed upon aquatic plants, probably both in the larva and imago states. There are six or eight species found in England.

BAGPIPE, a musical instrument, which consists of a leathern bag, inflated by a port-vent fixed in it, which has a valve. It has three pipes, the first and second called the great and little drone, each giving but one note, the third, a kind of oboe having eight ventages, or holes, on which the tune is played by the fingers. The wind is communicated to the pipes by compressing the bag under the arm, the mouth-piece of each pipe being fixed in the bag. The compass of this instrument is three octaves.

A similar instrument was in use among the ancients under the name of *tibia utricularis*. The bagpipe is mentioned by Chaucer as the music to which the Canterbury pilgrims performed their journey.

The German name is *Sackpfeife*; the Italian *Cornamusa*; the French *Musette*.

BA'GRADAS. [MEJERDA.]

BAGSHOT SAND. One of the higher members of the tertiary group of England is thus designated. It has been investigated by Mr. Warburton. (*Geol. Trans.*)

BAHA'MAS, or LUCA'YOS, are a chain of low islands stretching in a north-westerly direction from the north side of St. Domingo to the coast of East Florida, and lying between 20° and 27° 40′ N. lat., 68° 40′ and 79° 20′ W. long. It is composed of innumerable rocks, islets (called keys), and islands, of which not more than twelve or fourteen are inhabited: these are New Providence, Turk's Island, Eleuthera, Exuma, Harbour Island, Crooked Island, Long Island, San Salvador, Caycos, Watling's Island, Rum Key, and Heneagua. Some of the largest islands, as Great Bahama and Lucayo, now called Abaco, with many smaller ones, remain without inhabitants. San Salvador, called by the Indians Guanahani, was the first land fallen in with by Columbus on his first voyage in 1492.

The Bahamas remained unsettled till 1629, when New Providence was settled by the English, who were expelled by the Spaniards in 1641. The English again took possession of the island in 1666, and held it till 1703, when a French and Spanish force again dispossessed them. In 1718 a new English colony was led out; and Nassau, the capital of New Providence, was fortified in 1746. The Bahamas now enjoyed tranquillity till the American war, when New Providence was taken by the Americans (1776), but they abandoned it very shortly afterwards. In 1781 all the Bahamas were reduced by the Spaniards, but, by the treaty of peace in 1783, they were again restored to the British crown. At the close of the American war, many of the royalists transferred the remains of their property to these islands, and since that period the number of the people and the cultivation of the land have progressively increased. To encourage commerce, Nassau was declared a free port in 1787. This town is the centre of trade, but there are three other regular ports of entry—Exuma, Caycos, and Turk's Island. Nassau is also the seat of the government, which is similar to that of most other British West India islands: there is a governor and council of twelve, appointed by the Crown, and a House of Assembly. The House of Assembly consists of the representatives of the several islands, in number between twenty and thirty.

The principal islands are situated on those remarkable flats called the Bahama Banks, of which the Great Bank (lying at the western extremity of the Archipelago) occupies an extent of 300 miles in length, and 80 in breadth. The deepest water on any part of this bank is 30 feet, but the patches of coral rock and dry sand are innumerable. These banks rise almost perpendicularly from an unfathomable depth of water, and are formed of coral, with an accumulation of shells and calcareous sand. The climate is temperate and healthy; the summer range of the thermometer is from 80° to 90° Fahrenheit, and in winter from 60° to 65°. The north-east trade-wind prevails throughout the year, with the exception of the winter months, from November to March, when strong gales frequently blow from the north-west. Thunder-storms are violent and frequent, and earthquakes are sometimes felt. There are no streams or rivers, but water is easily procured by digging. The soil is dry and hard, but the islands are generally fruitful, and produce several species of trees, as mahogany, satin-wood, lignum vitæ, cedars, pines, braziletto, wild cinnamon, fustic, and pimento, with a great variety of esculent vegetables. Cattle are reared in great plenty, and in the woods are found the wild hog and the

agouti. The chief articles of export are cotton, dyewoods, bark, fustic, salt, turtle, and fruits. Great numbers of pine-apples are grown for sale. The islands generally produce sufficient maize and ground provisions for the use of the inhabitants. Turk's Island affords the principal supply of salt. A large portion of the inhabitants of the Bahamas derive considerable profit from giving assistance to vessels involved in the labyrinth of their innumerable rocks and shoals, or by saving lives and property from wrecked vessels, whence they have obtained the name of 'wreckers.' They are licensed by the government, and a legal salvage is allowed on property recovered by them. The rise and fall of tide varies from 3 to 6 feet in the different harbours, and the time of high water, at full and change, is from 7h. 30m. to 9h. 30m. A.M. The velocity of the Gulf Stream is at its maximum between the Bahamas and the Florida shore, running at the rate of 5 to 6 miles an hour.

BAHAR, a province of Hindustan, one of the territorial divisions of the Emperor Akbar, is situated between 22° and 27° N. lat.: it is computed to contain about 50,000 square miles. Bahar is bounded on the N. by Nepaul, on the E. by Bengal, on the S. by Gundwana, and on the W. by Allahabad, Oude, and Gundwana.

Bahar, together with Bengal, was conquered from the Afghans by Baber, the grandfather of Akbar, in 1530. The province of Bahar, together with those of Bengal and Orissa, came into the possession of the British East India Company, August 12, 1765, and were conveyed by firmaun from the Mogul Shah Allum.

Bahar is one of the most fertile, best cultivated, and most populous districts in Hindustan. It is well watered, is provided with easy internal communications, and has the advantage of being a thoroughfare for the commerce of Bengal with the north-western provinces of Hindustan.

The province may be considered as divided into two districts. The first consists almost entirely of a level plain containing about 26,000 square miles of fertile and highly cultivated land on both sides of the Ganges, which runs with an easterly course for 200 miles through the province. This plain extends from the mountains of Nepaul on the north to the Rajmahal Hills on the south. The second district, extending southward to Orissa, eastward to Bengal, and westward to Allahabad, comprises nearly 20,000 square miles of high and rugged hills.

In the plains, a hot parching wind from the west prevails during a great portion of the hot season, and blows strongly during the day; but at night the air is commonly tempered by a cool breeze from the opposite direction. During the cold season, frost is sometimes experienced among the hills. During this cold season the thermometer at sunrise frequently stands as low as 35° to 40° of Fahrenheit's scale, but in the afternoon rises to 70°.

The principal rivers of Bahar are the Ganges, the Sone, the Gandaki, the Caramnassa, the Dummodah, and the Dewah. Besides these, there are a great number of smaller streams.

A large quantity of saltpetre is obtained in Bahar. This article is produced in artificial beds, consisting of the refuse of vegetable and animal matters in a state of decomposition, mixed with calcareous and other earths. Opium is produced very abundantly; but wheat of excellent quality is the chief produce. Rice, sugar, indigo, cotton, castor-oil, and essences, particularly the attar of roses, are among the ordinary productions of the province.

About three-fourths of the inhabitants are Hindoos, and the rest Mohammedans and others.

(Mill's *History of British India;* Hamilton's *East India Gazetteer; Reports of Committees of the House of Commons on the Affairs of India.*)

BAHAR, a zillah or district of Hindustan, which occupies the central part of the province of Bahar. This district is bounded on the N. by the Ganges, on the E. by the district of Bogliporr, on the S. by Ramghur, and on the W. by Shahabad. The extreme length of the district, from E. by N. to W. by S., is 120 miles, and its greatest breadth, from N. to S. is 80 miles. The area has been estimated at 5358 square miles.

The district of Bahar is for the greatest part a level plain throughout, but interspersed with rugged and barren hills. Towards the southern boundary is a portion of the Vindhyan chain of mountains, but the hills do not rise to any great height, and in no part of this district do the hills any where approach the Ganges. In addition to the Ganges, the district is watered by the Sone, the Punpun, the Phalgu, and numerous smaller streams. The Sone rises on the east side of the province of Gundwana, and flows to the N.E. through Allahabad, where it is joined by other streams; taking then a more northern direction, it joins the Ganges 3 miles below the town of Moneah in this district. After heavy rains the rapidity of the current is unfavourable to navigation; but, at other times, boats of considerable size pass in a direct line for about 55 miles between the districts of Bahar and Shahabad.

The climate is considered to be generally healthy. In spring the heat is very great and is, in some places, increased by the reflection of the sun from the sands in the beds of rivers, or from naked rocks. In the winter, the natives generally kindle fires in their sleeping apartments, though frosts are rare. This district produces excellent wheat, barley, and rice: the rice is much esteemed, and is in great request in the markets of Calcutta. The cultivation of cotton is not of sufficient amount for the employment of the native looms, and the deficiency is supplied from the west. Tobacco and indigo are also raised, but not in any considerable quantities. The plains are universally cultivated to the very bases of the hills; but the greater part of the hills themselves are utterly unfit for any kind of tillage. A great portion of the lands in the vicinity of the Ganges give two crops in the year.

The principal towns in the district are Patna, the capital of the province; Gaya, the capital of the district; and Dinapoor. The villages are exceedingly numerous, and consist of mud-built houses huddled together without regard to comfort or ventilation. The population was estimated

in 1811 by Dr. Francis Buchanan at 2,755,150, of whom 724,159 were Mohammedans and 2,030,991 Hindoos.

(Rennell's *Memoir of a Map of Hindustan;* Dr. Hamilton's *Statistical Survey of Bahar; Reports of Committees of the House of Commons on the Affairs of India.*)

BAHAR, a town in the district of Bahar, which was once the capital of the province, but has since been superseded as to the province by Patna, and as to the district by Gaya. The town of Bahar is situated in 25° 13′ N. lat., and 85° 33′ E. long. It is a large straggling place, the best part of which consists of a long but narrow street, paved irregularly with bricks and stones. The place altogether contains about 5000 houses. Bahar is 35 miles S.E. from Patna.

(Dr. Hamilton's *Statistical Survey of the District of Bahar.*)

BAHAWULPOOR, an extensive division of the province of Moultan in Hindustan, 280 miles long, from N.E. to S.W., and 120 miles broad. This territory was, until 1811, tributary to the Afghan government, which however did not in any way interfere with the proceedings of the immediate ruler of the division, Bahawul Khan. At his death in 1811 the Rajah of Lahore seized upon a considerable portion of the territory. It is now governed by the Khan of Bahawulpoor. The territory is bounded W. by the rivers Ghara and Chenab, and E. by the states of Jessulmeer and Bikaneer. Its southern limit is about 27° 42′ N. lat., and its northern limit extends to 30° 22′ N. lat. The largest portion of it is included in the Thurr, or Indian Desert, but the soil on the banks of the rivers is generally fertile.

The chief towns of this territory are Bahawulpoor, Ameedpoor, Seedapoor, and Ooch. Bahawulpoor stands near the river Ghara, in 29° 22′ N. lat., and 71° 42′ E. long., 62 miles S. from the city of Moultan. Including its gardens, this town is four miles in circumference. The houses are built of unburned bricks. The greater part of the inhabitants are Hindoos; the rest are chiefly Mohammedans. The merchants of Bahawulpoor are Hindoos; they have much commercial enterprise, and deal extensively in goods of European manufacture, which they introduce by way of Bicaneer and the desert of Ajmeer, and convey by land-carriage through Moultan and Lahore, crossing the Indus at Kaheree. These Bahawulpoor merchants often travel to Balk and Bokhara, and sometimes to Astrakhan, for commercial purposes.

(Rennell's *Memoir of a Map of Hindostan;* Elphinstone's *Embassy to Cabul.*)

BAHI'A, a province of Brazil, between 9° and 16° S. lat., and 36° and 43° W. long. From the Rio San Francisco to Rio de Belmonte its length is about 480 miles; and the average breadth is 200. On the E. it is washed by the Atlantic Ocean, on the W. and in part on the N. it is divided from the province of Pernambuco by the Rio San Francisco; and on the S. it is bounded by the provinces of Espirito Santo and Minas Geraes.

By far the greatest part of its surface is covered with mountains; plains only occur along the coast and on the banks of the Rio Francisco. The whole chain in the southern district of this province is called Aimores, and in the northern Serra de Cincura. The former is higher, and contains near the boundary of Minas Geraes the Montes Altos (High Mountains). The water-shed of this range lies in general parallel to the coast at a distance of about 150 miles, and about 50 from the banks of the Rio Francisco. But the offsets and branches from this boundary approach the sea within about twenty or thirty miles, and they advance still nearer to the river. It seems that, at a distance of about fifteen to twenty-five or thirty miles, the whole country rises with a pretty rapid ascent; for about this distance all the rivers traversing the coast are full of cataracts and rapids, and become unfit for the purpose of navigation.

Bahia may, with respect to its climate and productions, be divided into three districts: the Beira-Mar, or southern coast country; the Reconcave, or northern coast country; and the mountain region. The Beira-Mar enjoys many advantages. It has abundance of running water, and commonly a fertile soil, in which mandioca, rice, Indian corn, the coffee-tree, the sugar-cane, and the cotton-plant prosper. But, on the other hand, heavy dews and almost incessant rain render it an unpleasant and unhealthy country. There is scarcely a distinction of seasons; the trees bear blossoms and fruits in all stages at the same time. The temperature of the winter is never cold enough to check vegetation, nor is the summer hot enough to call forth its full force, because the sky is commonly covered with clouds. There are a few Portuguese inhabitants, and also a few Indians and negroes, but the intermediate breeds far exceed the unmixed races. Many of the Indians are successful cultivators, and much mandioca and rice are produced. Immense woods, hardly yet touched by the axe, exist in the province.

Reconcave is properly only the country which extends round All Saints' Bay, but as the coast south of it to Point Mutta enjoys the same advantages of climate, agriculture, and commerce, we have included it in this district. Many islands lie within and near the mouth of the bay [All Saints' Bay], the chief of which is Itaparica, 23 miles long, at the two ends of which are two channels of entrance into the bay. The soil of this island is fertile, and planted with cocoa-palms, mangoes, jacas, and oranges. The number of its inhabitants amounts to upwards of 16,000, of whom about 7000 live in the port of San Gonçalo. The capital of the province, San Salvador da Bahia de Todos os Santos, lies near the eastern entrance of the bay, on a projecting rock, which rises about 650 feet above the sea. Many small rivers and creeks open into the bay, which render it very favourable for commerce. The Reconcave has a healthy climate, an excellent soil, and plenty of water. The winter or rainy season begins about the end of March, and continues till August, with considerable intervals of dry weather. In the other months the sky is commonly without a cloud, but thunder-storms are frequent; and these, as well as the breezes and heavy dews, moderate the summer heat and support vegetation. The soil is fertile, and yields grapes and other fruit, rice,

mandioca, sugar, tobacco, and cotton. The cultivation of these, and the fisheries along the coast, render the Reconcave one of the busiest parts of South America.

The remainder of the province, which is of a very different character, comprehends the mountains and the sertões. The latter are open dry plains on the backs of the mountains or between their ridges, and afford at certain seasons abundant pasture to numerous herds of cattle. The supply of rain and moisture is very irregular, and the crops uncertain. Some places, especially in the more narrow valleys, are wooded, and contain a better soil; and in such the few towns of this region have been built. Here mandioca, vegetables, fruits, and cotton are raised. Two or three roads, leading from the town of Bahia to the interior of Brazil, traverse the sertões, and along them villages have been built, and some vegetables are raised; but the largest part of this district has no inhabitants except two native nations, the Camacans and the Patochos.

Among the rivers which water this province, the Rio de S. Francisco is by far the largest. Before it arrives at its boundary, this river has already run about 500 miles from its source, which lies to the south of Villa Rica in Minas Geraes, and it continues its course between Bahia and the sertão of Pernambuco for at least 600 miles. About 200 miles from its mouth it leaves Bahia, and forms lower down the boundary between the provinces of Seregype and Pernambuco. In its course through Bahia it is too much interrupted by rapids to be available for navigation. The next river in size is the Itapicuru, about 250 miles long. The Peruaguaçu, which flows through the fertile Reconcave, the Jaguaripe, the Serzipe, the Sarahary, the Pirajà, the Matuin, the Pitanga, the Jiquie, the Acarahy, the Marahu, the Rio de Contas, the Patype, the Belmonte, and the Salsa, are the others most worthy of note; but most of them are small.

The lakes of Bahia are not numerous nor of great extent. The largest is that of Itahype, between the Rio de Contas and the river Ilheos. It is very deep, seven miles in circumference and three in length, with a small island in the middle. It is bordered with extensive woods and forests, from which several small streams flow into this lake.

The metals, which once formed a considerable portion of the wealth of this province, are now of very little importance. Gold has long ago ceased to be worked: silver is found, but it would not pay the expense of working. Iron is abundant, but neglected. Copper is still worked in the northern district, but not to any great amount. The largest piece of native copper perhaps in the world was found about two miles to the east of the town of Cochocira. It weighed 1666 pounds, and is now in the Royal Museum at Lisbon. Armenian bole, antimony, saltpetre, and rock-salt, are among the mineral produce.

The chief cultivated plants have already been enumerated. Among the spontaneous products of the soil are ipecacuanha, Jesuits' bark, jalap, tamarinds, Brazil root, curcuma or turmeric, betony, copal, dragon's blood, mastic, copaiba, Brazil-wood, bow-wood, iron-wood, oil-wood, cachew-nut, nayha, palm, and numerous timber trees for carpentry and cabinet work. There are also many leafless parasite plants, which intertwine among the forest trees, and produce an almost impervious network.

The zoology of this region includes only a small supply of domestic animals. Among wild animals, the tapir, the ounce, the boar, and the deer, are the most numerous species and most hunted. Monkeys of different kinds are common in the woody districts. Parrots and some other birds, more distinguished by the beauty of their plumage than by their voice, are found in all parts of the province. Among the snakes some are poisonous. Various species of bees produce honey; some in the cavities of the trunks of the trees, as in Poland and Russia, others in little hives of wax which they form in the twigs. Sharks are abundant; a few whales are caught; and most of the rivers are well stocked with fish.

The province of Bahia is divided into three comarcas or districts, of which that of Ilheos was formerly a separate capitania, and comprehends the coast south of the island of Tinhare, and all the country inland to a distance of about a hundred miles. The comarca of Bahia, which lies to the north of it, contains the Reconcave, and all the country to the north of it up to the boundary of the provinces Seregype and Pernambuco. The comarca of Jacobina comprehends the western part of the province.

The principal places in Ilheos are Olivença, Ilheos, Villa de Contas, and Camamu; in Bahia, besides the capital, Cochocira, San Amuno, Maragogype; and in the comarca of Jacobina is Jacobina, Rio de Contas, and Urubu, on the Rio S. Francisco.

In 1840 the value of the commodities exported from Bahia was about 5,872,833 milrees (a milree is worth about 5*s.*), of which sugar amounted to 3,801,831.

(Alcedo, Southey, Henderson, and Schäffer; Map in Spix and Martius' *Travels; Parliamentary Papers.*)

BAHIA DE TODOS OS SANTOS. [All Saints' Bay.]

BA'HLINGEN, a bailiwick in the Würtemburg circle of the Black Forest; bounded N. and E. by Hohenzollern, and S. by Baden. It consists of the vale of the Eyach, which river flows through it, and has an area of 126 square miles, and a population of 30,000, who rear much cattle, breed sheep, and are actively engaged in the manufacture of bed-ticking, stockings, brandy, &c.; they do not raise sufficient grain for their own consumption. The local authorities are established in the town of Bahlingen, which is situated on the Eyach, 40 miles S.W. of Stuttgart. It contains 3250 inhabitants, trades in grain, and manufactures linens and woollens, spirits, &c. There are sulphurous baths in the vicinity of the town.

BAHR, the Arabic word for the sea, a lake, or a large river, appears as a component part of many proper names in eastern geography: as *Bahr-al-Kolzum*, 'the sea of Kolzum,' the Ara-

bian Gulf or Red Sea, especially its north-western extremity; *Bahr Lût*, 'the Lake of Lot,' the Lacus Asphaltites, or Dead Sea, in Syria; *Bahr-al-Abiad*, 'the White River,' and *Bahr-al-Azrak*, 'the Blue River,' the two principal southern branches of the Nile. The diminutive of *Bahr* is *Boheirah*, or *Boheirat*, 'a small lake.' It has passed into the Portuguese language under the form *Albufeira*, 'a reservoir, a tank, a lagune;' and into Spanish under the two forms *Albufera* and *Albuhera*, in the same sense. The prefixed *al* in these words is the Arabic definite article. The letter *h*, of many Arabic words that have been received into the Spanish and Portuguese languages, has been changed into *f*.

BAHR-BELA-MA, 'the Waterless Sea,' a remarkable valley in the Libyan desert, on the borders of Egypt, about 50 miles W. of Cairo. It runs westward of and parallel to the valley of the Natron Lakes, from which it is divided by a sandy ridge. The valley is very deep, and about 9 miles in breadth: it is totally barren and waterless. It has, however, the appearance of having been once a watercourse, and is strewed with loose stones, quartz, silex, fragments of jasper, &c. There is also a quantity of petrified wood, trunks of trees, and large splinters.

There is another Bahr-bela-ma, mentioned by Browne, farther south, between the canal of Youssouf and Lake Keroon, or Mœris; it was formerly part of the communication between the Nile and the lake, but is now dry, the canal passing more to the south-west. [NATRON LAKES.]

BAHR-AL-ABIAD, BAHR-AL-AZRAK. [NILE.]

BAHREIN BAY. [ARABIA.]

BAHREIN ISLAND, otherwise called AVAL, is situated in the middle of Bahrein Bay. It is 27½ miles long, and about 10 miles broad; it is surrounded by shoals, most of which are dry at low water. A range of moderately high hills runs through the centre of the island, but the shores all round are very low. The island is fertile, and covered with plantations of date-trees. There are numerous springs of excellent water in the interior, but at too great a distance from the port to be available for shipping. The only water with which the inhabitants can be supplied, as well as all that is used on the neighbouring island of Arad, is brought up from the bottom of the sea at the depth of 18 feet, where there is a spring of good fresh water.

Bahrein is surrounded by flats, one of which, called Teignmouth Shoal, extends off from the island 15 miles to the northward, with a breadth of 14 miles; many parts of this shoal are dry at low water. The chief town, called Manama, is at the north-east extremity, and is large and populous, being supposed to contain upwards of 40,000 inhabitants. The bazar is well supplied with cattle, sheep, poultry, fish, and vegetables; and a very considerable trade is carried on. Upwards of 140 vessels of various sizes are employed in trading; but the pearl fishery is of the greatest importance to the island, which in the season employs 2400 boats, each containing from eight to twenty men. The annual produce of these fisheries amounts, it is said, to sixteen or twenty lacs of dollars. Manama lies in 26° 14′ N. lat., 50° 36½′ E. long. There is a small town, called Ruffin, 7 miles S. of Manama; near it there are extensive ruins.

The island of Arad, lying close to the northward of Bahrein, is very low, and nearly divided into two by the sea at high water. At its south-west extremity is the town of Maharag, about a mile to the eastward of Manama, but not nearly so populous. It is environed by a wall for defence by muskets, and a communication is constantly kept up between the two places by means of ferry-boats, the distance across being only 900 yards. The distance from the west coast of Bahrein to the Arabian shore is only 10 miles, and between the two lies a small low island called Jebel Hussein, which is not inhabited.

BAIÆ, a seaport and a celebrated watering-place of the ancient Romans, which was situated on the west shore of the Bay of Naples, between the Lucrine Lake [AVERNO] and Cape Misenum, and opposite to the town of Puteoli, now Pozzuoli, from which it was distant about three miles across the water. The ground on which Baiæ stood is supposed to be that crescent-like sweep of coast between the base of Mount Grillo, which divides it from Lake Averno and the Lucrine Lake, and the promontory on which the present Castle of Baja stands. It is a narrow semicircular slip of ground, about one mile in length and confined between the hills and the sea. Here the wealthy Romans built their villas and baths, and, for want of space, often encroached upon the sea. The only remains above ground are three or four circular buildings, commonly called temples, but two of which, at least, were apparently thermæ, or warm-baths. There is one building, rising behind a small projection on the shore, near the centre of the crescent, which is generally supposed to have been a temple of Venus. It is an elegant structure, octagonal outside, but circular inside, the diameter of which is about ninety feet. The pretended temple of Mercury, also called Truglio, consists of two quadrangular rooms, and a circular one: this last is vaulted like a rotunda, receiving the light from a round opening at the top, and is about 70 feet internal diameter; it has niches and several lateral recesses. The pavement is swamped with water, which issues out of the ground.

The whole country is full of mineral springs. The baths, sometimes called Tritoli, and sometimes the Baths of Nero, although there is no reason for believing that they were constructed by that emperor (Paoli, 'Antichità di Pozzuoli'), are two separate buildings near one another. The attractions of Baiæ were, its mild climate; its situation, protected by hills from the blasts of the north and of the south-west winds, and open to the eastern breeze, which is freshened by blowing across the bay; a sea generally smooth; abundant hot-springs; and a delightful view. These were the charms which made opulent men, tired of the bustle and the heat of Rome, resort to Baiæ for quiet and for health.

The whole of this coast has undergone changes,

and the sea comes farther in shore than it did in the time of the Romans; it also appears to have stood, with respect to the land, at some intermediate period, and in consequence of some convulsion of nature, several feet higher than its present level, if we are to judge from the marks of the dactylides (a species of shell-fish which burrows in the stone) on the three standing pillars of the temple of Serápis, near Pozzuoli. [Pozzuoli.] The whole coast of Baiæ is now a desert. The numerous springs, being neglected, have oozed down the declivity of the hills, and formed stagnant pools, the exhalations of which render the upper air unwholesome in summer. The ground is strewed with foundations and remains of walls, bricks, cement, and pieces of marble. Under the water, near the shore, cameos, carnelians, and other valuable stones have been found.

The name of Gulf of Baja is now applied to the extent of sea between Cape Misenum and the point of Pozzuoli, which affords a good anchorage to large vessels and men-of-war, while the bay of Naples is exposed to the fury of the *libeccio* or south-west wind. The castle of Baja is a modern structure rising high on a cliff above the sea; it has two ranges of batteries, which command the roads, and a garrison is kept in it.

BAIGORRY, VALLEY OF, in the department of Basses Pyrénées in France. This valley commences at the frontier of France and Spain, and is about 11 miles long and 8 broad. It is watered by a little stream, the Hourepeteca, which falls into the Nive, a tributary of the Adour. The principal place in the valley is St. Etienne-de-Baigorry, which has a population of 3266. There are rich copper and iron mines in this valley, and large copper and iron works for smelting and refining the ores.

BAIKAL, the largest and most remarkable of all mountain lakes, is embosomed in the mountain-ranges which skirt on the north the high table-land of that part of Asia. It lies between 51° and 56° N. lat., and between 104° and 111° E. long. Its length, according to Georgi, is 355 miles, but the modern Russian accounts increase it to about 400. Its widest part between the northern extremity of the island of Olkhon and the mouth of the river Bargusin is not more than about 52 miles; and between the mouth of the Selinga and the rivulet Buguldekha the two shores are only 20 miles distant from one another. Its mean breadth varies between 30 and 40 miles, and its circumference is said not to fall short of 1200 miles. Its surface is calculated by Berghaus to cover 14,800 square miles, so that it occupies a space larger than half of Scotland. This lake, like other alpine lakes, is very deep, with the exception of a few tracts along the shores and some bays; in some places the bottom has not been reached by a line of 100 fathoms.

On the north-western shores of the lake, the mountains, which encircle it so closely as to constitute in many parts the very shores, are interrupted only by one narrow and deep crevice, which occurs towards the western extremity of the lake, and by which the Lower Angara carries off the surplus waters of the lake. Numerous streams descend from these heights into the lake, but all of them have a short course, and are only torrents, which, however, commonly flow even in the hottest summer. The mountain-ranges, which inclose the eastern and southern sides of the lake, advance, in many parts, as close to its shores as those on the other sides of the lake, but they are more broken into bays and capes; and, besides, there are two large openings and one narrow opening in them. About 180 rivers empty themselves into the lake, of which the largest are the Bargusin, the Selinga, and the Angara.

The height of the lake above the sea is estimated at 1793 feet. This accounts, in a great degree, for the severity of the seasons on its shores and the whole extent of its basin. The summer is very short, and the nights are cold and often frosty; sometimes it begins to snow in August, or at latest in September. In the bogs and morasses ice is always found, even during summer heat. The lake is never covered with ice before the middle of December, often only in the beginning of January, which must be ascribed to its great depth and its troubled surface. It may be traversed on sledges up to the end of April, or even the beginning of May. No traces of the approach of spring are discovered before the middle of April, and this season shows itself in its vigour only at the end of May or the beginning of June.

The lake produces abundance of fish; of which the chief are the sturgeon, the salmon, the seal, and a singular fish called the *Callionymos Baicalensis*, which yields a good deal of train oil.

The country, the productions, and the inhabitants near the shores of Lake Baikal, are described under Altai Mountains.

(Pallas; Georgi; Ritter's *Asia*.)

BAIKALEAN MOUNTAINS, is a name sometimes extended to all the mountain ranges which inclose the Lake of Baikal, and surround and traverse its basin; but it is with more propriety limited to that range which separates the great lake from the lowlands of Siberia, and unites the mountains of Saïansk with those on the banks of the Upper Angara, which form a part of the Da-urian mountain-system. In this more limited sense the Baikalean Mountains begin at, and are united to, the mountains of Saïansk by the mountain-knot which stands between the western extremity of the Lake of Baikal (or the Kultuk) and the Lake of Kossogool, and terminate with the high range which divides the lower course of the Upper Angara from the tributaries of the Lena river; consequently, they lie between 51° and 57° N. lat., and 103° and 112° E. long. The length of this range may amount to upwards of 500 miles.

This range is divided into two unequal parts by the Lower Angara, which, issuing from the Lake of Baikal in a northern direction, flows with a precipitous course to the town of Irkutsk, and carries its waters to the lowlands, discharging them, under the name of Upper Tunguska, into the Yenesei. That portion of the mountain-range which lies to the west of the Lower Angara is the

lowest, but at the same time exhibits the more alpine aspect. Close to the lake the mountains rise with an extremely steep ascent, and consist of narrow and sharp ridges, which are divided from one another by short and narrow valleys, which are often so deep and close that the rays of the sun cannot penetrate to their bottom. The portion of the mountain group eastward of the Lower Angara contains the sources of the Lena, but it is very little known.

The relation between the Baikalean range and the surrounding country is further described under ALTAI MOUNTAINS.

BAIL, in *Civil Causes*, signifies the sureties who become responsible for the appearance of a defendant, arrested by legal process, to answer to the complaint made against him; and they are so called because anciently the defendant was *baillé*, delivered or committed to the custody of his bail, who were bound to produce him at the time appointed for his appearance. By the statute of 23 Hen. VI. c. 9, the sheriff is compelled to admit to bail all persons arrested by him in any personal action, or because of any indictment of trespass, on reasonable sureties being offered for their appearance: and, if he refuse to take sufficient bail when offered, he is liable to an action by the party arrested. Bail were formerly either *common bail* or *special bail*, a distinction which arose thus:—until the commencement of the last century, the defendant was in *all* cases of process against his person actually arrested; and it was then discretionary in the court either to discharge him on *common bail* (that is, fictitious sureties, John Doe and Richard Roe) being entered for his appearance, or to detain him till he found real sureties or *special bail*. But this discretion in the court was abolished by the 12 Geo. I. c. 29, which provided that no person should be held to special bail unless the demand amounted to 10*l.*, over and above costs, which sum was increased, by the 7 & 8 Geo. IV. c. 71, to 20*l.* In all cases where the defendant was not actually arrested, the ancient fiction, stating that he was delivered to bail to John Doe and Richard Roe, continued in the Court of King's Bench to be the only mode of his effectually entering an appearance to the suit till the late act for uniformity of process 2 Will. IV. c. 39, s. 2, which provided that, for the future, the appearance of the defendant, in cases where he is not arrested, shall be by entering a memorandum that he either appears in person or by some attorney to the suit instituted by the plaintiff, so that common bail was thus abolished.

All personal actions are now commenced by writ of summons, and the cases in which a defendant may be held to special bail in civil causes are confined to those which are specified in the third section of 1 & 2 Vict. c. 110, § 2. It is thereby enacted that if a plaintiff, in any action in any of the superior courts of law at Westminster, in which the defendant is now liable to arrest, shall show by affidavit to the satisfaction of a judge of one of the said courts that such plaintiff has a cause of action against such defendant or defendants to the amount of 20*l.* or upwards, or has sustained damage to that amount, and there is probable cause for believing that the defendant or any one or more of the defendants is or are about to quit England, unless he or they be forthwith apprehended, such judge may order the defendant or defendants to be held to bail in any sum he may think fit, not exceeding the amount of the debt or damages. This order may be made at any time between the commencement of the action and final judgment. The plaintiff may thereupon sue out a writ of capias ad respondendum, and arrest the defendant, who, when so arrested, is to remain in custody till he shall have given a bail bond to the sheriff, or shall have made deposit of the sum endorsed on such writ of capias, together with 10*l.* for the costs.

The object of the bail bond and deposit is to compel the defendant within eight days from the day of arrest (which day of arrest is to be included in the eight days) to put in special bail to the action; or, in other words, to find two responsible persons, householders, or freeholders, to enter into a recognizance, by which they bind themselves, in case of judgment being given against the defendant, that he shall pay the debt or damages, or give himself up to prison, or that they will pay for him. The practice in the case of special bail is explained in Tidd's 'Practice,' 9th ed.; Jervis's 'Rules of Court;' Bacon's 'Abridgment,' 7th ed., tit. 'Bail.' The power given by the statute to a judge, to grant an order to hold to bail, is not affected by the act of 7 & 8 Vict. c. 96.

Bail in Error are sureties required to be given by a defendant at common law who sues out a writ of error to reverse a judgment which has passed against him; and the condition of the recognizance into which they enter is, that the party suing out the writ of error shall prosecute it with effect, and, if the judgment be affirmed, shall satisfy the debt and costs recovered, together with all such costs and damages as are awarded by reason of the delay of execution occasioned by the writ of error, or else that the bail shall do it for him. By 3 Jac. I. c. 8, 16 and 17 Car. II. c. 8, and 6 Geo. IV. c. 96, execution is not stayed by a writ of error, unless a recognizance of bail with two sufficient securities has been given to prosecute the writ with effect, and to satisfy the debt and costs if the judgment be affirmed, or unless the court or a judge shall dispense with such recognizance.

Bail in Criminal Cases are the sureties given to the crown by a person accused of a crime, and who is allowed by a court or magistrate to be at liberty till trial, on giving security for his appearance. By the common law, all accused persons, even though charged with heinous felonies, were allowed the privilege of bail, till the crime of murder, and afterwards treason, and other felonies, were excepted by statute. The 7th of Geo. IV. c. 64, s. 1, defines the powers and duties of justices of the peace as to bailing parties charged before them with *felony*. By this statute, when any person is taken on a charge or suspicion of felony before one or more justices of the peace, and the charge is supported by positive and cre-

dible evidence of the fact, or by such evidence as, if not explained or contradicted, shall, in the opinion of the justice or justices, raise a strong presumption of the guilt of the person charged, such person shall be committed to prison to take his trial. But if only *one justice* is present, and the whole evidence given before him shall be such as neither to raise a strong presumption of guilt nor to warrant the dismissal of the charge, such justice shall order the party to be detained till he is taken before two justices at the least; and when such two justices, or any two justices before whom a party may be charged in the first instance, shall deem the evidence not such as to raise a strong presumption of guilt, and to require the party's committal; or if such evidence shall be adduced on behalf of the person charged as shall, in the opinion of the justices, weaken the presumption of his guilt, but there shall notwithstanding appear to them sufficient ground for judicial inquiry, the party charged shall be admitted to bail by such two justices. The justices, however, are not required to hear evidence on behalf of the party charged, unless it appear to them conducive to the ends of justice to do so. Before they admit to bail, or commit any person charged with felony, they are bound to take the information upon oath (or affirmation in the case of Quakers, Moravians, and Separatists) of those who know the circumstances, and to put the same into writing, and to subscribe their names to the bailment and examinations, and deliver them to the proper officer of the court in which the trial is to be, before or at the opening of the court. The prisoner's statement in answer to the charge, which statement is not to be on oath, must also be taken down in writing. A *single* justice of the peace in consequence of this statute cannot now take bail for a felony; such bail can only be taken by two justices either after an examination by one justice, or on an original examination by themselves. With respect to *misdemeanors*, persons charged therewith are in general entitled to be admitted to bail, which may be taken by one justice as well as two or more. By the third section of the above act, any justice, on taking bail, or committing a person for misdemeanor, is also required to take the examinations in writing, and certify the bailment, and deliver the examinations and recognizances to the proper officer of the court before trial, in the same manner as in cases of felony.

The statute 7 Geo. IV. c. 64, was somewhat altered by the 5 & 6 Will. IV. c. 33, § 3, which provides that any two justices of the peace, if they shall think fit (of whom one or other shall have signed the warrant of commitment), may admit any person or persons charged with felony, or against whom any warrant of commitment for felony is signed, to bail, in such sums and with such sureties as they shall think fit, notwithstanding such person or persons shall have confessed the matter laid to his or their charge, or notwithstanding such justices shall not think that such charge is groundless, or shall think that the circumstances are such as to raise a presumption of guilt.

This act applies only to the taking of bail by justices of the peace, and does not affect the authority of the superior courts of law to admit prisoners to bail. The courts of Common Pleas and Exchequer, at any time during term, and the Court of Chancery, either in term or vacation, may, by the common law, award a *habeas corpus* to bring up any person committed for a crime under the degree of felony or treason, and may discharge him, if it appear that the commitment was illegal, or bail him if it appear doubtful. The authority of the chancery is said, indeed, to extend to cases of felony; that of the other two courts is confined to misdemeanors. The Court of King's Bench has a more extensive authority; that court, or any one of its judges, in time of vacation, may bail a party committed for any crime whatever, even for treason or murder; and they will in general exercise this authority in cases not capital, and also in capital cases, where the circumstances raise a presumption of the party's innocence. But neither the Court of King's Bench nor any other court can bail prisoners in execution, or suffering imprisonment under the sentence of a competent court for crime, or for a contempt of its authority, unless it is made to appear to the court that they are not guilty of the offence, or unless a prisoner is in danger of losing his life from the effects of continued confinement. No person can be bailed for felony with less than two sureties, and it is usual with the Court of King's Bench to require four. The sum in which the sureties are bound ought never to be less than 40*l.* in case of a capital crime; but it is discretionary in the court or magistrate to require a higher amount, having regard to the circumstances and rank of the prisoner, and the nature of the offence. Care must however be taken not to require such excessive bail as amounts to a denial of bail, which is one of the grievances complained of by the Bill of Rights (1 William and Mary, st. II. c. 2), and is prohibited by that act.

By the 1 & 2 Geo. IV. c. 218 (the Metropolis Police Act), it is lawful for any constable or headborough in London attending at any watch-house to take bail from persons charged with petty misdemeanors, without warrant of a justice, and such recognizances shall be of equal obligation as if taken by a justice of the peace.

(Stephen's *New Commentaries*, iv. p. 363; Bacon's *Abridgment*, tit. 'Bail in Criminal Cases,' 7th edit.)

BAIL, *in Scotland*. Bail is now little known in the Scotch courts, and, when demanded, it is *substantial* bail. This bail is of two kinds: caution *de judicio sisti*, and caution *de judicato solvendo* —phrases derived from the Roman law through the medium of the old French courts, and answering to the forthcoming borgh, and the surety as law will, of the ancient common law of Scotland.

In civil cases, the defendant—or as he is called, from the French, *defender*—may be attached or arrested till he find substantial bail, or caution *de judicio sisti*, by two sorts of warrant, *foreign* warrant and *flight* warrant. The foreign warrant

is of two kinds, usually called *burgh* warrant and *border* warrant.

The *burgh warrant* is a burghal or civic proceeding directed against foreign debtors. The act 1672, c. 8, now regulates this matter. The privilege is limited to royal burghs, and to book debts for man's meat, horse meat, abuilziements, and other merchandize due by a stranger to an inhabitant burgess, the plaintiff being the merchant, innkeeper, or stabler from whom the same was gotten, and to whom it was originally addebted, and having no bond from the stranger nor any other security except his own compt-book; and, lastly, the remedy is attachment and imprisonment of the stranger, by warrant of the magistrates, on plaint to them made, till he find caution *de judicio sisti* in any process to be brought for payment of the debt within six months. *Border warrants* are granted, on application to any judge ordinary, on the borders between England and Scotland, against debtors whose domicile is on the opposite side, for attaching them till they find like caution *de judicio sisti*. To obtain a *flight warrant*, fugæ warrant, or warrant against a debtor as *in meditatione fugæ*, a petition or plaint is made to any judge ordinary by the creditor, setting forth his debt, and his information and belief that the debtor is about to flee the kingdom without paying the same, and praying warrant, the petitioner's oath on the premises being first taken, to bring him before the court for examination. With this application the creditor produces his grounds of debt. He must also make oath to his debt, and to his belief that the debtor means to abscond, justifying such belief by a statement of its grounds. If the circumstances are sufficient, the magistrate or judge then issues his warrant to bring the debtor before him for examination; at which examination the magistrate or judge must also look to any collateral evidence that may offer. If, after due inquiry, it appear that the debtor is about to flee the kingdom in defraud of his creditor, warrant is granted to seize and imprison him till he find caution *de judicio sisti*.

In maritime causes the defenders must find caution *de judicio sisti et judicatum solvi*.

The Scots law of bail in cases of crime is principally contained in the acts 1701, c. 6, and 39 Geo. III. c. 49. By the former, all crimes not inferring capital punishment are made bailable. In the same act the highest bail demandable is laid down; but by 11 Geo. I. c. 26, § 11, the sums so fixed were allowed to be doubled; and by 39 Geo. III. c. 49, the judge or magistrate may extend the bail to 1200*l.* for a nobleman, 600*l.* for a landed gentleman, 300*l.* for any other gentleman, burgess, or householder, and 60*l.* for an inferior person.

BAILIFF signifies a keeper or superintendent, and is directly derived from the French word *bailli*, which appears to come from *ballivus*, and that from *bagalus*, a Latin word which signifies generally a governor, tutor, or superintendent, and also designated an officer at Constantinople who had the education and care of the Greek emperor's sons. (Du Cange, 'Glossary.') The word Baiolus, which seems to be the same as Bagalus, is used by the Roman classical writers to signify a porter, one who carries any burden on his back. (Facciolati, 'Lex.') The French word Bailli is explained by Richelet ('Dictionnaire,' &c.). All the various officers who are called by this name have some kind of superintendence intrusted to them by their superior. The sheriff is called the king's bailiff, and his county is his bailiwick. The keeper of Dover Castle is called the bailiff; and the chief magistrates of many ancient corporations in England had this name. Amongst the principal officers of corporate towns to which the inquiries of the Corporation Commissioners extended in 1835, there were 120 officers called bailiffs, and 45 inferior officers with the same designation, besides 29 water-bailiffs. But the chief functionaries to whom the name is applied in England are the bailiffs of sheriffs, the bailiffs of liberties or franchises, and the bailiffs of lords of manors.

1. *Bailiffs of Sheriffs* were anciently appointed in every hundred, to execute all process directed to the sheriff, to collect the king's fines and fee-farm rents, and to attend the justices of assize and gaol delivery: they are called in the old books bailiffs errant. There is now a certain number of bailiffs appointed by the sheriff in his county or bailiwick, who are commonly called *bound bailiffs*, from their entering into a bond to the sheriff in a considerable penalty for their due and proper execution of all process which the sheriff intrusts to them to execute, whether against the person or the goods of individuals. These are called *common bailiffs*; but the sheriff may, and often does, at the request of the suitor or otherwise, intrust the execution of process to a person named merely for the occasion, who is called a *special bailiff*. The bailiff derives his authority from a warrant under the hand and seal of the sheriff: and he cannot lawfully arrest a party till he receives such warrant. It is a contempt of the court from which process issues, to hinder the bailiff in executing it; and when a party is taken by the bailiff, he is legally in the custody of the sheriff. The bailiff is forbidden by the Lord's Day Act, 29 Car. II. c. 7, to execute process on Sunday; and he is not authorized to break open an outer door to make an arrest under civil process, or to seize goods; but if the outer door is open, he may, in general, break open inner doors in execution of the process. If a bailiff misdemean himself grossly in the execution of process, he will be punished by attachment from the court from whence the process issues.

2. *The Bailiff of a Franchise or Liberty* is one who has the same authority granted to him by the lord of a liberty as the sheriff's bailiff anciently had by the sheriff. [LIBERTY.]

3. *Bailiffs of Manors* are stewards or agents appointed by the lord (generally by an authority under seal) to superintend the manor; collect fines and quit-rents; inspect the buildings; order repairs, cut down trees; impound cattle trespassing; take an account of wastes, spoils, and misdemeanors in the woods and demesne lands; and do other acts for the lord's interest. [MANOR.]

(Bacon's *Abridgment*, tit. 'Bailiff,' 7th ed.; Tomline's *Law Dictionary*, same title.)

BAILIWICK, from the French *bailli*, and the Saxon *wic*, the dwelling-place, or district of the bailiff, signifies either a county which is the bailiwick of the sheriff, as bailiff of the king, and within which his jurisdiction and his authority to execute process extend; or it signifies the particular liberty or franchise of some lord who has an exclusive authority within its limits to act as the sheriff does within the county. The corresponding French word is Bailliage. [BAILIFF; SHERIFF.]

BAILLEUT. [NORD.]

BAILLIAGE [BAILIWICK], a French term equivalent with bailiwick, a district or portion of territory under the jurisdiction of an officer called a bailiff. This term was more especially appropriated to certain sub-governments of Switzerland; as to which, see Coxe, *Travels in Switzerland*, London, 1774, vol. i. 30; and Planta, *Hist. of the Helvet. Confederacy*, vol. iii. 380.

BAILLIE, ROBERT, was born in Glasgow, April 30, 1602, of which city his father is described as a citizen. The subject of the present notice was educated first at the grammar-school and afterwards at the University of Glasgow, at which he was entered a student in March 1617. He took his degree of M.A. in 1620; probably in 1623 or 1624 he entered into holy orders; in August 1625, he was admitted to the office of one of the masters or regents (as the professors were then styled) of the college; and this situation he held till the year 1631, when he was presented by the Earl of Eglinton to the parish church of Kilwinning in Ayrshire. At this time Baillie's sentiments on the subject of church government were extremely moderate; his ordination had been episcopal, and he was attached on principle, as well as by education and habit, to that form of polity, which was indeed at this time the established ecclesiastical system in Scotland. But, when Charles I. made his attempt in 1636 and 1637 to impose the new service-book and canons upon the Scottish church, Baillie was induced to attend a meeting of the Supplicants, as the opponents of the obnoxious measures called themselves, which was held at Edinburgh on the 18th of October, 1637; and from this time he took his place as one of the chief managers and leaders of the Presbyterian and anti-court party. When he first rose to speak at the Edinburgh meeting, it was, he tells us, 'with some piece of blushing, in such an auditory, the like whereof he had never before addressed;' but he adds that he was heard with very great applause, and ere evening was a famous man over all the town.

In April 1640, Baillie published what may be considered to have been an extension of his speech at the meeting of Supplicants. In the following October, when the Scotch had taken arms, he proceeded, on the invitation of the earls of Rothes, Montrose, and Argyle, to the council of war at Newcastle, taking with him a number of copies of his book; and here he was nominated one of the four clerical commissioners who were deputed, with nine laymen, to proceed to London, under the protection of the great seal, to negotiate a treaty with the king. He reached London on the 16th of November, and remained there till the beginning of June, 1641, having, during his residence, witnessed the trial of Strafford and other remarkable occurrences, of which his letters contain very detailed and graphic accounts. In June 1642, Baillie was appointed joint Professor of Divinity in the University of Glasgow; but immediately after this he was again despatched to England as one of the five clerical commissioners from the General Assembly to the Westminster Assembly of Divines. He reached London on the 18th of November; and his stay this time lasted for more than two years. He now resumed his duties as Professor of Divinity, continuing also, however, to take an active part in public proceedings. After the execution of the king, he was one of two clergymen sent over to the Hague, in March 1649, with the commissioners of the Scottish estates (or parliament) to enter into negotiations with Charles II. When Cromwell advanced upon Glasgow, in October 1650, after the battle of Dunbar, Baillie fled to the isle of Cumray with Lady Montgomery, but left, he tells us, all his family and goods to Cromwell's courtesy, 'which,' he adds, 'indeed was great; for he took such a course with his soldiers that they did less displeasure at Glasgow, nor [than] if they had been at London, though Mr. Zachary Boyd railed on them all to their very face in the High Church.' In church politics Baillie now allied himself with the more moderate party. Immediately after the Restoration he was appointed Principal of the University, Patrick Gillespie, one of the chief leaders of the party opposed to Baillie, being dispossessed of that office. He did not however long enjoy this preferment, having died about the end of August in the following year.

A complete edition of Baillie's Letters has been lately produced under the care of David Laing, Esq., in 3 vols.

BAILLIE, MATTHEW, an eminent anatomist and physicinn, was born in Scotland on the 27th of Octobor, 1761, at the manse (or parsonage) of Shotts, in Lanarkshire. His father was the Rev. James Baillie, at that time clergyman of the parish of Shotts, and his mother, Dorothea Hunter, sister of the celebrated anatomists William and John Hunter. Soon after his birth his father was removed to the charge of the church of Bothwell, and subsequently to that of Hamilton, at the school of which place young Baillie acquired a character both for industry and talent. His father having been elected professor of divinity in the University of Glasgow, his education was carried on in that place. During the three years of his attendance there, the first two were devoted to the Latin and Greek classics, and the third to mathematics, to which he applied diligently. At the same time he attended logic, and the class of moral philosophy, at that time taught by Dr. Reid.

Though originally inclined to adopt his father's profession, or to enter the bar, his uncle, Dr. William Hunter, held out such inducements as determined him to choose the medical profession. This celebrated individual, at that time the most eminent teacher of anatomy in London, was desirous of superintending the education of his nephew in

person,—a scheme which was only partially practicable, as, in order to obtain a degree of doctor of medicine from one of the English universities, it was necessary that part of his time should be spent at Oxford or Cambridge. Measures were accordingly taken at Glasgow to procure for him an exhibition to Balliol College, Oxford, which is in the gift of the professors of the University of Glasgow. The loss of his father at this time, and the consequent diminution of the family income, rendered such assistance very desirable. It was at last obtained.

On his way to Oxford he visited London, and for the first time saw his distinguished uncle, from whom he received directions respecting his studies, which he prosecuted for an entire year at Oxford. But subsequently he visited the university only at term time, spending all the intervening periods in London. Two years after he had commenced his studies in London, he became a teacher in his uncle's anatomical theatre in Great Windmill Street, in the capacity of demonstrator. About a year after this time Dr. William Hunter died, and bequeathed to his nephew the use of his splendid museum, his anatomical theatre and house in Great Windmill Street, as well as a small estate in Scotland (which Baillie generously gave up to his uncle, John Hunter) and an annuity of 100*l.* a year. Dr. Hunter, a short time before his death, told his nephew, 'that it was his intention to leave him but little money, as he had derived too much pleasure from making his own fortune to deprive him of doing the same.'

In 1785, two years after William Hunter's death, Baillie, in conjunction with Mr. Cruickshanks, gave his first course of anatomical lectures, thus in his twenty-fifth year taking upon himself the task of supplying the place of one whose talents as a lecturer were of the first rank. He took every opportunity of preserving morbid structure, and thus formed a museum, inferior indeed to that of the Hunters', but of great value, which now enriches the College of Physicians of London. This collection was liberally presented to that body by Dr. Baillie during his lifetime, along with 400*l.* to keep it in a proper state of preservation. To the same body, in his will, he bequeathed his medical library.

In 1787, though only a Bachelor of Medicine, he was appointed physician to St. George's Hospital, and two years afterwards he received his degree of Doctor of Medicine from the University of Oxford, upon which he became a Fellow of the College of Physicians. In 1789 he married Sophia, the second daughter of Dr. Denman, at that time a very eminent accoucheur in London.

To render the collections of his uncles, as well as his own, useful to the public, he undertook an examination of them, and in 1795 published his 'Morbid Anatomy.' It was soon translated into French (two translations) and Italian, and into German by Professor Sömmering. About four years after the appearance of this work he began to publish engravings for its illustration: these, as well as the work itself, will remain a lasting memorial of the zeal, the industry, and the talents of their author. He also published various papers in the 'Transactions of the Royal Society' (of which he was a Fellow), and in different medical periodicals: these are now collected in the edition of his works edited by Mr. Wardrop.

The progress of a physician is proverbially slow; and though no man laboured more in early life than Dr. Baillie, and no one ever commenced under more favourable circumstances, he was nearly forty years of age before he found himself fully established in practice.

Dr. Baillie added to his great facility of diagnosis a knowledge of the precise effects and extent of the powers of medicines. He excelled in the art of delivering his opinion on a case, being concise, clear, and practical, his language simple and remarkably free from technicalities. His manner was natural and unassuming, yet decided and impressive. He was the same to all persons and on all occasions: 'his benevolent principles led him to disclaim all distinctions in his mode of addressing the sick.'

'His physical frame was feeble, compared with his mental powers. He was under the middle stature, and of rather a slender form. His countenance was marked with a great deal of sagacity and penetration.' He continued in the unremitting exercise (with a few occasional exceptions) of his profession till the spring of the year 1823, when he became affected with chronic inflammation of the trachea (or windpipe) for which he went to Tunbridge, and afterwards to his estate in Gloucestershire, where he died Sept. 23, 1823, in the 63d year of his age.

Dr. Baillie was frequently called upon to render his professional services to members of the royal family. The Princess Amelia, George III. (on whom he attended for ten years), and the Princess Charlotte of Wales, appointed him their physician. His friends erected a monument to him, with a suitable inscription, in Westminster Abbey.

BAILLY, JEAN SYLVAIN, was born at Paris, September 15, 1736. An accidental acquaintance formed with Lacaille, at the house of a common friend, was Bailly's first motive to attach himself to astronomy. The first fruits of the instruction which he received from this great master were some lunar observations, presented to the Academy in 1762. He was received into this body in 1763, and had previously made one among the various calculators of the orbit of the comet of 1759. In 1763 he reduced Lacaille's observations of zodiacal stars, and began to turn his attention to the theory of the satellites of Jupiter. This was the subject of the prize offered by the Academy for 1764; and Bailly, by applying the formulæ which Clairaut had employed in his lunar theory, was enabled to deduce from the hypothesis of gravitation several of the inequalities observed by Bradley and Wargentin. The prize was gained by Lagrange, who, by a new and more powerful analysis of his own, carried the theory much farther; but the attempt of Bailly immediately placed him among the successors of Newton. His essay 'Sur la Théorie des Satellites de Jupiter' was published in 1766. In 1771 he wrote a curious and original paper on the light

of the satellites of Jupiter, which he had measured by finding how much the object-glass of a telescope must be diminished in order to make these bodies disappear. In 1775 he published the first part of his 'History of Astronomy.' The whole of this work was completed in 1787 by the appearance of his 'Indian Astronomy;' and the supplementary works which at different times came from his pen were 'Lettres sur l'Atlantide,' 1779; 'Letters sur l'Origine des Sciences,' 1777; 'Essai sur les Fables et sur leur Histoire,' written in 1781–82, published posthumously in 1799. Their author was a candidate for the secretaryship of the Academy in 1771, at which time Condorcet was preferred by the exertions of D'Alembert. But Bailly was elected to the Académie Française in 1784, and to the Académie des Inscriptions, &c., in 1785, he and Fontenelle being the only two instances of Frenchmen who belonged at once to all the three academies, and himself the only academician whose bust adorned their library during the life of the original.

We shall complete the references to the scientific life of Bailly by mentioning his reports to the Academy of Sciences on animal magnetism (1784), and on the plan of a new Hôtel-Dieu (1786), as well as his 'Eloges' of Charles V., Molière, Corneille, Lacaille, Leibnitz, Cook, and Gresset.

At the election of the States-General in 1789, Bailly was the first chosen for Paris. He was chosen president of the Tiers-Etat (June 17, 1789), the day after that body declared itself a National Assembly. He held this office during the memorable sittings at the Jeu de Paume on the 20th, and at the church of St. Louis on the 23rd, during the personal attempt of the king to disperse the assembly; at the consolidation of the three orders on the 27th, and till July 2nd. His conduct pleased the people of Paris, who elected him mayor of their city on the 15th of July, being the time when the king visited Paris after the fall of the Bastille (14th July). At this period Mirabeau, Lafayette, and Bailly were the three most marked men of the revolution; and Mignet calls the first the tribune of the people of Paris, the second the general, and the third the magistrate.

During the period of his mayoralty, no accession to any violent measure distinguished Bailly's conduct; the most remarkable proposition he made to the assembly (June 5, 1790) was that for the celebration of the taking of the Bastille. He completely satisfied neither extreme, being charged with devotion to and contempt of the royal cause by the two parties. We must pass over the events of his life until we come to that of the 17th of July, 1791. The attempt at escape on the part of the king had irritated the republican party, and the gathering of foreign troops on the frontier had lent colour to their violence. A tumultuous assembly, headed by all the chiefs of the Jacobins (as they were afterwards called), assembled in the Champ de Mars to petition for the dethronement of the king. These were, after remonstrance, fired on by the National Guard under Lafayette and Bailly. The account of Bailly himself is, that the firing took place against his consent.

The measure of the 17th was approved by the Assembly, but Bailly offered his resignation on the 19th of September, and finally relinquished the mayoralty on the 16th of November. He either travelled abroad, or retired to Nantes, according to different accounts, till towards the middle of 1793. During this time he compiled memoirs of the Revolution and its causes, which were published in 1804.

The execution of Louis XVI., on the 21st of January, 1793, made Bailly feel that a man so much the object of enmity to the ruling faction as himself could no longer live openly in France. He wrote to Laplace, who had retired to Melun, wishing to know whether he might safely come there. Laplace answered that he might; but, in the meanwhile, the insurrection of the 31st of May established the armed power of the Jacobins, and Laplace wrote again to Bailly, warning him not to come, as a detachment of the revolutionary army was at Melun. In spite of this warning he had the imprudence to venture. He was recognized by a soldier in the streets, seized, and conducted, after some delay, to Paris. He was charged, as well with the affair of the 17th of July already alluded to, as with conspiring in favour of the late royal family. Being produced as a witness on the trial of Marie Antoinette, he denied all accession to any scheme of the latter nature, and declared his conviction of the falsehood of all the charges brought against the queen. His own trial took place on the 10th of November. The day preceding he published his justification, which is to be found in the 'Procès Fameux,' vol. ii. The next day, or the next but one (accounts differ), he underwent the usual fate, attended by circumstances of unusual cruelty. The conduct of the people towards him excited the indignation even of the executioners. They insisted that the scaffold should be removed to the Champ de Mars, the scene of the events for which he was to suffer. When there, it was once more removed beyond the boundary of the sacred spot, which was not to be profaned by the blood of such a criminal. The detested drapeau rouge was burnt literally before his face. Under these insults his demeanour is represented as having been perfectly calm; and he is said to have answered the remark, 'Bailly, you tremble,' addressed by one of his persecutors, with, 'My friend, 'tis with cold.'

Even in the time of his greatest popularity he appears to have had enemies, who propagated the most absurd charges. His friends affirm that he was retired, simple, and rather approaching to severity. But the unusual and solid respect paid him by his countrymen before his political life began, the arduous employments which fell thick upon him at the very first moment when a plebeian could be called into public life, and the furious anger which he had the honour to excite among the savages of 1793, are so many strong presumptions that he must have been no common character, even among the distinguished.

The character of M. Bailly as a writer is that of one of the most interesting and elegant among many. On the history of science no man has

treated so as to approach him in the agreeable qualities of style. But his whole system is built upon surmises or conjectural interpretations of fact. He imagines that he sees, in the early science of all nations, rather the ruins of some complete system than one in process of formation; and he supposes, therefore, that some nation, whose name is now lost, is the common original of the Egyptian, Chaldæan, Hindoo, and Chinese astronomy. On this supposition he speculates most agreeably, and, as has been observed, gets every point connected with his primæval people except their name and existence.

We have dwelt thus much upon the character of Bailly as an historian, because we find in many works, English and French, one unvaried note of praise upon the subject. When his 'History of Astronomy' appeared, the elegance of the style, and the plausibility of the hypothesis, caught the whole world. We doubt not that Voltaire regretted in his heart that he had committed himself to the Bramins. There was no work on the subject in existence which could claim the title of history, and praise to every possible extent became the order of the day. The work of Delambre soon dispelled this mist from the eyes of scientific men, as could be sufficiently demonstrated if we had room for quotations. But experience has abundantly proved that time is necessary to work a reformation in such matters of opinion. Were we to collect the sentiments of our most celebrated works of reference on the merits of Bailly's 'History,' and compare them with those expressed in France at the time of its appearance, as well as at the present day, the reader would smile to see that we have been receiving the light of a star which has long been extinguished, a phenomenon as likely to happen in morals as in astronomy.

BAILMENT is a term derived from the French word *bailler*, to deliver, and may be defined to be 'a delivery of a movable thing for a particular purpose, upon a contract, express or implied, that the purpose shall be carried into effect, and that, when that is done, the goods shall be restored, by the bailee or person to whom they are delivered, to the owner or bailor, or according to his directions.' The English law of bailment is said to be founded upon the Roman law, and the most convenient mode of classifying the different species of bailments to be that suggested by Sir William Jones in his 'Essay on the Law of Bailments.' But his mode of treating the subject appears to be mainly founded on the case of Coggs *v.* Barnard (2 Lord Raymond, 913), in which the Chief Justice Holt quotes various passages of Bracton as authority. These passages of Bracton are from the Institutes of Justinian, which are thus indirectly declared to be the source of the English law of bailment. The division of the subject which Holt makes in this case is not, though it is generally supposed to be, a proper exposition of the Roman system. In fact it is not possible, under the notion of bailment (delivery) of a movable thing, to treat the Roman law properly. The following outline is according to Jones's method. A short summary of the Roman system is given at the end of the article.

1. *Depósitum*, is a mere delivery or simple deposit of a movable thing to be kept by the bailee for the bailor without remuneration. The obligation of the bailee is to return the thing upon demand. He is not liable for the loss or injury of the property deposited with him, unless he was guilty of dolus malus (fraud), or culpa lata (gross negligence). The general rule is, that a man must keep deposited goods as he keeps his own; and, if he does so, he is not answerable for loss or damage, however careless he may be in his general habits. 'If,' says Lord Holt (Coggs *v.* Barnard), 'the bailee be an idle, careless, drunken fellow, and comes home drunk, and leaves all his doors open, by reason whereof the goods deposited are stolen, together with his own, he shall not be charged, because it is the bailor's own folly to trust such an idle fellow.' A person with whom a thing is deposited does not thereby acquire any right to use it. His agreement is to keep and preserve the thing without any advantage of any kind. Some things which are called deposits are in fact loans, and may be used. If a man deposits with his banker a sealed bag of gold, he may demand back that bag of gold: but if he gives the banker coin not sealed up, or bank notes, or checks, or a bill of exchange duly endorsed, this transaction, though it may be called a deposit, is a loan; and the banker may use the money.

2. *Mandátum* (the mandate of the Scotch law) means an agreement on the part of one man with another, to do some legal act for another, without any remuneration. The person who gives the commission is called mandans; he who receives the commission is the mandatarius. The acceptance of the commission implies an undertaking to do so much towards the execution of it as a man would do if he were performing his own work: gross negligence or breach of faith are the only grounds upon which a mandatary can be charged with a loss.

The Roman law as to mandatum partly corresponds to that branch of the law of England which comes under the title of AGENT.

3. *Commodátum* is a loan of a movable thing, to be used by the person to whom it is lent. If a chair, a book, or any other article is lent for the accommodation of the borrower, he is bound to re-deliver it in as good condition as it was in when delivered to him, subject only to the deterioration produced by the ordinary and reasonable use of it for the purposes of the loan. The borrower is answerable for the slightest neglect; it is not sufficient to exonerate him from responsibility for the loss or injury of the article borrowed, that he has taken as much care of it as of his own property; it is his duty to apply the utmost care of a vigilant man. If a man places a borrowed horse in a ruinous stable, and a violent tempest blows down the stable and kills the horse, he must bear the loss; if the stable was in good repair, and fell from the violence of the tempest only, he would not be liable. If things be stolen from the borrower, he must indemnify the owner, unless he has observed the greatest care, and used all proper precaution to prevent the

occurrence. If a horse is taken from the borrower's stable, which is properly secured, the borrower is not answerable for the loss. If the stable door is not locked, the borrower is answerable for the loss. The borrower is also liable for any loss or damage to the thing, which happens from any cause, while he is using it, contrary to the terms of the loan. If a man who borrows a horse for the purpose of riding on it to one place, goes on some other journey, he is liable for any loss or damage to the horse that may happen in any way.

4. *Vádium*, is a delivery of goods in pledge or pawn as security for some debt or engagement; but this is properly discussed under PLEDGE.

5. *Locátum*, is the hiring of an article, with a payment or remuneration made either by the bailee for the use of it, or by the bailor for work and services to be performed by the bailee upon the article delivered to him. 1, There may be bailment of goods to be used by the hirer for a compensation to be paid by him to the owner; or 2, a delivery of goods for the purpose of having work done upon them, or of being safely kept for the owner, and in each case for a payment to be given or made to the bailee by the owner; or a delivery of goods to be carried for hire from one place to another.

As to the first of these divisions, the hirer of goods for a payment to the owner is bound to keep them with that degree of care which a careful man uses in keeping his own goods. If, therefore, I hire a horse, I am bound to treat it with the same care as a man of common prudence would apply to his own horse; if I place it in a stable and leave the door open, and it is stolen, I must indemnify the owner; but I am not answerable if it is taken from me by robbers, unless, by riding at unseasonable hours, and travelling by unusual roads, I have imprudently placed myself in danger. If I hire a house, lodging, or carriage, I must take the same care of them, and of the conduct of my servants and family respecting them, as all prudent and discreet men would do of their own property.

The second kind of bailment comprises the case of manufacturers and artizans, who have materials delivered to them to work up; and also the case of innkeepers, carriers, factors, wharfingers, and warehousemen. But innkeepers, factors, and carriers, are subject to various liabilities by acts of parliament and ancient customs. [CARRIER; FACTOR; INN.] Generally speaking, all bailees of this description are bound to take *ordinary* care of the things respectively bailed to them. With respect to manufacturers or artizans, they are not only bound to keep with ordinary care the goods deposited with them to be worked upon; but they must also apply a degree of skill equal to the performance of the particular kind of work respectively committed to them. If a man delivers cloth to a tailor to make it into a coat, and if, for want of having the ordinary skill of his trade, he cuts it so as to spoil the cloth, he must make good the loss. With respect to agisters of cattle, wharfingers, and warehousemen, they are all responsible for want of good faith, and of reasonable and ordinary care and diligence, and not to any greater extent unless under peculiar circumstances.

(Sir William Jones's *Essay on the Law of Bailments;* Bacon's *Abridgment*, title *Bailment;* Pothier's *Traités des Contracts, &c.;* and Kent's *Commentaries on American Law.*)

The contract of Mandatum and Locatio et Conductio are in the Roman system two of the four contracts, which are now usually termed Consensual Contracts. The other two are buying and selling, and partnership (societas). In the Roman system, Commodatum and Depositum are two of the contracts, now usually called Nominate: the third nominate contract is Mutuum, or a loan of things which are estimated by number, weight, and measure, and which are not returned in specie, but in genere. Pawn or Pledge (Pignus, Hypotheca,) is treated separately in the Roman system; there may be pledge with delivery of a thing or without delivery. From this it will appear that the English law, which affects to bring under the head of Bailment a considerable number of Roman rules of law, is, in the general, a clumsy and inexact exhibition of that which it professes to imitate; and, in the particular, it is often characterized by a want of precision, where the Roman original is precise. (Thibaut, 'System des Pandekten Rechts,' i. § 329, &c., § 436, &c., § 475, &c.)

BAILY, FRANCIS, was born April 28, 1774, at Newbury in Berkshire. His father was a banker at that place.

It is the peculiar part of Mr. Baily's history, that while actively engaged in business, as a stock-broker, in which he accumulated a large fortune, he gained a first-rate reputation in one species of mathematical application, and laid the foundation of another, to be completed after his retirement from the Stock Exchange at the age of fifty-one. He had a good working knowledge of mathematics, in all the elementary branches, and an extensive acquaintance with English writers on the subject. He first published his 'Tables for the Purchasing and Renewing of Leases' (1802, 1807, 1812, 8vo.); next, the 'Doctrine of Interest and Annuities,' (1808; 4to.); then the 'Doctrine of Life Annuities and Assurances' (1810, 8vo.); lastly, 'Appendix to the Doctrine of Life Annuities and Assurances' (1813, 8vo.); also, 'An Account of the several Life Assurance Companies' (1810, 1811, 8vo.), which is an extract from the work on Life Assurance. If the writer had published nothing but the writings already enumerated, he might still have been cited as a remarkable instance of active and useful exertion during the hours of relaxation from a laborious occupation.

He retired from business in 1825. From this time till his death, he was engaged with all the energy of his character in the promotion of astronomy. Between the ages of fifty-one and seventy, when most men in his circumstances would have been enjoying the leisure to which commercial men above all others are apt to look forward, he did the work of a lifetime. He was (in 1820) one of the founders of the Astronomical Society,

and his attention to its affairs was as constant and minute as if it had been a firm of which he was the chief clerk. He was one of those who exerted themselves to produce a reformation and enlargement of the Nautical Almanack, and whose efforts did at last prevail upon the government to place it upon its present distinguished footing. In pendulum experiments [PENDULUM] he was among the foremost of those who investigated the newly observed effects of the air upon the instrument. Of the repetition of the Cavendish experiment we shall have to speak elsewhere. [WEIGHT OF THE EARTH.] The Astronomical Society's catalogue of stars was the suggestion of Mr. Baily and Mr. Gompertz, and was superintended by Mr. Baily. The remarkable circumstances attending the publication of Mr. Baily's 'Life of Flamsteed' are detailed in another place. [FLAMSTEED.] He put the finishing hand to his revision of ancient catalogues in the 13th volume of the 'Memoirs of the Astronomical Society' which is entirely his own work, and printed at his own expense. He suggested to the British Association the republication of the immense catalogue of Lalande, called the 'Histoire Céleste,' combined with that of Lacaille; the two together containing fifty-seven thousand stars. He suggested to the same body the extension of the Astronomical Society's catalogue to ten thousand stars, accompanied by the coefficients of reduction. He superintended the construction of these tables and a portion of the printing, and he left the preface to the latter completely written. All these catalogues are now published; the Lalande and Lacaille very recently. He had also undertaken the construction of the new standard scale, wanted by the government in consequence of the destruction of the old one. This is a brief account of Mr. Baily's principal works; a minute account of all his writings is given in a Memoir by Sir John Herschel, read to the Astronomical Society in 1844.

Mr. Baily died August 30, 1844. His last public appearance was at Oxford, on the 2nd of July, to which place he went, with some difficulty, to receive the honorary degree of Doctor of Civil Law. He was never married.

There is an admirable article on the life and writings of Mr. Baily in the 'Supplement to the Penny Cyclopædia.' We regret that our limits will not allow its insertion at length. It thus concludes: 'It is no exaggeration to say that he did, in the last twenty years of his life, much more and better work than younger men of much greater original power have done in twice the time. And, besides this, his admirable personal qualities, which made it so easy to co-operate with him, led to his being able to make others do more than they could have done without him. His high moral worth added to his power; and all these together made him the most influential member of the astronomical world. He had, we suspect, a strong love of fame, though perfectly free from vanity; but the same judgment which marked his selection of other things appeared in his choice of means to secure a lasting reputation. That he has won it, is certain: the history of the astronomy of the 19th century will be incomplete without an account of his labours. Those who are well acquainted with Delambre's history of the science will easily imagine how much that severe judge would have abated of his rigour, had there came before him such models of patient thought, all but impeccable accuracy, careful research, and well-chosen objects, as the writings of Francis Baily.'

BAINBRIDGE, or BAMBRIDGE, CHRISTOPHER, Archbishop of York, received his education at Queen's College, Oxford. In 1507 he was advanced to the see of Durham, and was translated the next year to the archbishopric of York. Bainbridge distinguished himself chiefly by his embassy from King Henry VIII. to Pope Julius II., who created him cardinal of St. Praxede, in March 1511. His letter to King Henry VIII., concerning the pope's bull giving him the title of most Christian King, is extant in Rymer's 'Fœdera' (edit. 1704–1735, vol. xiii. p. 376). This prelate died at Rome, from poison, July 14, 1514. Rinaldo da Modena, a priest whom the cardinal employed, after confessing that he was suborned to this act by Sylvester de Giglis, Bishop of Worcester, who was at that time envoy from King Henry VIII. to Rome, committed suicide.

BAINBRIDGE, JOHN, an astronomer of merit, was born in 1582 at Ashby-de-la-Zouch, and died in 1643 at Oxford. He was the first Savilian professor of astronomy in that university. He was also a Doctor of Medicine, and a good oriental scholar, having studied Arabic for the purpose of reading the astronomers who have written in that language.

(Martin's *Biographia Philosophica;* Hutton's *Dictionary.*)

BAINS. [PYRENE'ES ORIENTALES; VOSGES.]

BAIRAM is the designation of the only two festivals annually celebrated by the Turks and other Mohammedan nations. The first is also called *Id-al-Fitr*, 'the Festival of the Interruption,' alluding to the breaking of the universal fast which is rigorously observed during the month Ramadhan or Ramazan. It commences from the moment when the new moon of the month Shewal becomes visible, the appearance of which, as marking the termination of four weeks of abstinence and restraint, is looked for and watched with great eagerness. The second festival, denominated *Id-al-Aṭhá*, or *Kurbán Bairám*, 'the Festival of the Sacrifices,' is instituted in commemoration of Abraham offering his son Isaac, and is celebrated seventy days after the former, on the 10th of Zulhijjah, the day appointed for slaying the victims by the pilgrims at Mecca. It lasts four days. At Constantinople the two Bairâms are celebrated with much pomp.

BAIRD, SIR DAVID, Bart., General in the British army, and K.C.B., was born on the 6th December, 1757, at Newbyth, in Scotland. He entered the service at fifteen years of age, as an ensign in the 2nd regiment of foot, and obtained a company, in 1778, in the 73rd Highland regiment.

In 1779 Captain Baird accompanied his regi-

ment to India, and was present at the disastrous affair of Perambaucum, on the 10th September of the next year, when a handful of British troops, after a most gallant defence, were perfidiously slaughtered by the army of Hyder Ali. Captain Baird was here wounded and taken prisoner.

After his release from prison Baird visited England, and returned to India in 1791 with the rank of lieutenant-colonel. During his stay he quarrelled with the British authorities respecting their conduct in the affairs of the Raja of Tanjore, and he left India in disgust on the 17th October, 1797, for the Cape of Good Hope, but returned soon after with the rank of brigadier-general, and was engaged in active service under General Harris in the war which again broke out between the British government and the Sultan of Mysore, Tippoo, the son of Hyder Ali.

After various successes the British army encamped under the walls of Seringapatam, a fortress of great strength, and defended by a numerous and confident army. General Harris determined to take it by storm; and the conduct of the dangerous enterprize was, at his own solicitation, intrusted to Major-General Baird. The arrangements for storming were completed on the 4th May, 1799, and one o'clock of that day was fixed upon for the assault. It was successful, and Baird took possession of the palace of Tippoo, who was among the slain, as his head-quarters, and assumed the governorship of the town he had captured; but he was next day abruptly commanded to deliver up the keys of the town to Colonel Wellesley, who, as it happened, had no active share in the capture.

The storming of Seringapatam was the great achievement of Sir David Baird's military life. He received the thanks of Parliament and the East India Company for his brilliant conduct at Seringapatam, and declined a pension from the Company, in the hope of being rewarded by a red riband from the king, but he was disappointed.

In 1801 General Baird was sent from India to co-operate with the British troops in Egypt against the French. He landed at Kosseir, on the west coast of the Red Sea, and marched by the usual route to Kenneh, on the Nile, and he arrived at Rosetta August 30, 1801, where he received a letter from General Hutchinson, announcing that the French had sent a flag of truce to treat for the surrender of Alexandria. General Baird returned to India through the Red Sea, and landed at Calcutta July 31, 1802.

On his return to India he was removed to the staff of the establishment at Fort St. George, Madras, at his own request. He was afterwards engaged in the hostilities against Sindia. During this campaign, considering himself neglected and thwarted, and having in vain remonstrated with the government of Madras, he applied for leave of absence, which being granted, he relinquished his command, and returned to Europe.

In 1805 General Baird commanded an expedition directed against the Dutch settlements at the Cape of Good Hope; he took Cape Town, and was proceeding to organize his conquest when he was recalled for having sanctioned an ill-judged expedition of Sir Home Popham against one of the possessions of Spain in South America.

In 1807 he accompanied Lord Cathcart in the expedition of that year against Denmark. In 1808 Baird commanded a large force that was sent out to co-operate with Sir John Moore, then commander-in-chief of the British forces in the Peninsula. On the death of that able commander, General Baird, as second in command, became commander-in-chief, and the despatch relating to the battle was accordingly written in his name. He was however too severely wounded to take advantage of the accidental promotion, even had circumstances been otherwise favourable; for he received some grape-shot in the left arm, which so shattered the bone of the arm and shoulder, that amputation from the socket became necessary. On his return, he received the thanks of Parliament for his gallant conduct, was gratified with the long-sought-for red riband, and created a baronet.

In 1810 Sir David Baird married Miss Campbell Preston, of Perthshire, with whom he received considerable estates in that county. In 1820 he was appointed commander-in-chief in Ireland, but was removed from his command in 1821, when the Marquess Wellesley became Lord Lieutenant. From this period, till his death in 1829, he lived in retirement.

(*Life of General Sir David Baird, &c.*; Mill's *British India*; Napier's *History of the Peninsular War.*)

BAIREUTH, or BAYREUTH, the name of a circle in the north-eastern part of Bavaria, in the province of Upper Main. The circle of Baireuth is a hilly country, owing to the numerous arms which the Fichtel-Gebirge throws out in all directions, but it has excellent pastures, and raises much grain and fruit. It is 109 square miles in extent, and contains about 23,000 inhabitants.

BAIREUTH, the capital of the province of Baireuth, is pleasantly situated on the Red Main, about 115 miles N. of Munich, in 49° 57′ N. lat., 11° 40′ E. long. Population 13,000. Baireuth is an open, cheerful, well-built place. It has six gates: the streets are broad, regular, and well-paved; and it is embellished with gardens, groves, promenades, and public fountains. The most remarkable buildings are—the Sophienburg, formerly the margravial residence, and its church with an octangular tower of freestone; the new palace; the theatre, which is one of the largest in Germany; the barracks; the mint; and hunting establishments, now converted into schools, in the same way as the orphan-house has been appropriated as a gymnasium; the town-hall; and the market-place, in which are three handsome fountains. Besides the palace-church and the gothic church of St. Mary Magdalen, erected in 1446, there are six other churches and a synagogue in the town. Baireuth is the centre of administration for the province. There are tan-yards, manufactories for making tobacco-pipes, parchment, linen, porcelain and earthenware, cottons, and stockings; and the inhabitants carry on consider-

able trade in grain and flour. A road, bordered with trees, and about half a mile in length, leads to the suburb of 'St. Georgam See,' on the Red Main, opposite to Baireuth. About 3 miles distant are the beautiful park, temple, gardens, and waterworks of Eremitage, the retreat of the former Margraves of Baireuth. Six miles beyond it lies Sanspareil, a royal country-seat.

BAIROUT. [Beirout.]

BAJA. [Bacs.]

BAJAZET. [Bayazid.]

BAKER, SIR RICHARD, the author of the 'Chronicle of the Kings of England,' known by his name, was born about the year 1568. He was descended from Sir John Baker, who filled the office of Chancellor of the Exchequer to Henry VIII.; was educated at the University of Oxford; knighted in 1603; and married and settled in Oxfordshire before the year 1620. Having got into pecuniary difficulties, as it should seem, soon after his marriage, he was thrown into the Fleet Prison, where he spent the remaining years of his life, and died in the year 1644-5, in a state of extreme poverty. It was during his imprisonment, and as a means of subsistence, that he wrote his 'Chronicle,' and various other works, chiefly devotional; a circumstance which should, perhaps, induce us to judge leniently of their imperfections.

BAKER, DAVID, an English Benedictine monk and ecclesiastical historian, was born at Abergavenny, 1575. He received his early education at Christ's Hospital, in London, whence, in 1590, he went to Oxford, where he became a commoner of Broadgate Hall, now Pembroke College. Here he is recorded by Anthony à Wood to have fallen into vicious and disorderly habits, and subsequently became a professed infidel. A miraculous escape from drowning recalled him to a sense of religion, and made him ultimately desirous, in some way, to enter its service. After much meditation, he became convinced there was no safety but in the Roman Catholic Church; and, taking a journey to London, he fell in with some Benedictine fathers of the Cassine congregation, with one of whom he shortly after repaired to Italy. Arriving at Padua, he was received and admitted to the habit of religion by the abbot of Justina, in 1605, about which time he changed his name from David to Augustine Baker. After the death of his father, he resided in this country for some years, professing his religion as openly as could be done with safety. He then retired for a time to Douay, and was afterwards spiritual director of the convent of English Benedictine nuns at Cambray. The latter years of his life were employed in searching after and transcribing the records of the ancient congregation of the black or Benedictine monks in England; and his religious treatises, though none were ever published, filled nine folio volumes of manuscript. Baker died in Gray's Inn Lane, in 1641. (Wood's *Athenæ Oxon.* edit. Bliss, vol. iii.)

BAKER, THOMAS, the Cambridge antiquary, was born at Crooke, near Durham, in 1656. His father was George Baker, son of Sir George Baker, recorder of Newcastle. He was educated in the free school at Durham, and afterwards sent, with his elder brother George, to Cambridge, where he became a pensioner at St. John's College, in 1674, and was elected fellow of his college in 1679. He entered into orders in 1685, and in June 1687 was collated by Lord Crew, then bishop of Durham, to the rectory of Long Newton, in that diocese, which he cheerfully resigned in 1690, upon refusing to take the oaths to King William. He now retired to his fellowship at St. John's, in which he was protected till January 20th, 1717, when, again refusing to take the oaths to a new government, he was ejected from it, in company with several other learned men. Mr. Baker retained a lively sense of this deprivation, which he particularly expressed by writing in the blank leaves of all the books which he afterwards gave to the college, 'Tho. Baker Coll. Jo. Socius ejectus.' After his ejectment, he still kept his chambers in St. John's College, and resided there as common master during the remainder of his life. An annuity of 40*l.* a year was at first his only subsistence after the loss of his fellowship. Mr. Baker died July 2, 1740.

His manuscript collections relative to the history and antiquities of the University of Cambridge formed the great labour of his life, and chiefly entitle him to a notice here. They amount to thirty-nine volumes in folio, and three in quarto, closely written, and are divided between the British Museum and the Public Library at Cambridge.

(*Biographia Britannica.*)

BAKER, HENRY, whose name is familiar to those who are interested in microscopic observations, was the son of William Baker, a clerk in chancery: he was born in 1698, in London. His early life was employed as a teacher of the deaf and dumb. In 1729 he married the daughter of the celebrated Daniel Defoe, and in 1740 was elected first a fellow of the Society of Antiquaries, and soon after a fellow of the Royal Society. He now gave proof of his talent for accurately observing objects of natural history, a taste for which he showed at a very early period of his life; and, about two years after his election, he published the first edition of 'The Microscope made Easy,' which was followed by his 'Employment for the Microscope.' In 1744 he received the Copley Medal of the Royal Society, for his microscopical experiments on the crystallizations and configurations of saline particles. He died in 1774.

BAKEWELL. [Derbyshire.]

BAKEWELL, ROBERT, a celebrated agriculturist and improver of live-stock. He was born, about the year 1725, at Dishley, in Leicestershire, and died there in the year 1795. Though it does not appear that he contributed anything to literature, even on the subjects to which he devoted his life, his efforts, particularly to improve the breed of sheep, procured for him a widely extended reputation: the cross-breed which he introduced is designated by the name of the Dishley or New Leicestershire breed. He is to be distinguished from a Mr. Robert Bakewell, who, in 1808, published 'Observations on Wool,' with notes by Lord Somerville.

BAKTCHISSARAI, a Tartar town in the Crimea, of which it was formerly the capital, now included in the circle of Simferopol, which forms part of the Russian government of Taurida. It is situated in 44° 59′ N. lat., and 33° 54′ E. long., in a long deep valley, between two mountains, and is built in an irregular manner upon each side of the sloping ground which descends to the Tshuruk-Su, a rivulet that flows into the Katcha. The main street is about 2 miles in length, and in this the principal buildings are situate. The other streets are mere lanes, dirty, crooked, and ill-built. The most attractive features of Baktchissarai are its numerous fountains, mosques, medressi (or schools), baths, and the magnificent khan-serai, or palace of the Crimean khans, whose residence it formerly was. The Greeks, Armenians, and Jews have several churches or synagogues in the town; there are sixteen khans for the residence of strangers, or deposit of merchandize, six of which are of freestone, and of spacious dimensions. Including seventeen coffee-houses, the number of houses of public entertainment is thirty-eight, of shops there are about five hundred. The manufactures of the town consist of Morocco-leather, saddlery, 'bouza,' a spirit distilled from millet, silks, knives, woollens, gold and silver plate, pottery, arms, tobacco pipes, &c. The population amounts to 12,700, of whom about 2000 are Greeks, Jews, or Armenians.

BA'KHTEGAN is the name of a salt lake in the province of Fars, or Persia Proper. It is now called Deryâ-i-Nîrîz, or the Lake of Nîrîz, from the principal town in its vicinity. It is 42 miles long, 24½ broad, and 122½ in circumference. The river Kur or Bundemir falls into it. During summer the lake, although it has no outlet, is nearly dry, and its bottom becomes encrusted with salt.

BAKING. [Bread; Pottery.]

BAKU. The territory of this name, which is confined to the peninsula of Abosheron or Abshora, lies on the west side of the Caspian Sea. Besides the town of Baku, it contains thirty-five villages, and, including the town, 19,000 inhabitants, among whom Klaproth states that there are 1000 Turcoman families. Gamba asserts that there is no spot in this part of the globe more favourably situated for traffic with the east than Baku, the capital. The surface of the territory is generally level; the soil is rocky and sterile, without one attractive spot in its whole extent, and without any water but what is drawn from wells, and this has a salt disagreeable flavour. Not a tree exists upon it; but portions of the territory have a layer of mould on which wheat, barley, and maize, melons, fruits, rice, and cotton, and, on the highest ground, saffron, are raised. In some parts opium is prepared from poppy-heads; and a species of red and highly savoury onion, which is not found elsewhere, is cultivated under cover.

The peninsula is celebrated for its numerous volcanoes, which discharge volumes of mud; but still more for the superabundance of naphtha with which its soil is charged, particularly in the neighbourhood of the capital. It not only issues spontaneously through the surface, but rises wherever a hole is bored. It is of two descriptions, black and white; and its principal sources are situated at a spot called Balegan, about 6 miles from Baku. The whole of these naphtha springs belong to the government, and are farmed at a rental of about 9000*l*. Travellers describe the Asjur-Meisjan, or burning field, near Baku; it is a hollow expanse full of fissures, and coated with white sand and grey dust, in which particles of sulphur abound. Some fissures are seen burning, some smoking, and others sending forth naphtha vapours. There is a boiling lake also, not far from the town, which is in constant motion, and emits a flame said to be altogether devoid of heat.

In ancient times, the burning field was one of the most celebrated Ateeshyahs, or shrines of grace, among the Ghebers or Parsees; it was a spot to which thousands of fire-worshippers resorted. A few adherents of this sect, who are thinly scattered over the south of Persia, the Malabar coast, and the banks of the Ganges, find their way from time to time to the Ateeshyah of Baku, which lies about 10 miles from the town, and pass five, seven, or ten years on the spot. Gamba describes the place as a walled quadrangle, with an altar raised in the centre. At each of the four corners stands a chimney, 25 feet in height, from which issues a flame 3 feet in length. The walls of the sanctuary are surrounded by 20 cells or more, where the priests and Ghebers reside.

The town of Baku stands in 40° 22′ N. lat., 49° 40′ E. long., at the southern extremity of the peninsula of Abosheron, where the Caspian is land-locked by two islands, which render the roadstead a safe anchorage even close upon the shore. The town is walled, and built upon a declivity, the summit of which is crowned by the palace of the former shahs. The streets are narrow and tortuous; and the houses ill-constructed and of small dimensions, with flat roofs coated with naphtha as a substitute for lead. An ancient and lofty tower, which goes by the name of the Virgin's Tower, is the most striking object in the place. Baku possesses several spacious mosques, public squares, and caravansarays, besides a Greek and an Armenian church, and some Tartar schools. Its inhabitants are 4000 in number; and its principal exports consist of naphtha, saffron, cotton, silk, opium, rice, and salt.

BALA. [Merionethshire.]

BALA LAKE. [Merionethshire.]

BALA LIMESTONE, one of the most interesting of the calcareous deposits which have been examined by Professor Sedgwick in the midst of the schistose rocks of North Wales. There are two bands of this rock, exhibited on the west of the Berwyn mountains and on the east of Bala Lake. Two miles north-east of Bala, the limestone, and the schistose rocks in which it lies, may be well seen, and numerous fossils may be gathered at this place and at many other places in the vicinity of Bala, on both sides of the lake. Professor Sedgwick has satisfied geologists of the true position of these rocks with reference to the slates of the Berwyn range, and the flags and slates of

Llangollen. The series is in two parts, thus :—*Upper part*—Flags and schistose beds of Llangollen, with upper Silurian fossils. *Lower part*—Schistose beds with *limestone bands*, the lowest of which occur at Bala, and yield lower Silurian fossils. The Bala and Llandeilo limestones are thus nearly coeval.

BALACHNA, or BALAKNA, a circle in the province of Nischnei-Novgorod, in the eastern part of Great Russia. Its surface is hilly and irregular, and the thickly wooded acclivities of the Balakna-Gora range bound it on the left bank of the Volga. The land is highly cultivated even to the very edge of the woods, and the plains produce flax, hemp, and corn, as well as afford pasturage for considerable numbers of cattle. Its population is about 100,000. The chief town of this circle, which bears the same name, is situated on the right bank of the Volga, about 20 miles N.W. of Nischnei-Novgorod. It is slightly fortified, and contains 15 churches, a monastery, and a population of about 4500 individuals, who carry on a brisk traffic in grain, linens, and other manufactures, and construct barks for the navigation of the Volga. There are salt springs near the town.

BALACLA'VA is a port on the S.W. coast of the Crimea, on a small bay of the Black Sea, in the Russian province of Taurida. It has a harbour, capable of receiving ten or twelve sail of the line, but with so narrow an entrance that not more than one vessel can enter it at a time. The ruins of an old fortress built on an almost inaccessible height by the Genoese, who formerly held the town, overlook the harbour's mouth to the east of the town. In the plain below are the ruins of churches and mosques, which indicate the former opulence of the port. The streets are narrow, and paved with the limestone which enters so largely into the composition of the adjacent hills. Balaclava has at present only one church, and its inhabitants subsist principally by the traffic they carry on with other towns in the Crimea: 44° 50′ N. lat., 33° 36′ E. long.

BALÆ'NA (from the Greek Φάλαινα), the Latin name of the common or Greenland whale, and adopted by naturalists as a generic term, to comprehend all the other species which agree with it in their zoological characters. [WHALES.]

BALÆNO'PTERA. This term was invented by De Lacépède, to denote those whales which are distinguished by having an adipose fin on the back, whence they are called finners by sailors, and which he proposed to separate from the other balænæ for the purpose of forming them into a distinct genus. The character, however, upon which he proposed to make this separation is utterly void of importance, and exercises no assignable influence upon the habits and economy of animal life. His division is consequently vicious, and cannot be admitted into a natural or philosophical system of mammalogy, at least for any other purpose than as a matter of simple convenience. The word itself is compounded of the terms balæna, 'a whale,' and πτέρον, 'a wing' or 'fin.'

BALAGHAUTS, the name given to an extensive and fertile district of Hindustan, and which is so called in consequence of its being situated *above the Ghauts*. [HINDUSTAN.] The term Balaghauts, in its usual acceptation, is restricted to the territories acquired by the government of the East India Company under a treaty with the Nizam, concluded in October 1800. This district, which is included in the presidency of Madras, has since been divided into the two collectorates of Bellary and Cuddapah. Its northern boundary is well defined by the Krishna and Toombuddra rivers; the southern portion consists of valleys lying between the eastern ghauts at Gurrumcondah, in 13° 46′ N. lat., and 78° 34′ E. long., and extending to Sera, in the Mysore territory, in 13° 44′ N. lat., 76° 58′ E. long. With the exception of the two rivers which form their northern boundary, these collectorates, owing to their elevated position, do not contain any large streams. They are consequently subject to frequent droughts.

The soil of the Balaghauts is in general good. The productions of the country, beyond the food required for the population, consist principally of indigo, sugar, and cotton. Cattle, sheep, and goats are reared in great numbers. The central and eastern divisions contain several diamond mines; and it is from these, and not from mines in their own district, that the diamond merchants of Golconda have been supplied.

The population of the district is about 2,000,000, most of whom are Hindoos, but with a considerable number of Mohammedans among the population of Adoni Bellary, Cuddapah, and Curnoul, which are the chief towns in the district.

(Rennell's *Memoir of a Map of Hindustan*; Mill's *History of British India*; *Reports of the Committees of the House of Commons on the Affairs of India*.)

BALANCE, a corruption, probably, of the middle Latin word *valentia*, used to denote price or value; whence came *valance*, mentioned by Ducange, who considers the word *Balanx*, or *Bilanx*, to be a re-construction from the common idiom. The word *ballancia* is found in the 13th century. From meaning the worth or value, it came to signify any instrument used for ascertaining it, but particularly when weight was the quality referred to. Hence came the general meaning of the term, in which it, stands for any state of things under which opposing circumstances just destroy the effects of each other; as when we speak of a balance of power, of good and evil, &c. Hence also the commercial meaning, in which the balance is not the state just mentioned, but the sum of money which must be added to one or the other side of an account, in order that the debts and credits may be *balanced*, or of equal amount. As an instrument of common use, the term *Scales* is more frequently applied. [See also LEVER; STEELYARD, and WEIGHING-MACHINE.]

The instrument most commonly known by the term balance is a superior sort of scales, executed with all the precision necessary for the nicest operations of physics, and particularly of chemistry. We shall therefore confine ourselves to state the circumstances which are necessary to a good performance of the philosophical balance.

A simple straight lever, balanced by weights resting immediately upon it, or suspended from it by strings, in such a manner that the common centre of gravity of the weights and lever may fall exactly on the fulcrum, or point of support, will remain at rest in any position; and the same may be said if the weights are so disposed that the centre of gravity of the whole is always in a vertical line passing through the fulcrum. This condition is obtained when the weights, being suspended by strings from points in a straight line resting on a fulcrum, all the strings (on the line being turned in a vertical plane on the fulcrum) approach to or recede from a vertical line passing through the fulcrum, at the same time and in the same proportions.

A balance should be so sensible that, when equipoised, a very small additional weight in either scale may overcome the friction and adherence of the pivot by which it rests; and the diminution of friction to the utmost possible extent is accomplished by giving the supports a high polish and attaching a knife-edge pivot to each side of the beam. The knife-edges must not be so sharp as to cut the supports; and, to prevent them from becoming too blunt, they are in some balances removed from the supports, when the instruments are not in use, by an apparatus for the purpose.

A balance should have what is called a *stable* equilibrium, that is, the beam when turned on its support from a horizontal position should immediately return and oscillate for a time about such position; and this is obtained by causing the centre of gravity of the beam and weights, when at rest, to be below the axis of support, and in a vertical line passing through that axis. The scales used in shops are in general sufficiently stable, but they are seldom very sensible.

The stability of a balance is estimated by the force with which the beam endeavours to recover a horizontal position after it has been made to deviate from it through some small angle, as one degree. By the nature of the lever that force consists of two terms: the first is the momentum of the sum of the weights of the two scales, with respect to the point of support (conceiving the masses of the scales to exist in the middle of a line joining the two points at which the scales are suspended from the beam), and the second is the momentum of the beam itself, with respect to the same point of support (conceiving the mass of the beam to exist in its centre of gravity). Therefore, if the beams of two balances are made to incline equally from horizontal positions, their relative stabilities will be directly proportional to the sums of these momenta; momentum being understood to signify, as usual, the product of the weight of the scales, or beam, by the distance of the point of support from the point in which the weight is supposed to exist.

The sensibility of a balance is estimated by the angular deviation of the beam from a horizontal position when a very small weight is placed in one scale: thus, if one grain placed in a scale of each of two balances should make the beam of the first incline two degrees, and that of the second four degrees, the latter balance would be twice as sensible as the former. Or the sensibility of a balance varies as the product of the length of an arm by the number (found as above), which represents its stability.

From what has been said it follows, first, that other things remaining the same, the longer the arm of a balance is, the greater is the sensibility; secondly, the arm having a given length, every increase of sensibility is a decrease of stability, and vice versâ; thirdly, additional weight, either to the scale or beam (the arm remaining the same), is favourable to stability, and unfavourable to sensibility; and, fourthly, whatever does not alter the length of the arm cannot be favourable to both.

Every balance has different degrees of sensibility and stability, with the different weights which are employed. But as, generally speaking, the quantities weighed in delicate balances are small, a balance which is highly sensible when no weight is in the scales, will be so for every weight with which it is intended to use it. A balance made by Ramsden for the Royal Society, weighing ten pounds altogether, turned with the ten-millionth of that quantity, or with about the thousandth part of a grain.

A balance should be made as much as possible of brass. Steel and iron are apt to acquire magnetic properties. It should also be inclosed in a glass case, with doors for communication, and, when not in use, a portion of muriate of lime, or any other strong absorbent of moisture, should be placed in the case. A needle, which points either exactly upwards or downwards when the beam is horizontal, is usually attached to the beam, and a graduated scale of degrees is attached to the framework of the instrument, in such manner that the needle may point to zero when it is vertical. By the scale also it may be ascertained, before the balance comes to rest, whether horizontal equilibrium has been obtained: for in that case the needle will describe equal arcs on the graduated scale on each side of the zero point; while, if either scale be overloaded, the needle will move through more degrees on the side of that scale than on the side of the other.

It is impossible in practice to make a perfect balance; but the following simple method, imagined by Borda, obviates the difficulty of making equal weights counterpoise each other, provided only the balance be sensible. Instead of weighing, say a portion of salt, against brass weights, weigh both the salt and the weights successively in the same scale against a third substance, as iron. It will then be of no consequence whether the weight of iron was equal to that of the salt or not; the weight of the salt and of the brass must be the same, because, under the same circumstances, the two counterpoise the same weight of iron.

(For more detail on this subject, see the treatises of Biot and Pouillet on *Physics*.)

BALANCE. [CHRONOMETER; WATCH.]

BALANCE OF POWER. The notion upon which this phrase is founded appears to be the following:—When a number of separate and sovereign states have grown up beside each other, they may be conceived to be evenly balanced, so

long as no single state is in a condition to interfere with the independence of any of the rest. But, as among such states there are generally a few leading powers, it is by these counterpoising each other that the balance is principally maintained, and the safety of the smaller states secured. In the ancient world, after the destruction of Carthage, there was no power strong enough to cope with Rome, and the countries that yet remained sovereign powers successively fell under her dominion.

So long as the power of one great state can be kept in check, or balanced by that of another, the independence of the smaller states is secured against both. Neither will be disposed to allow its rival to add to its power by the conquest of any of the minor states; consequently each state, whether great or small, has an interest and a motive to exert itself in the preservation of the balance.

Mr. Hume ('Essays,' part ii., Essay 7th) has shown that ancient politicians were well acquainted with the principle of the balance of power. 'In all the politics of Greece,' he observes, 'the anxiety with regard to the balance of power is apparent, and is expressly pointed out to us even by the ancient historians. Thucydides (lib. i.) represents the league which was formed against Athens, and which produced the Peloponnesian War, as entirely owing to this principle; and after the decline of Athens, when the Thebans and Lacedæmonians disputed for sovereignty, we find that the Athenians (as well as many other republics) always threw themselves into the lighter scale, and endeavoured to preserve the balance. They supported Thebes against Sparta till the great victory gained by Epaminondas at Leuctra; after which they immediately went over to the conquered—from generosity, as they pretended, but, in reality, from their jealousy of the conquerors.' 'Whoever,' he adds, 'will read Demosthenes' oration for the Megalopolitans, may see the utmost refinements on this principle that ever entered into the head of a Venetian or English speculatist.' He afterwards quotes a passage from Polybius (i. c. 83), in which that writer states that Hiero, king of Syracuse, though the ally of Rome, yet sent assistance to the Carthaginians, during the war of the auxiliaries, 'esteeming it requisite, both in order to retain his dominions in Sicily, and to preserve the Roman friendship, that Carthage should be safe; lest by its fall the remaining power should be able, without contest or opposition, to execute every purpose and undertaking. And here he acted with great wisdom and prudence; for that is never on any account to be overlooked; nor ought such a force ever to be thrown into one land as to incapacitate the neighbouring states from defending their rights against it.' 'Here,' remarks Mr. Hume, 'is the aim of modern politics pointed out in express terms.'

The systematic observance of the principle of the balance, subsequently to the subversion of the Roman empire, may be first traced in the conduct of the several Italian republics. It appears clearly to have formed part of what may be called the public law of these rival states from about the commencement of the 15th century. From the commencement of the next century it became an active principle in the general policy of Europe.

The leading rule by which it has ever since then been attempted to maintain the balance of power, may be stated to be the opposing of every new arrangement which threatens either materially to augment, the strength of one of the greater powers, or to diminish that of another. Thus, first Austria, and afterwards France, have been the great objects of the jealousy and vigilance of the other states of Europe. While the power of the Germanic empire was united in the person of Charles V. to the kingdom of Spain, that prince was naturally regarded as formidable both by France and England. If he could have effected a permanent alliance with either of these powers, or could have even induced one of them to stand aside and acquiesce, there can be little doubt that he would have taken that occasion to attempt to crush the other. The vast possessions of Philip II. appeared to call for the same watchfulness and opposition, in regard to his projects, from all other states that valued their independence. In later times, the ambition of Louis XIV. of France, and the scheme concerted under his management to unite in one family the crowns of France and Spain, drew upon him the general hostility of Europe.

The maintenance of the principle of the balance of power, although it has no doubt given occasion to some wars, has probably prevented more. Its general recognition has, to a certain extent, united all the states of Europe into one great confederacy, and habituated each of the leading powers to the expectation of a most formidable resistance in case of its making any attempt to encroach upon its neighbours. It is no sufficient objection to say that such attempts have been actually made, and have sometimes succeeded. The fact is indisputable that the aggressions of powerful states are checked by that opinion which is the foundation of the notion of a balance or equilibrium among the political powers of Europe.

BALANCE OF TRADE. The balance of trade is the difference between the aggregate amount of a nation's exports and imports, or the balance of the particular account of the nation's trade with another nation. If the account shows that the imports (valued in money) exceed the exports (valued also in money), the balance is said to be against the nation; if the exports exceed the imports, the balance is said to be in the nation's favour. When the imports from any country, as valued in money, exceed the exports to the same, also valued in money, it is assumed that the exporting country must part with some of its precious metals in payment; and, according to the doctrine, must so far lose by the trade. But a nation, such for instance as our own, has not the means of keeping accounts of these matters. We have indeed an arbitrary standard of value called *official*, which has been in use for about a century and a half, and which *official value* is an ingenious device for perplexing many otherwise simple questions. Now, taking these

official or unreal values in connection with the notion of the balance of trade, we find that during the year 1843 the United Kingdom gained some forty-eight millions sterling by a favourable balance; for its imports, or the goods which it received from foreigners, amounted to sixty-five millions, whilst its exports, or the goods which it sent to foreigners, amounted to one hundred and thirteen millions, official valuation. In 1842, the same sort of excess amounted to fifty-two millions, and in 1841 to forty-nine millions. If the favourable balance of these three years were anything but a fiction, it is manifest that the nation would, in these three years only, have accumulated specie to the extent of the favourable balance, and this would amount to the sum of eighty-eight millions sterling. But, further, the same favourable balance has been going on for the last half-century, or longer; and the result would be, that all the specie in the world would at the present time be locked up in this island, and that the balance of forty-eight millions in 1843 would only be a small addition to the heap. Such a result is impossible, for bullion is as much a commodity for sale as corn, and is consequently as generally exchanged. No commerce is of any value to a country except as it supplies the people of that country with foreign productions, which they either cannot produce at home, or which are produced cheaper abroad. The exchanging of the surplus produce of one country for the surplus produce of another country is the object of all foreign commerce. The profit of the individual merchant is the moving force; the result is, that each country consumes what it would otherwise go without. Every country is a gainer by its foreign commerce; and, if this gain could be estimated by figures, every country which exchanges its products with another country would have a favourable balance of trade: for both individuals and nations exchange that which they do not want for other things that they do want; and, when both parties continue to carry on such exchange, it is clear that both are gainers.

Gold and silver are in one sense the most valuable products, because they have a universal value, and a nation which in its trade can get all that it wants, and gold too, will be richer than other nations. It will always have a great quantity of a material that is commercially more valuable than corn or manufactured articles. England has received a large part of its precious metal thus, in which it abounds above all countries; and this is invested in articles of use and ornament, and also gives employment to a vast mass of people, who receive for their wages a commodity of universal value. It also enables us to base our paper-money on the sound principle of convertibility for the precious metal.

BALANI'NUS, in Entomology, a genus of the order *Coleoptera*, and family *Curculionidæ*. The species of this genus are all remarkable in possessing a long slender rostrum, or snout, which is furnished at the tip with a minute pair of sharp horizontal jaws: this instrument is used by the animal in depositing its eggs, which are generally placed in the kernel of some fruit.

Balaninus nucum, or the nut-weevil, deposits its eggs in both the common nut and the filbert, having bored a hole for that purpose while the nut is young and tender. When about to perform this operation, the beetle may be seen travelling over the nut, and feeling with its antennæ for a convenient situation, in the selection of which it shows great care: the spot being chosen, it cuts a hole with the jaws at the top of the snout until it reaches the kernel; in this hole the egg is deposited, which in a short time is hatched, and becomes a maggot, or *larva*. The nut being but slightly injured continues to grow and ripen, while the larva feeds upon its kernel. In course of time, this larva gnaws a hole in the shell, through which it makes its escape, and immediately burrows into the ground, where it assumes the pupa state, from which, in the following summer, the perfect insect proceeds.

Balaninus glandium, another species of the same genus, attacks the acorn in the same manner as the one above-mentioned does the nut.

BALANOPHO'REÆ, a natural order of parasitical plants belonging to the class *Rhizantheæ*. They grow upon the roots of woody plants, in tropical countries, rooting into their wood, from which they draw their nutriment. Thirty species of these singular plants have been discovered, and doubtless there are many more. They have no perfectly formed leaves, but instead of them a number of closely packed fleshy scales around the stems and flowers.

BALA'NTIA, from *βαλάντιον*, a bag or pouch, the generic name which the German naturalist Illiger gave to the animals commonly called *Phalangers* (*Phalangista*): the latter name he reserves for the *Petaurists* (*Petaurus*) of other zoologists.

BA'LANUS, a genus of shelled marine animals, belonging to the class *Cirrhipoda* or *Cirripeda*, in which the Barnacles are included. [CIRRIPEDA.] Instead of hanging by a fleshy stalk, as do the Barnacles (*Lepas*), the animals of this genus are sessile. They offer a great variety of form; but the shell will be found to consist of several pieces, four of which are comparatively large, coalescing at the sides, and forming altogether a rude hollow cone, with a shelly base; the aperture is closed by an operculum of four valves, between the two foremost of which issue the jointed feather-like tentacles of the inclosed animal. This genus is widely diffused, and many species are of very large size. All are found strongly attached to other solid bodies, as rocks, stones, timber, shells, and the backs of crabs, lobsters, &c. The shells of muscles and oysters are often covered with Balani. Some live in the substance of sponges; and these constitute the genus *Acasta* of Leach, which is not admitted as legitimate by Mr. Sowerby. Among the more remarkable species of *Balanus*, may be noticed the *B. Psittacus*, from the southern coasts of South America. It is esteemed as a delicacy, equal or superior to the crab. (See 'Zool. Journal,' No. 19.) This species is very large, the conical case often measuring between five and six inches in length. It is generally clustered in large

bunches, the parent being covered by its progeny. Fossil *Balani* have been found in the later deposits, and species are recorded from the beds at Piacenza, Bordeaux, Paris, in Essex, &c. [CIRRIPEDA.]

BALARUC. [HERAULT.]

BALAS RUBY, a term used by lapidaries to designate the rose-red varieties of Spinel. It should be carefully distinguished from oriental ruby (the sapphire), a gem of much greater rarity and value.

BALASORE, a town in the province of Orissa and district of Cuttack, in 21° 30′ N. lat., 86° 56′ E. long., 110 miles S.W. from Calcutta, direct distance. The town is situated about ten miles from the mouth of a small river, in which the tide rises about eight feet. There is a bar at the entrance, over which vessels of 100 tons burden can pass at full tide. Balasore had a flourishing trade formerly, but is now comparatively ruinous. The population is probably not more than 2000 or 3000.

BA'LATON, LAKE, or the *Platten See*, a salt lake in the south-western part of Hungary. Its length from S.W. to N.E. is about 46 miles; in breadth it is extremely irregular, but the average is stated to be about 3½ miles. It lies between 46° 45′ and 47° 5′ N. lat., 17° 14′ and 18° 10′ E. long. The depth of this lake is very variable, but in general it ranges from 27 to 36 feet, the latter being its depth near Tihany; it occupies a surface of about 110 square miles, to which may be added an extent of about 88,170 acres of swamps and marshes, which its inundations render unfit for cultivation. It is supplied with fresh water by the Szala, which flows into it at its southern extremity, as well as by nine springs which rise on its margin, and thirty-one rivulets and brooks, independently of whatever quantities it receives from the sources which ascend from its bed. The outlet of the lake is through the Sio, near the town of Fok. Its northern sides are encircled by hills covered with woods and vineyards. The surrounding country is full of limestone, intermixed with red and yellow clay. The waters of the lake are in a state of constant motion, and not a day passes without their foaming and becoming so violently agitated as to drive in waves against its banks. The water is beautifully clear and transparent, excepting when it becomes boisterous or a storm is at hand, and then they assume a sombre blueish hue. The lake abounds in fish. There is an acidulous spring near Füred, on the banks of the lake, which has become a place of great resort.

BALBEC. [BAALBEC.]

BA'LBI, GASPARO, a Venetian merchant and traveller, who lived in the second part of the 16th century. He was a dealer in precious stones, and the business of his trade led him to Aleppo, whence he undertook a journey to India, which lasted several years. On his return to Venice he published an account of this journey, 'Viaggio all' Indie Orientali,' 8vo. Venice, 1590, which was reprinted in 1600. Balbi's narrative refers to an epoch when India was much less known than it is now, and was in a state very different from the present. The Portuguese were then almost the only European nation trading to India, and their establishments on the coasts were numerous and strong. Those Venetian merchants who ventured so far appear to have been on good terms with the Portuguese, and to have enjoyed security under their protection. Balbi wrote in an unpretending style, which bears marks of his candour as to what he himself saw, and also of his credulity with regard to matters which he knew only from hearsay. He is very minute and exact in every particular of mercantile information; but his statements are scanty with regard to the history and geography of the countries which he visited.

Balbi returned home by the way of Ormuz, Bassora, Bagdad, and Aleppo. He had left Aleppo in 1579, and proceeded to Bir, on the Euphrates, from which point his eastern travels commence. He visited various parts of India, and the kingdom of Pegu, and returned in 1588.

Balbi seems to have been the first traveller who gave an account of Trans-Gangetic India. Olearius, in his edition of Mandelslo's 'Travels,' gives an abridgment of Balbi's journey, as Mandelslo himself, who travelled in the East Indies about half a century later than Balbi, did not visit Pegu. A Latin translation of Balbi's narrative is in De Bry's *Collection of Voyages and Travels to the East Indies*, Frankfort, 1590-64. Prevost, in his *Histoire Générale des Voyages*, gives an account of Pegu from Sheldon, a later traveller, in which he quotes Balbi.

BALBI'NUS, DE'CIMUS CAE'LIUS, a Roman senator, after being twice consul, was elected emperor by the senate in opposition to the usurper Maximinus, who was supported by the legions in Germany. The two Gordiani, father and son, who had been proclaimed shortly before in Africa with the approbation of the senate, were killed by the soldiers of Capellianus, the governor of Mauritania, who had taken the part of Maximinus. [GORDIANUS.] Maximinus, hearing that the senate had outlawed him, was preparing to march from Illyricum into Italy. The senate in this emergency elected two emperors—Clodius Pupienus Maximus, an experienced officer, who had risen from a low station to the highest ranks, and Balbinus, a man of station and fortune. As the two emperors elect were proceeding to the Capitol, to sacrifice to the gods, the people and the soldiers stopped the way, demanding an emperor from the family of the Gordiani, who were popular favourites. A boy twelve years of age, the son of a daughter of the elder Gordianus, being found, was saluted Cæsar, by the name of Marcus Antonius Gordianus, afterwards known in history as the Third Gordianus. After the tumult was thus appeased, and the customary games in the Circus were given for the amusement of the Roman people, Maximus set off for North Italy to oppose Maximinus, and Balbinus remained at Rome. A serious tumult broke out in the city, which Balbinus was unable to suppress. As a last expedient, the senators exhibited to the multitude the boy Gordianus, who was clad in the imperial purple and lifted upon

the shoulders of a tall man. The veneration which both the people and the soldiers felt for the name of Gordianus produced the desired effect, and the tumult was appeased. Meantime Maximinus had laid siege to Aquileja, where he was killed by his own soldiers, who afterwards made their submission to Maximus. Maximus returned to Rome to enjoy a triumph for having ended the civil war, A.D. 241. The people of Rome were overwhelmed with joy, but the soldiers were dissatisfied, seeing their influence on the decline. A misunderstanding also appears at the same time to have existed between the two emperors. While most of the citizens had gone to witness the celebration of the Capitoline games, the prætorian soldiers sallied out to attack the palace of the emperors. Maximus, being informed of this, sent for his German guards, in whom he trusted; but Balbinus, through some suspicion of the designs of Maximus, opposed the order. The prætorians had thus time to force the entrance of the palace, when, rushing into the apartments, they seized both emperors, whom they dragged ignominiously towards their camp. Hearing that the Germans were coming at last, they killed their two prisoners, and left the bodies in the street. They then took the boy Gordianus to their camp, and proclaimed him emperor, and he was acknowledged by the people and the senate, A.D. 242. Balbinus and Maximus reigned little more than one year; during which time they had shown assiduity in their duties, attention to justice and public security, and respect for the laws. Maximus was characterized by firmness, tempered by moderation; and Balbinus for his affability and his elegant manners and taste. Balbinus was fond of luxury and refinement, and was also a lover of literature. His house, inhabited by his posterity, was still existing in the time of Diocletian. (Julius Capitolinus, 'Historia Augusta.') The reign of these two emperors is a sample of the social and political condition of Rome in the century which elapsed between the death of Commodus and the accession of Diocletian: thirty emperors, besides pretenders, followed each other in rapid succession; and only two died a natural death.

(Herodianus, vii. viii.; Crevier, *Histoire des Empereurs Romains;* Tillemont, *Histoire des Empereurs,* tom. iii.)

BALBO'A, VASCO NUÑEZ DE, was born in Jerez de los Caballeros, in Spanish Estremadura, about 1475. Vasco in his youth held some office in the house of Don Pedro Portocarrero, lord of Huelva; and in 1501 he accompanied Rodrigo de Bastidas in his voyage of discovery to the coast of Cumana. He revisited Spain, but in 1510 he was at Salvatierra, one of the settlements in St. Domingo, or Española, as it was then called. Here he joined Bachiller Enciso, who was taking out a reinforcement to the expedition of Alonso de Ojeda and Diego de Nicuesa, who had obtained a grant of the country from Cape de la Vela (12° 5′ N. lat., 72° 9′ W. long.) to Cape Gracias a Dios (15° N. lat., 83° 15′ W. long.). The expedition was on the whole unsuccessful, though it effected, with some loss, a landing near the site of the present Cartagéna, and formed a small settlement at San Sebastian, on the Gulf of Darien. The leaders quarrelled; Ojeda died; Nicuesa was sent as a prisoner to Spain, but was lost at sea during his passage; Enciso was superseded by Balboa, imprisoned, and only released on condition of leaving Darien. Throughout the expedition Balboa had distinguished himself by his courage and conduct, and having now acquired the supreme command, and also received the first information of Peru, applied for and obtained some assistance from Columbus. He then, in the beginning of September, 1513, embarked his men in one brig and some canoes, and sailed direct from Darien to Coiba, an island near the coast of Veragua, where he left the vessels, and proceeded into the interior. By his prudent policy he won several tribes of Indians, and after a painful journey of about a month he arrived, on the 29th of September, at a mountain from the summit of which the immense expanse of the Pacific Ocean burst upon his view. Affected at the sight, and falling upon his knees, he thanked the Almighty for having granted him the favour of discovering those immense regions. He then cut down a large tree, and, depriving it of its branches, erected a cross upon a heap of stones, and wrote the names of Fernando and Isabel on the trunks of several trees round about. Descending with his companions to the sea-shore, Balboa, in full armour, having in one hand his sword and the standard of Castile in the other, stood upon the sand until, the tide ascending, the water reached his knees. He then said in a loud voice, 'Long live the high and powerful king and queen of Castile. In their names I take possession of these seas and regions; and if any other prince, either Christian or Pagan, should pretend to have any claim or right to them, I am ready to oppose him, and to defend the right of their lawful possessors.' A notary then registered this act, by which the Spaniards considered themselves to be the lawful possessors of all that country. To that part of the sea they gave the name of Golfo de San Miguel, on account of its having been discovered on Michaelmas Day.

Balboa, after visiting some of the islands in the gulf, returned to Darien. The fatigues of the journey brought upon Balboa a very dangerous fever, which obliged him to be carried part of the way in a hammock to the settlement, where he arrived on the 19th of January, 1514. On arriving at Darien, Balboa gave those who had remained in the colony their proportionate share of the riches acquired in the expedition; he also sent a messenger to Spain to give an account of his discovery, and devoted himself entirely to the improvement of the settlement. By intrigues at home, however, he was superseded in his government by Pedrarias Dávila, who arrived at Darien in 1514. In 1515, however, he was appointed governor of Darien and Coiba under Pedrarias, but they disagreed of course, and in 1517 he was accused of treason, tried, and executed.

(Herrera, *Historia General de las Indias Occidentales;* Quintana, *Vidas de Españoles Ilustres.*)

BALCASH, LAKE OF. [SONGARIA.]

BALCONY is derived from the Italian word *balco* or *palco*. Palco signifies, in Italian, the box of a theatre; and in the great theatre at Bologna each box or balcony has a balustrade. The balcony is much employed in edifices of modern date. The object of balconies is to give the inhabitants of a house a better view. They are formed nearly on a level with the floors of rooms, and supported on cantilevers or brackets, and sometimes, though more rarely, on columns of wood or stone. The floor of the balcony is laid on the cantilevers, and the sides are inclosed with a rail of iron, or a balustrade of stone. Since the introduction of Grecian architecture some balconies have been inclosed with small Greek columns, instead of the baluster used by the Italian architects. In Venice there are very magnificent balconies in the Gothic taste, remarkable for their richness. It is uncertain when balconies were first introduced into England. Some of the old inns, with the galleries round them, are perhaps the oldest examples existing. Elizabethan architecture shows some very elaborately designed balconies; but perhaps the nearest example to the *palco* of the Italians will be found in some of the colleges of Oxford. Magdalen College contains an example of such a balcony in a pulpit supported on corbels. (Mackenzie and Pugin, *Specimens of Gothic Architecture*).

BALD BUZZARD, one of the English names of the *Osprey*, or *Fishing Eagle*, also called *Fish-Hawk* and *Fishing-Hawk*—*Aquila Pescatrice* of the Italians—(*Falco Haliætus*, Linn.; *Pandion Haliætus*, Savigny).

This species of eagle, *Le Balbuzard* of Buffon, is the type of the genus *Pandion*. The beak is rounded above, the cere is hisped, the nostrils lunulated, the tarsi naked, and covered anteriorly with rigid reticulated scales; toes large, the outermost of the three anterior versatile. Claws very powerful, much curved and rounded underneath. Under surface of toes rough, with sharp pointed scales. Wings long and ample; second and third quill feathers the longest.

Bald Buzzard

The Osprey, or Bald Buzzard, is very extensively spread, being dispersed over Europe, a great portion of Asia, and North America; but is everywhere migratory. Being strictly piscivorous, that is, a feeder upon fish, it is only in the vicinity of lakes and rivers, and along the borders of the sea, that it is to be ordinarily met with. In England it is not common, but according to Montagu is more frequently to be seen in Devonshire, than in any other district. In Ireland it occasionally visits the Lakes of Killarney. In Scotland it is more common. Mr. Selby observed several upon Loch Lomond, in the neighbourhood of which they are said to breed, and also upon Loch Awe, where an eyrie is, or was till lately, established upon the ruins of a castle near the southern extremity of the lake, and another in a similar situation opposite to the gorge or egress of the river Awe. On the continent this bird annually visits the larger rivers and lakes of Germany, Russia, and the middle districts of Europe. It is found also in Italy; but even there migrates southwards on the approach of winter. In its habits it appears to be partially gregarious, several pairs associating together and in harmony pursuing their vocation. In America, according to Wilson, the Fish-hawk arrives on the coasts of New York and New Jersey about the 21st of March, and retires to the south about the 22nd of September. On their arrival they sometimes find the bays and ponds still frozen, especially in the more northern parts, and experience a difficulty in procuring fish, yet, however pressed by hunger, they never attack birds or inferior land animals with intent to feed on them; though from their great powers, and the strength of their beak and claws, they might become very formidable. 'The first appearance,' says Wilson, 'of the fish-hawk in spring is welcomed by the fishermen as the happy signal of those vast shoals of herrings, shad, &c. that regularly arrive on the coast and enter the river in prodigious multitudes. Two of a trade, it is said, seldom agree. The adage, however, does not hold good in the present case, for such is the respect paid to the fish-hawk, not only by this class of men, but generally by the whole neighbourhood where it resides, that any one who would attempt to shoot one of them would stand a fair chance of being insulted. This prepossession in favour of the fish-hawk is honourable to their feelings. They associate with its first appearance ideas of plenty and all the gaiety of business; they see it active and industrious like themselves; inoffensive to the productions of their farms; building without the least disposition to concealment in the middle of their fields and along their fences, and returning year after year regularly to breed.'

The nest of the fish-hawk is generally built in a tree, and consists of a mass of sticks, sea-weed, turf, grass, &c., and, being repaired every year, sometimes amounts to a fair cart-load. Among the interstices of the materials other birds are allowed to nidify, and several pairs of grakles or crow-blackbirds may be often seen, taking up their abode around the margin and sides of the structure, confident in the hospitality of the power-

ful owner of it. In some districts the fish-hawks are very numerous, and build their nests very near each other, as if colonizing the spot. Mr. Gardiner counted no less than 300 nests with young on the small islet on which he resided, near the eastern extremity of Long Island, New York; and elsewhere Wilson observed twenty of their nests within the walk of half a mile. The eggs are from two to four, somewhat larger than those of a common fowl, of a reddish or yellowish cream colour, dotted and blotched with reddish brown. During incubation the male often feeds the female. The parents defend their young with indomitable resolution.

The flight of the fish-hawk is peculiarly graceful; and its plunge when sweeping down to secure its finny prey inconceivably rapid and arrow-like; a flash on the surface of the water, succeeded by a white foam, startles the eye; the next moment the bird is seen rising on powerful wings and bearing the prey in its large talons. It is then that its great enemy, the White-headed Eagle (*Haliäëtus leucocéphalus*), marking its actions from some tall tree or beetling cliff, launches itself into the air, and gives chase to the honest fishing-bird, in order to rob it of its well-earned booty. The aerial manœuvres of the attacked and the aggressor are most interesting. Generally, however, the fish-hawk, hard pressed by his unincumbered antagonist, is obliged to drop his prey; as a flash of lightning down dashes the eagle, and catches it ere it reach the water. The fish-hawk is about two feet in length, and about five feet three or four inches in expanse of wing. The plumage is very compact and imbricated; the general colour of the upper parts is dusky brown; the tail is barred with pale brown; the upper part of the head is white or whitish, each feather having a brown dash down the centre. A brown line runs down each side of the neck to the back; under parts generally white; bill bluish black; cere light blue; iris lemon yellow. The female exceeds the male in size.

BA'LDACHIN (*baldachino*, Italian), a kind of canopy, either supported on columns, or suspended from and used to cover an altar in a Roman Catholic church. The Italian word signifies a piece of furniture, which is carried or fixed over sacred things, or over the seats of princes and persons of great distinction, as a mark of honour. The form, for the most part, is square, and the top covered with cloth with a hanging fringe: sometimes the fringe is formed of pieces of cloth cut out after the fashion of a banner. The baldachin has been supposed to have been derived from the ancient *ciborium* (κιβώριον, a large cup or vase). An isolated building, placed by the early Christians over tombs and altars, was called a ciborium. The modern baldachin is of the same form as the ciborium erected by Justinian in the church of Santa Sophia of Constantinople, which was made of silver, gold, and precious stones, and supported by four silver-gilt columns. The baldachin in St. Peter's at Rome, made by Bernini, is the most celebrated, and is the largest known work of the kind in bronze. It is not improbable that the Gothic canopies over figures of saints and personages of distinction, were intended for baldachins. (Stothard's *Monumental Remains;* and Blore's *Monumental Remains of Great Britain.*)

BA'LDI, BERNARDI'NO, was born at Urbino in 1553, of a noble family. He wrote a vast number of works in prose and verse, the greater part of which have remained inedited. Among those published are, a poem on navigation, and several eclogues, which are not without merit. Of his prose works there are several 'Dialogues.' He also compiled a short chronicle of all the mathematicians known from Euphorbius down to his own time; and he published two Latin works in illustration of Vitruvius. Two inedited historical works of Baldi were published only a few years since, which contain some curious information about the Feltre dynasty in Urbino, and the epoch of Cesar Borgia's rule in the Romagna. (Affo, *Vita di Bernardino Baldi.*)

BALDI'NI, BA'CCIO, one of the first Italian engravers, whose works on that account have an historical interest, but are otherwise of a very low scale of merit. He appears to have been active from about 1460, and after 1481; he was bred a goldsmith, and was taught engraving by Finiguerra himself, who was the inventor of the art according to the Italians. Baldini however, though acquainted with the art, was incapable of making a design; he communicated it therefore to Alessandro Botticelli, and the two entered into partnership; the one designed and the other engraved. Such is the story of Vasari.

BALDIVIA. [VALDIVIA.]

BALDRICK, or BAUDRICK (Fr. *baudrier*), a military belt, band, or girdle, much used by warriors in more ancient as well as in the feudal times; ordinarily encircling the waist, but occasionally pendent from the right shoulder and sustaining a sword.

BALDUNG, HANS, called also *Hans Grün*, a celebrated old German painter and wood-engraver, the contemporary and the friend of Albert Dürer. He was born at Gmünd, in Swabia, about 1470, but lived chiefly in Switzerland, at Strassburg, and its neighbourhood. His woodcuts are variously signed, H. B., H. B. G., and H. G.

As a painter he was little inferior to Albert Dürer in expression, in colouring, or in finish. The year 1545 is given in several works as the year of his death.

BALDWIN was the name of several Counts of Flanders, whose reigns were distinguished by little except the share they took in the almost constant wars prevailing during their æra in Europe, sometimes as allies of the more powerful neighbouring sovereigns, and sometimes in defence of their own territories; but of which the details are of little interest, and of no general importance. We shall therefore give little more than a list, but sufficient to identify them.

BALDWIN, or BAUDOCIN, great forester of Flanders, succeeded, A.D. 837, his father Andacer in the government of that province, as feudatory of the Emperor Louis, Charlemagne's successor. After the death of Louis in 840, he endeavoured to make himself independent of any of the sons

and successors of Louis, Lotharius, Charles the Bald, and Louis of Bavaria, and having married, against the consent of her father, Judith, the daughter of Charles the Bald, he was excommunicated by Pope Nicholas I. He at length not only obtained absolution, but, by the intervention of the Pope, the forgiveness of his father-in-law; and his territories were enlarged, and erected into a county. He died at Arras in 877.

BALDWIN II., Count of Flanders, son of the foregoing, married Alfrith, daughter of Alfred of England. He died in 919, and was succeeded by his son Arnoul.

BALDWIN III., succeeded Count Arnoul the younger in 988. It is recorded in the Chronicles, that he held an assembly of the prelates and nobles of Flanders at Oudenrade; and this appears to be the first mention made of the states of Flanders. Baldwin III. died in 1034.

BALDWIN IV., son of the preceding, succeeded his father. He gave his daughter Mathilda to William of Normandy, afterwards king of England, and accompanied his son-in-law, William, to the conquest of England, who for his services on that occasion assigned him and his successors a yearly pension of 300 marks of silver out of the English treasury. Baldwin died in 1067, and was buried at Lisle.

BALDWIN V., married the Countess Richilda, of Hainault, who brought him the lordship of Mons, and succeeded his father, Baldwin IV. He died in 1070, leaving two sons, Arnoul and Baldwin. In a contest for the succession with their uncle Robert, Arnoul was killed.

BALDWIN VI., son of Baldwin V., after a time, renounced his claims on the county of Flanders, and kept for himself the county of Hainault, which he had inherited from his mother.

BALDWIN VII., grandson of Robert the Frieslander, succeeded his father, Robert the younger, as Count of Flanders, in the year 1111. He made war in Normandy in favour of William, son of Robert Curthose, against Henry I. of England, and, being severely wounded at the siege of Rouen, died soon after in 1119.

BALDWIN VIII., Count of Hainault, was descended from Baldwin VI., and became Count of Flanders after the death of Count Philip, in 1194. Thus the line of Baldwin of Mons was restored, and the two counties of Hainault and Flanders were re-united. Philip of France, afterwards Philippe Auguste, married Isabella, Baldwin's daughter. Baldwin died in 1195, leaving his dominions to Baldwin IX., afterwards Emperor of Constantinople.

(Oudegherst, *Chroniques et Annales de Flandre.*)

BALDWIN I., Emperor of Constantinople, was the son of Baldwin of Hainault, and of Margaret, Countess of Flanders. He became Count of Flanders by the death of his mother in 1194, and the following year succeeded his father as Count of Hainault. After a war with Philip II. of France for the possession of Artois, Baldwin, in 1200, resolved to join the fourth crusade, which was formed in consequence of the exhortations of Pope Innocent III., for the purpose of re-conquering Palestine; and with his brother Henry, and a numerous body of knights and men-at-arms, proceeded through Burgundy and Italy to Venice, which was the appointed place of meeting. After many difficulties in procuring a conveyance, the Venetians proposed that, on their way to the East, the crusaders should stop before Zara in Dalmatia, and assist the Venetians in re-conquering that place, which had revolted, and given itself up to the King of Hungary. This was at length agreed to, and Zara was taken in 1202. At Zara the crusaders were applied to for their assistance by messengers from Alexius, son of Isaac Angelus, Emperor of Constantinople, who had been deposed, had his eyes scared out, and been thrown into a dungeon by his brother Alexius III. After much deliberation, the expedition to Constantinople was resolved upon. They then proceeded to Corfu, where they were joined by young Alexis himself. In May 1203, the fleet, consisting of nearly five hundred sail, left Corfu, and steered for the Hellespont; they entered the Propontis, and cast anchor at Chrysopolis opposite to Constantinople, and after a slight opposition gained possession of part of the ramparts on the side of Galata. Meantime a revolution took place within the city; the usurper Alexius escaped in a boat with his treasures, and Isaac was restored to the throne. The war was now at an end; but a quarrel arose immediately as to the satisfaction of the claims of the crusaders. Hostilities broke out in January 1204, and this was the signal for a new revolution in the city. Another Alexius, of the house of Ducas, usurped the throne, cast Alexius Angelus into a dungeon, and murdered him. The old Emperor Isaac died at the same time, it was said, of terror and grief.

The crusaders now invested Constantinople, and at the end of nearly three months' siege a general assault was made, and the town was stormed from the harbour side, as before, though after a stouter defence. The Greeks at last sued for mercy, and the carnage was stopped; but the city was given up to plunder, attended by all its concomitant excesses, although both Baldwin and the Marquis of Montferrat exerted themselves to restrain the licentiousness of the soldiers. A new emperor was to be appointed by the conquerors, and the choice fell upon Baldwin of Flanders, the most distinguished as well as the most powerful of the crusaders. The authority of Baldwin however was much circumscribed: not more than one-fourth part of the provinces of the empire was appropriated to him, one-half of the remainder being allotted to the Venetians, whose doge was proclaimed Despot of Romania; the other half was distributed among the adventurers of France and Lombardy. The Marquis of Montferrat had, for his share, the kingdom of Thessalonica and the island of Crete, which last he sold to the Venetians. Others received fiefs in various parts of the empire. Several provinces however remained in the possession of Greek princes, the relatives of the former emperors. Theodore Lascaris kept part of Asia Minor; a descendant of Andronicus Commenus held the duchy of Trebizond; and Michael, a bastard of the House of Angeli, formed a strong prin-

cipality in Epirus. Baldwin was therefore rather a titular than a real emperor, and all his abilities and good intentions, for which historians have generally given him credit, could not prevent the disorders inherent to such a state of things. Intrigue and insurrection raged on all sides; and at length, in a contest with the Bulgarians, he was defeated and taken prisoner on the 15th of April, 1205, and died a prisoner the following year.

(Nicetas, books xix. xx. xxi. and Villehardoin.)

BALDWIN II., was the son of Peter de Courtenay, Count of Auxerre, and of Yolande, sister of Baldwin I., the emperor. After the death of Henry, Baldwin's brother and successor in 1217, Peter de Courtenay was called to the imperial throne; but Peter never reached his destination, being treacherously arrested in Epirus by Theodore Angelus, the despot of that country. He died in captivity, but the manner of his death is unknown. Several of his successors continued to hold a precarious dominion in Constantinople, till Michael, in 1261, was compelled to make his escape, and with him ended the dynasty of the Latin emperors of Constantinople. Baldwin continued to his death, which occurred thirteen years after, to assume the empty title of Emperor, which was transmitted to his descendants for several generations, until the end of the fourteenth century, when it was at last dropped. (Gibbon, ch. 61, and his authorities.)

BALDWIN I., King of Jerusalem, was the son of Eustace, Count of Bouillon, a feudal territory in the Ardennes, and of Ida of Lorraine. He accompanied his two elder brothers, Godfrey, Duke of Lower Lorraine or Brabant, and Eustace, Count of Boulogne, to the first crusade in 1096. [CRUSADES.] Baldwin distinguished himself throughout the war, and, after his brother Godfrey had been elected King of Jerusalem, he repaired to the Holy City. In the following year, 1100, Godfrey died, and Baldwin, being called to succeed him, was crowned on Christmas Day 1100. His reign, which lasted till 1118, was one of continual warfare against the Turks, the Arabs, the Persians, and the Saracens of Egypt, in which Baldwin displayed much bravery and perseverance, indefatigable activity, and with general success. While conducting an expedition against Egypt, he was taken ill, and died in March 1118. Baldwin was a very different character from his brother Godfrey, who was a sincere enthusiast, pure and disinterested; Baldwin was ambitious and worldly, but at the same time brave, clever, and firm. Tasso, in the first canto of his 'Gerusalemme' (st. 8-9), has faithfully portrayed the character of the two brothers. For the events of the first crusade, and the reigns of Baldwin and his successors, see William of Tyre, Gibbon, and Michaud, 'Histoire des Croisades.'

BALDWIN II., succeeded his cousin Baldwin I. on the throne of Jerusalem. Under his reign the military and religious order of the Templars was instituted for the defence of the Holy Land. [TEMPLARS.] The order of St. John of Jerusalem had been instituted many years before for pious and charitable purposes; but it also now assumed a military character. Baldwin's reign, like that of his predecessor, was one of almost constant warfare against the Turks, Arabs, and Egyptian Saracens. Baldwin abdicated the crown in favour of his son-in-law, Foulques of Anjou, in 1131, and retired to the monastery of the Holy Sepulchre, where he soon after died.

BALDWIN III., the son of Foulques of Anjou, succeeded his father in 1142. Baldwin had to struggle, during the greater part of his reign, with the power and abilities of Noureddin, of whom he was sometimes the enemy and sometimes the ally against the Fatimide sultans of Egypt. [NOUREDDIN.] Louis VII., of France, and Conrad III., Emperor of Germany, undertook the second crusade in 1147, at the exhortation of St. Bernard, for the object of supporting their Christian brethren of Palestine. Their expedition turned out unfortunate. Baldwin died in February 1162. He was succeeded by his brother Amaury, or Amalric.

BALDWIN IV., son of Amaury, was still a minor when his father died in 1174, afflicted with leprosy and nearly blind. In this distressed state he had to encounter the might of Saladin, who had succeeded Noureddin, and had extended his power over both Egypt and Syria. Baldwin, however, obtained a truce from Saladin. He died in 1186, leaving for his successor his nephew, Baldwin, then a child, who died seven months after his uncle, and Jerusalem was taken by Saladin in 1187. [SALAH-ED-DEEN.]

BALDWIN, Archbishop of Canterbury in the reigns of Henry II. and Richard I., was born at Exeter, where he received a liberal education. Having entered into holy orders, he was made archdeacon of Exeter, but soon quitted both his dignity and the world, and became a monk in the Cistercian abbey of Ford, in Devonshire, of which in a few years he was elected abbot; and from thence in 1180 was promoted to the bishopric of Worcester. In 1184 King Henry II. translated Baldwin to the see of Canterbury, in spite of a very powerful opposition from the monks of the cathedral, where he was enthroned May 19, 1185. Urban III. afterwards made Baldwin his legate for the diocese of Canterbury. On September 3, 1189, Baldwin performed the ceremony of crowning Richard I. at Westminster, and in the same year successfully asserted the pre-eminence of the see of Canterbury against Geoffrey, archbishop of York, the king's natural brother, forbidding the bishops of England to receive consecration from any other than the Archbishop of Canterbury. In 1190 he made a progress into Wales, to preach the crusade; and in the same year, having held a council at Westminster, he followed King Richard I. to the Holy Land, where he died, Nov. 20, in the same year.

Bishop Tanner ('Biblioth. Britan. Hib.' pp. 67, 68,) has given a list of a great many treatises by Archbishop Baldwin, which remain in manuscript, and has noticed the different libraries in which they are deposited. The most important, however, were collected by Bertrand Tissier, and published, in 1662, in the fifth volume of the 'Scriptores Biblioth. Cisterciensis.'

(Gervas, *Pontif. Script.*; *Biog. Britannica.*)

BALE, JOHN, in Latin *Balæus*, was Bishop of Ossory, in Ireland, in the middle of the 16th century. He was born, as he himself tells us, at Cove, a small village in Suffolk, about 5 miles from Dunwich, November 21st, 1495, and complains that his parents, being encumbered with a large family, placed him, at the early age of twelve years, in the monastery of Carmelites at Norwich, whence he was afterwards sent to Cambridge, and he adds, that there he had neither tutor nor patron. He was entered of Jesus College in that university, where, according to Baker's manuscript collections, we find him as early as 1514. In 1529 he occurs as prior of the Carmelites of Ipswich. Soon after this date he adopted the principles of the reformed religion, and became an active and energetic writer in defence of its tenets against the papists, though he complains of the persecution and sufferings he underwent in consequence. He was made Bishop of Ossory by Edward VI. in 1553; but his zeal in favour of Protestantism made him unpopular, and on the death of Edward VI. he was forced to make his escape, first to Holland and then to Switzerland, where he remained during the short reign of Queen Mary. On the accession of Queen Elizabeth he returned to England, but not to his bishopric in Ireland, preferring a private life, and contenting himself with a prebend in the cathedral church of Canterbury, to which he was promoted on the 1st of Jan., 1559–60. He died in November 1563, in the sixty-eighth year of his age, at Canterbury, and was buried there in the cathedral.

Bishop Bale's writings were very numerous, and most of them are now rare. The greater number are controversial; one or two are autobiographical, such as 'The Vocacyon of Johan Bale to the Bishopric of Ossorie in Ireland, his Persecucions in the same, and final Deliverance,' London, 1553. His fame, however, principally rests on his attempts in the English drama, though more remarkable for the earliness of their period than for any considerable excellence; and on his valuable collection of British biography, first published under the title of 'Illustrium Majoris Britanniæ Scriptorum, hoc est, Angliæ, Cambriæ, et Scotiæ, Summarium,' 4to, 1548, of which there have been several improved editions. He has himself in this very work preserved a long list of his other writings, in Latin, which Fuller has translated in his 'Abel Redivivus.' Bale divided them into, 1, those which he had compiled while yet a papist; 2, those which he wrote after he had renounced popery; 3, his comedies in English, in various kinds of verse; 4, his works in English, in prose: adding that he had written and translated many others which he could not bring to recollection. The subjects, however, only of his writings are enumerated in this list, and not their actual titles, so that it is impossible to ascertain distinctly from it which among them are his printed works, and which were those remaining in manuscript.

(*Biographia Britannica;* Fuller's *Abel Redivivus;* Strype's *Memorials of Cranmer.*)

BALE. [BASEL.]

BALEARIC CRANE. [HERONS.]

BALEA'RIC ISLANDS are situated in the Mediterrancan Sea, off the east coast of Spain, to which country they belong. These islands are five in number, namely, Iviza, Mallorca (Majorca), Minorca, Formentera, and Cabrera. They lie in a N.E. and S.W. direction, occupying a space of 160 miles in length, by a mean breadth of 30 miles. Iviza, the nearest to the Spanish coast, is distant from Cape San Martin 60 miles; Majorca, the central and the largest, lies 43 miles to the N.E. of Iviza; and Minorca is separated from Majorca by a strait 22 miles in width. The islands are hilly, and Majorca may be termed mountainous, but they are not of volcanic formation. Granite, marbles, jasper, porphyry, slate, and pit-coal are found; also lead and iron. The soil is generally good, and chiefly cultivated with vines, olives, and other fruit-trees: corn is not produced in sufficient quantities for home consumption. This article and cattle form the principal imports, in exchange for wines and brandies of an inferior quality, coarse woollen cloths, and dried fruits; the pottery made in these islands is much esteemed. The coasts are steep and rugged, surrounded by rocks and islets, but afford some excellent harbours. The water around them is deep. There are no rivers, but the mountain torrents during the rains, or on the melting of the snows, are impetuous.

The name Baleáres, which is given to the group by Strabo, is said to be from the Greek βάλλω, 'throw,' the original inhabitants having been very expert in the use of the sling, to which they were trained from their infancy; and their dexterity as slingers, while serving in the Carthaginian and Roman armies, is often noticed by ancient authors. Strabo mentions only four of the islands, and he classes them under the names of Gymnesiæ and Pityusæ; the former including Majorca and Minorca, the latter Iviza and Formentera. The two Pityusæ were called Ebusus and Ophiusa by the Greeks. The Phœnicians, it appears, were the first settlers in these islands, which, however, had a race of original inhabitants. The Carthaginians and Romans successively made themselves masters of them. Spain having fallen into the hands of the Vandals and Huns, a body passed over to these islands, which became an easy conquest. They were next seized by the Moors, who made them the head-quarters of their piratical expeditions. Instigated by several bulls of the pope, the kings of Aragon made frequent attempts against the Moors; but they were not finally expelled from the whole group till about 1289, when the islands were formally annexed to the crown of Aragon. Minorca was taken by the English in 1708, and finally ceded to them by the treaty of Utrecht; but on the breaking out of the war it was re-captured by the combined force of France and Spain. In 1798 it again surrendered to the British, and remained in their possession till the peace of 1814, when it was restored to Spain.

BALECHOU, JEAN JACQUES, a very celebrated French engraver, born in 1715. His works are still much valued and eagerly sought for by collectors. His merit however consisted

solely in a perfect mastery of the graver. In the representation of the natural appearances of objects, or in the imitation of textures, he has been surpassed by many artists. He gave every object the same appearance. The strongest condemnation of Balechou's style, says Huber, is to be found in the prints of Woollet. He died in 1764.

BA'LEN, HENDRIK VAN, a Flemish historical painter, and the first master of Vandyck and Snyders, was born at Antwerp, in 1560. He went early to Rome to study his profession, having acquired the rudiments from Adam van Oort. He was an excellent colourist, a good draughtsman, and painted with great facility. He died in 1632.

BALESTRA, ANTO'NIO, a painter, born at Verona, in 1666. He was brought up as a merchant, but before his 21st year he was studying as a painter under Bellucci at Venice. He afterwards studied under Maratta at Rome, and he eventually painted much more in the style of the Roman than of the Venetian: he however combined the chief beauties of Venetian colour with the characteristic correctness and solidity of design of the Roman school, and is regarded as one of the most able painters of his time. He died in 1734, according to Guarienti, but in 1740, according to Zanetti and Oretti.

BALFOUR, SIR JAMES, of Pittendreich, Lord President of the Court of Session in Scotland, and the reputed author of Balfour's 'Practicks of the Law,' was son of Sir Michael Balfour, of Pittendreich and Montquhany, Fifeshire, and in his early years received a liberal education for the church, in the course of which he distinguished himself particularly in the study of the canon and civil laws. Just at this time the great religious revolution which had overthrown the papal power in the neighbouring kingdom began to extend itself to Scotland. Among others, young Balfour left the ancient religion and joined the standard of the Reformation. He also joined the conspiracy led by Norman, eldest son of the Earl of Rothes, against the Cardinal Beatoun, and, being taken in the castle of St. Andrews when that fortress surrendered to the French auxiliaries in the end of the summer of 1547, was put into the same galley with Knox, and carried prisoner to France. On the peace of 1549, Knox, Balnavis, and others, returned to Scotland with new ardour in the cause of the Reformation. Balfour also returned, but professed himself a Roman Catholic. He was immediately appointed official of St. Andrews within the archdeaconry of Lothian.

On the breaking out of the civil war between the congregation and the queen-regent in 1559 Balfour took the part of the latter. He escaped the search of the reformers in Fifeshire in February 1560, and was about the same time appointed parson of Flisk in that county. Soon after the arrival of the young queen in 1561 he was appointed an extraordinary lord of session, and on the 5th of November, 1563, advanced to the place of an ordinary lord in the same court. On the institution of the Commissaries' Court of Edinburgh, in the room of the court of the official of Lothian, he was constituted its chief judge; and on the 5th of July, 1565, he was sworn of the queen's privy council. He was with the queen at Holyrood on the night of Rizzio's assassination; and, if we believe her statement, his death also was in contemplation.

Balfour saw the influence of Bothwell in the royal closet. To that nobleman, therefore, he attached himself, and quickly joined in the conspiracy against the youthful Darnley. Balfour framed the bond for mutual support entered into by the conspirators, and prepared the house in the kirk of Field for the execution of the deed, but was not actually present on the occasion. Bothwell was brought to an early trial, which no entreaty of Lord Lennox, his prosecutor, could stay; but as the evidence was not ready, his guilt was not established, and he was acquitted. It would appear that Balfour professed a determination to have himself cleared by an assize also; but he afterwards saw it expedient not to press this.

On the 22nd of April, 1567, the queen, under the influence of Bothwell, who no doubt imagined he had Balfour bound to him, if by no other tie, at least by that of fear of public justice, appointed him captain of Edinburgh Castle, which he soon afterwards surrendered to the regent Murray on the following extraordinary conditions:—1st, a pardon for art and part in Darnley's murder; 2nd, a gift of the priory of Pittenweem; 3rd, an annuity to his eldest son out of the priory of St. Andrews; 4th, a large sum (Spottiswoode calls it 500*l.*) in present hand; and 5th, delivery of the castle into the hands of Kirkcaldy of Grange, an adherent of the queen's. Murray, on attaining the regency, pursued in religion the same course of policy which Bothwell had held, favouring the Reformation; and in his first parliament we find a commission issued, and Balfour (now prior of Pittenweem) named therein, to ascertain the jurisdiction of the church of Scotland. In the same parliament we find Balfour a Lord of the Articles on the spiritual side; and on the 12th of September, 1567, he was sworn of the privy council. He soon afterwards resigned his place of lord clerk register to please the regent, who wished to restore M'Gill. For this he got a pension of 500*l.*; and was raised to the chair of Lord President of the Court of Session.

At the battle of Langside, May 1568, Balfour was in the rear-guard with the regent, and displayed no little valour on the occasion; yet, in the end of the same year, he was intriguing in favour of Mary, for which he was arrested, but effected his peace with Murray, and regained his liberty, though he lost his situation of President of the Session, to which Bailie of Provand now returned.

The year 1570 opened with the murder of the Good Regent by Hamilton of Bothwellhaugh,—an event which appears to have inspired Mary's adherents with great hopes. Of those Balfour was now one; and on the 30th of August, 1571, he and some others of that side were attainted in a parliament held by the king's men. Morton, on his becoming regent, endeavoured to effect a settlement with the queen's party; but all his overtures were rejected by Maitland and Kirkcaldy. Balfour, however, readily acceded to the

triumphant Morton, whom he also endeavoured to conciliate by acts of vile treachery. He was mainly instrumental in bringing about the concord called the Pacification of Perth, in February 1572, whereby his late coadjutors were given over to the tender mercies of the regent. In July 1572 Morton brought his victims to trial for Darnley's murder, and had them sentenced to the scaffold. Balfour, however, not only escaped a trial, but the following year had his forfeiture annulled, and himself restored by act of parliament; and in 1574 the regent committed to him and Skene a design for a general digest of the laws. Balfour did not remain much longer in the country: dreading the ground on which he stood, he fled to France, where he continued till the young king of Scotland assumed the reins of government. He then returned to his native country, and joined the party who watched for the destruction of the yet formidable Morton. In 1579 Morton recovered his authority, and Balfour again fled from before him, and the forfeiture was re-acted which had been pronounced in 1571. The death of Morton was now to be accomplished; and as Balfour had taken care to preserve the bond by that nobleman and others in support of Bothwell in the murder of Darnley, a plan was speedily devised: Morton was accused of treason, tried, convicted, and beheaded.

This was Balfour's last public act. He died soon after, in the year 1583. After his death, he was restored, against the forfeiture of 1579, by act of parliament; but acts of parliament can wipe off those taints only which human laws have created: they cannot remove the stains of profligacy, nor wash away infamy from the memory of the corrupt.

(Knox's *Hist. of the Ref.*; Keith's *Hist. of the Ref.*; Goodal's Preface to *Balfour's Practicks.*

BALFOUR, JAMES, of Pilrig, in the shire of Edinburgh, was admitted an advocate of the Scottish Bar on the 14th of November, 1730. Balfour was afterwards appointed sheriff substitute of the county of Edinburgh, but, having occupied himself much with philosophical science, he early became an opponent of the celebrated David Hume, whose speculations he attacked in two anonymous treatises, the one entitled a 'Delineation of Morality,' the other, 'Philosophical Dissertations.' In 1754 he resigned his judicial office, having on the death of Professor Cleghorn, in August of that year, been elected his successor in the chair of moral philosophy, at Edinburgh. This he resigned, in May 1764, for the chair of public law; and soon afterwards he published what appear to have been his lectures while in his former situation, under the title of 'Philosophical Essays.' In the spring of 1779 he resigned the chair of public law, and retired to Pilrig, where he died, 6th of March, 1795, at the age of 92.

BALFRUSH. [PERSIA.]

BALGUY, JOHN, an eminent divine of the church of England, was born in 1686, at Sheffield; and was educated in the grammar school of that place. Mr. Balguy took orders in 1710; in 1711 he became private tutor in the family of Sir Henry Liddell, who afterwards bestowed upon him the living of Lamesly and Tanfield in Durham; and he married in 1715. He appeared as a controversial writer in 1718, having published two tracts in vindication of Bishop Hoadly. From time to time he continued to publish various treatises, which he collected, after having gone through several separate editions, into one volume, and published in 1734. In 1741 appeared his 'Essay on Redemption.' This and his volume of sermons, including six which had been published before, were the last pieces committed by him to the press. A posthumous volume was afterwards printed, which contained almost the whole of the sermons he left behind him. While in possession of the living of Lamesly and Tanfield, for the first four years he never intermitted one week without composing a sermon; but fearing that his son, who was afterwards in orders also, might not follow his example, he destroyed almost his whole stock, and committed, at one time, two hundred and fifty sermons to the flames. He died in 1748. (*Biographia Britannica.*)

BALGUY, THOMAS, D.D., only son of John Balguy, was born in 1716, and was educated at the free school of Ripon in Yorkshire. In 1734 he was admitted at St. John's College, Cambridge. He was a volminous writer of theology. The ablest of his performances is held to be 'Divine Benevolence asserted and vindicated from the Reflections of Ancient and Modern Sceptics,' 8vo. Dr. Balguy died in 1795, at his prebendal house at Winchester.

BALI, Island. [BALLY.]

BALIOL. [BALLIOL.]

BALIO'STICHUS. A fossil plant in the laminated lithographic limestone of Pappenheim, is named *Baliostichus ornatus* by Sternberg.

BALISTA. [ARTILLERY.]

BALISTES (in Zoology), an extensive genus of fishes, belonging to the Cuvierian order *Plectognathes*, and family *Sclerodermes*. The groups thus denominated by Baron Cuvier are intermediate in point of structure between the osseous and the cartilaginous tribes; for the skeleton, which is of a fibrous or bony texture, ossifies very slowly, and is never entirely complete; the ribs, in particular, usually remain imperfect throughout the whole period of the animal's life. The maxillary and intermaxillary bones, again, form but a simple piece, distinguished only by a slight suture or furrow at the point of junction, and the palatal arch is soldered firmly to the skull, and consequently devoid of individual motion. The opercula and gill-rays are concealed beneath the skin.

The balistes are particularly distinguished by the vertical compression of the body, by having eight teeth arranged in a single row in each jaw, and a scaly or granulated skin. They have two dorsals; the first composed of numerous powerful spines, articulated to a peculiar bone, itself articulated to the skull, and furnished with a longitudinal furrow for the reception of the spines, which can be erected or depressed at the will of the animal; the second large, soft, or without spines, and placed opposite to an anal fin of similar structure. Like other genera of the same

order, the balistes have no ventral fins; notwithstanding which, however, their skeleton is furnished with a complete pelvis, suspended from the bones of the shoulder. The intestinal canal is large, but without cæca, and the air-bladder of considerable size. These fish abound in all the seas of the torrid zone, where they swim on the surface of the water, particularly in the neighbourhood of rocky coasts and coral reefs, feeding with avidity upon the polypi of the reefs, and shining with the most brilliant and varied colours. Their flesh is at all times very indifferent food, and is said to be actually poisonous during the period that the coral worms are in season. The species are very numerous, but possess no peculiarities or useful qualities which would entitle them to a detailed notice. They are easily distinguished by the rhomboidal form of their large and hard scales, which are disposed in regular rows, not overlapping one another as in the generality of fishes, but merely touching at their edges, and thus giving the whole body the appearance of being divided into so many regular compartments.

(Cuvier, *Règne Animal*, vol. ii. pp. 372, 373.)

BALIZE, or BELIZE, the name of that portion of Central America which is occupied by the British settlement on the Bay of Honduras. It is bounded N. by Yucatan, W. by Vera Paz, S. by Guatemala, and E. by Honduras Bay and the Gulf of Mexico. The area is about 10,370 square miles, and the population about 6000. The word Balize is a corrupt spelling of Waliz, the name given to this spot by the Spaniards in consequence of the harbour and river having been discovered and much resorted to by a piratical Englishman named Wallice.

The first settlement of Balize is uncertain, as the early visitors were merely the mahogany and logwood cutters, whose residences were but temporary. The first establishment of the English in this quarter was made shortly after the treaty with Spain in 1667. The first settlers were adventurers from Jamaica, who fixed themselves at Cape Catoche, and gradually extended their location to the town of Balize. Great hostility was shown to this settlement by the Spaniards residing in and about Campeachy, and after many struggles between the settlers and the Spaniards, the right of the British to maintain a settlement in this place was recognized by the crown of Spain, in a treaty concluded in July 1670. During subsequent wars with Spain the British settlers were more than once dispossessed; but the treaty of 1783 put them once more in possession, which, with the exception of an unsuccessful attack by the Spaniards in 1798, has since been undisturbed.

The chief authority in the settlement, which is established at the town of Balize, is held by a superintendent nominated by the crown. Seven magistrates are annually elected by the inhabitants to act as a council, at which the superintendent presides. The magistrates act gratuitously, and, as they manage the public funds of the colony, they form a body of importance.

The neighbourhood of the town of Balize abounds in lakes and swamps which are overflowed during the rains. The intercourse with the interior by land is difficult, and travelling is only conveniently performed by the river. The commerce of Balize consists chiefly in the exportation of mahogany and other woods; but within the last few years the interior has opened a new market for the consumption of articles of British manufacture. The climate is generally moist, but is considered healthy; the place is constantly refreshed by the sea-breeze (except for a few months) tempering the heat, which however is not excessive, as the thermometer seldom rises above 83° in the hottest time, and during the wet season sinks to 60°. The variation of temperature during the twenty-four hours is very great, frequently 25°.

The river Balize takes its rise in the mountains about 100 miles direct from the sea-shore. Its course is E.N.E., but very tortuous: it discharges itself into the Bay of Honduras by two mouths, one at the town, the other about three miles and a half to the north-west; the latter is however not accessible. The falls in different parts of the river, and the scenery along the banks, are extremely grand. In the year 1833 the exports from the settlement consisted of 4,500,000 superficial feet of mahogany, 1800 tons logwood, considerable quantities of indigo, cochineal, and sarsaparilla root, besides small quantities of tortoise-shell, hides, cocoa-nuts, and balsam. About five-eighths of the whole were sent to England, and employed 9000 tons of British shipping. Maize, rice, yams, and plantains, are cultivated for the consumption of the inhabitants; and a considerable number of horned cattle are bred, and employed in the mahogany works.

BALIZE, or BELIZE, the chief town of the British settlement of Balize, is situated in 17° 29′ N. lat., 88° 8′ W. long., at the southern mouth of the river Balize, which divides the town into two parts, and is crossed by a substantial wooden bridge of 220 feet span, and 20 in width. Many of the houses are convenient, well-built, spacious, and even elegant, constructed entirely of wood, and raised eight or ten feet from the ground, on pillars of mahogany. The town is immediately open to the sea, standing on a low flat shore, guarded by numerous small islands, which are densely covered with trees and shrubs, and so very similar as to render the navigation extremely difficult. The groups of lofty cocoa-nut trees, interspersed with the foliage of the tamarind, give a pleasing and picturesque appearance to the dwellings, independent of the agreeable shade they afford. The streets are regular, and intersect each other at right angles. The public buildings consist of—a government house, a church, a hospital, and barracks. Balize is attached to the see of Jamaica. There are also Wesleyan and Baptist establishments. Besides several batteries, the town is defended by a regular fort, called Fort George, situated on a small islet at the entrance of the river, which has been principally formed of the ballast from shipping, every vessel being obliged to leave a portion, thus affording the settlers an opportunity of boasting that the fort stands on British earth. The population of the town is between 3000 and 4000.

BALKAN is a name which properly belongs to that range of mountains in Turkey in Europe, which, lying between 42° and 43° N. lat., and 23° and 28° E. long., divides the plains on the Lower Danube from the rivers running southward to the Archipelago.

The most considerable mountain chain, and that which, by an extension of the term, may be called Balkan, runs from the Adriatic Gulf to the Black Sea. It begins on the shores of the Adriatic Gulf with the rocky peninsula of Sabioncella, opposite the island of Curzola, and soon assumes an extremely wild and alpine character in the mountains of Czerna (pronounced Cherna), Gora, or Montenegro, which are inhabited by the Montenegrins. Proceeding farther east, between the provinces of Servia and Albania, it seems to increase in height, in the mountains of Perserim, which join the Shard Dagh, or Kara Dagh, the Mons Scardus of the Romans. The highest part of the range lies still farther to the east, where it receives the names of Gliubolin, Argentaro, and Egrisu. Here it is supposed that some summits attain the point of constant snow. To the west of the town of Sóphia, near the sources of the Isker, a tributary of the Danube, and those of the Struma (Strymon), is Mount Orbelus, 9000 feet above the sea, as it is conjectured, which is the highest known summit of the whole system. From Mount Orbelus the range declines to the south-east, and is called Dupinsha Dagh, but it resumes its eastern direction again at the sources of the Maritza (the Hebrus), and from this point, to its termination on the shores of the Black Sea, it is called Balkan, or Emineh Dagh: the latter name is derived from Cape Emineh, with which it terminates on the Black Sea. This portion of the range is considerably lower than that farther to the west and it is thought that its mean height does not exceed 3000 or 4000 feet above the sea. It forms the Hæmus of the Greek geographers, probably so called from its cold and snowy climate. The range is distinguished by craggy summits and steep slopes; and there are only six passable roads across it.

The Balkan is united to the mountains of Middle Europe by the Dinaric Alps, which separate the Lowlands of Hungary from the Adriatic Gulf; and by the Bulgarian Mountains, which extend from the Balkan to the Carpathians. The country between these two offshoots, comprising Bosnia and Servia, is quite of an alpine character; but the country east of the Bulgarian Mountains is much less elevated.

Three extensive and continuous chains branch off from the southern side of the Balkan. The most eastern, bearing the name of the Strandshea Mountains, and continued by the Tekiri Mountains, stretches out to the Black Sea, and the Propontis. The second range, called Despoto Dagh, branches out south-eastward, at about 23° E. long., and extends to the Maritza. The western range, the most extensive of the three, separates Albania from Macedonia and Thessalia, and its most southern branches extend through the northern part of Greece, terminating on the shores of the Gulf of Lepanto and at Cape Colonna (Sunium of the Romans).

The country westward of this third range is one of the most mountainous districts in Europe; but that to the east, comprehending the ancient Macedonia and Thrace, is far less alpine.

The natural riches of this extensive mountain system are very imperfectly known. The silver and gold mines worked by the ancients are not now known. Yet, in some parts, mines of this description are worked, as at Kostendil, or Giustendil, not far from the sources of the Karasa Struma, in the Egrisu Dagh. In the same range, farther to the west, are considerable mines of copper, which are also found in the Eminch Dagh, near Shumla, and probably in other places. Iron seems also to be abundant, and is got from the Dupinsha Dagh, near the place which has given to this range its name. In many parts there are mines of lead, and in others rock-salt in great abundance. Marble is abundant in the southern ranges.

BALKH, a town in the kingdom of Bokhara, about 25 miles south of the Oxus, stands on a gentle declivity in 36° 40′ N. lat., 67° 18′ E. long. The remains of its former magnificence cover a space of about 20 miles in circuit. They consist of fallen mosques and decayed tombs, which have been built of sun-dried bricks: there are no ruins prior to the age of Mohammedanism. By the inhabitants of the surrounding countries Balkh is called 'Mother of Cities,' and is said to have been built by Kyamoors, or Cyrus, the founder of the Persian monarchy. After the conquest of Alexander the Great, it flourished under the name of Zariaspa or Bactra ('Strabo,' p. 516), as the capital of Bactriana. It subsequently became subject to Persia, and continued to be the residence of the head of the Magi, till the followers of Zoroaster were overthrown by the conquests of the Caliphs. Its inhabitants were butchered in cold blood by Gengis Khan; Timur, who took Balkh, attached it to his empire. It formed the government of Aurungzebe in his youth, and was at last invaded by Nadir Shah. On the establishment of the Doorance monarchy, after his death, it fell into the hands of the Afghans, from whom it has been lately wrested by the king of Bokhara, whose deputy now governs it. The present population does not exceed 2000. A mud wall surrounds the present town; outside of which are ruins on every side, to the extent of about two miles. The citadel on the northern side has been constructed in a more solid style, yet it is a place of no strength. There is a stone of white marble in it which is pointed out as the throne of Cyrus.

The river of Balkh, Adirsiah or Dehas (the ancient Bactrus) rises in the mountains of the Hindu Koosh, and enters the plain of Turkistan about six miles south of Balkh. According to Quintus Curtius (vii. 4), it formerly washed the walls of the town, or, according to Strabo, ran through it; but this is not the case at present, for at the point where it leaves the mountains its waters are drawn off by numerous canals for purposes of irrigation. One of these canals passes through Balkh, another through Akchu, 50 miles W. of Balkh, and a third to Muzar, 14 miles E. of Balkh. The gentle slope

of the land towards the Oxus affords great facilities for irrigating the country, the soil of which is rich and productive, and will account for the great population and vast fertility that once existed in this province.

(Burnes's *Travels into Bokhara, &c.*)

BALL, SIR ALEXANDER. [MALTA.]

BALLAD, a popular song or roundelay. Ballads and rude poetry have been, in all countries, the earliest memorials of public transactions; and in the savage state of each were invariably used to rouse and perpetuate a martial spirit. In process of time, as manners refined, the ballad in every country by degrees included a wider range of subjects: it was no longer solely employed in rehearsing valourous deeds, but included in its rhymes the marvellous tale or the wild adventure, occasionally becoming the vehicle of sentiment and passion. No festivity was esteemed complete among our ancestors in the eleventh, twelfth, and thirteenth centuries, which was not set off with the exercise of the minstrel's talents, who usually sang his ballad to his own or some other harp, and was everywhere received with respect. In the further progress of literary taste, these compositions came to be considered as objects of curiosity, on account of the insight they afforded into the manners and modes of thinking of remote times; while the strokes of nature with which they abounded, and the artless simplicity and strength of their language, excited the admiration of just critics.

Among numerous other collections of our own national ballads, Percy's 'Reliques,' Evans's 'Old Ballads, Historical and Narrative,' and Ritson's 'Ancient Songs from the time of Henry III.,' stand conspicuous. Pinkerton, Jamieson, and Finlay have collected the Scottish Ballads; and Sir Walter Scott the 'Minstrelsy of the Scottish Border.'

BALLAD, in Music, a short air, repeated to two or more stanzas, simple in construction, and therefore confined in modulation, and having an accompaniment of a strictly subordinate kind. When an air, or its accompaniment, is florid, or modulates into unrelated keys—when, in short, either assumes a more elaborate form, the composition generally takes the name of Song or Canzonet, even when several stanzas are repeated to the same melody.

BALLAST, a term used to denote any heavy material placed in a ship's hold with the object of sinking her deeper in the water, and of thereby rendering her capable of carrying sail without danger of being overset. Ships are said to be in ballast when they sail without a cargo, having on board only the stores and other articles requisite for the use of the vessel and crew, as well as of any passengers who may be proceeding with her upon the voyage. In favour of vessels thus circumstanced it is usual to dispense with many formalities at the custom-houses of the ports of departure and entry, and to remit the payment of certain dues and port charges which are levied upon ships having cargoes on board.

A foreign vessel proceeding from a British port may take on board chalk as ballast; and by 3 & 4 Wm. IV. c. 52, shall not be considered as other than a ship in ballast in consequence of her having on board a small quantity of goods of British manufacture for the private use of the master and crew, and not by way of merchandise; but such goods must not exceed in value 20*l.* for the master, 10*l.* for the mate, and 5*l.* for each of the crew (s. 87).

Regulations have at various times been made in different ports and countries determining the modes in which ships may be supplied with ballast, and in what manner they may discharge the same; such regulations being necessary to prevent injury to harbours.

(Hume's *Laws of the Customs.*)

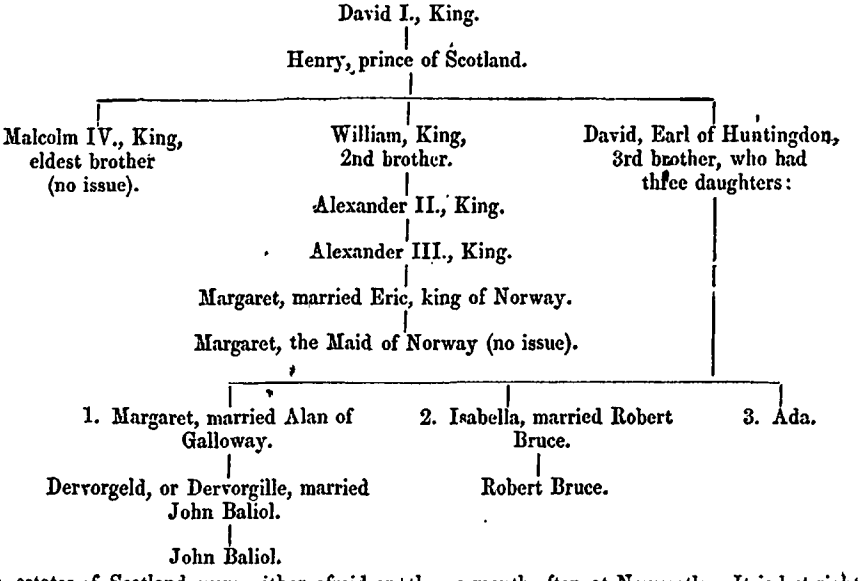
BALLENY ISLES, a cluster of islands in the Antarctic Ocean discovered by Mr. John Balleny and Mr. H. Freeman, the commanders of two vessels sent out on a sealing expedition to the South Seas, in 1838, by several merchants in conjunction with the Messrs. Enderby of London. The group was first seen Feb. 9, 1839. It consists of five islands which, proceeding from E. to W., are called Sturge Island, Buckle Island, Borradaile Island, Young Island, and Row Island, from the names of some of the patrons of the expedition. Borradaile Island, the central one of the group, lies in 66° 44′ S. lat., 163° 11′ E. long. Immediately to the east of it is a remarkable rock called Beale's Pinnacle, which is described as rising like a tall light-house from the waters. Borradaile Island and Row Island are small and low; the other three are of considerable size and elevation. Young Island is the highest of the group. It rises to a beautiful peak called Peak Freeman, which is 12,000 feet above the sea. Sturge Island also rises to a peak which is named Brown's Peak, but is not half so high as the former. Buckle Island contains several high summits, two of which are volcanoes in an active state: indeed the whole group is said to be of volcanic origin, and this opinion is strengthened by the basaltic nature of some stones brought from Young Island by Mr. Freeman. These islands are covered with snow and ice, and walled in with steep precipitous cliffs, without any appearance of inlet or harbour. Whales, penguins, seals, Cape pigeons, and small white birds, are numerous, and the only animals seen. Fogs are frequent and thick; and navigation in the neighbourhood of the islands is dangerous in consequence of icebergs and drift-ice. (*Journal of the Royal Geographical Society of London*, Vol. IX.)

BALLET, a theatrical representation, in which a story is told by gesture accompanied by characteristic or illustrative music, and to which dancing, scenery, decorations, &c., are the accessories. Appropriate music is a constituent part of a good ballet; it supplies the language which action alone cannot speak, and is grave or lively, energetic or tender, according to the passion or sentiment meant to be portrayed on the stage. By its rhythm it also regulates the motion of the dancer (for all the performers in the ballet are indiscriminately called dancers), whose every action and step ought to be more or less measured. A composer of good ballet-music is care-

fully attentive to locality and to nationality. Almost every civilized nation has, in addition to a general style of melody, a style peculiarly its own; and, by a judicious adoption of this, an incalculable addition is made to the interest and the reality of the scene, through the powerful medium of association.

BALLINASLOE. [GALWAY.]

BALLIOL, or BALIOL, JOHN, the successful competitor with Bruce for the crown of Scotland, was descended from an ancient Anglo-Norman family that held large possessions in England, Normandy, and Scotland. He was the only son of John Baliol, lord of Galloway, and was born about the year 1259. In 1290 he first becomes an object of historical notice as one of the claimants to the then vacant Scottish throne, claiming in right of his grandmother, the eldest co-heiress of the only son of David I., king of Scotland, that had issue living. The following pedigree will show the relative claims of the two principal competitors:—



The estates of Scotland were either afraid or unwilling to decide between the competitors, and, alarmed at the prospect of civil war, very prudently determined to refer the decision of the controversy to one who was able to enforce it, namely, the king of England.

It does not belong to our present purpose to detail the proceedings by means of which Edward I. made this office of arbiter instrumental in imposing the chains of feudal subjection upon Scotland. Though there can be no doubt that he employed his alleged feudal superiority as a mere means towards subjugating Scotland, he laboured to invest the proceedings with the garb of judicial deliberation and free agency.

After a tedious inquiry of nearly two years' duration, the delegates to whom the English king referred the consideration, as a point of the law of inheritance, of the claims of the several competitors to the vacant throne, made their report unanimously in favour of the heir of the eldest daughter, that is, in favour of primogeniture; and accordingly Edward gave judgment, not as arbiter, but as feudal superior, that John Baliol, as the heir of the eldest daughter, should receive and have seisin of the kingdom of Scotland and all its appurtenances. This occurred on the 19th of November, 1292. Next day Baliol swore fealty to the king of England. The new king was crowned at Scone on the 30th November, and again went through the ignominious ceremony of vassalage, within less than a month after, at Newcastle. It is but right to add, that the estates of Scotland and the other competitors, with Bruce (the namesake and grandfather of the hero of Bannockburn) at their head, had, in the first stage of the inquiry, fully acknowledged Edward's claim as lord paramount; so that Baliol's oath of fealty after the decision in his favour was only in keeping with the whole proceedings.

Edward's object in causing the ceremony of homage to be repeated was soon seen. A number of petty indignities soon taught the new vassal king of Scotland that his lord paramount only waited a pretext to seize the fief into his own hands.

In 1295 war broke out between France and England. The estates of Scotland eagerly caught at so favourable an opportunity of asserting the independence of their country, and prevailed upon Baliol to conclude an alliance, offensive and defensive, with the French monarch. Edward made extensive preparations for chastising his rebellious vassal. He first cited Baliol to appear before him at Newcastle. The summons was unattended to, the Scottish barons detaining their king in a kind of honourable captivity in the highlands. This was in March. On the 5th of April, Baliol sent to the English monarch a formal renunciation of homage, in his own name and that of his barons. Edward invaded Scotland, subdued it, and the unfortunate Baliol was compelled to perform the

most humiliating acts of feudal penance, and he was compelled to sign an instrument, in which he acknowledged the right of the superior lord to enter into possession of his fee after the renunciation of homage, and transferred to him the fealty which the Scottish barons and freeholders had sworn to himself. This formal surrender of his kingdom of Scotland took place on the 2nd of July, 1296, just four years after his accession. From Kincardine, where he signed the act of abdication, he was transferred, with his son Edward Baliol, to the Tower of London, where he resided for three years, with some state, and the liberty of a circle of twenty miles. There is reason to believe that he was serious in saying that he parted with his crown without regret, and that he longed to lead a private life on his patrimonial estates in Normandy. His wishes were gratified in 1299, three years after his abdication. He solemnly pledged himself never more to intermeddle in the affairs of Scotland; and, the pope having become surety for the performance of his promise, he was permitted to return to Normandy, where he lived in obscurity, and apparently forgotten, till his death, which took place in 1314, just after the battle of Bannockburn.

(Hemingford's *Hist.*, and Rymer's *Fœdera*; Lord Hailes's *Annals*; Tytler's *History of Scotland.*)

BALLIOL, or BALIOL, EDWARD, shared his father's captivity in the Tower, and accompanied him to his paternal residence in Normandy. With the exception of his visits to the English court in 1324 (when he was invited over by Edward II. with a view to intimidate Robert Bruce) and in 1327, it would appear that he led a life of retirement in Normandy till the year 1332, when we find him taking an active part in the enterprise of the Lords Wake, Beaumont, and other 'querellours' (as the disinherited lords were called), to take forcible possession of their forfeited estates in Scotland. Sailing from Ravenspur on the Humber with a few adventurers, said not to exceed 300 horse and a few foot soldiers, he landed at Kinghorn in Fife, defeated the Earl of Fife, increased his force to about 3000 men, and with them won the battle of Dufflin Moor, in which 13,000 Scots, including the Earls of Mar and Moray, and many knights and barons, lay dead on the scene of battle; while the loss of the English, as at the memorable field of Cressy, did not exceed a few gentlemen and foot soldiers. From Dufflin Moor Baliol and his confederate barons hastened to Perth, and he was crowned king of Scotland at Scone, on the 24th of September, only seven weeks from the day of his landing at Kinghorn.

So rapid a conquest, with means so disproportionate to the magnitude of the result, was only equalled by the suddenness with which it was overturned. He was suddenly attacked at Annan by the young Earl of Moray, brother to the earl who fell at Dufflin, and with difficulty escaped half naked to the English Marches, once more an exile and a fugitive. This event occurred on the 16th December, within less than three months from the date of his coronation.

Edward III. promptly interfered in favour of his vassal; and the battle of Halidon Hill, July 10, 1333, again placed Edward Baliol on the throne of Scotland. The loss of the Scots in this action was so great as to be deemed irrecoverable, and probably Baliol's seat would have been firm had he not outraged the national feelings by the extent of his concessions to his royal benefactor.

It would be a tedious and unprofitable task to detail the various fortunes of Edward Baliol till his final expulsion from the throne of Scotland. So long as he was supported by the king of England he exercised a nominal sovereignty, but the moment the pressure of that monarch's iron hand was withdrawn the deep-rooted hatred of the Scots against their vassal king broke out into fresh acts of resistance. Baliol himself placed so little reliance on his subjects, that he fled to England at every reverse of fortune.

In this manner Baliol contrived for some years to struggle against the obstinacy of his opponents, and the lukewarmness and perfidy of his adherents. In 1334 he was compelled to fly, in consequence of a quarrel between the most powerful of his confederate barons.

In 1355 Edward III. determined to put an end to the interruptions which the Scottish wars had constantly offered to his operations in France. As a preliminary step he purchased Baliol's rights to the Scottish throne. This was easily arranged. He appeared before Edward attired in all the symbols of royalty, and formally divesting himself of them, and laying his golden crown at the feet of the English king, ceded to him all right, title, and interest which he had or might claim to the sovereignty of Scotland. For the surrender of a barren and disputed title he received a present of 5000 marks, and a yearly annuity of 2000*l.* sterling. He then retired into privacy and obscurity, and is never again mentioned in history. He died childless at Doncaster, in the year 1363; and with him ended the line of Baliol.

BALLIOL COLLEGE, Oxford. The founder of this college was John Balliol, or de Balliol, of Barnard's Castle, in the county of Durham, a man of great opulence and power in the 13th century, and a steady adherent to King Henry III. in all his wars and contests. The wealth and political consequence of John de Balliol were dignified by a love of learning and a benevolence of disposition which, about the year 1263 (or 1268, as Wood thinks), induced him to maintain certain poor scholars of Oxford, in number sixteen, by exhibitions. On his death, in 1269, he recommended only the objects of his bounty to his lady and his executors, leaving no written deed or authority for their support. As what he had previously given was from his personal estate, now in other hands, the care of them would, in all probability, have ceased, had not his widow, who is styled the Lady Dervorgille, been persuaded to fulfil his intention in the most honourable manner by taking upon herself their future maintenance. She established a residence for the scholars: the foundation was confirmed by the founder's son, John Balliol, afterwards king of

Scotland; and a number of benefactors promoted the purposes of the founder by enriching the establishment with gifts of land, money, and church livings. At the beginning of the 14th century however the revenues were so insufficient, that many of the scholars were obliged to relinquish their studies, and even to follow mechanical trades for a maintenance. But gradually various benefactors stepped forward to relieve them in this distress, and to support the college, and during the succeeding five centuries endowments of high value have raised this college to the distinguished rank which it holds.

The actual society of Balliol College at present consists of a master, twelve fellows, and fourteen scholars. Of these, nine fellows and ten scholars are on the old foundation; and their fellowships and scholarships, together with the fellowship and two scholarships of Lady Periam's foundation, are open to all candidates, without regard to the place of their birth, residence or education. The nomination to the two fellowships and two scholarships supplied from Tiverton school is vested in the feoffees of Blundell's lands. The number of members, resident and non-resident, upon the college books is generally about 280.

The master and fellows of this college, by their statutes, enjoy the singular privilege of electing their own visitor. The present visitor is the Archbishop of Canterbury.

The more ancient parts of the buildings of this college have been so completely changed by successive alterations, made in the course of five centuries, that it would be idle now to attempt to identify the original 'refectory, kitchen, outhouses, and walks,' ascribed by Wood to the lady Dervorgille, in the latter part of the 13th century. It appears however that Old Balliol Hall stood westward, on the ground afterwards occupied by Hammond's Lodgings; and that Mary's Hall, to which the society soon removed, called for some time New Balliol Hall, was situated at the S.W. corner of the present quadrangle. The oldest part of the quadrangle, as it stood in Wood's time, was supposed by him to be the east side, having been partly rebuilt about the time of Henry VI. The College Hall, which is on the west side of the quadrangle, was originally built in the reign of Henry VI.; but the present interior is modern. The interior of the Library was rebuilt about the beginning of the present century, by Wyat, in imitation of the Gothic style. The Chapel was built between 1521 and 1529.

(Wood's *Hist. of the Colleges and Halls of Oxford*, by Gutch; Chalmers's *Hist. of the University of Oxford*; *Memorials of Oxford*, by Dr. Ingram.)

BALLISTIC PENDULUM, a rectangular block of elm weighing from 600 to 2800 lbs., and suspended by an iron stem from a horizontal axle, which rests upon the upper part of a strong frame of timber standing on the ground, or, for the sake of greater stability, inserted in the wall of a building. It is used for determining the velocities of shot discharged from a gun by given quantities of powder. The shot being made to strike the block in the direction of its fibres, and entering it to a certain distance, causes it to vibrate on the horizontal axis of the machine, when, by the extent of the vibrations, measured from a vertical plane passing through the axis, the velocities at the instant of striking are found.

The block is strongly bound by bars of iron, and, in order to obtain the extent of a vibration, a tongue of iron terminating below in a point projects from the lowest surface of the block; the point of the tongue just enters a groove, having the figure of a circular arc standing in a vertical position with its concavity upwards, and the centre of its curvature being in the axis of motion: the groove is formed in a wooden block, which is fixed to the base of the machine, and is filled with a composition of soft soap and wax. By the vibration of the pendulum when struck, the point of the tongue makes a scratch on the composition; and this remaining after the vibration has ceased, its chord can be measured, and the angular movement of the pendulum rod may thereby be computed.

The machine was invented by Mr. Robins, and at first it was so small as only to enable the experimenter to determine the velocities of musket shot as well as of small balls, but with machines of a larger kind the velocities of 9, 12, and 24-pounder balls have been ascertained. A description of the machine in its improved state may be read in Dr. Hutton's 'Tracts,' vol. ii., p. 319, ed. 1812, and in the same volume, p. 322, &c., there will be found investigations of formulæ, both strict and approximative, for computing the required velocity. The following is one of the latter kind, which affords results very near the truth:—

$$v = 614.58\, hc\frac{p+b}{bkrn},$$

in which v = the required velocity of the shot at the moment of impact; b = the weight of the shot; p = the weight of the whole pendulum; h = the distance, from the axis of motion, of the centre of gravity of the pendulum after the shot has lodged in the block; k = the vertical distance from the axis of motion to the point struck; c = the chord of the arc described by the point of the iron tongue; r = the distance from the axis of motion to the lower extremity of the tongue, or the radius of the arc described; n = the number of vibrations made in one minute after the shot has penetrated into the block.

In the above formula b and p must be expressed in the same unit of weight, as pounds; k, h, c, r in the same unit of length, as feet; then v will be obtained in feet, per second.

The place of the centre of gravity was determined mechanically by making the whole pendulum balance itself on the upper edge of a triangular prism in a horizontal position; but this was done before the firing commenced. Let h' represent the distance of the centre of gravity, so determined, from the horizontal axis of the machine; then if h, as above, represent the distance after the shot has entered the block, we have very nearly

$$h = h' + \frac{(k-h')\,b}{p}$$

By the Ballistic Pendulum has been obtained almost all the information we possess respecting the velocities of cannon balls and the resistance of the air in the case of bodies in rapid motion. [AERODYNAMICS.] Its accuracy is such that, from an average of twelve experiments, the difference between the measured length of the chords described by the lower extremity of the tongue of the pendulum and the theoretical determinations of the lengths did not exceed $\frac{1}{70}$ of the length of the chord. [GUNNERY.]

BA'LLIUM. This term, according to Dufresne, anciently meant an outer bulwark; but was afterwards adopted for the area or court-yard contained within one. It appears clear from the word, and its original use, that it is a corrupted form of the Latin *Vallium*.

Grose ('Antiquities of England and Wales,' vol. i. pref. p. 7,) says, the ditch of a royal castle was sometimes called the Ditch del Bayle, or of the Ballium, to distinguish it from the ditches of the interior works. Over it was either a standing or a draw-bridge, leading to the ballium. In towns, the appellation of ballium was given to a work fenced with palisades, and sometimes masonry, covering the suburbs. When there was a double inclosure of walls, the areas between the walls and within the interior wall were styled respectively the outer and inner ballia, as may be inferred from the manner in which these are mentioned by Camden, from the Chronicle of Dunstable, in the account of the siege of Bedford Castle, A.D. 1224.

The wall of the ballium in castles was commonly flanked with towers, and crowned by a parapet, embattled, crenellated, or garreted. There were flights of steps at convenient distances; and the parapet often had the merlons pierced with long chinks, ending in round holes, called oillets.

Within the ballium were the lodgings and barracks for the garrison and artificers, the stable, hospital, wells, chapel, and even sometimes a monastery. Large mounts were also thrown up in this place, serving, like modern cavaliers, to command the adjacent country.

The entrance into the ballium was commonly through a strong machicolated and embattled gate, between two towers, secured by a herse or portcullis. Over this gate were rooms, originally intended for the porter of the castle; the towers served for the corps de garde. Compare the representation of the works of Dover Castle, in Grose's 'Antiquities,' vol. i. p. 10.

The name Bailey, as the Old Bailey, in London, and the church of St. Peter in the Bailey, in Oxford, seems to have been derived from ballium.

Grose's *Antiq.*; Dufresne's *Glossar. ad Script. Med. et Inf. Ætatis*; King's *Observ. on Anc. Castles*, in *Archæol.* vol. vi. pp. 249, 308; *Munim. Antiqua*, vol. ii. p. 45.

BALLOON, from the French *ballon*, a football, is a name applied generally to any hollow spherical body, but especially to the well-known machine consisting of a bag of silk, or other light material, inflated with gas or heated air, so that, being lighter than an equal bulk of common air, it will rise from the earth with sufficient force to lift a car, in which persons may perform an aërial voyage.

The notion of flying or sailing through the air, evidently suggested by the flight of birds, is very ancient; but, passing over the early fables or traditions on the subject, we find the first idea of a real balloon suggested by the Jesuit Francis Lana, in a work published in 1670. His notion was to raise a vessel by means of hollow metal balls, strong enough, when exhausted, to resist the pressure of the external air, but so thin as to be, under such circumstances, lighter than their bulk of air; but, had he tried the experiment, he would have found the requisite strength incompatible with the necessary degree of thinness and lightness. The actual invention of balloons, however, is of much later date, and is due to Stephen and Joseph de Montgolfier, paper-manufacturers at Annonay, near Lyon. Soon after Cavendish had discovered the comparative lightness of hydrogen gas, Dr. Black conceived that a light body filled with it would rise of itself. Cavallo, in 1782, tried to put this idea in practice, but could not succeed in raising anything heavier than a soap-bubble; and about the same time the Montgolfiers began their experiments by attempting to confine hydrogen in paper. Failing in this, in consequence of the escape of the gas through the pores of the paper, they next thought, that as it was supposed the elevation of the clouds was caused by the presence of electric matter, and as it seemed to them, from some experiments, that electrified bodies were diminished in weight, it might be possible to raise a surface of great extent in proportion to its specific gravity by means of electricity. After trying various methods, they applied fire underneath a balloon, not to rarefy the inclosed air, 'but as well to increase the layer (*couche*) of electric fluid upon the vapour in the vessel, as to divide the vapours into smaller molecules, and dilate the gas in which they are suspended.' ('Memoir of J. Montgolfier to the Academy of Lyon.') They succeeded in raising a balloon, as they supposed, on this principle, early in 1782; but as, in a report made to the Academy of Sciences in December 1783 they are spoken of as simply rarefying the air contained in the balloon, it is probable that by that time they were led to take a correct view of the subject.

The ideas of J. Montgolfier as to the possible use of his invention have that character of simplicity and soundness which distinguish the philosopher from the projector on such points. 'Large balloons might be employed for victualling a besieged town, for raising wrecked vessels, perhaps even for voyages, and certainly, in particular cases, for observations of different kinds; for reconnoitring the position of an army, or the course of vessels at 25 or even 30 leagues distance,' &c. One of these ideas was put in practice at the battle of Fleurus, where the French made a reconnoisance and prevented a surprise by means of a balloon.

The first public experiment was made at Annonay, June 5, 1783. At the appointed time, nothing was seen in the public place of the town

but immense folds of paper 110 feet in circumference, fixed to a frame, the whole weighing about 500 pounds, and containing 22,000 cubic feet (French measure). On the application of fire underneath, the mass gradually unfolded and assumed the form of a large globe, striving at the same time to burst from the arms which held it. At length it rose with great rapidity, and in less than ten minutes was at 1000 toises of elevation. It then described a horizontal line of 7,200 feet, and gradually sank. This balloon contained nothing but heated air, maintained in a state of rarefaction by a fire, the receptacle of which was attached underneath the globe of paper, which had an orifice opening downwards. Machines on this principle were called Montgolfiers, to distinguish them from the hydrogen balloons which were made immediately afterwards.

Almost as soon as the news of this experiment reached Paris, other parties resolved to repeat it with a balloon made of lute-string dipped in a solution of India-rubber or caoutchouc, and inflated with hydrogen. After some difficulties, this balloon ascended, on the 27th of August, from the Champ de Mars; and in the following month J. Montgolfier twice exhibited a balloon of the former construction, sending up with it, on the second occasion, a sheep, a cock, and a duck, which descended in safety. Soon afterwards, M. Pilâtre de Rozier ascended to a very moderate height, the balloon being held by ropes; and on the 21st of November, in the same year, that gentleman accompanied the Marquis d'Arlandes in the first aeronautical voyage attempted with a free balloon. The balloon used was a Montgolfier, 70 feet high, and 46 feet in diameter. It ascended from the Château de la Muette, near Passy, gained an elevation of at least 3000 feet, and, after catching fire, which was easily extinguished by the intrepid voyagers, descended safely, after a journey of 5000 toises (about 6 miles), which was performed in from twenty to twenty-five minutes. On the 1st of December M. Charles ascended to the height of 1500 toises (nearly 2 miles), in a hydrogen balloon of 26 feet diameter, from the Tuileries; and on the 19th of January seven persons ascended in a Montgolfier 126 feet high, and 102 feet in diameter. To reduce the above measures, which are French, to the English standard, it should be remembered that the French foot was equal to 12.7892 English inches.

On the 22nd of February, 1784, a small balloon, launched by itself from Sandwich, crossed the Channel; and in the course of that year several personal ascents were made with both kinds of balloon. M. Blanchard, in his first ascent from Paris on the 2nd of March, with a hydrogen balloon, added wings and a rudder, but found them useless. He also first attached a parachute, or open umbrella [PARACHUTE,] above the car, to break his fall in case of becoming accidentally separated from the balloon. In one of the French ascents of this year the use of oars was tried, with, it was thought, some effect. In England a hydrogen balloon of 10 feet diameter was launched from the Artillery Ground, London, by Count Zambeccari, on the 25th of November, 1783; but the first personal ascent was made by Vincentio Lunardi, from the same place, on September 15, 1784. On the 7th of January, 1785, M. Blanchard and Dr. Jeffries crossed the Channel from Dover; and on the 15th of June following M. Pilâtre de Rozier and M. Romain ascended from Boulogne with the same object, with a Montgolfier, which caught fire, and precipitated them from a height of 1000 yards. Among the more memorable subsequent ascents may be mentioned that of M. Garnerin, in 1802, from London, on which occasion he descended successfully by means of a parachute; that of the same person from Paris, in 1807, in which, after encountering great risks, he landed at, or rather was dashed against, Mount Tonnerre, at a distance of 300 miles from his starting-point; that of MM. Gay Lussac and Biot, from Paris, in 1804, to the height of 13,000 feet, for the purpose of making scientific observations; the subsequent ascent of M. Gay Lussac alone, in the same year, to the height of 23,000 feet; and the attempt made in 1806, by Carlo Brioschi, astronomer royal at Naples, and Signor Andreani, to attain a yet greater elevation, when they reached an atmosphere so rarefied that the balloon burst, its remains proving, however, sufficient to break their fall so that their lives were saved.

Although much has been suggested, very little has been accomplished towards rendering balloons available for any practical use. The great experience acquired in the numerous ascents made for popular amusement has rendered them safe to a degree which could hardly have been hoped for, when under the management of such a person as our English veteran, Charles Green; but, excepting in so far as it is involved in a limited power of ascending and descending, so as to take advantage of such different currents as may be met with at various elevations, nothing has been done towards guiding a balloon. Many of the schemes which have been proposed for the purpose evince a singular disregard of the essential difference between a ship and a balloon. The former sails in two fluids of very different density, and the action of the water, the denser of the two, upon the rudder is a guide to the impelling power derived from the air, or lighter or less dense element; but no such regulator can be applied to the balloon, which is sustained, as well as impelled, by the air. So far, however, as the mere safety of the machine, and the power of ascending or descending more or less rapidly according to circumstances, are concerned, little remains to be desired. Two very important improvements effected by the gentleman last named, who has made several hundred ascents, and many of them under peculiarly perilous circumstances (we refer especially to his nocturnal ascents for the purpose of letting off fireworks at an otherwise unattainable elevation), with an almost total immunity from accident, claim notice in this brief sketch: The first is the use of common coal gas instead of hydrogen gas for the purpose of inflation, by which an immense saving of cost is effected, and the buoyancy of the balloon may be longer maintained, as it is far less liable to escape; and the second is what he terms

the *guide-rope*, a contrivance very important for long voyages, and in case of crossing the sea. A balloon is, in the course of its voyage, liable to incessant changes of power or buoyancy. At one time the sun shines upon it so as to heat and expand the gas, causing it to rise so rapidly that a considerable quantity of gas must be let out to prevent the danger of bursting or of mounting too high. Shortly after it enters a cloud, the temperature falls, and its immense surface becomes loaded with perhaps two or three cwt. of moisture. It can then only be prevented from sinking too low by throwing out a quantity of the sand carried as ballast. By the repetition of such operations the power of the machine becomes so soon exhausted that it is necessary to descend. This state of things is met by the use of the guide-rope, which is a rope of 1000 feet or more in length, attached to a windlass in the car, and capable of being let down through it. In crossing an open country the rope may be let down until the lower end trails on the ground; and, supposing the balloon to be sinking for want of power, it is thereby relieved of part of its load, and so prevented from falling lower; the portion of rope lying on the ground being equivalent to the throwing out of an equal weight of ballast. If, on the other hand, the balloon be inclined to rise, it lifts up more of the rope, and the additional load is equivalent to the letting out of a quantity of gas. In crossing the sea copper floats may be attached to the lower end of the guide-rope. This contrivance proved of great importance in the remarkable voyage undertaken on the 7th of November, 1836, with the Great Vauxhall, since called the Royal Nassau balloon, by Mr. C. Green, accompanied by Robert Hollond, Esq., the promoter of the voyage, and Monck Mason, Esq. Intending to cross over to the continent, these voyagers started from Vauxhall Gardens, London, at half-past one on the above-named day, crossed the Channel, continued their voyage through the night, and descended at half-past seven the following morning in the valley of Elbern, about two leagues from Weilburg, in the duchy of Nassau. The balloon with which this feat was performed is of silk, more than 60 feet high, and about 50 feet in diameter, and will contain, when fully distended, more than 85,000 cubic feet of gas.

(Cavallo, *History and Practice of Aërostation*, London, 1785; Farrjas de St. Fond, *Description des Expériences Aërostatiques*, &c., Paris, 1784; Bourgeois, *Recherches sur l'Art de Voler*, &c., Paris, 1784; Monck Mason, *Aëronautica*, London, 1838.)

BALLOT, a word taken from the French *balotte*, or *ballotte*, signifying a little ball, and used to designate a mode of voting employed upon occasions when it is considered desirable to preserve secrecy in regard to the opinion of each voter. In many cases where any matter is decided by votes, there are good reasons why it should be generally known how each person has voted; but there are other cases in which there may be equally good reasons for allowing the voters to vote by ballot. Voting by ballot, therefore, cannot be called either a good or a bad system of voting, without considering the particular cases in which it is exercised. [VOTING.]

The modes of voting by ballot are various; but the principle is the same. The voter puts into a box a black ball or white ball as he pleases, and it is so contrived, or intended to be so contrived, that no person shall know which colour he has put in. Sometimes the name or names of the person or persons for whom a man votes are written or printed on paper, and the voter places the paper folded up, so as to conceal the names, in a glass, or urn, or so forth. The result is ascertained by counting the balls or billet-papers. This mode of election is now almost universally used in England by clubs and scientific societies, as well as in hospitals for the election of medical officers, and by insurance offices and commercial associations for choosing their managers or directors. The directors of the Bank of England and of the East India Company are thus chosen. The ballot is now used in many English parishes in the annual election of the officers called vestrymen.

In France, voting by ballot is used in the election of members of the Chamber of Deputies, and the same mode of voting is frequently resorted to in the deliberations of the legislative chambers. In determining the acceptance or rejection of the separate clauses of any law, the votes of the members present are taken by the approving party rising up, while their opponents remain seated. If however twenty members should concur in demanding a ballot, that course must then be resorted to. In every case the ultimate acceptance or rejection of the entire law, with all its clauses, is determined by the ballot.

In the United States of America, almost all public elections are conducted by ballot. Virginia and Arkansas are perhaps the only States in which open voting is used.

BALLSTON SPA, a town in the State of New York, capital of Saratoga county, about 167 miles N. of the city of New York, and 28 miles N. of Albany. It is frequented on account of several medicinal springs, the waters of which are found to be serviceable in dyspeptic cases, for obstructions, stone and gravel, and in cutaneous diseases. The water contains iron, common salt, and lime. When fresh from the springs, it is cold, brisk, and sparkling. It is, at the same time, cathartic, diuretic, and sudorific. The springs are said to have lost some of their medicinal properties, and are less frequented than formerly. The population of the town is about 1500, exclusive of visitors. It is connected by railroads with Troy, Schenectady, and Saratoga.

BALLY, BALI, or LITTLE JAVA, an island separated from the eastern extremity of Java by a strait called the Strait of Bally: it is situated between the 8th and 9th degrees of S. latitude, its southern promontory being in 8° 40′ S. lat., and 115° 20′ E. long. The island is 70 miles long from E. to W., and its average breadth is 35 miles. No bottom is found with 480 feet of line in the strait, which is very narrow in some parts; the spring tides pass through it at the rate of six miles an hour. The coast is difficult of approach. The country is mountainous, and rises gradually

from the north and south coasts towards the interior for the distance of about ten miles, where a ridge of mountains occupies the centre, and extends through the island from east to west. At the eastern extremity is a volcanic mountain called the Peak of Bally.

The chief vegetable productions of Bally are rice, maize, sweet potatoes, and cotton. Cocoanuts, oranges, and citrons are also very abundant, but are not cultivated. No part of the rice produced is allowed to be exported, but in years of abundance the surplus produce is stored in granaries on the tops of mountains, against a time of scarcity. Oxen for draught, cattle, and swine are numerous. In addition to the cotton grown on the island, a further quantity is imported from Sumbawa, and the whole is spun and a great part woven by the females. Cotton yarn and cloths are purchased by the Chinese traders who visit the island.

The external trade of the island is almost entirely carried on by Chinese and by proas from the island of Celebes. Besides the cloths and cotton-yarn already mentioned, the traders of Bally furnish cocoa-nut oil, edible birds' nests, hides, and a few other trifling articles, receiving in exchange opium, betel-nuts, ivory, gold, and silver. A considerable export trade in slaves was formerly carried on with the Chinese.

The island is divided into eight independent states; each of which is governed by a raja. The most important of these states are Karang-Assem, Giangur, Tabanan, Blelling, and I-Klong-Ktong, so named from their respective chief towns. The harbour of Bali-Badong, which is visited by Dutch vessels, is on the south side of the island. The population of the whole island has been variously stated at 600,000 and 800,000. The Balinese are a finer race of men than the Javans, and indeed are superior in stature and muscular strength to the generality of Eastern islanders.

No European power has ever made any permanent settlement on the island. In 1814, in consequence of an insult offered by the brother of one of the rajas to the British post at Blambangan in Java, some English troops were sent to Bally, and during some time occupied the town of Blelling.

(Raffles's *History of Java;* Crawford's *Indian Archipelago.*)

BALLYMENA. [ANTRIM.]

BALLYMONEY. [ANTRIM.]

BALLYSHANNON. [DONEGAL.]

BALNAVIS, HENRY, of Halhill, was born of poor parents in the town of Kirkaldy, in Fife, whence, after obtaining a little learning at St. Andrews, he proceeded abroad, and when at Cologne got admission into a free school there, where he received a liberal education, together with instruction in the principles of the Protestant faith. He returned to his native place towards the latter end of the reign of king James V., and, having applied himself to the study of the Roman jurisprudence, acted for some time as a procurator in the courts of the then metropolitan city of St. Andrew's. From St. Andrews he removed to Edinburgh, where he was one of the earliest friends of the Reformation; and notwithstanding the jealousy of the papal clergy, who hated him for his religious sentiments, his reputation introduced him to the court. On the 31st of July, 1538, he was appointed a Lord of Session. He sat in the parliament of 4th November, 1538, by special commission; and in the subsequent parliaments his name often occurs. In January 1541, he was joined in a commission to adjust one of the frequently recurring disputes about the Borders.

On Mary's accession to the Scottish throne, in 1543, the Earl of Arran was made Regent of the realm. Balnavis, who is said to have powerfully contributed to Arran's appointment, was then also promoted to the situation of Secretary of State. He was instrumental to the passing of the important act, introduced into the parliament by the Lord Maxwell, and passed, notwithstanding the opposition of the Lord Chancellor and all the prelates, for allowing the Holy Scriptures, 'baith the New Testament and the Auld,' to be translated and read by the people in the vulgar tongue. In May of the same year he was one of the commissioners despatched by the parliament to the English court to treat of a peace with England, and of a marriage between Prince Edward and the young Queen of Scotland, both of which were quickly agreed to, except as to the time of Mary's passage into England, on which point new instructions were given and additional commissioners appointed. Cardinal Beaton, however, who had just succeeded to the Chancellorate, saw in the match the ruin of the religion to which he clung. Balnavis was dismissed from his office by Arran, and in the same year, together with the earl of Rothes and the Lord Gray, he was seized at Dundee, and confined in the castle at Blackness, on the Forth, till the arrival of the English fleet in the river, in the month of May following, set them at liberty.

On the accession of Edward to the English throne in January 1547, the conferences for a peace and marriage were renewed. In August, however, a fleet and land forces from the King of France appeared before St. Andrews, in support of the Regent and the papal faction; and those within the castle were, after a vigorous defence, at length obliged to surrender. They were conveyed to France, and, in direct violation of the articles of capitulation, thrust into the castle of Rouen, in Normandy, as prisoners of war.

In 1554 Arran resigned the regency, to which the Queen Dowager, Mary of Guise, was then raised; and she, to soothe her Protestant supporters, recalled the laird of Grange and the other conspirators from their banishment; and the forfeiture which had been pronounced against Balnavis was also rescinded. In the proceedings of the people of Scotland which soon afterwards followed, Balnavis took a leading part for the reformers; and ultimately, in the parliament of 1560, the reformed religion was established by law.

On the 11th February, 1563, Balnavis was reappointed a Lord of Session, and on the 29th of December, same year, he was named by the General Assembly of the Church of Scotland one of

the commissioners appointed by that venerable body to revise the 'Book of Discipline.' The next year he attended the Regent Murray as one of the commissioners from Scotland to York in relation to the charges against Mary for the murder of Darnley; and he was one of the two afterwards sent to London on the part of the Regent in the same matter.

According to Mackenzie ('Lives,' vol. iii. p. 147), Balnavis died in 1579; yet in the Pitmedden MS. we find it stated that on the 20th October, 1570, Macalzean, of Clifton Hall, was appointed a Lord of Session in the room of Henry Balnavis, deceased.

(Rymer's *Fœdera;* Sadler's *State Papers;* Knox's *Hist.;* Keith's *Hist.;* M'Crie's *Life of Knox.*)

BALSAMI'FLUÆ, a natural order of plants, intermediate between the Willow and Plane tribes. It consists of lofty trees, flowing with balsamic juice. The different species yield the resinous fragrant substance called liquid storax, which is so much prized by the inhabitants of the East. The whole order consists of but a single genus. [LIQUIDAMBAR.]

BALSA'MINA, one of the only two genera of which the natural order *Balsamineæ* consists. There are many species, several of which have very handsome flowers: they are chiefly found in the damper parts of the East Indies; but the only one that is much known in Europe is the common garden balsam, which, in its double state, has been an object of cultivation since the earliest records of modern horticulture. All that is necessary in order to secure fine balsams is, first, to save the seed with great care from the finest and most double flowers only; and, secondly, to cultivate the plants with a due regard to the natural habits of the species. A shaded, damp, but well-ventilated situation suits them best, unless they are beginning to bud, when a greater amount of light and heat is desirable in order to produce brilliant flowers.

BALSAMI'NEÆ, a small natural order of plants belonging to the Gynobasic alliance of Dicotyledons. The order is remarkable for the elastic force with which the valves of its fruit contract and reject the seeds.

BALSAMODE'NDRON, a genus of Oriental trees belonging to the natural order Amyrideæ, and remarkable for their powerful balsamic juice. Five species are mentioned by botanists. Myrrh, a gum-resin, celebrated from all antiquity for its aromatic and fragrant properties, is yielded by two of them, *Balsamodendron Myrrha*, and *Balsamodendron Katof.* Myrrh exudes from the bark, and is at first soft, oily, and of a yellowish-white colour, then acquires the consistence of butter, and by exposure to the air becomes harder, and changes to a reddish hue. As met with in commerce, it is of two kinds, that which is called *myrrh in tears*, and that called *myrrh in sorts.* The smell is peculiar and rather disagreeable, the taste is bitter and very unpleasant.

The alcoholic tincture of the best myrrh, mixed with equal parts of nitric acid, becomes red or violet. The tincture of the false myrrh (of Bonastre) so treated becomes turbid and yellow, but not red. The taste of this false myrrh is very bitter, but the smell is that of turpentine.

Myrrh, though containing a volatile oil, seems to act more from its bitter qualities, which approach to the character of a stimulant tonic. It increases the energy of the whole frame, giving solidity to the solids, and greater consistency to the fluids. The secretions of the mucous membranes particularly are improved by it, and diminished in quantity when excessive. Its introduction into the stomach is followed by a sense of warmth, which diffuses itself over the whole abdomen. The appetite is increased, and the digestive process is much facilitated, especially where there is weakness and torpidity of the intestinal canal, sometimes accompanied by too copious mucous secretion (constituting what is termed *diarrhœa mucosa*). In affections of the lungs, bronchia, chronic cough, and hysteria, myrrh is found to be a valuable remedy; and, from its cleansing power in the case of external ulcers, it has been recommended in consumption. In amenorrhœa occurring in feeble persons, it is of great use, along with aloetic medicines and preparations of iron.

The produce of the *Balsamodendron Gileadense*, though called a balsam, and denominated Balsam of Mecca, and Balsam of Gilead, is not entitled chemically to rank as such, being an oleo-resin. It is of two kinds, that obtained by spontaneous exudation, and that which is obtained by boiling the branches. The former is so highly prized in the East and so expensive, that it is never brought to Europe. That which is obtained by boiling is of different qualities and value, according as the boiling is continued for a short or long time. When for a short time only, the substance which floats on the surface is highly esteemed, and almost all of this quality is consumed in Asiatic Turkey and Egypt. The variety procured by long-continued boiling is sent to Europe in small conical leaden bottles, the mouth of which is closed with a leaden stopper, and covered over with bladder. It is, however, frequently adulterated on account of its high price.

BALSAMS. The substances commonly included under this title are of various natures. There are natural balsams exuding from trees, as those of Peru and Tolu, &c., which contain benzoic acid and resin. There are also the balsams of Copaiba, Gilead, &c., which contain no benzoic acid, but are turpentines containing a volatile oil and resin. There were in former pharmacopœias sundry very different preparations ranked together as balsams, such as balsam of sulphur, traumatic balsam, &c.: these, when retained in modern pharmacopœias, are arranged under other forms.

Balsams are obtained from certain vegetables, chiefly of the *Leguminosæ*, or pea tribe, the *Styraceæ*, or storax tribe, and that section of *Amentaceæ* called *Salicineæ*. Numerous substances of a resinous nature were formerly designated *balsams*, and turpentines and balsams are still popularly confounded with each other. The term balsam, however, should be limited to such articles as contain *benzoic acid* along with a volatile oil and resin. The others, which contain only volatile oil and

resin, should be called turpentines, or oleo-resins. The true balsams appear to be only five, viz. balsam of Peru and balsam of Tolu, yielded by the *Myrospermum Peruiferum* and *M. Toluiferum leguminosæ*, benzoin, from *Styrax benzoin*, storax, from *Styrax officinalis*, and liquidamber, from *Liquidambar styraciflua*, and *L. imberbis*.

Balsams are regarded as stimulants of the secretory and excretory systems, which they rouse to continued action. Their influence is greatest over mucous membranes, the secretions from which they render more abundant when deficient, and more consistent when too liquid and of imperfect quality. The mucous membranes of the lungs and of the urinary passages seem to be more under their influence than that of the intestinal canal. They possess a similar power over the skin, the secretion of which they regulate according to its condition: when cool, pale, dry, and in a state of atony, they promote the perspiration; but if the weakness be so great that the skin is covered with a cold clammy sweat, or of a colliquative kind, the balsamic medicines frequently check its flow.

BALTIC SEA is a close sea, which occupies, as it were, the centre of northern Europe, separating Sweden and the Danish islands from Germany, Prussia, and Russia. It extends from 54° to 66° N. lat., and from 10° to 30° E. long.

Its great length and comparatively small breadth give it the form of an extensive gulf, and such it would be considered, if it were not separated from the Atlantic Ocean by the low and comparatively narrow tract of land, which forms the southern part of the Danish peninsula, called Schleswig. It is connected with the ocean by means of a large gulf called Kattegat, which separates Denmark from Norway and Sweden, and by three straits, the Sound, the Great Belt, and the Little Belt, which may be considerad as three gates by which the Baltic Sea is entered. Between Denmark and Prussia, the Baltic extends from west to east, but between Cape Torhamsudde in Sweden and Cape Brusterort in Prussia it bends to the north, and the remainder of the main body lies nearly due north and south. The longest straight line drawn through the Baltic would be about 900 miles; the width nowhere exceeds 150 miles. The area is computed at 160,000 square miles. The Gulf of Bothnia joins the Baltic on the north, and the Gulf of Finland prolongs it on the east. The southern coast, westward of the Gulf of Livonia, is low and sandy, and lined by numerous sandbanks. This part of the coast is characterized by fresh-water lakes called Haffs, which are separated from the sea by very narrow and sandy but somewhat elevated tracts of land called Nehrungs. Eastward of the Gulf of Livonia the shores are generally more rocky.

The basin of the Baltic Sea is of considerable extent. On the south it receives, by the Oder and Vistula, the drainage of countries which lie 300 miles and upwards from its shores. On the east it does not extend quite so far; yet the Niemen and the Düna, near their sources, drain countries which are from 250 to 300 miles from the sea. To the north of the Gulf of Finland the basin of the Baltic becomes more contracted, though round the Gulf of Bothnia, and southwards to the parallel of Stockholm, it generally extends 150 miles from the coast. It is only at its western extremity, where it approaches the North Sea, that the waters falling into it have a short course, frequently only a few miles. The drainage of more than one-fifth of the surface of Europe goes to the Baltic.

Perhaps in no other inhabited country on the globe such a quantity of snow falls as in the countries round the Baltic. This phenomenon may be accounted for by the atmosphere of the Baltic being alternately filled with warm moisture, and subjected to a dry piercing cold, and by the frequent and rapid transition from one to the other. The warm moisture is brought from the south-west and west, while the cold dry air comes from the north-east and east. Though not endowed with great fertility, the soil being, with very few exceptions, sandy and light, the Baltic provinces abound in timber of the best quality; they support in their green pastures innumerable herds of cattle, and produce abundant crops of grain, which have made these districts the richest granary of the globe. No other portion of the earth approaching so near the Polar Circle can be compared with them in natural wealth. The immense quantity of melted snow water that falls into the Baltic renders its waters much less salt than those of the Black Sea. Its average depth is small compared with its area, being only from 40 to 60 fathoms. To these two circumstances—the small degree of saltness and the little depth of its waters—it is to be attributed that the shores of the Baltic nearly every year are covered with ice, which in general, from the end of December to the beginning of April, shuts up the harbours, straits, and bays, and interrupts navigation. In severe winters large portions of the Baltic have been frozen sufficiently hard to allow an army to pass over.

The current of the Baltic may be compared to that of a wide river or a large æstuary. It commences at the remotest extremities, and its course is towards the outlets of the sea. The greatest volume of fresh water is discharged by numerous rivers into the northern part of the Gulf of Bothnia; and the current thus produced determines that of the Baltic generally. The tides are felt very little in the Baltic: the rise at Copenhagen being only one foot.

The Baltic does not abound in fish either as to species or numbers. The chief fishery of the Gulf of Bothnia is that of the *straemling*, a kind of small herring. Among the Danish islands the cod and other varieties are caught; and at various places the salmon, the sturgeon, the turbot, and the flounder, are the objects of fishery. The herring, once very prevalent, is now little met with in the Baltic.

The countries surrounding the Baltic supply timber, grain of different kinds, hides, tallow, &c., in the greatest abundance and of the first quality. If we except the seas contiguous to the British islands, and that which incloses the maritime tracts of the Chinese empire, no portion of the ocean is so much frequented by ships as the Baltic; and this in spite of the difficulties of the navigation. In 1842, 6991 vessels entered the Baltic,

and 6966 left it, the burthen of the whole being 2,117,388 tons. Of this total number of 13,957 ships, 3489 were British. It is thought that 2 per cent. of the vessels which visit the Baltic are annually lost, while the commerce between Great Britain and America is carried on with the loss of 1 per cent. Besides this, the harbours of the Baltic are shut up for three or four months by the ice, and thus the navigation is interrupted for nearly one-third of the year. Another disadvantage is the shallowness of the harbours on the southern coast, and the complete want of tides. These difficulties render it necessary that the vessels employed in the Baltic trade should be of comparatively small burthen, averaging from 200 to 300 tons.

The Swedes who inhabit the coasts long since observed that some places formerly covered by the sea had become dry land in the course of time. This induced some Swedish naturalists to suppose that the surface of the Baltic was lowering; but modern investigations have tended rather to the conclusion that the surrounding country is slowly rising; although the question is still unsettled.

(Catteau, *Tableau de la Mer Baltique*; *Travels* of Von Buch, Thompson, Schubert.)

BALTIMORE, a large city in Maryland, in the United States of North America. Baltimore is situated on the N. side of the river Patapsco, 14 miles from its entrance into Chesapeake Bay in 39° 17′ N. lat., 76° 36′ W. long. Population 103,000. The town was first laid out in 1729, and in 1765 it contained only 50 houses. It received a charter as a city in 1797, and since that period its extension has been rapid, which is no doubt to be ascribed to its favourable position for foreign trade.

Baltimore is built round a basin which forms one of the securest harbours in the United States, and is capable of containing 2000 sail of merchant ships. The entrance to this harbour, which is 600 yards wide, with 22 feet of water, is defended by a fort. At common tides the water rises five or six feet, and the harbour is at all times deep enough, through the greater part of its extent, to receive ships of large burthen, but only small vessels can go quite up to the town. As, from its formation, vessels can only depart from this harbour with the wind in a particular quarter, it is usual for large ships to load and unload in a harbour near the mouth of the basin, which is formed by a neck of land called Fell's Point. The harbour is accessible through a great part of the year, but it is sometimes obstructed by ice.

The exports of Baltimore consist principally of tobacco, wheat, wheat-flour, maize, hemp, and flax; and its imports, of colonial produce and the principal European products and manufactures. Its export trade has of late years been greatly increased by the railroads which connect the town with Philadelphia, Washington, Ohio, York in Pennsylvania, &c.; by these the products of the interior, including even the valley of the Mississippi, find a rapid transit to Baltimore, whence they are shipped to various parts of the United States and of Europe. There are lines of steam-packets to Philadelphia and to Norfolk, and other packets to New York and various parts of the Atlantic. The tonnage belonging to the port of Baltimore in 1840 amounted to 98,514, giving an increase of 26,991 above the preceding year. The number of vessels which entered from foreign ports in 1840 was 410, with a tonnage of 77,000, and of those which cleared for foreign ports was 461, with a tonnage of 93,354. The total value of the imports in 1839–40 was 4,835,617 dollars, being a falling off on the preceding year of 2,117,001 dollars. The total value of the exports in 1839–40 was 5,756,870 dollars, which was an increase on the preceding year of 1,210,725 dollars. The coasting trade is very considerable; in 1840 there were engaged in it 981 vessels of all sizes.

The city is well supplied with good water by numerous fountains; an aqueduct also half a mile long conveys water from the Jones' Falls River to a reservoir in Calvert Street, whence it is distributed in pipes through the city. The water power of the Jones' Falls and of the Patapsco, which has a fall of 800 feet in a course of 30 miles, is made available in the numerous flour mills, cotton factories, and other manufactories of cloth, paper, iron, copper, glass, steam-engines, tobacco, chemicals, powder, &c., in the environs of the city. In the city itself there are cotton factories, tanneries, distilleries, breweries, sugar refineries, potteries, saw mills, glass-works, rope-walks, tobacco manufactories, printing-offices, &c. In the year 1840, 6 daily, 7 weekly, 5 semi-weekly, newspapers, and 6 periodicals, were published in Baltimore. Ship-building is very extensively carried on.

Baltimore is laid out with regularity; the streets are spacious, and the houses are well built, generally with brick. The town contains many churches; of which the Episcopalians have 5; the Catholics, 6, one of which is a splendid cathedral; the Presbyterians, 5; the Baptists, 4; and the Methodists, 9. The citizens have erected a monument to General Washington: its base is 50 feet square, and 20 high, on which stands a column 140 feet high; on the top of this is a statue of Washington 13 feet in height. It was sculptured in Italy. Among the other public buildings may be mentioned the City Hall, the Court House, the State Penitentiary, the County Prison, and the Battle Monument, erected in 1815, to commemorate the successful defence of the city against the British in Sept., 1814. The names of those who fell in the battle are inscribed on the column in letters of gold. There are various benevolent institutions, among which are the hospital, the almshouse 375 feet long, with spacious grounds, several dispensaries, and orphan asylums. The city contained, in 1840, 9 banking companies with an aggregate capital of nearly seven millions of dollars, four marine insurance and two fire insurance companies.

The University of Maryland, which is situated in Baltimore, was incorporated in 1812, and the Baltimore College has since merged into it; it has an academical and scientific, a medical and law department. St. Mary's Catholic college is a flourishing institution, and has a library of 12,000 volumes. Among the other literary and scientific institutions, the Maryland Institute for the diffusion of scientific and mechanical knowledge, the Maryland Academy of science and literature, and

Asbury College, are deserving of particular notice. Besides these there are 50 grammar schools, 63 primary schools, and several public libraries. Baltimore sends two members to the House of Delegates, and one member to the senate of the state of Maryland.

(*United States Gazetteer*, by Haskel and Smith; Macgregor's *Commercial Tariffs*.)

BALTIMORE, LORD, founder of the colony of Maryland in North America. The family name of the Lords Baltimore was Calvert, who were originally of Flemish extraction, but for a long time were settled in Yorkshire, where they were large landholders. George Calvert, the first Lord Baltimore, held several lucrative situations, and obtained extensive grants of land in Ireland and Newfoundland under James I.; but having, in the year 1624, become a Roman Catholic, he was compelled to give up his office of secretary of state, and to abstain altogether from interfering in public affairs, the intolerant spirit of that age prohibiting the open exercise of the Catholic worship.

The French having taken possession of a settlement in Newfoundland, upon which Lord Baltimore had expended a very large sum of money, Charles I. made him a grant of all that tract of country which constitutes the present state of Maryland, but he died before the grant was legalized; and the patent or charter was accordingly made out in the name of his son Cecil, the second Lord Baltimore. This charter is dated June 20th, 1632. Under this charter, about 200 persons, of respectable family, and mostly of the Roman Catholic persuasion, entered the Chesapeake Bay, in February 1634. Having purchased a village from the native Indians, they proceeded to organize the new colony, called Maryland, in honour of Henrietta Maria, the wife of Charles I. The experiment was most successful [MARYLAND]; a representative form of government was established; all persons professing a belief in the divinity of the Christian dispensation were declared eligible to the civil advantages of the state, without distinction; and as long-continued persecution had taught the Catholics the wholesome lesson of religious tolerance, the constitution of Maryland stood alone in not sanctioning laws directed against liberty of conscience. This most honourable exception, which, however, did not extend to the Jews, soon made Maryland an asylum to the persecuted for conscience' sake in the mother-country and the adjacent settlements.

Lord Baltimore died in 1676, at an advanced age. Though proprietor of Maryland, he never resided in it, nor, as it should seem, ever even visited it.

(*The British Empire in America; containing a History of the Discovery, Settlement, and Progress of each Colony*, London, 1708; *A Relation of Maryland, &c. &c. &c.*, London, 1635; *The Case of Lord Baltimore, with a Reply*, 1654.)

BALTIMORITE is composed of longitudinal fibres adhering to each other. Lustre silky. Opaque, but in thin pieces translucent on the edges. Hardness less than that of calcareous spar. Found at Baltimore, U. S. Analysis by Dr. Thomson:—Silica, 40.95; magnesia, 34.70; protoxide of iron, 10.05; alumina, 1.50; water, 12.60.

BALTINGLASS. [WICKLOW.]

BALUSTER, or BALLISTER, a peculiar kind of column, of the form of an ancient bow in its profile, from which resemblance it is supposed the name was derived, the Roman engine of war, balista, being in the form of a bow. It is employed in balustrades. The baluster has also of late years been formed after the model of Greek and Roman columns. Balusters are placed on a plinth, and are surmounted with a cornice.

BALUSTRADE, the termination of a modern edifice. There does not appear to be any example of a balustrade in the remains of antiquity now existing; although there are examples of railing or fencing. Balustrades are most commonly placed over the cornices of large edifices, after the manner of a parapet, as at the Banqueting-House at Whitehall and St. Paul's Cathedral. Balustrades are not only employed in large edifices, above the orders of architecture, but also to inclose stairs, terraces, altars, fonts, and the balconies of houses. The balusters forming a balustrade are placed on a plinth, at equal distances from one another, with a small opening between them: they support a cornice, and are divided at intervals by a pedestal. *Bannister* is a corrupt term for balluster, and is used to express the wooden railings inclosing stairs.

BALZA'C, JEAN LOUIS GUEZ, Seigneur of Balzac, was born at Angoulême, in 1594. A residence of some years in Italy led him to compare the high polish which the language of that country had attained, and the rich literature which it had produced, with the rude and barren condition of the language and literature of his native land. On his return to France he fixed himself at Paris, and then began writing. With the assistance of a cultivated taste, an extensive reading of the Latin classics, and a good ear, he contrived to introduce a harmony, a precision, and a correctness of style which were before unknown in French prose, and which acquired him the name of the most eloquent writer of his time, and the reformer of the French language. His contemporary, Malherbe, effected a similar improvement in French poetry. They were both the forerunners of the great writers of the age of Louis XIV. He died in 1655. In course of time most of Balzac's works fell into neglect, except his 'Familiar Letters,' which have been repeatedly printed.

BAMBARRA is an extensive country in the interior of Northern Africa, the exact boundaries of which are not known. On the west it extends to 5° W. long., and on the east probably at least to the meridian of Greenwich. Towards the north it is bounded by the great desert of the Sahara, about 16° N. lat., and to the south it extends perhaps to about 9° N. lat. It derives its name from the Bambarras, a numerous tribe of negroes, who are the native occupants of this part of Africa.

The eastern and greater part of the country is a plain, slightly undulating, and intersected by rivers of considerable size, which in the rainy season overflow their banks, and inundate con-

siderable tracts of land. Along the banks of the Joliba a flat of great extent lies on both sides, which is annually inundated. A considerable part of this eastern division has been changed into marshes by the annual inundations of the rivers. The western part is hilly and even mountainous, comprehending the eastern declivities of the Kong Mountains.

The climate is various. It is sultry and oppressive in the plains, especially on the boundary of the great desert, but where the country rises into hills the air is at all times comparatively cool. About the middle of June the hot and sultry atmosphere is agitated by violent gusts of wind, accompanied by thunder and rain. These usher in the rainy season, which continues till the month of November. During this time the diurnal rains are very heavy, and the prevailing winds are from the south-west. The termination of the rainy season is likewise attended with violent tornadoes, after which the wind shifts to the north-east, and continues to blow from that quarter for the rest of the year. The north-east wind, called the *harmattan*, in passing over the great desert, becomes hot and dry, and parches up everything exposed to its current.

The principal river is the Joliba, or D'joliba, that is, 'the great water,' or 'the great river." [NIGER; QUORRA.]

The chief mineral wealth of Bambarra is iron: it abounds in many districts, and the inhabitants make utensils of this metal, which are exported to the neighbouring nations. Gold is also found. Salt is imported in large quantities from the Sahara and the coasts of Guinea.

A considerable number of vegetables are cultivated, especially rice, maize, millet, yams, cotton, water-melons, French beans, and onions. In the rainy season, cabbages, carrots, and turnips are raised. Tobacco is planted in some districts; and in others the indigo plant grows spontaneously. It is remarkable that very few fruit-trees exist, except the pistachio. Among the trees the most remarkable is the butter-tree, called by Park shea-tree, and by Caillié *cé*. From the kernel of this tree an ash-grey butter is extracted, which is a considerable object of agricultural industry and trade. In the southern district, the enormous baobab is very common, and its fruit much esteemed. Among other trees are *bambacea*, of great size, and tamarind-trees. Ropes are made of *Ribiscus Cannibinus;* and the *Rhamnus Lotus* bears a fruit of a pleasant taste, rather acid, and in colour resembling gingerbread. Many districts to the north as well as to the south of the Joliba are covered with extensive forests.

The pastures, both in the wooded tracts and in the open plains, being extensive and excellent, the domestic animals are numerous, as horned cattle, sheep, goats, and horses of a fine breed. Poultry and guinea-fowl abound. Dogs are reared and fattened for food. In the rivers there are alligators and turtles, besides fish in great abundance. Dried fish is a considerable article of commerce. The marshes, which in many parts are of very great extent, are frequented by pelicans, egrets, trumpet-birds, puffins, Barbary ducks, teals, and various other species. A large quantity of honey is collected from bee-hives placed in trees.

The aborigines of Bambarra are a tribe of negroes, from whom the country has received its name. They compose the peasantry, but the soil is ill cultivated, and their villages disgustingly dirty. Their food is very bad: they eat all sorts of animals, dogs, cats, rats, mice, serpents, and lizards. Nearly all that they cultivate for the market is a little cotton, which they exchange for salt. The rest of the Bambarrese are composed of Mandingoes and Foulahs, who form the population of the towns, and the Moors, who, having introduced Islamism, have obtained a great degree of authority with the petty sovereigns of the country and with the rest of the population.

Bambarra carries on a very active commerce, though it is limited to a small number of commodities. The principal trading places are Jennée, Sansanding, Sego, Yamina, Bammaku, and Boure, all of which are on the Joliba. The last, which lies to the south-west of Bammaku, is the principal market for gold. Besides gold, the principal articles of exchange are slaves, ivory, and coarse cotton cloth made by the natives; they are exchanged for salt brought from the desert, for tobacco, and European merchandise. In their way to the northern countries they pass through Timbuctu, which is the general dépôt for them. There seems also to exist some trade with the coast of Guinea, from which salt is imported.

Bambarra is now governed by two independent chiefs, one of whom holds the western and hilly region, and has Sego for his capital, the population of which is said to be 30,000. The other has Jennée for his capital, which stands on an island formed by the Joliba, and is a place of considerable trade.

(Mungo Parke; Rennell; Caillié.)

BAMBERG was formerly an independent bishopric and principality, formed out of the possessions of the Counts of Babenburg, whose line became extinct in 908; the bishopric was instituted at the commencement of the 11th century, and existed until 1801, when it was secularized. In February 1803, it was assigned to Bavaria by a decree of the deputation of the Germanic empire. Part of it has been formed into two bailiwicks, which bear the names of Bamberg I. and II., and occupy an area of 164 square miles. The two bailiwicks are in the circle of Upper Main, and are separated by the Regnitz; they are thickly wooded, and produce corn, hops, and vegetables in large quantities, as well as wine, and rear considerable numbers of cattle.

BAMBERG, a large town in the Bavarian circle of Upper Main. It stands on the Regnitz, a little above where this river falls into the Main, in 49° 53′ N. lat., 10° 59′ E. long. It has a population of 21,000. The town is about midway between Munich and Leipzig, and on the railroad which unites these two cities, being about 130 miles distant from each of them. It was formerly the residence of the Prince-bishops of Bamberg: it is now the seat of

an archbishop and of the higher courts of justice of the circle. The Regnitz divides into four branches in the town; these are crossed by several bridges, one of which (Ludwigsbrücke) lately constructed is a suspension bridge. The five main streets are of handsome breadth and length; the suburb called the 'Steinweg,' formerly the Teuerstadt, presents the longest line of dwellings, and is the most populous quarter of the town; the deep ditches bordering its ramparts, which have been partially razed, are laid out in walks and gardens; the whole place is well paved and lighted. Amongst the buildings most deserving of notice are—the cathedral, rebuilt by bishop Otho in 1080, which contains many fine monuments and pictures: the former episcopal palace on a hill called Petersberg, now a royal residence: the great hospital, with its schools of surgery and medicine: the former college of the Jesuits, to which is attached the beautiful church of St. Martin, a cabinet of natural history, and an extensive library: and the Maxplatz, a large square ornamented with a colossal statue of king Maximilian. Among the literary and scientific establishments of Bamberg, besides those attached to the great hospital, are the archiepiscopal seminary, the lyceum, the historical society, the gymnasium, the school of surgery, the training-school for schoolmasters, the public library, and painting gallery, &c. Among the numerous incorporations in this town is that of the gardeners, which consists of 508 masters, 70 apprentices, and upwards of 250 workmen. The highest prize which it gives—and it is given but once in three years—is for the cultivation of officinal plants, particularly the liquorice root, of which above 50,000 lbs. are annually exported. Very considerable quantities of vegetable seeds are raised and exported by the Bamberg growers. There are sixty brewers here, whose beer is in much demand in some of the German states. The other manufactures consist of tobacco, porcelain, musical instruments, marble wares, starch, sealing-wax, gold and silver plate, gloves, &c. Two annual fairs give life to the trade of the town, the situation of which enables it to share largely in the traffic of central Germany. The navigation of the Regnitz for the larger-sized class of vessels, which commences at Forkheim, about 14 miles higher up, is however much impeded by mills and water wheels. The environs of Bamberg abound in picturesque sites and varied attractions for the visitor.

BAMBOCCIO, more frequently known by his proper name, *Peter de Laer*, was born at Laeren, in Holland, in 1613. His disposition for art manifested itself in early childhood, and was encouraged by his parents, who procured for him the requisite instruction in the elements of design, and afterwards sent him to Rome. He neglected classical art, which was ill suited to his temperament, but found a surer reputation in the freshness, novelty, and animation which the scenes of every-day life presented to his pencil, and which he has exhibited with wonderful truth and vivacity. He delighted in fairs, hunting parties, the exploits of banditti, rustic festivals, harvest-homes, and drolleries of all sorts, subjects which the Italians comprise under the general name of *Bamboccíate*, and from which the name given him in Italy was derived, not, as some have asserted, from the deformity of his person. De Laer was profoundly skilled in the art of graduating his objects, whether through the medium of lines or colours. His effects of aërial perspective are surprisingly just, and his skies are touched with a depth, delicacy, and transparency which has rarely been excelled. He died about 1673.

BAMBOROUGH. [NORTHUMBERLAND.]

BAMBOUK is a mountainous country in Africa, extending between 12° and 14° N. lat., and 8° and 11° W. long. It occupies a part of the declivities with which the extensive system of the Kong Mountains descends towards the Great Desert of Sahara. The mountains afford excellent pasture to numerous herds of horned cattle, and the lower parts of the valleys produce maize and rice in abundance. The mines yield silver and iron of excellent quality, and also a great quantity of gold. The principal gold mines of Bambouk are situated to the south of the city of Bambouk, in the mountains of Tambaoura; but a greater quantity seems to be obtained by washing the sand which the rivers have carried down from the mountains and imbedded along their courses in the alluvial soil.

Part of the gold is converted into ornaments for the women. When a lady of consequence is in full dress, her gold ornaments may be worth altogether from 50*l.* to 80*l.* sterling. But the greater part of this metal is annually carried away by the Moors, who take it to Timbuctu, whence it finds its way to the northern coast of Africa, to Egypt, and to Asia. It is exchanged for other commodities, but chiefly for salt, the value of which article is very great in these mountainous countries of Africa. One slab, about two feet and a half in length, fourteen inches in breadth, and two inches in thickness, will sometimes sell for 2*l.* 10*s.* sterling; and from 1*l.* 15*s.* to 2*l.* may be considered as the common price. This salt is brought from the Desert of Sahara. The European merchandise, brought from the coast, has till lately been generally paid for with slaves.

Among the wild animals of the woods, with which a great part of the country is covered, lions, leopards, and elephants are mentioned; ivory is brought hence to the western coast.

The Ba-Fing, which traverses the east of Bambouk and divides it from Brooko, is one of the greatest tributaries of the Senegal. It rises, according to Mungo Park, near 11° N. lat., runs in a general direction from S. to N., and, after receiving numerous tributaries, it waters Bambouk, and then joins the Kokoro, which comes from the W. The river thus formed takes the name of Senegal, and runs to the W.N.W.

The whole mountainous tract which forms the northern declivity of the Kong Mountains is inhabited by the Mandingoes. [MANDINGOES.]

(Mungo Park; Ritter's *Africa*.)

BAMBU'SA, or BA'MBOS, a genus of grasses, well known for its great economical importance, and consisting of the various species of *Bamboo*. The stems are universally pushed forth by a strong,

jointed, subterranean, creeping root-stock, which is the true trunk of the bamboo, the shoots being the branches. The latter are hard externally and coated with flint; in the inside they are hollow, except at the nodes, where strong partitions stretch across the inside, and cut off the interior into a number of closed up cylinders. In the cavity of these cylinders water is sometimes secreted, or, less commonly, an opaque white substance, becoming opaline when wetted, consisting of a flinty secretion, of which the plant divests itself, called tabasheer, concerning the optical properties of which Sir David Brewster has made some curious discoveries.

The purposes to which different species of bamboo are applied are so numerous, that it would be difficult to point out an object in which strength and elasticity are requisite, and for which lightness is no objection, to which the stems are not adapted in the countries where they grow. The young shoots of some species are cut when tender, and eaten like asparagus. The full-grown stems, while green, form elegant canes, exhaling a perpetual moisture, and capable of transporting fresh flowers for hundreds of miles: when ripe and hard, they are converted into bows, arrows, and quivers, lance-shafts, the masts of vessels, bed-posts, walking-sticks, the poles of palanquins, the floors and supporters of rustic bridges, and a variety of similar purposes. In a growing state the spiny kinds are formed into stockades, which are impenetrable to any but regular infantry, aided by artillery. By notching their sides, the Malays make wonderfully light scaling-ladders, which can be conveyed with facility where heavier machines could not be transported. Bruised and crushed in water, the leaves and stems form Chinese paper, the finer qualities of which are improved by a mixture of raw cotton and by more careful pounding. The leaves of a small species are the material used by the Chinese for the lining of their tea chests. Cut into lengths and the partitions knocked out, they form durable water-pipes, or, by a little contrivance, are made into excellent cases for holding rolls of papers. Slit into strips, they afford a most durable material for weaving into maps, baskets, window-blinds, and even the sails of boats. Finally, the larger and thicker truncheons are exquisitely carved by the Chinese into beautiful ornaments. It is however more especially for building purposes that the bamboo is important. According to Marsden, in Sumatra the framework of the houses of the natives is chiefly composed of this material. In the floorings, whole stems, four or five inches in diameter, are laid close to each other, and across these laths of split bamboo about an inch wide are fastened down with filaments of the rattan-cane. The sides of the houses are closed in with the bamboo opened and rendered flat by splitting or notching the circular joints on the outside, chipping away the corresponding divisions within, and laying it in the sun to dry, pressed down with weights. Whole bamboos often form the upright timbers, and the house is generally roofed in with a thatch of narrow split bamboos, six feet long, placed in regular layers, each reaching within two feet of the extremity of that beneath it, by which a treble covering is formed. Another and most ingenious roof is also formed by cutting large straight bamboos of sufficient length to reach from the ridge to the eaves, then splitting them exactly in two, knocking out the partitions, and arranging them in close order with the hollow or inner sides uppermost; after which a second layer, with the outer or convex sides up, is placed upon the other in such a manner that each of the convex falls into the two contiguous concave pieces, covering their edges; the latter serving as gutters to carry off the rain that falls upon the upper or convex layer. About thirty different species of bamboo have been described.

(Roxburgh's *Flora Indica;* Rumphius's *Herbarium Amboinense.*)

BAMPTON. [DEVONSHIRE; OXFORDSHIRE.]

BAMPTON LECTURE, an endowment for ever of a course of Eight Sermons, to be annually preached in the University of Oxford, between the commencement of the last month in Lent Term and the end of the third week in Act Term, at St. Mary's Church. This lecture was founded in pursuance of the will of the Rev. John Bampton, canon-residentiary of the cathedral of Salisbury, who ordered that the lecturer should be yearly chosen, upon the first Tuesday in Easter Term, by the heads of colleges only, and no others: no person to be qualified to preach the sermons unless he had taken the degree of M.A. at least, in one of the two Universities of Oxford or Cambridge, and the same person never to preach the lecture twice. The sermons to be upon some one or other of the following subjects: 'to confirm and establish the Christian faith, and to confute all heretics and schismatics; upon the divine authority of the Holy Scriptures; upon the authority of the writings of the primitive fathers, as to the faith and practice of the primitive church; upon the divinity of our Lord and Saviour Jesus Christ; upon the divinity of the Holy Ghost; upon the Articles of the Christian Faith, as comprehended in the Apostles' and Nicene Creeds.' Thirty copies of these lecture-sermons are to be always printed within two months after they are preached; one copy to be given to the Chancellor of the University, one to the head of every college, one copy to the mayor of the city of Oxford, and one copy to be put into the Bodleian Library; and the expense of printing them to be paid out of the revenue of the lands or estates given for establishing the lecture; the preacher not to be paid, nor to be entitled to the revenue, before they are printed. The names and dates of the successive preachers from 1780, when the series was begun, will be found in the 'Oxford University Calendar.' The clear income of Mr. Bampton's estate, in 1780, amounted to 120*l.* a year.

BAN, a word found in many of the modern languages of Europe in various senses. But as the idea of 'publication' or 'proclamation' runs through them all, it is probable that it is the ancient word *ban* still preserved in the Gaelic and the modern Welsh in the simple sense of 'proclaiming.'

The word *ban* occurs in some of our best writers; among the poets, Spenser, Marlowe, and Shakspere; and among prose-writers, Knolles and Hooker. By these writers however it is not used in its original sense of 'proclamation,' but to denote cursing, or denouncing woe and mischief against one who has offended.

When churches and monasteries were founded, writings were usually drawn up, specifying with what lands the founder and other benefactors endowed them; and those instruments often conclude with imprecatory sentences in which torments here and hereafter are invoked on any one who should attempt to divert the lands from the purposes for which they were bestowed. It seems that what we now read in these instruments was openly pronounced in the face of the church and the world by the donors, with certain ceremonies.

This, in the English phrase, was the *banning* of the middle ages. King Henry III., in the ninth year of his reign, renewed the grant of Magna Charta. In the course of the struggle which was going on in the former half of the thirteenth century between the king and the barons, other charters of liberties were granted. But for the preservation of that which the barons knew was only extorted, the strongest guarantee was required: and the king was induced to preside at a great assembly of nobles and prelates, when the archbishop pronounced a solemn sentence of excommunication against all persons who should violate the charters. This was done in Westminster Hall, on the 3rd of May, 1253. The transaction was made matter of public record, and is preserved in Rymer's 'Fœdera.'

Besides these general *bannings*, particular persons who escaped from justice, or who opposed themselves to the sentence of the church, were sometimes *banned*, or placed under a *ban*.

This species of banning is meant when we read of persons or cities being placed under the *ban of the empire*, a phrase not unfrequently occurring in writers on the affairs of Germany. Persons or cities who opposed themselves to the general voice of the confederation were by some public act cut off from society, and deprived of rank, title, privileges, and property.

It is manifest that out of this use of the word has sprung that popular sense in which now only the word is ever heard among us, as well as the Italian *bandire*, French *bannir*, and the English *banish*. [BANISHMENT.]

In some parts of England, before the Reformation, an inferior species of *banning* was in use. Stow relates that, in 1299, the dean of St. Paul's cursed at Paul's Cross all those who had searched in the church of St. Martin's-in-the-Fields for a hoard of gold. ('London,' p. 333.) Something like this seems to be retained in the Commination Service of the English Church.

In France the idea of *publication* prevails over that of *denouncement*, and they call the public cry by which men are called to a sale of merchandise, especially when it is done by a beat of drum, a *ban*. In time of war a proclamation through the ranks of an army was the *ban*. In Artois and some parts of Picardy the public bell was called the *bancloque* or the *cloche à ban*, as being rung to summon people to their assemblies. When those who held of the king were summoned to attend him in his wars, they were the *ban*, and tenants of the secondary rank the *arrière-ban*; and out of this feudal use of the term arose the expressions *four à ban*, and *moulin à ban*, for a lord's bakehouse, or a lord's mill, at which the tenants of a manor (as is the case in some parts of England) were bound to bake their bread or to grind their corn. The *banlieue* of a city was a district around it, usually but not always, a league on all sides, through which the proclamation of the principal judge of the place had authority. A person submitting to exile was said to *keep his ban*, and he who returned home without a recall *broke his ban*.

The French use the word as the English do, when they speak of the *ban*, or, as we speak and write it, the *banns* of marriage. This is a public proclamation of the intention of the parties named to enter into marriage. The law of the ancient French and of the English church is in this respect the same. The proclamation must be made on three successive Sundays in the church, during the celebration of public worship, when it is presumed that the whole parish is present. [MARRIAGE.]

BAN, BANUS, or BANNUS, from the Sclavonian *ban*, 'a chief,' is the name given to the governor of certain military districts in the kingdom of Hungary, in Sclavonia, and Croatia, who is the representative of the sovereign, and, in virtue of his office, takes the command for the defence of those districts in time of war. A district over which such a ban or ruler is set is hence termed a Banate or Banal. There are two of these banates in Hungary, the *Hungarian Banat* and the *German Banat*.

Banal Frontier (*Banal-Generalat*, or *Banalgräntze*) is part of the Austrian military frontiers, which lies between 45° and 45° 32′ N. lat., and 15° 50′ and 16° 55′ E. long.: it consists of two circles, the First and Second Banal Regiments, which lie on the southern bank of the Save, and extend between that river, the Kulpa, and the Unna. The confluence of the last river with the Save forms their most easterly point. The population amounts to about 130,000. The majority of the inhabitants are Croatians, consisting of about 40,000 adherents of the Greek church and 86,000 of the Armenian church. [CROATIA; MILITARY FRONTIER.] The Banal Frontier was formed in the course of the year 1696, during the reign of the Emperor Leopold I.

BANA'NA. [MUSA.]

BANBURY. [OXFORDSHIRE.]

BANCA, an island in the Indian Ocean lying off the north coast of Sumatra, near to its eastern extremity, from which it is separated by the Straits of Banca. The island measures in its greatest length from N.W. to S.E. 135 miles, and in its broadest part is 65 miles; the mean breadth is 35 miles. It lies between 1° 30′ and 3° 8′ S. lat., and 105° 9′ and 106° 51′ E. long.

Banca had always formed a dependency of the sultans of Palembang, in Sumatra, but in 1812 it was formally ceded to the government of the

British East India Company. On the 2nd of December, 1816, the island was made over to the government of the King of the Netherlands, in exchange for the settlement of Cochin on the Malabar coast.

This island does not contain any continued chain of mountains, but in every part are found short ranges of lofty hills. The whole of Banca is abundantly supplied with water of good quality by the rivers Jeboos, Jering, Marawang, Antun, Layang, &c. Almost the only town on the island is Mintok or Minto, which contained, when the island was ceded to the Dutch, about 2000 souls.

Banca derives all its importance, in a commercial point of view, from its tin-mines, which were first discovered in 1710 or 1711, and have since yielded immense quantities of ore: they appear, in fact, to be inexhaustible. The geological formation of the island is a primitive rock, the principal mountains being granite, and those of inferior elevation being formed of red iron-stone: it is in the level ground between these rocks that the tin is generally found, in alluvial deposits, seldom lower than twenty-five feet from the surface. The ore (an oxide), after being washed in the nearest mountain-stream, is smelted, and yields in various proportions from thirty to seventy pounds of tin for every hundred pounds of ore; the more usual proportion is about sixty of metal to one hundred of ore. If the ore should yield less than twenty-five per cent. of metal, the mine is abandoned as unprofitable. The proportion of metal partly depends upon the quality of the charcoal used in smelting.

From the time of their first discovery, the tin-mines of Banca have been worked by Chinese, whose numbers have been annually recruited. The quantity of tin procured was about 3,000,000 lbs. annually, at the time of cession to the Dutch; since which time it has largely increased, so largely, indeed, that after fully supplying the markets of China and India, a large quantity is annually brought to Europe, where it has consequently lessened the demand for the tin of Cornwall.

Except during the four months, from May to August inclusive, when the south-east monsoon blows, rains are very frequent on the island, especially from November to February inclusive, which is the season of the north-west monsoon. The climate is generally healthy. Ebony and other timber trees are found on the island. Deer, wild hogs, and fish, are among the animals of the island; but both animal and vegetable food are largely imported from other islands.

The population of Banca is made up of Malays, Chinese, and indigenous islanders. By a census taken when under the British flag, the total number of inhabitants, exclusive of the few Europeans connected with the government, was 13,413, of whom 2711 were Malays, 4651 Chinese, and 6051 native islanders, called Orang Goonoongs. Almost all the laborious occupations are performed by the Chinese, the Malays being extremely indolent, and the Orang Goonoongs living dispersed over large tracts of country in the interior, nearly in a state of nature, and averse to all restraint or habits of settled industry.

(Marsden's *Sumatra;* Raffles' *Java;* Stavorinus's *Voyages;* Court's *Exposition of the Relations of the British Government with the Sultan of Palembang.*)

BANCO. [BANK.]

BANCROFT, RICHARD, Archbishop of Canterbury in the reign of James I., was born at Farnworth, in Lancashire, in 1544. He was first a student of Christ's College, Cambridge, and, in 1567, he took the degree of B.A. He afterwards removed to Jesus College, and commenced M.A. in 1570. After having passed through various steps of preferment, he was consecrated Bishop of London in 1597. From this time he had in effect the archiepiscopal power; for the archbishop, being advanced in years and unfit for business, committed the sole management of ecclesiastical affairs to Bishop Bancroft. In 1604, upon Whitgift's death, he was promoted to the archbishopric of Canterbury; and in 1608 was elected Chancellor of the University of Oxford, in the room of the Earl of Dorset. He died November 2, 1610, in his palace at Lambeth. Bancroft was a learned controversialist, an excellent preacher, a great statesman, and a vigilant governor of the Church. He was, however, rigid in his treatment of the Puritans, and on that account has been spoken of with severity. He was the chief overseer of the last translation of the Bible.

BAND, in architecture, a flat moulding, with a vertical face slightly projecting beyond the vertical or curved face of any moulding or parts of an edifice to which it is attached. It is very extensively employed, and is used to give an appearance of binding parts of buildings together.

BAND, also written BUND, or BEND, the Persian word for a dyke or artificial embankment, frequently occurs as a component part of names in eastern geography: for instance, in the name of the Persian river Band-Emir, a branch of which passes near the ruins of Persépolis. (Ker Porter's *Travels*, i. 684; Sir W. Ouseley's *Travels*, ii. 181.)

BANDA ISLANDS, a small group of islands in the Malay Archipelago, about 45 miles S. from the island of Ceram, are situated between 4° 22′ and 4° 33′ S. lat., and 129° 41′ and 130° 8′ E. long. There are in all ten islands, of which Banda-Neira, Banda-Lantoir, Gonong-Apee, and Pulo-Ay, or Way, are the most important. The others are, Rossengen, Pulo-Rondo, Soangee, Pulo-Pisang, and Capella, besides several rocky islets. The area of the whole group is only about 190 square miles. These islands produce the nutmeg almost exclusively, whence they are frequently called the Nutmeg Islands, in contradistinction to the Amboynas, which yield the clove.

A settlement was first made in these islands by the Portuguese about 1520, who about sixty years afterwards were expelled by the Dutch. The English afterwards obtained a settlement, and there was much contention between the two nations, till the possession of the islands was finally given by the English in 1816 to the Dutch, who still retain them.

Banda-Neira is the seat of the Dutch government. The anchorage is formed by Banda-Lantoir on the south, Banda-Neira and Gonong-Apee on the north, with Pulo Pisang and Capella at the west entrance. All the islands are volcanic, and Gonong-Apee, or the Burning Mountain, smokes almost continually, and occasions frequent earthquakes. Besides regular forts, there are a number of redoubts and military posts all round these islands, to prevent smuggling, and protect the plantations and villages from pirates.

(Craufurd's *History of the Indian Archipelago;* Milburn's *Oriental Commerce.*)

BANDA ORIENTAL. [URUGUAY.]

BANDAGE is a term employed in surgery to designate the bands or strips of cloth by which dressings are kept to wounds, separated parts are brought together, blood-vessels compressed, and weak and protruding parts of the body are supported and retained in their natural position. Bandages are commonly composed of flannel, calico, and linen cut into different shapes, according to the parts to which they are applied, and the purposes for which they are required.

BANDANAS or BANDANNAS, a name originally applied to a peculiar kind of silk handkerchief made by the Hindoos, is now given to silk and cotton handkerchiefs manufactured in this country, decorated with patterns of similar character, though by a very different process. A bandana handkerchief has a dyed ground, usually of bright red or blue, ornamented with circular, lozenge-shaped, or other simple figures, either white, or in some cases of a yellow colour. These spots are said to be produced, in real Indian bandanas, by tying up the parts intended to be white or yellow with bits of thread before exposing the handkerchief to the action of the dye, and thus protecting them from it. In the process followed by British manufacturers, which was invented in 1810 by M. Köchlin, of Mühlhausen, the whole surface of the handkerchief is dyed of one uniform colour; a number of pieces thus dyed are laid between two leaden plates, perforated with holes wherever white spots are intended to be, and while the several thicknesses of cloth are compressed in this manner by the power of a hydraulic press, a fluid capable of discharging the dye is caused to percolate through the holes in the leaden plates, removing, in its passage, the dye from such parts of the cloth as are exposed to its action. By varying the discharging fluid the spots may be made yellow instead of white; and arrangements are sometimes made for combining white and yellow spots in the same handkerchief.

BANDAR, also written BUNDUR, BUNDER, or BENDER, the Persian word for a harbour, is in eastern geography frequently met with as the component part of proper names, especially of many sea-ports: for instance, Bandar Abbasi, otherwise called Gombroon.

BANDELLO, MATTEO, was born in the latter part of the 15th century. He lived to an advanced age, but the year of his death is not known. Bandello holds a rank in Italian literature on account of his 'Novelle' or tales, written somewhat after the manner of those of Boccaccio, though in less pure Italian. But in fluency of narrative and vividness of description Bandello rivals and even surpasses, at times, the Tuscan novelist. On the score of morality, most of his tales are as exceptionable as those of Boccaccio. The first edition of Bandello's novels is that of Lucca, 1554, in 3 vols. 8vo.

BANDERMASSIN, River. [BORNEO.]

BANDES NOIRES. This appellation was first given to a body of German foot-soldiers, who were employed in the Italian wars by Louis XII. of France, in consequence of their carrying black ensigns after the death of a favourite commander. Another body of troops, formed of Italians, afterwards took the same name from the same cause, on occasion of the death, in 1526, of their leader Giovanni de' Medici; and still later the French regiment of Piedmont, who had served for a long while in Italy, followed the same example after the death of their colonel, the Comte de Brissac in 1569.

BANDICOOT (*Perameles*, Geoffroy St. Hilaire), a genus of marsupial mammalia peculiar, with one exception, to Australia, where they appear to represent the shrews, tenrecs, and other *Insectivora* of the older continents. The genus *Perameles* (family *Perametidæ*, Waterhouse) includes some subgenera, and a considerable number of species. Their general characters are as follows:

$$\text{Incisors } \frac{10}{6}, \text{ canines } \frac{1-1}{1-1},$$

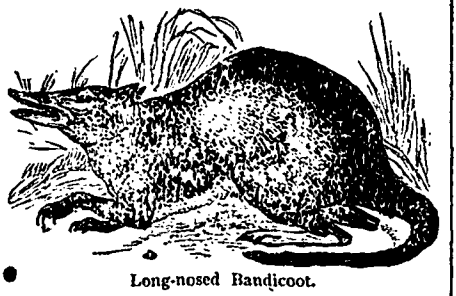
$$\text{premolars } \frac{3-3}{3-3}, \text{ true molars } \frac{4-4}{4-4}: 48.$$

Premolars compressed and pointed; true molars tubercular. Head elongated and pointed; muzzle naked; nostrils lateral; ears moderate or very large. Limbs unequal, the posterior longer than the anterior. Fore feet with the outer toes rudimentary; hind feet with the inner toe rudimentary or absent, the second and third toes united together. Tail short, occasionally rather long. Pouch of the female with the entrance directed to the tail.

These animals are all of small size, the largest known being scarcely equal in bulk to the common hare. In the structure of the hind feet, the species of this group greatly resemble the kangaroos; but there is less disproportion between the fore and hind limbs; and they do not proceed by a series of vigorous leaps, but much in the manner of the hare or rabbit. In one genus indeed, *Chœ'ropus*, the feet are peculiarly modified. [MARSUPIALIA.] The teeth are adapted for an insect diet, but these animals feed also upon roots and other vegetable substances. About ten species are described, independently of varieties or doubtful species: one, the *Perameles Doreyanus* is a native of New Guinea.

As an example of the group, we select by way of illustration the Long-nosed Bandicoot (*Peramelis nasuta*, Geoffr.). Muzzle much elongated; ears moderate. General colour pale brown; on the sides of the head and body of a very pale vinous red; under parts of body and feet yellowish white; tail brown above, dirty white beneath. Length of

head and body sixteen inches; of the tail between four and five inches, slender. Fur harsh, almost bristly, covering a soft undercoat. Country, New South Wales.



Long-nosed Bandicoot.

According to the colonists this species is purely herbivorous; nevertheless, insects may also form part of its diet, although they have not noticed the fact. It uses its sharp and strong fore claws for the purpose of digging up roots; and like the rat frequently invades granaries, committing no trifling mischief. However, it is far more easily excluded from such places than the rat, as it cannot gnaw planks or timber, and is less daring. M. St. Hilaire imagines that it may use its snout for the purpose of rooting up the soft earth in search of worms and the larvæ of insects. This may be true, but the fact has not been confirmed by observation; still, as M. St. Hilaire observes, analogous forms of dentition seldom fail to indicate analogous appetites, and on this principle we may venture to class insects and the like among its food. The common hedgehog, which as we all know is insectivorous, is fond of the roots of the plantain, and, as White observes, digs them up in garden paths with its pig-like nose. Here we have an example in point, the partiality of an insectivorous animal for herbaceous diet.

Among other species we may mention the Short-nosed Bandicoot (*P. obescula*); the Thick-tailed Bandicoot (*P. macroura*); the White-banded Bandicoot (*P fasciata*); the Saddle-backed Bandicoot (*P. myosuros*), &c.

(Waterhouse, 'Nat. Hist. Mamm.' pt. 8, p. 354, et seq.) [MARSUPIALIA.]

BANDINE'LLI, BARTOLOME'O, commonly called *Baccio Bandinelli*, was born at Florence in 1487. Baccio is the diminutive of Bartolomeo used by the Florentines, and Bandinelli is a cognomen which he himself assumed, affirming that his ancestors belonged to the family of Bandinelli of Siena. His father was Michelagnolo di Viviano da Grajuole, a goldsmith of Florence, who was skilful in works of ornament and minute sculpture in gold and silver. Baccio was early taught drawing in his father's house, and was afterwards placed as a pupil with Giovanni Francesco Rustici, an eminent sculptor. One of the best of his earlier works is a colossal group in marble of Hercules overcoming Cacus. It stands in the Piazza del Gran Duca at Florence. He executed many groups and statues in marble and bronze, several of which still remain in the palaces and churches of Florence, Rome, and other cities of Italy. In the great saloon of the Palazzo Vecchio at Florence are statues by Bandinelli of Cosmo I., Giovanni de' Medici, Clement VII., Charles V., and a group of Adam and Eve. The beautiful compositions in bassorilievo round the basement of the choir of the Duomo at Florence are by Bandinelli. These and other of his bassi-rilievi have been engraved by Morghen and Marc Antonio. His last work was that of his own tomb in the chapel of the Anunziata at Florence. The principal group represents the Saviour supported by Nicodémus. On the frieze at the back of the monument are profiles of himself and his wife, executed by his son Clemente, an artist of much promise, who died prematurely. Bandinelli, though severely criticised by his contemporaries, to whom he had made himself offensive by his arrogance and ill temper, was undoubtedly a sculptor of great ability, admirable in design, though somewhat hard and imperfect in execution. He drew exceedingly well, had a minute knowledge of the muscles of the body, and much taste in the arrangement of drapery, so that his cartoons and many of his models in wax were greatly admired. He never attained, however, even a tolerable degree of skill in painting, but employed others to colour his drawings; and he did nothing in architecture. He died at Florence in 1559.

(Vasari, *Vite de' Pittori, &c.; Handbook of Northern Italy.*)

BANDITTI. This word, though seldom used by the Italians in our sense, for 'bands of robbers,' is derived from the Italian verb *bandire*, to banish or put to the ban, whence the participle *bandito*, banished or outlawed, and the substantive *bandito*, an outlawed man (plural *banditi*, or outlawed men). [BAN.] Correctly, therefore, the word should not be banditti, but banditi. The term seems to have been introduced into our language at least as early as the time of Shakspere; but whoever first imported it, and confined its signification to robbers, departed from the original extensive sense of the word, which means a man banished on any account. In the south of Italy, the only part of the peninsula where such lawless associations have existed for many years, the robbers are popularly called *briganti*, and never banditi.

These organized bands of robbers have been fostered in Italy by the mountainous nature of a great part of the peninsula, by the division of the country into numerous small states, which too often enable the robbers, by crossing a frontier, to put themselves in safety, by frequent revolutions, and by weak governments. In modern days however their excesses have almost been confined to Lower Italy, the States of the Church, and the kingdom of Naples, and regular or numerous bands of robbers have been unknown in Upper Italy, in Lombardy, Piedmont, and Tuscany for many years. Organized societies, with their captains, their lieutenants, and chaplains, have become almost unknown within the last twenty years. The most remarkable Italian bandit chiefs of our times were the three brothers Vardarelli, and Don Ciro Anicchiarico.

BANDOLIERS. [ARMS.]

BANDON, River and Town. [CORK.]

BANFF, pronounced *Bamff*, a royal burgh, and the chief town of Banffshire, is situated on the west side of the Deveron, near the entrance of that river into the Moray Frith. It is 125 miles N. of Edinburgh, and 39 N.W. of Aberdeen. The distance from Edinburgh by the road is 165 miles, and from Aberdeen 45. The town consists of two parts, the land-town and the sea-town, as they may be called, which are completely separated by a piece of table-land lying midway between them, and on which stands the castle. The harbour is at the western extremity of a semicircular bay, at the eastern extremity of which is the town and harbour of Macduff. A new harbour was constructed in 1816, but was found to be unsafe. The new pier however prevents all swell in the old harbour, and renders it very safe. Banff was erected into a royal burgh in 1372. The town contains several places of worship, a town-hall, a prison, and several schools. There is a handsome stone bridge of seven semicircular arches over the Deveron.

The chief exports from Banff consist of corn, cattle, salmon, and herrings. The herring-fishing for the last few years has been carried on to a great extent, and on the whole with success. The manufactures of Banff are confined to thread, linen, stockings, soap, and leather. It has several libraries, belonging to various societies. Banff has a weekly market on Friday, and four annual fairs. The town-council was formerly self-elected; but since the passing of the Burgh Reform Bill, the town-council, as in the other royal burghs included in that Act, are elected by the 10*l.* electors, qualified under the statute, and the provost and four magistrates by the council. By the Reform Act, it is included in the Elgin District of Burghs, the entire constituency of which is 838, the separate constituency of Banff being 218. In 1841 the population of the town and parish was 3202. The population of the Parliamentary borough was 5309.

(Pennant's *Tour through Scotland; New Statistical Account of Scotland; Population Returns.*)

BANFFSHIRE, a county in the north of Scotland, comprehending the districts of Strathdovern, Boynie, Enzie, Strathaven, Balvenie, and part of Buchan. It was a sheriffdom at least as early as the time of King David I. It lies on a long slope between a range of the Grampian Hills and the Moray Frith. It is bounded on the S. and S.E. by Aberdeenshire, on the W. by Elgin, and on the N. by the Moray Frith. Banffshire contains 647 square miles, or, exclusive of a small space covered with water, 412,800 English acres. The face of the country is agreeably diversified with hills and dales, woods and rivers. For about 30 miles along the coast the soil, which chiefly consists of sand and loam, is excellent, and produces heavy crops. The coast is mostly rocky, but not high. The southern part of the country is mostly mountainous, and is consequently pastoral rather than agricultural. Even here, however, there are many beautiful and fertile valleys. In the upper or hilly districts there are large tracts of land peculiarly adapted for grazing. These are, for the most part, well sheltered with natural wood, and abundantly watered by the rivers and streams with which the county abounds. The Spey, which is one of the largest rivers in Scotland, and the most rapid, runs along a considerable part of its western boundary, and the Deveron falls into the sea near its eastern extremity. The Aven, a branch of the Spey, rises in the south-western angle of this county.

Some of the mountains in Banffshire are among the highest in Great Britain. Cairngorm is 4080 feet above the sea-level. The rocks of the county are mostly of old formations; and in various parts are found mineral veins, fluor spar, rock crystal, hones, or whetstones, and fossil remains imbedded in blue clay.

The principal towns in the county are—Banff, the capital [BANFF]; Cullen, a royal burgh (population, 712); Keith (population, 1804); Newmills (population, 449); Dufftown (population, 770); Gardenstown (population, 348); Portsoy (population, 1523); Portgordon, (population, 470); Buckie (population, 2165); and Macduff (population, 2228). Macduff has a commodious harbour. An outer harbour built some years ago has been destroyed by successive storms, but a part which remains has been secured, and serves as a breakwater. Cattle, grain, and fish, are exported for the London market, and coals, lime, salt, and market-goods are imported.

The manufactures in Banffshire are inconsiderable. The principal are weaving, bleaching, flax-dressing, tanning, and distilling. The salmon-fishing, especially in the Spey, is very successful; the take, in some years, having amounted in value to 100,000*l.* The shipping-trade is considerable for the extent of the county. It is chiefly carried on at the ports of Banff, Macduff, Portsoy, and Gardenstown. The exports principally consist of grain, meal, black cattle, swine, and other live stock. The imports are, for the most part, timber, coals, iron, &c.

Agriculture is in general conducted on the best principles. In the lower districts of the county the fields are well laid out, inclosed either with hedges or stone dykes, but generally the latter, and abundantly manured. Wheat, barley, bear, and oats are the kinds of grain chiefly grown. The quantity of land which yet remains to be brought under culture is very considerable; but arable tillage is every year increasing. All the farms which are of any extent are under a regular rotation of cropping. The average size is from 100 to 200 acres of arable land, with a certain quantity of moorland or pasture, which varies according to the part of the county in which the farms are situated. The leases are generally, as is the case throughout the north of Scotland, for a term of nineteen years. A few individuals hold their leases for life. The cattle and stock of every kind are of the best breeds that can be procured.

The climate is variable. Along the coast it is dry and genial, and the crops consequently ripen well; but in the mountainous districts the climate

is cold and humid, and the harvest in those parts is therefore late.

In Banffshire there are numerous noblemen's and gentlemen's seats; and also many remains of antiquity, such as the ruins of the ancient castle of Findlater, the castles of Deskford, Galval, and Balvenie, the churches of Mortlich and Gamrie, and several cairns.

Banffshire is divided into twenty-four parishes, each of which has its own schoolmaster, church, and clergyman. A considerable part of the county formerly belonged to the rich and extensive province of Moray. Part of it is now in the synod of Moray, and the remainder belongs to the synod of Aberdeen. Education has been largely aided by a munificent bequest made by Mr. Dick in 1827.

Banffshire sends a member to Parliament. Previous to the Reform Bill the right of election was vested in 51 freeholders. The constituency in 1841 was 760. The population of Banffshire in 1841 was 49,679. In 1831 it was 48,604.

(Pennant's *Tour through Scotland;* Douglas's *Journey through the North of Scotland;* Sir John Sinclair's *General Report of Scotland;* Rev. Charles Cordiner's *Beauties of Scotland; New Statistical Account of Scotland; Parliamentary Returns,* &c.)

BANGALORE, or BANGALURA, a fortified town in the territory of the Raja of Mysore, situated in 12° 57′ N. lat. 77° 38′ E. long., 70 miles N.E. from Seringapatam. This city was founded during the reign of Hyder Ali, the Mohammedan sovereign of Mysore, and during the continuance of his government it became a place of considerable importance, enjoying an extensive trade and containing numerous manufactures. As a fortress, Bangalore was a place of some strength. The fortifications were regular, and constructed of solid materials, surrounded by a deep ditch cut in the solid rock. The fort is now in ruins, having been destroyed by Tippoo Sultan after he found it incapable of resisting the attacks of European troops. The decline of its prosperity began during the early part of the reign of Tippoo, who, being unfriendly to the governments at Arcot and Hyderabad, prohibited his subjects at Bangalore from maintaining any commercial intercourse with those places. In 1791 Lord Cornwallis took the fort of Bangalore by assault.

The town of Bangalore contains a large proportion of good-sized houses. The whole of the buildings are composed of the red earth of the country, and are covered with tiles. Adjoining the town are extensive gardens, which were made by Hyder and Tippoo. The inhabitants are mostly Hindoos; but many Mohammedans, some members of whose families were attached to the service of the late sultans, continue to reside in the town. The population has been estimated at 60,000.

From its central position, Bangalore has routes passing through it in every direction; which circumstance gives to it considerable importance, both politically and as a trading station. Its merchants carry on commercial dealings with every part of the south of India. The principal articles which enter into this commerce are salt, sugar, betel-nut, spices, metals, dyeing-stuffs, raw silk, and cotton wool. Many of these articles are imported for the use of its manufacturers. The tissues woven here, both of silk and cotton, are almost entirely retained for the use of the district. The spinning of cotton is all performed by women, who carry their yarn to a weekly market for sale to the weavers.

(Hamilton's *Journey through Mysore, Canara, and Malabar;* Rennell's *Memoir of a Map of Hindustan.*)

BANGKOK, the capital of the kingdom of Siam, is situated on both banks of the river Menam, about 20 miles from its mouth, in 13° 40′ N. lat., 101° 10′ E. long.

Bangkok extends along the banks of the Menam about 2½ miles. On the left bank there is a long row of floating houses, each house or shop consisting of a distinct vessel, which may be moored at any place along the banks. Besides the Menam, which at Bangkok is about a quarter of a mile wide, there are numerous tributary streams and canals, so that almost all intercourse at Bangkok is by water.

The land portion of the city, which is chiefly on the eastern bank, is entirely built of wood, except the palaces of the king, the temples, and the houses of some of the ministers, which are constructed of bricks or with mud walls. The houses are built on posts driven into the earth and raised above the bank—a precaution rendered necessary by the daily tides, and the annual inundations to which the town is exposed. A boat, generally a small one, is attached to each house, whether floating or not, for the use of the family. The few streets that Bangkok has are passable only on foot, and in dry weather.

The palace of the king is contiguous to the town, on the left bank of the river, but higher up the stream. It is situated upon an island from 2 to 3 miles in length, but of inconsiderable breadth, which is separated from the continent by a narrow arm of the river. The palace, and indeed almost the whole of the island, is surrounded by a wall, in some parts of considerable height, here and there furnished with indifferent-looking bastions, and provided with numerous gates. The greatest ornaments of the city are the temples, with their numerous spires; they cover a large extent of ground, and are placed in the most elevated and best situations, surrounded by brick walls or bamboo hedges; their inclosure contains numerous rows of buildings disposed in straight lines. The temples consist of one spacious and lofty hall, with numerous doors and windows. Both the exterior and interior are studded with a profusion of minute and singular ornaments of the most varied description. In the central temple, which has the form of a parallelogram, is a sitting figure of Buddha of gigantic proportions. An area incloses this central temple, and at a certain distance from it smaller temples are disposed in straight lines, filled likewise with gilded figures of Buddha, for the most part considerably larger than life. Of these statues the greater number are made of cast-iron,

others of brass, others of wood or clay, and all with studied uniformity. In a separate apartment the sacred library is preserved. Without the inclosure are the cells of the talapoins, or priests, which are wooden structures raised on pillars, and extending, in a regular range, along the whole face of the square.

Bangkok is rather to be considered as a Chinese colony than as a Siamese town; for by far the greatest number of inhabitants are Chinese and their descendants. This is partly to be attributed to its being a sea-port situated on a large river in a low country, but still more to its origin, which is of modern date. When the ancient capital of the empire was taken by the Birmese in 1760, and the royal family was nearly destroyed, a merchant of the name of Pia-tac, either himself a Chinese, or of Chinese extraction, put an end to the existing anarchy, and ascended the throne. He chose Bangkok for his residence, and favoured his countrymen, who settled in great numbers at Bangkok; and though Pia-tac was afterwards killed, and a Siamese dynasty followed on the throne, the Chinese maintained themselves at this place. The population of Bangkok has been estimated at from 100,000 to 150,000.

Bangkok is a place of considerable trade. The Menam is deep up to the town, and even to the ancient capital, Yuthia, 80 miles from the mouth of the river. There is a bar at the mouth of the river, which has only 6 feet water upon it at low tides; and from February to September 13½ feet; and the remainder of the year, that is, in the seasons of the south-western monsoons and of the rains, 14 feet at high tides. Consequently only vessels of from 200 to 250 tons ought to be sent to Bangkok. The most active commerce is carried on with the ports of the Chinese empire; but the trade between Singapore and other places of the neighbourhood has greatly increased of late years. The internal commerce with the extensive countries drained by the river Menam is also very important.

(Finlayson; Crawfurd, *Journal of an Embassy to the Courts of Siam and Cochin-China; Asiatic Journal.*)

BANGOR. [CAERNARVONSHIRE; FLINTSHIRE.]

BANGOR, or BENCHOR. [DOWN.]

BANGOR, a post town in the United States of North America, capital of the county of Penobscot in the State of Maine, 44° 48′ N. lat., 68° 47′ W. long., 620 miles N.E. of Washington. Its situation is pleasant, and very advantageous in a commercial point of view, being on the W. bank of the Penobscot river, which is navigable to the town for vessels of 300 or 400 tons burthen. It is 60 miles from the sea, but the tide rises 17 feet. The principal article of trade is lumber, which comes down the river in vast quantities. About 1200 vessels of more than 100 tons burthen are employed, while the navigation is open, in the lumber trade, besides a large number of vessels employed in the coasting and foreign trade. The river is open about eight months in the year, when steam-boats ply regularly between Bangor and Boston and Portland. There are seven or eight places of public worship. The population in 1840 was 8627. In 1830 it was 2868. (*United States Gazetteer*, by Haskel and Smith.)

BANIA'NS. The word Banian is a corruption of the Sanscrit *banij* or *banik*, 'a merchant, or trader,' and is the term by which Hindoos visiting foreign countries for mercantile purposes are generally designated. We find Hindoo merchants noticed at an early period during the middle ages in several of the most distinguished trading towns of the East. Marco Polo mentions Hindoos among the foreign traders who visited the fair of Tabriz; and in speaking of Aden he describes it as 'an excellent port, frequented by ships arriving from India with spices and drugs.' Indian merchants appear also to have settled, during the middle ages, on the eastern coast of Africa. Vasco de Gama, on his first voyage, met with several Indian trading-vessels in the port of Melinde (De Barros, *Asia*, dec. i., liv. iv., c. 5). In some of the principal towns of Persia and Arabia, the Banians appear to have sometimes formed a considerable class in society, and to have possessed much political influence. Some Hindoos are settled as far to the north and west as Astrakhan. (Niebuhr's *Reisebeschreibung*, &c., vol. ii., p. 270.) The Banians do not at the present day form a distinct class or caste in India, nor are they accounted as such in the ancient Hindoo codes of law.

BA'NIAS (Πανιὰς, Stephan. Byzant.), a town of Palestine, situated at the foot of a branch of Anti-Libanus, now called Jebel Heish, the Mount Hermon of Scripture, which was the northern boundary of the Children of Israel, and the Paneium of the Romans. Banias is supposed to be on or near the site of the Dan of the Jews. Its name was changed to Cæsarea Philippi, by Philip the Tetrarch, son of Herod. The modern village, which is 23 miles E. by N. of Tyre, contains only about 150 houses, mostly inhabited by Turks, but there are also Greeks, Druzes, and Arabs; it is a dependency on the town of Hasbeya, and about 20 miles N. of it. It stands on a triangular-shaped piece of ground inclosed by the river of Banias and the Jordan, and backed by the mountains, at the foot of which, to the N.E. of the village, the river of Banias takes its rise in a spacious cavern beneath a precipitous rock. There are several ancient ruins near the village, among which are the remains of two castles built by the Arabs in the 13th century.

The Jordan takes its rise about four miles N.E. of Banias, near the foot of a hill called Tel-el-Kadi, where there are two springs, the larger of which forms at once a river from 12 to 15 yards broad, which rushes rapidly over a stony bed, and, passing south of Banias, forms a junction a little below that village with the river of Banias. This stream is still called Dhan; and it is said that the river of Banias was formerly called Djour, whence the name Jordan. [JORDAN.]

(Burckhardt's *Travels in Syria;* Pococke's *Description of the East;* Seetzen's *Travels;* Mangles and Irby; Pliny, v. 15.)

BANISHMENT (from the French *Bannissement*), expulsion from any country or place by the

judgment of some court or other competent authority. The term has its root in the word *ban*. [BAN.]

As a punishment, banishment is unknown to the ancient unwritten law of England, although voluntary exile, in order to escape other punishment, was sometimes permitted. [ABJURATION.] The crown has always exercised, in certain cases, the prerogative of restraining a subject from leaving the realm; but it is a legal maxim that no subject shall be sent out of it without his consent or by authority of parliament. It is declared by the Great Charter, that 'no freeman shall be exiled, unless by the judgment of his peers or the law of the land.'

There are however instances of an irregular exercise of the power of banishing an obnoxious subject by the authority of the crown; and, in the case of parliamentary impeachment for a misdemeanour, perpetual exile has been made part of the sentence of the House of Lords, with the assent of the king. (Sir Giles Mompesson's case, in the reign of James I., reported by Rushworth and Selden, and cited in Comyns, 'Digest,' tit. 'Parliament,' 1. 44.) Aliens and Jews (formerly regarded as aliens) have often been banished by royal proclamation.

Banishment is said to have been introduced as a punishment by a statute in the thirty-ninth year of the reign of Elizabeth, by which it was enacted that 'such rogues as were dangerous to the inferior people should be banished the realm.' At a much later period the punishment now called transportation was sanctioned by the legislature. [TRANSPORTATION.]

Some towns of England used to inflict the punishment of banishment from the territory within their jurisdiction, for life and for definite periods. The extracts from the Annals of Sandwich, one of the Cinque Ports, which are printed in Boys' 'History of Sandwich,' contain many instances of this punishment in the fifteenth and sixteenth centuries.

The general name for Banishment among the Romans in the Imperial period was Exsilium; and it was a penalty inflicted under the Empire on conviction in a Judicium Publicum, if it was also a Judicium Capitale. A Judicium Publicum was a trial in which the accused came within the penalties of certain laws (leges), and it was Capitale when the penalties were either death or exsilium. This Exsilium was defined by the Jurists under the Empire to be 'aquæ et ignis interdictio,' a sentence which deprived a man of two of the chief necessaries of life. (Paulus, 'Dig.' 48, tit. 1, s. 2.) The sentence was called Capital because it affected the Caput or Status of the condemned, and he lost all civic rights. There was also Exsilium which was not accompanied by civil disabilities, and accordingly was not Capitalis: this was called Relegatio. The person who was relegated was either ordered to reside in some particular spot, or he was excluded from residing in particular places; the period of relegation might be definite or indefinite. If the relegatio was perpetual, the sentence might include the loss of part of his property; but the person who was relegated retained all the rights of a Roman citizen. When there was sentence of Deportation, Deportatio in insulam, a criminal was carried to some small island, sometimes in chains, and always for an indefinite period. A person who was relegated went to his place of exile. The person who was deported lost his citizenship and his property, but he continued to be a freeman.

Under the early Republic Exsilium was not a punishment: it was, as the name imports, merely a change of soil. A Roman citizen could go to another state, and the citizen of such state could remove to Rome, by virtue of isopolitical rights existing between the two states. This right was called Jus Exsulandi, the Right of Exsilium as applied to the party who availed himself of it, and the Law of Exsilium when it is considered a part of the political system. The condition of the exsul in the state to which he had removed might be various; but it seems probable that he would acquire citizenship in his new state, though he might not enjoy it in all its fulness (optimo jure). By the act of removing to another state as an exsul, he divested himself of his original citizenship. A man who was awaiting his trial might withdraw before trial to another state into Exsilium—a practice which probably grew out of the Jus Exsulandi. Thus Exsilium, though a voluntary act, came to be considered as a punishment, for it was a mode of avoiding punishment; but Banishment, as such, was not a part of the old Roman law. A practice was established under the later Republic of effecting a sentence of banishment indirectly by means of the 'interdictio aquæ et ignis,' or with the addition of the word 'tecti.' (Cicero, 'Pro Domo,' c. 30.) This sentence was either pronounced in a trial, or it was inflicted by a special lex. This putting of a man under a ban, by excluding him from the main necessaries of life, had for its object to make him go beyond the limits within which he was subjected to the penalty; for the interdictio was limited to a certain distance from Rome. In Cicero's case the interdictio applied to all places within four hundred miles of Rome. (Ad Attic. iii. 4.)

The Roman punishment of condemnation to work in the mines was in the nature of banishment, but more severe. Thus, if a man seduced a maid who was of years too tender for cohabitation, he was sent to the mines, if he was a man of low condition; but only relegated, if he was of better condition.

Deportation is the third of the six 'peines afflictives et infamantes' of the French Code Pénal. The punishment of deportation consists in the offender being transported out of the continental territory of France, there to remain for life; and, if he returns, hard labour for life is added to his sentence. The sentence of deportation carries with it loss of all civil rights; though the government is empowered to mitigate this part of the penalty either wholly or in part. (Law of September, 1835, s. 18, 'Code Pénal.') Banishment (*bannissement*) is classed as one of the two 'peines infamantes,' the other being civil degradation. The offender is transported by order of the government out of the territory of the kingdom for at least five years, and not more than ten.

BANISTER. [BALUSTER.]

BANJARMASSIN, a town on the south coast of the island of Borneo, situated in 3° N. lat., and 114° 55′ E. long. The town is built on the banks of the river Banjarmassin, at the mouth of which is a bar which prevents the entrance of all vessels except small boats. Beyond this bar it has been ascertained that the river is navigable for at least 50 miles from the sea. Vessels trading to the town anchor in the harbour of Tombanjou or Tomborneo, near the mouth of the river. Banjarmassin is included in the Dutch settlements. Many Chinese reside constantly there, and carry on a considerable trade with China. The imports of the town are principally of piece goods, cutlery, opium, gunpowder, and fire-arms. The produce exported in return consists of pepper, diamonds, gold dust, wax, camphor, spices, rattans, and edible birds' nests. Some steel of very superior quality is also manufactured at this place. (Raffles's *Java*.)

BANK, in barbarous Latin *bancus*, literally signifies a bench or high seat; but as a legal term it denotes a seat of judgment, or tribunal for the administration of justice. The judges in the superior courts of common law were called justices of the bench, or, as they are always styled in records, *justiciarii de banco*. This term formerly denoted the judges of a peculiar court held at Westminster, which is mentioned in records of the reign of Richard I. This court no doubt derived its name from its stationary character, being permanently held at Westminster, whereas the *curia* or *aula regis* followed the king. (Maddox, 'History of the Exchequer,' p. 539.) This institution was the origin of the Court of Common Pleas, and the judges of that court retain the technical title of 'Justices of the Bench at Westminster;' whereas the formal title of the King's Bench judges is 'the justices assigned to hold pleas in the court of the king before the king himself.' But the latter court has long been popularly called the Court of King's Bench, and the judges of both these courts have been described in acts of parliament and records in general terms as 'the judges of either bench' (*judices utriusque banci*); but the barons of the Court of Exchequer have never been denominated judges of the bench, though, in popular language, a new baron, on his creation, is, like the other judges, said to be raised to the bench.

The phrase of sitting *in banco*, or in bank, denotes the sittings during the law terms, when the judges of each court sit together upon their several benches. In this sense it is used by Glanville, who enumerates certain acts to be done by justices *in banco sedentibus*. *Days in bank* are days appointed by the courts, or fixed by statute, when process must be returned, or when parties served with writs are to make their appearance in full court. The day in bank is so called in opposition to the day at Nisi Prius, when a trial by a jury takes place according to the provisions of the statute of Nisi Prius. [ASSIZE.]

BANK—BANKER—BANKING. By the term 'bank' is understood the establishment for carrying on the business of a banker; the 'banker' is the person by whom the business is conducted; and the expression 'banking' is commonly used to denote the system upon which that business is managed, and the principles upon which it should be governed or regulated.

The early history of banking is merely a record of the attempts which have been made from time to time to perform imperfectly some of the functions which are now so admirably executed by bankers. Money-lenders have existed in all ages; and the reference to the money-changers in Scripture shows that they were well known in the earliest times. The bankers of Athens appear to have been the first to fulfil most of the functions belonging to the trade. (Demosthenes, 'Against Aphobus,' Orat. 1.) They received money in deposit at one rate of interest, and lent it out at another; they advanced money upon the security of goods, and lent sums in one place to be repaid in another. They likewise dealt in foreign coins, and appear to have occasionally advanced money to the state for public purposes. Some of them, as we are told, acquired great wealth.

Bankers (argentarii) conducted money business in Rome in a manner very similar to that now in use in Europe. They were the depositaries of the revenues of the wealthy, who through them made their payments by written orders. They also took in money on interest from some, and lent it at higher rates to others; but this banking trade does not appear to have been held in much repute in Rome, where a great prejudice existed against the practice of making a profit from the loan of money. They also sometimes conducted public sales (auctiones), where they had to receive the purchase-money and do whatever was necessary towards completing the bargain. (Gaius, iv. 126.)

During the middle ages, there was little opportunity for carrying on the banking business; but on the revival of commerce in the 12th century, and when the cities of Italy engrossed nearly all the trade of Europe, the necessity again arose for the employment of bankers. At first they carried on their business in the public market-places or exchanges, where their dealings were conducted on benches, whence the origin of the word bank, from *banco*, the Italian word for a bench. The successful manufacturing efforts of the Florentines brought them into commercial dealings with different countries of Europe, and thence arose the establishment of banks. In a short time Florence became the centre of the money transactions of every commercial country in Europe, and her merchants and bankers accumulated great wealth.

The earliest public bank established in modern Europe was that of Venice, which was founded in 1157.

About the year 1350, the cloth-merchants of Barcelona, then a wealthy body, added the business of banking to their other commercial pursuits; being authorized so to do by an ordinance of the king of Aragon, which contained the important stipulation, that they should be restricted from acting as bankers until they should have given

sufficient security for the liquidation of their engagements.

The Bank of Genoa was planned and partially organized in 1345; but was not fully established and brought into action until 1407, when the numerous loans which the republic had contracted with its citizens were consolidated, and formed the nominal capital stock of the bank.

The Bank of Amsterdam was established in 1609, simply as a bank of deposit, to remedy the inconvenience arising from the great quantity of clipt and worn foreign coin which the extensive trade of the city brought there from all parts of Europe. The bank received foreign coin, and the worn coin of the country, at its real intrinsic value, deducting only a small per-centage for the expense of coinage and charges of management. The credit given in the bank-books for coin thus received was called bank-money, to distinguish it from the current money of the place. The regulations of the country directed that all bills drawn upon or negotiated at Amsterdam, of the value of 600 guilders (about 55*l.*) and upwards, must be paid in bank-money. Every merchant was consequently obliged to keep an account with the bank, in order to make his ordinary payments. The Bank of Amsterdam professed to lend out no part of its deposits, and to possess coin or bullion to the full value of the credits given in its books. Dr. Adam Smith has given an account of this bank. ('Wealth of Nations,' book iv. c. 3.) When the French invaded Holland, it was discovered that the directors had privately lent nearly a million sterling to the states of Holland and Friesland, instead of keeping bullion in their cellars in accordance with the regulations of the Bank. In 1814 a new bank was established, called the Bank of the Netherlands, on the plan of the Bank of England.

The Bank of Hamburg was established in 1619, and is conducted upon nearly the same plan as the Bank of England, which was opened in 1694. The Bank of Vienna, established in 1703 as a bank of deposit and circulation, subsequently (1793) became a bank of issue; and its notes were for some time the sole circulating medium in Austria.

During the reign of the Empress Catherine, three different banks were established at St. Petersburg. Others have since been formed, some of which are for the benefit of the landed interest, and advance capital on property by way of mortgage.

The Bank of France, established in 1803, has a capital of 3,596,000*l.* sterling. This association alone enjoys the privilege of issuing notes in France, and, as a consequence, the circulation is comparatively limited. By a recent alteration of the law, the bank is now allowed to issue notes for sums equal to about 10*l.* of English money, but none under; and the circulation of the country is therefore almost entirely metallic, the high amount of the notes excluding them from the ordinary business transactions in which the 5*l.* notes of this country are employed. The affairs of this bank are managed by a governor and deputy-governor, who are nominated by the king, and by seventeen regents and three censors elected from among the shareholders. A full statement is published every quarter, pursuant to the law of 30th of June, 1840, which furnishes a complete exposition of the affairs of the bank.

Those who require further information on banks may refer to Gilbart's 'History and Principles of Banking,' and the 'Banker's Magazine,' which contain full particulars of all the chief foreign banks.

It will be interesting to trace the progress of banking in our own country, and we may therefore now direct attention to some of the chief events in the history of the Bank of England, and of the private and joint-stock banks of Great Britain.

Bankers and banking associations are the means of keeping that portion of the floating capital of a country fully and constantly employed, which but for their agency would frequently lie dormant and unproductive. Thus, while banking does not directly create capital, the issue of bank-notes enables people to buy who could not buy for want of a medium of exchange. A large farmer has grain and stock, and he wants to drain; but money is short. He goes to a bank and gets bank-notes on the security of his property. That is a useful operation. Another thing is, people may deposit small sums of money at a bank, which the banker lends. Thus a bank is a means of facilitating the loan of money from the possessor of money to the farmer or manufacturer who has goods, but wants ready money. The lending of money is the operation of banking, and a bank is a centre which facilitates this lending: it enables people to lend through a banker and his connection, who could not lend without that. But the real legal loan is the banker's. The man who puts his money in the bank looks to the banker only. Every man who holds a banker's note is his creditor to that amount. How to secure the safety of this operation, so that he who has a note shall always get a certain amount of coin for it, is the question that concerns the public.

The Bank of England.—This establishment was projected by a Scotch gentleman, Mr. William Patterson, in 1694. The scheme having received the sanction and support of the Government, to whom the whole of the capital was to be lent, the subscription was filled in ten days from its being first opened; and on the 27th of July, 1694, the Bank received its charter of incorporation. This charter provides, 'that the management and government of the corporation be committed to a governor, deputy-governor, and twenty-four directors, who shall be elected between the 25th of March and the 25th of April every year, from among the members of the company;—that those officers must be natural-born subjects of England, or have been naturalized;—that they shall possess, in their own names and for their own use, severally, the governor (at least) 4000*l.*, the deputy-governor 3000*l.*, and each director 2000*l.* of the capital stock of the said corporation;—that thirteen or more of the said governors and directors (of whom the governor or deputy-governor shall be always one) shall constitute a court of directors, for the management of the affairs of the company;—that no

dividend shall at any time be made by the said governor and company, save only out of the interest, profit, or produce arising out of the said capital stock or fund, or by such dealing as is allowed by Act of Parliament.' Each elector must be possessed of at least 500*l.* capital stock of the company. Four general courts to be held in every year, in the months of April, July, September, and December; and special general courts to be summoned at all times upon the requisition of nine qualified proprietors. The majority of electors present at general courts to have the power of making bye-laws for the government of the corporation; but such bye-laws must not be repugnant to the laws of the kingdom.

The original capital of the bank, which amounted to 1,200,000*l.*, was lent to Government, who paid interest for the same at the rate of 8 per cent., with a further allowance of 4000*l.* a year for management. The first charter was granted to continue for eleven years certain, or till a year's notice after the 1st of August, 1705.

In 1697 a new subscription was raised and lent to Government, to the amount of 1,001,171*l.* 10*s.*, which sum was repaid in 1707, and the capital again reduced to its original amount. In the following year the charter was renewed until 1732; and in 1713 a still further extension was granted for ten years, or until 1742. On the first of these occasions the capital was raised by new subscriptions to 5,559,995*l.* In 1722 further subscriptions were received, amounting to 3,400,000*l.*; and in 1742, when the charter was again renewed until 1764, a call made upon the stockholders raised the entire capital to 9,800,000*l.* A further call of 10 per cent. upon this amount was made in 1746. The charter was again renewed until 1786; but previous to the expiration of this term it was continued until 1812, a call of 8 per cent. having been made in 1782. In 1800 the charter was further extended until twelve months' notice after the 1st of August, 1833; and in 1816 the directors were empowered to appropriate a part of their undivided profits among the proprietors, by adding 25 per cent. to the amount of their stock. These successive additions raised the capital of the bank to 14,553,000*l.*, the whole of which amount was, as it was raised, lent to Government. At the renewal of the company's charter which was granted in 1833 (Act 3 & 4 Wm. IV. c. 98), a provision was made for the repayment, on the part of the public, of one-fourth part of the debt due to the bank. At each of the times before mentioned for the renewal of the charter, some advantage was given by the bank to the public, in the shape of an advance of money at a low rate of interest, or without any interest. At present, the rate paid by Government for the bank capital is 3 per cent. per annum.

From its first institution, the Bank of England has discounted mercantile bills. The rate of discount charged fluctuated at first, but was usually between 4½ and 6 per cent. In 1695 a distinction was made in this respect, in favour of persons who used the Bank for purposes of deposit: for such persons inland bills were discounted at 4½, and foreign bills at 3 per cent.; while to all other persons the rate was 6 per cent. upon both descriptions of bills. After that time the rates were equalized to all classes, and fluctuated between 4 and 5 per cent. until 1773, when 5 per cent. was fixed as the rate of discount upon all descriptions of bills; and at this per-centage the Bank continued to discount bills until June, 1822, when it was lowered to 4 per cent. The rate was again advanced to 5 per cent. during the panic, in December, 1825; but was lowered in July, 1827, to 4 per cent. In August, 1847, it was raised to 7 per cent.

Shortly after its first establishment the Bank was involved in some difficulties, and was obliged, in 1696, even to suspend the payment of its notes, which were then at a considerable discount. Having received assistance from Government, this difficulty was soon surmounted; and the establishment was not again placed in the same dilemma until 1797, when the celebrated Bank Restriction Act was passed, which will require a more particular notice.

In 1708 an act was passed, greatly in favour of the Bank of England, declaring that 'during the continuance of that corporation it should not be lawful for any other body politic, erected or to be erected, other than the said Governor and Company of the Bank of England, or for any other persons whatever united, or to be united, in covenants of partnership exceeding the number of six persons, in that part of Great Britain called England, to borrow, owe, or take up any sum or sums of money on their bills or notes payable on demand, or in any less time than six months from the borrowing thereof.' This act continued in force until 1826, when it was partially repealed, so as to admit of the formation of banking establishments for the issue of notes with more than six partners, at any distance exceeding 65 miles from London; but these establishments were restrained from having any branches in London; and it was expressly declared that the partners, jointly and severally, should be held liable for all the debts of the bank with which they might be connected.

Until a very recent period, it was not doubted that the act of 1708, as above described, forbade the formation of banks of all descriptions having more than six partners, and this impression was universally acted upon. Even the discussions which preceded the partial relaxation of its provisions, in 1826, failed to produce any different views regarding it. During the negotiations of 1833 for the renewal of the Bank Charter, strong doubts were conceived upon the point whether the restriction was not confined to the forbidding only of banks of issue; and the law-officers of the crown, having been called upon for their opinion on the subject, gave it as their decided opinion, that banks, provided they did not issue their own notes payable to bearer, might have been at any time established in any part of the kingdom. To remove all doubts upon the subject, a clause was introduced in the act of 1833, expressly authorizing the establishment of banks which do not issue notes, with any number of

partners, in any place within or without the limits to which the exclusive privilege of the Bank of England, in regard to issuing notes, now applies.

In the year 1759 the Bank began to issue notes for 10*l.*, having previously not put any into circulation below 20*l.* Notes of 5*l.* value were first issued in 1793; and in March 1797, 1*l.* and 2*l.* notes were brought into use. The issue of the latter, except in one partial instance, ceased, in fact, in 1821, and by law on the 5th of April, 1829, since which time 5*l.* is the smallest sum for which any bank in England may send forth its notes payable to bearer.

The necessity for the issue of notes for so small an amount as 1*l.* arose out of the act of 1797, which restricted the Bank from making payments in gold,—a measure which was forced upon it by the financial operations of the Government, then very largely indebted to the corporation.

In 1817, having accumulated nearly twelve millions of coin and bullion, the Bank gave notice, in the month of April, that all notes of 1*l.* and 2*l.* value, dated prior to 1816, might be received in gold. In the September following, a further notice was given that gold would be paid for notes of every description dated prior to 1817. The effect of these measures was to drain the Bank of a large portion of its bullion, so that in August, 1819, no more than 3,595,960*l.* remained in its coffers, and an act was hurried through parliament to restrain the Bank from acting any further in conformity with the notices here mentioned.

In the same year the bill was passed, commonly known as Mr. Peel's Bill, which provided for the gradual resumption of cash payments. Under the provisions of this law, the Bank Restriction Act was continued in force until the 1st of February, 1820; from that time to the 1st of October in the same year, the Bank was required to pay its notes in bullion of standard fineness at the rate of 4*l.* 1*s.* per ounce. From the 1st of October, 1820, to the 1st of May, 1821, the rate of bullion was reduced to 3*l.* 19*s.* 6*d.* From the last-mentioned day, bullion might be demanded in payment for notes at the Mint price of 3*l.* 17*s.* 10½*d.* per ounce. On the 1st of May, 1823, the current gold coin of the realm might be demanded. The provisions of this act were anticipated in point of time; and on the 1st of May, 1821, the Bank recommenced the payment of their notes in specie.

The Bank of England acts as the agent of the government in the management of the national debt. It receives and registers transfers of stock from one public creditor to another, and makes the quarterly payments of the dividends. Previous to the passing of the act of 1833, the Bank received from the public in payment for this service the sum of 248,000*l.* per annum. Of this amount 120,000*l.* per annum was, according to that act, to be deducted annually, in consideration of the privileges of exclusive banking. By the act of 1844, in consideration of the privileges of exclusive banking and the exemption from stamp-duty, the Bank is to deduct 180,000*l.*

The balances of money belonging to the State are kept in the Bank, which in this respect performs the ordinary functions of a private banker. The alteration made a few years ago in the constitution of the department of the Exchequer added somewhat to this branch of the Bank's business. Many individuals likewise use this establishment as a place of deposit for their money; but as the Bank directors do not give the same facilities to their customers as they receive from private bankers, the proportion of mercantile men who have drawing accounts with the Bank is comparatively small.

Branch banks have been established by the Bank of England at Gloucester, Manchester, Swansea, Birmingham, Liverpool, Bristol, Leeds, Newcastle, Hull, Norwich, Plymouth, Portsmouth, and Leicester.

The profits of the Bank of England are derived from discounts on commercial bills; interest on Exchequer-bills, of which a large amount is usually held; the interest upon the capital stock in the hands of Government; the allowance for managing the public debt; interest on loans, on mortgages, dividends on stock in the public funds; profit on purchases of bullion; and some minor sources of income.

In 1832 the Bank maintained an establishment of nearly one thousand officers, clerks, porters, and messengers; and the number has since been increased. In the same year the salary of 940 persons employed at the Bank and its branches amounted to 211,903*l.*, or, on an average, to 225*l.* each; and 193 persons, principally superannuated clerks, received 31,243*l.* per annum, or 161*l.* each.

In 1694 the stockholders divided 8 per cent., which was increased to 9 per cent. in the following year; from that time to 1729 the annual dividend fluctuated between 5½ and 9 per cent.; for the next eighteen years the rate was 5½ to 6 per cent.; in 1747 it fell to 5 per cent.; in 1753 to 4½ per cent., which was the lowest rate of profit since its first establishment; from 1767 to 1806 the dividend was gradually increased to 7 per cent.; and from 1807 to 1822 the proprietors divided 10 per cent. annually: in 1823 the rate was lowered to 8 per cent., and has so continued to the present time. In addition to these payments, the stockholders have at various times received bonuses to the amount of 6,694,380*l.*, or 57½ per cent. upon the subscribed capital.

The directors of the Bank of England have always declared and acted upon the opinion that secrecy in regard to its condition is important to its prosperity. To such an extent has this feeling been carried, that year after year large and increasing dividends were declared and paid, without the exhibition to the proprietors of a single figure by which such a course could be justified, the simple recommendation of the directors having always satisfied the proprietors as to the policy of preserving this mystery. The printing of the Report of the Committee of Secrecy, in 1832, revealed the true condition of the corporation, and it is not likely that the directors will

ever again be allowed to involve its proceedings in the same degree of concealment.

The Bank of England Charter Act (7 & 8 Vict. c. 32), which received the royal assent on the 19th of July, 1844, remodels the Bank, and establishes a separate department for the issue of notes, independent of the banking department; and it provides for the weekly publication of the Bank's returns in the 'Gazette.' The division of the departments was adopted by the legislature with the view of taking the control of the circulation out of the hands of the directors.

The most important parts of the act 7 & 8 Vict. c. 32, are:—1. The separation of the issuing and the banking functions of the Bank of England, with strict limitations as to its issues, and a different system of account and different officers for each department. The Bank has the power of issuing notes on a fixed amount of securities which is of the value of 14,500,000*l.*, and any issue beyond this sum must be founded on bullion only. As the stock of bullion in the bank increases or diminishes, so will likewise the issues of bank-notes. 2. The next point of importance is the absolute prohibition of any new bank of issue, and the limitation of the issues of all existing banks of issue to an average of the circulation of each bank for the twelve weeks preceding April 12, 1844. 3. Joint-stock banks in London are empowered to accept bills for any period, instead of such bills being confined to dates of not less than six months. Such are the chief features of the system now in operation, the practical working of which, in the course of the ensuing ten years, will be watched with much interest. Another remodelling of the Bank may then again take place according to the act, and an opportunity again be afforded for effecting further changes in banking institutions.

Banking, as carried on by Private and Joint-Stock Companies in England.—The Italian merchants who, under the name of Lombards, settled in England during the 13th century, and previously to that time the Jews, performed the greatest part of the money business of the country. They were not, however, bankers in the modern acceptation of the word; and, in fact, the business of banking does not appear to have been carried on among us earlier than the middle of the 17th century. The goldsmiths of London, who before that time had restricted their trade in money to the purchase and sale of foreign coin, then extended their business by borrowing and lending money. The latter part of their business—that of lending—was principally transacted with the king, to whom they made advances on the security of the taxes. They allowed interest to the individuals from whom they borrowed, and the receipts which they gave for deposits passed from hand to hand in the same manner as Bank-notes have since circulated.

The taking of interest for the use of money was not rendered legal in England until 1546, when the rate that could be demanded was fixed at 10 per cent. The Lombard merchants were accustomed to demand 20 per cent. interest, and even more, according to the urgency of the borrower's wants. In 1624 the legal rate was reduced to 8 per cent., and a further reduction to 6 per cent. took place in 1651. At this rate it still remains in Ireland, but was lowered in England to 5 per cent. in 1713, at which it now continues. By 3 & 4 Wm. IV. c. 98, an exception was made from the operation of the statute of 1713 of all bills of exchange and promissory notes not having more than three months to run previous to their becoming due; these might be discounted at any rate of interest agreed upon with the holder. More recently, by 1 Vict. c. 80 (July, 1837), this relaxation was extended to such mercantile instruments as have not twelve months to run before they are due.

The merchants of London had been used to deposit their money for security at the Mint in the Tower of London, whence they drew it out as occasion demanded; but in the year 1640 King Charles I. took possession of 200,000*l.* thus lodged, which of course put a stop to that practice. This state of things preceded, and most probably led to, the extension of the business of the goldsmiths, as just explained.

This business soon became very considerable, and was found convenient to the government. In 1672 King Charles II. who then owed 1,328,526*l.* to the bankers, borrowed at 8 per cent., shut up the Exchequer, and for a time refused to pay either principal or interest, thus causing great distress among all classes of people. Yielding to the clamour raised against this dishonesty, the king at length consented to pay 6 per cent. interest, but the principal sum was not discharged.

The number of private banks in London about 1793 was 56, of which only 24 are now in existence. The number is at present 75, including 7 colonial and 8 joint-stock banks. There are 3 private banking-houses still carrying on business which were established before the Bank of England. These are Child's, established in 1653; Hoare's, in 1680; and Snow's, in 1685. The London bankers continued to issue notes for some time after the closing of the Exchequer, but they have long since ceased to do so, acting solely as depositaries of money, discounters of bills, and agents for bankers established in the country.

There were very few country bankers established previous to the American war, but after the conclusion of that contest their numbers increaed greatly. In 1793 they were subjected to heavy losses, consequent upon the breaking out of the French war, and 22 of them became bankrupt. The passing of the Bank Restriction Act was the signal for the formation of many establishments for banking in the country. In 1809, the first year when bankers were required to take out a licence, the number issued was 702, which gradually rose to 940 in 1814. In 1813-14 the number of licences taken out by country bankers for issuing notes was 733, and the number of partners in these banks was 2234. In 1814 and the two following years, 89 country bankers failed, and their numbers fell off greatly. From 1826 to 1842 the number of private banks and joint-stock banks were as follows:—

	Private Banks.	Joint-stock. Banks.
1826	554	—
1827	465	6
1828	456	7
1829	460	11
1830	439	15
1831	436	19
1832	424	25
1833	416	35
1834	416	47
1835	411	55
1836	407	100
1837	351	107
1838	341	104
1839	332	108
1840	332	113
1841	321	115
1842	311	118

All country banks in England are banks of deposit and of discount; they act as agents for the remittance of money to and from London, and for effecting payments between different parts of the kingdom. A large number of them are also banks of issue, and their notes are in many cases made payable at some banking-house in London, as well as at the place where they are issued.

In 1826 the 7 Geo. IV. c. 6, provided for the gradual withdrawal of small notes from circulation, by prohibiting the future issue of any stamps for that purpose, and declared that their issue should wholly cease on the 5th of April, 1829. It was on the occasion of the introduction of this act that the Bank of England undertook, at the recommendation of Government, to establish branches of its own body in different parts of the country.

The country bank-notes in circulation in 1810 amounted to 23,893,868*l.* In July 1844, the issues of private banks were 4,624,179*l.* and of joint-stock banks 3,340,326*l.*, being together less than eight millions. In February of the same year there were 43 provincial bankers which, by an arrangement with the Bank of England, agreed to issue the notes of that establishment exclusively, to the amount of 2,429,000*l.*

By 3 & 4 Will. IV. c. 83, banks issuing promissory notes were required, for the first time, to make quarterly returns to the Stamp Office of the average amount of notes in circulation; the quarterly average to be founded on the amount in circulation at the end of each week. The 4 & 5 Vict. c. 50, required the returns to be made at the end of every four weeks. The 7 & 8 Vict. c. 32, sec. 18, requires returns to be made of the notes in circulation on every day in each week; the average for the week; and a like average for every four weeks.

At the time of passing the law for the suppression of small notes in England, provision was made by the legislature, in the manner already described, for the establishment of joint-stock banks, which should be banks of issue, at any distance beyond 65 miles from London. In consequence of this act, above 100 joint-stock banking companies have been formed in England. About 138 private banks have been merged in joint-stock banks. The following table shows the number of joint-stock banks in the United Kingdom in January 1839:—

	No. of Banks.	Branches, &c.	No. of Partners.
England . . .	105	648	32,142
Scotland . . .	29	117	6,971
Ireland . . .	18	143	11,755
Total .	152	903	50,868

Of the 29 Scotch banks, one established by act of parliament, and four by royal charter, are not required to lodge lists of partners.

According to some valuable tables in the 'Banker's Magazine' for August 1844, the number of joint-stock banks in the United Kingdom at that date was as follows:—England and Wales, 106; Scotland, 20; Ireland, 10; and there were besides 10 joint-stock Colonial banks in London.

Bankers in Ireland.—A national bank was established by charter in Ireland in 1783, with the same privileges as those granted to the Bank of England by the act of 1708. The original capital of this corporation was 600,000*l.*, and was lent to Government at 4 per cent. interest. The management is vested in a governor, deputy-governor, and fifteen directors. In 1809 1,000,000*l.* was added to its capital. This sum, which was raised by subscription among the proprietors at the rate of 125 per cent., was also lent to Government at 5 per cent. interest. In 1821 the capital was augumented to 3,000,000*l.*, and a further prolongation of the charter was granted in 1808.

The system adopted by and in regard to the Bank of England has on various occasions been extended to the Bank of Ireland. In 1797, when it became necessary to restrict the Bank of England from paying its notes in gold, that measure was, almost necessarily, adopted in Ireland, and in consequence the issue of the Bank of Ireland notes increased from 780,000*l.*, which it was in 1797, to upwards of 4,000,000*l.*, before the Suspension Act was ultimately repealed.

The total circulation of the Bank of Ireland for the week ending April 27, 1844, was 3,618,600*l.*, of which sum 1,917,000*l.* was circulated by the branches. The bullion in the bank coffers was 1,037,100*l.*, and the total securities amounted to 7,250,700*l.*, consisting of 4,226,500*l.* public securities; 1,844,400*l.* notes and bills discounted; and 1,179,800*l.* of other securities. The total deposits were 3,555,300*l.*, of which 2,484,100*l.* were private, and 1,071,200*l.* public deposits. The Bank neither grants cash credits nor allows interest on deposits.

The suspension of specie payments led, as in England, to the establishment of numerous private banks in Ireland; fifty of these were in operation in 1804. The power of issuing notes was greatly abused by these banks, and the mischief thus occasioned was aggravated by other individuals issuing notes also. It was given in evidence by several persons, before a committee of the House of Commons, that about this time there were 295 issuers of paper money in Ireland, whose notes were in some cases put forth for a few shillings, and occasionally even as low as 6*d.* and 3*d.* each.

These issuers consisted of merchants, shopkeepers, and petty dealers of all descriptions. The consequences might easily have been foreseen; forgeries and frauds innumerable were committed, and it became necessary to put a legal stop to the practice. The mischief recoiled with severity upon the bankers, so that, of the fifty who carried on business in 1804, only nineteen remained in 1812. A few had prudently withdrawn from business, but the remainder had failed; and of the nineteen here mentioned eleven became bankrupt in 1820. The number of private banks in Ireland is now only four.

The mischief and misery thus occasioned called loudly for the interference of government, and in 1821 an act was passed (1 & 2 Geo. IV. c. 72) by which joint-stock banking companies were allowed to be established at a distance of fifty Irish (sixty-three statute) miles from Dublin. This district comprises a population of about 1,500,000, and the Bank of Ireland has only six branches, while in the various towns of Ireland beyond sixty-three miles from Dublin there are above one hundred branches of joint-stock banks. The Bank of Ireland has altogether twenty-four branches.

The Act 1 & 2 Geo. IV. was at first inoperative, in consequence of its omitting to repeal several vexatious restrictions; and it was not until after the passing of a new act in 1824, by which this error was remedied, that a joint-stock banking company was established in Belfast with a capital of half a million. This was followed in 1825 by the formation of the Provincial Bank of Ireland, with a subscribed capital of two millions, one-fourth part of which has been paid up by the shareholders. The management of the bank is conducted in London. This association carries on business in forty of the principal cities and towns of Ireland. Each branch is managed, under the control of the directors, by an agent, with the advice and assistance of two or more gentlemen residing in the district, each of whom holds at least ten shares in the bank. The system of business adopted is the same as is followed by the Scotch banks. The benefit to the country from the introduction and prudent employment of so much capital has been very great. The notes of the Provincial Bank are received by the Irish government in payment for duties and taxes equally with the notes of the Bank of Ireland.

There are ten joint-stock banks in Ireland, including the Bank of Ireland.

In the same year with the formation of the Provincial Bank, the directors of the Bank of Ireland, in 1825, began to establish branches in the country. The notes issued from these branches were not at first payable except in Dublin; but this inconvenience was rectified by the Act 9 Geo. IV. c. 81, which makes it obligatory on all banks to pay their notes at the places where they are issued. This regulation, which does not apply to banks in Scotland, renders it necessary to keep at all times a considerable supply of gold at the branches; and from the political state of Ireland, this necessity is more particularly pressing. In 1828, during a 'run,' the Provincial Bank of Ireland sent over from the head-quarters in London no less a sum than 700,000*l.* in gold to its branches. In Scotland the notes would have been payable at the head-office, where specie is more easily provided.

By the Act 8 & 9 Vict. c. 37, many of the restrictions imposed on joint-stock banks in Ireland by the Bank of Ireland Charter are removed. They can now establish branches at any distance from Dublin, and are allowed to retire their notes there. A limit is however fixed on their issue by this act, the same as on the English Banks of Issue by the Bank of England Charter Act.

Scotch System of Banking.—There are three incorporated public banks in Scotland: one of these, called the bank of Scotland, was established by act of the Scottish Parliament in 1695; another, called the Royal Bank of Scotland, received a royal charter in 1727; and the third, the British Linen Company, was incorporated in 1746, for the purpose of undertaking the manufacture of linen, but now operates as a banking company only; its capital is 500,000*l.* None of the Scotch banks have exclusive privileges resembling those of the Bank of England and Bank of Ireland.

The capital of the bank of Scotland was originally 1,200,000*l.* Scots, or 100,000*l.* sterling money, divided into 1200 shares. This capital has since been augmented at different times, and now amounts to 1,500,000*l.* sterling, but of this sum only one million has been paid up by the subscribers. This bank began to establish branches in 1696, and issued notes for 1*l.* each, in 1704. It also began very early to receive deposits, for which it allowed interest; and in 1729 it introduced the plan of granting credits on cash accounts, which now forms a principal feature of the Scotch banking system.

The nature of these cash accounts consists in the bank giving credit on loan, to the extent of a sum agreed upon, to any individual or house of business that can procure two or more persons, of undoubted credit and property, to become surety for the repayment, on demand, of the sum credited, with interest. When a person has obtained this credit, he may employ the amount in his business, paying interest only upon the sum which he actually uses, and having interest allowed to him from the day of repaying any part of the loan. These loans are advanced in the notes of the bank, whose advantage from the system consists in the call which these credits produce for the issue of their paper, and from the opportunity which they afford for the profitable employment of part of their deposits. In order to render this part of their business as advantageous and secure as possible, it is necessary that the credits should be frequently operated upon; and if the managers of the bank find that they are used as dead loans to produce interest only, or that the operations of the borrower are infrequent, so that the amount of notes called for is inconsiderable during the year, they will speedily put an end to the credit, it being to the interest of

the bank to keep up an active circulation of its notes.

These cash accounts are found to be very advantageous to traders, by supplying an additional capital, for the use of which they pay only in proportion to the amount of it which they employ.

The management of the Bank of Scotland is vested in a governor, deputy-governor, twelve ordinary and twelve extraordinary directors. They are chosen every year by the stockholders having 250*l.* of stock or upwards. The management of the various branches, which are opened in all the principal towns in Scotland, is confided to cashiers or agents.

The Royal Bank of Scotland had at first a capital of 150,000*l.*, which has since been increased to 2,000,000*l.* The system of business adopted by this establishment, and by the British Linen Company, is the same as that of the Bank of Scotland, which has already been described.

The act of 1708, which restrained any association having more than six partners from issuing notes payable to bearer, did not extend to Scotland, where banking companies, with numerous partners dealing on joint-stock, have long existed. 'There is no limitation upon the number of partners of which a banking company in Scotland may consist.'—'The partners of all banking companies are bound, jointly and severally, so that each partner is liable, to the whole extent of his fortune, for the whole debts of the company. A creditor in Scotland is empowered to attach the real and heritable, as well as the personal estate of his debtor, for payment of personal debts, among which may be classed debts due by bills and promissory notes: and recourse may be had, for the purpose of procuring payment, to each description of property at the same time.' (*Commons' Committee on Scotch Banks*, 1826.)

In 1793 and 1825, when so many bankruptcies took place among country bankers in England, not one Scotch bank failed to make good its engagements. The Lords' Committee on Scotch Banks, in 1826, reported that 'the banks of Scotland, whether chartered or joint-stock companies, or private establishments, have for more than a century exhibited a stability which the committee believe to be unexampled in the history of banking; that they supported themselves from 1797 to 1812 without any protection from the restrictions by which the Bank of England and that of Ireland were relieved from cash payments; that there was little demand for gold during the late embarrassments in the circulation; and that in the whole period of their establishment there are not more than two or three instances of bankruptcy; and as, during the whole of this period, a large portion of their issues consisted almost entirely of notes not exceeding 1*l.* or 1*l.* 1*s.*, there is the strongest reason for concluding that, as far as respects the banks of Scotland, the issue of paper of that description has been found compatible with the highest degree of solidity.' In another respect the law which regulates the system of banking in Scotland differs from that in force in England. The act of 1826, which put an end to the circulation of notes under 5*l.*, does not extend to Scotland, where a considerable part of the circulating medium of the country is composed of notes of 1*l.* value. The 9 Geo. IV. c. 65, prohibits the introduction of Scotch notes under 5*l.* into England.

All banking establishments in Scotland take in deposits and allow interest upon very small sums lodged with them,—a fact which may account for the small number of savings' banks in that part of the kingdom. The interest allowed varies according to the current market rate. The rate has sometimes been as high as 4 per cent., and as low as 2 per cent. There is said to be a sort of understanding that less than 5*l.* shall not be paid in or drawn out. It is stated in the Report of the Committee of the House of Commons of 1826, to which the subject of banking in Scotland and Ireland was referred, that the aggregate amount of the sums deposited with the Scotch banks was then from twenty to twenty-one millions, and there is reason for believing that the sum has since been greatly increased. It appears, from the inquiries of the committee just mentioned, that about one-half of the depositors in Scotch banks are persons in the same rank and station as the depositors in savings' banks in England and Ireland.

All the chartered and private banks in Scotland have agents in London upon whom they draw bills, but their notes are not made payable except in Scotland.

There are at present twenty joint-stock banks in Scotland, including the three chartered companies. The greater part of the Scotch banks have branches in connection with the principal establishment, each branch being managed by an agent acting under the immediate directions of his employers, and giving security to them for his conduct. The Bank of Scotland has 33 branches; the British Linen Company, 44 branches; the Commercial Bank, 53; and the total number of branch banks established in Scotland is 313, having been 133 in 1826. Two banks have upwards of 1500 partners.

The Scotch bankers have a practice which is rigorously adhered to, of exchanging each other's notes four times a week and immediately paying the balances. For that purpose each bank has an agent in Edinburgh, by whom this arrangement is conducted. The balances are paid by bills at ten days' date on London. The state of these balances is looked at with great attention: if any thing at all wrong in the conduct of a bank were thereby indicated, the others would instantly interfere and force the party to alter its proceedings. This course has proved efficient in guarding against any over-issue of bank-notes, and in preventing the consequent depreciation of their value. The plan of periodically exchanging notes with each other is partially acted upon in some districts in England, and has recently been adopted by the Irish Banks, whose chief offices in Dublin exchange notes regularly, the same as the Scotch banks.

The Act 8 & 9 Vict. cap. 38 (1845, 21 July) fixes the issues of the Scotch banks on the same principle as those of the Irish banks.

Banking Operations.—Having thus noticed the various banking establishments of foreign nations and of this country, it remains for us to describe briefly the chief operations performed by bankers, and from which they derive their profits.

The business of a bank may be classed under the following heads:—1. Discounting bills of exchange. 2. Advancing money on cash credits. 3. Receiving deposits at interest. 4. Keeping current accounts for customers. 5. Issuing notes. 6. Acting as agents for others. Private bankers in London do not make any charge of commission to their customers, and generally grant facilities to them, both by discounting bills and by temporary loans, either with or without security. Even where this kind of accommodation is not required, it is almost a matter of necessity for every merchant or trader carrying on considerable business to have an account with a banker, through whom he makes his payments, and who will take from him the daily trouble of presenting bills and cheques for payment.

At various times some banking establishments in London have adopted the principle of allowing interest upon deposits placed in their hands. The practice of most of the joint-stock banks is to allow a moderate interest, depending on the market-value of money, for any sum exceeding 100*l.*, provided that it is not withdrawn by the depositor in less than three months. Some of these banks receive deposits as low as 10*l.*; and others allow a higher rate of interest on small than on larger sums. It is expressly stipulated by bankers in these cases that the rate of interest on the sum deposited will be liable to fluctuation according to the state of the money-market. The joint-stock banks also allow interest at the rate of 1 or 2 per cent. on the smallest balance on current accounts, if the balance has stood for a month; and some of them allow interest on the average daily balance for a month.

The profits of London bankers are principally derived from discounting mercantile bills, either for their customers, or, through the intervention of brokers, for other parties. They have great facility as regards the security of this business, from the unreserved confidence which they are accustomed to place in one another as to the credit of their respective customers.

A moderate rate of interest, from 2 to 2½ per cent., is allowed by country bankers upon deposits which remain with them for any period beyond six months; some make this allowance for shorter periods. Where a depositor has also a drawing account, the balance is struck every six months, and the interest due upon the average is placed to his credit. Upon drawing accounts, a commission, usually of a quarter per cent., is charged on all payments. The country banker, on his part, pays his London agent for the trouble which he occasions, either by keeping a certain sum of money in his hands without interest, or by allowing a commission on the payments made for his account, or by a fixed annual payment in lieu of the same.

The portion of funds in their hands arising from deposits and issues, which is not required for discounting bills and making advances in the country, is invested in Government or mercantile securities in London, which, in the event of a contraction of deposits or issues, are immediately available.

The system upon which the business of a joint-stock bank is conducted is the same generally as that pursued by private establishments; but it is, of course, more obligatory upon managers acting for others to adhere rigidly to system, than it is for an individual or a small number of partners without the same degree of responsibility. [JOINT-STOCK BANKS.]

BANK FOR SAVINGS. [SAVINGS' BANKS.]

BANKRUPT (*banque-routier*, a bankrupt, and *banque-route*, bankruptcy—from *bancus*, the table or counter of a tradesman, and *ruptus*, broken) is a trader whose property and effects, on his becoming insolvent, are distributed among his creditors under the bankrupt laws. These laws, which originated in England with the statute 34 & 35 Henry VIII. c. 4, were first mainly directed against the frauds of traders, who acquired the merchandize and goods of others, and then fled to foreign countries, or lived in extravagance, and eluded and defrauded their creditors. The bankrupt laws have the double object of enforcing a discovery and distribution of the property and effects of an insolvent trader, and of conferring on the trader the advantage of security of person and a discharge from all future claims of his creditors. These laws were till lately spread over a voluminous accumulation of statutes, which have been repealed, and their provisions altered and consolidated into the present general Bankrupt Act—6 Geo. IV. c. 16.

The 1 & 2 William IV. c. 56, which constituted 'the Court of Bankruptcy,' materially altered the mode of administration of this law; it removed the jurisdiction in the first instance in cases of bankruptcy from the Court of Chancery to the new Court of Bankruptcy, reserving only an appeal from the judges of that court to the Lord Chancellor, as to matters of law and equity and questions of evidence. Instead of the commission under the Great Seal, which formerly issued to a certain number of barristers-at-law who were permanent 'Commissioners of Bankrupt,' this act substituted a *fiat* of bankruptcy; and other important alterations were also introduced.

The 5 & 6 Vict. c. 122, which came into operation on the 11th of November, 1842, also effected several important alterations. It is entitled 'An Act for the Amendment of the Law of Bankruptcy,' and it repealed all acts which were inconsistent with its provisions.

The provisions of the Bankrupt Act of 6 Geo. IV. c. 16, as amended by the Act of 5 & 6 Vict. c. 122, and the more recent Act of 7 & 8 Vict. c. 96, are very numerous. Only those persons can have the benefit of the law of bankruptcy who are described in the Act 6 Geo. IV. c. 16, and the Act of 5 & 6 Vict. c. 122. The 5 & 6 Vict. c. 122, s. 10, has added to the list of traders who may be made bankrupts, 'livery-stable keepers, coach proprietors, carriers, ship-owners, auctioneers, apothecaries, market-gardeners, cow-keepers, brickmakers, alum-makers, lime-burners, and millers.'

In order that a man shall become liable to be

made a bankrupt, he must commit an act of bankruptcy.

These acts are of two sorts: first, those which are only acts of bankruptcy when done with intent to defeat or delay his creditors; secondly, certain acts which have that effect without reference to any intention. The first class are enumerated in s. 3 of 6 Geo. IV. c. 16, which enacts, 'that if any such trader shall depart this realm, or being out of this realm shall remain abroad, or depart from his dwelling-house, or otherwise absent himself, or begin to keep his house, or suffer himself to be arrested, or his goods, money, or chattels to be attached or sequestrated, or taken in execution, or make any fraudulent grant or conveyance of any of his lands, tenements, goods, or chattels, or make any fraudulent surrender of any of his copyhold lands or tenements, or make any fraudulent gift, delivery, or transfer of any of his goods or chattels; every such trader doing, suffering, procuring, executing, permitting, making or causing to be made, any of the acts, deeds, or matters aforesaid, with intent to defeat or delay his creditors, shall be deemed thereby to have committed an act of bankruptcy.'

The word *realm* means the jurisdiction of the courts of England, and therefore departing to Ireland or Scotland, or a British colony, which are out of such jurisdiction, and with intent to defeat or delay his creditors, may constitute an act of bankruptcy.

A trader being arrested for a debt is only an act of bankruptcy in itself when he can pay the debt, but prefers going to prison with a view to defeat his general creditors. A compulsory going to prison under an arrest is only an act of bankruptcy when the imprisonment endures twenty-one days. It is also an act of bankruptcy if a man keep out of the way with intent to defeat and delay his creditors, in consequence of which he is outlawed for want of due appearance to legal process.

An assignment by deed of all a trader's effects to trustees for the benefit of all his creditors is legally an act of bankruptcy; unless all the creditors (as often happens) assent to and sign such instrument. By s. 4 of 6 Geo. IV. c. 16 such an assignment shall not be deemed an act of bankruptcy unless a fiat issue against the trader within six calendar months from the execution of such arrangement by such trader; provided the assignment be executed by every trustee within fifteen days from the date of the execution by the trader, and the execution is attested and publicly notified in the manner pointed out by the statute.

The acts of bankruptcy above enumerated depend upon the trader's intention. The following acts constitute acts of bankruptcy, whether done with or without an intention to defeat or delay creditors.

By s. 5 of 6 Geo. IV. c. 16, 'if any trader, having been arrested or committed to prison for debt, or on any attachment for non-payment of money, shall upon such or any other arrest or commitment for debt, or non-payment of money, or upon any detention for debt, lie in prison for twenty-one days, or having been arrested or committed to prison for any other cause, shall lie in prison for twenty-one days after any detainer for debt lodged against him and not discharged, every such trader shall be thereby deemed to have committed an act of bankruptcy: or if any such trader having been arrested, committed, or detained for debt, shall escape, every such trader shall be deemed thereby to have committed an act of bankruptcy from the time of such arrest, commitment, or detention.'

It was provided by 6 Geo. IV. c. 16, s. 6, and continued by 5 & 6 Vict. c. 122, s. 22, that if a trader file with the secretary of bankrupts a declaration of his insolvency, signed by himself, and attested by an attorney, the secretary of bankrupts shall sign a memorandum which shall authorize the insertion in the 'Gazette' of such declaration, and such declaration shall then become an act of bankruptcy; but the fiat upon it must issue within two months after filing the declaration.

In addition to the above acts of bankruptcy, the circumstance of a debtor filing a petition for his discharge under the Insolvent Debtors' Act is, by the statute 7 Geo. IV. c. 57, declared an act of bankruptcy, on which a fiat may be issued. And by 7 & 8 Vict. c. 96, s. 41, the Lord Chancellor may issue a fiat against a trader upon his petition made to the Lord Chancellor, when such trader has filed a declaration of insolvency in the manner and form prescribed by the statute in that case made and provided relating to bankrupts.

The 5 & 6 Vict. c. 122, s. 11, enacts, that when the creditor of any trader has made an affidavit of his debt in the proper court, and of his having delivered a written account of such debt and demanded payment thereof from his debtor, the court may summon the debtor and require him to say whether he admits the demand or not, but he is also allowed to make a deposition upon oath in writing that he believes he has a good defence to such demand, or to some part thereof, which he must specify. If the trader does not appear on such summons, or shall appear and refuse to admit the demand, and not make such deposition as above mentioned, in such case, if he does not pay or compound the debt within the time named by the act (fourteen days), or give security for its payment, he shall be considered to have committed an act of bankruptcy. If the trader admits the debt, he must pay or compound or secure it within the time fixed by the act (s. 14); otherwise he will be adjudged to have committed an act of bankruptcy.

Traders who are members of parliament are not liable to personal arrest for debt during the time of privilege. But s. 9 of the Bankrupt Act, 6 Geo. IV. c. 16, provides that, if any trader having privilege of parliament commit any of the beforementioned acts of bankruptcy, a commission (fiat) of bankruptcy may issue against him, and the commissioners, and all other persons acting under the fiat, may proceed as against other bankrupts; but such trader shall not be subject to be arrested during the time of privilege, except in cases made felony by the bankrupt law. By the 52 Geo. III. c. 144, whenever a member shall be found and declared a bankrupt, he shall be for twelve

months incapable of sitting and voting. At the expiration of twelve months the bankruptcy must be certified to the Speaker, and the election of the member is void, unless the fiat be superseded or the creditors paid in full. There is no legal obstacle to a bankrupt retaining his seat in the interval, unless the fact of the bankruptcy be brought before the notice of the House by petition. (May, 'On the Usage, &c., of Parliament.')

By s. 11 it is enacted, that if any decree or order of a Court of Equity or Bankruptcy shall have been pronounced, ordering any such trader, having privilege of parliament, to pay money, and such trader shall disobey the same, the person entitled to receive it may apply to the court to fix a peremptory day for the payment; and if such trader shall then neglect to pay the same, he shall be deemed to have committed an act of bankruptcy, and any of his creditors may sue out a fiat, and proceed as against other bankrupts.

The above are the only acts which, before passing of 5 & 6 Vict. c. 122, rendered a trader liable to a fiat of bankruptcy; but by this statute an act of bankruptcy is also committed when a trader neglects paying, securing, or compounding a judgment debt, upon which the plaintiff might sue out execution (s. 20); also if a trader disobeys an order of any court of equity, or order in bankruptcy or lunacy, for payment of money on a peremptory day fixed (s. 21). No other acts, however strongly they may indicate insolvency or fraudulent intention in the trader, are sufficient to render him a bankrupt. The act of bankruptcy may be committed after a trader has ceased trading; for, so long as his trading debts remain unpaid, he is amenable to the law of bankruptcy. The debt, however, on which the fiat is grounded must be one which was contracted during the period of his trading.

The liability to be made a bankrupt is capable either of being a benefit or an injury to the bankrupt. If he is insolvent, it is for his benefit that his creditors should have his property equally distributed among them, and that he should be released from all further claims. It may be an injury, if he has a profitable business, the value of which depends on its not being disturbed; for by committing an act of bankruptcy, and being under a temporary disability to meet his engagements, he is liable to have all his property sold for the purpose of being distributed among his creditors. Such forced sales often realize very little, and never produce the full value of a property. By such a sale what is called a business is totally destroyed. An act of bankruptcy may, therefore, ruin a man who would be able to satisfy all his creditors if his property were not sold.

The fiat of bankruptcy issues on a petition of one or more creditors to the Lord Chancellor. The various proceedings against a trader or other person who is liable to be made a bankrupt, after he has committed an act of bankruptcy, properly belong to a law treatise. By 5 & 6 Vict. c. 122, the petitioning creditor's debt must be 50*l.* or upwards; if two creditors petition, their joint debts must be 70*l.*; or, if three, 100*l.*

The fiat is directed either to a commissioner of the Court of Bankruptcy, or, secondly, to the commissioners of the district courts of bankruptcy, constituted under 5 & 6 Vict. c. 122. The functions and powers of the different component parts of the Bankrupt Court are prescribed by this statute.

One of the most important parts of the proceedings in bankruptcy is the proof of debts. Every person to whom the bankrupt is indebted is entitled to establish his debt, and to receive a portion of the bankrupt's estate. All debts legally due from the bankrupt at the time of the act of bankruptcy are proveable, and also all debts contracted before the issuing of the fiat, though subsequent to the act of bankruptcy, provided the creditor, at the time of the debt being contracted, had no knowledge of the act of bankruptcy. There are also provisions in favour of those to whom a debt may become due after the issuing of the fiat, upon some contingency provided for by agreement before the trader was made a bankrupt, such as policies of insurance for instance. And all creditors having claims upon the bankrupt which depend on any contingency, may, on application to the commissioners, have a value set on the contingent claim, and be admitted to prove for the debt thus ascertained.

The investigation of a bankrupt's debts is often a matter of great difficulty, owing to the complicated nature of many mercantile transactions, fraud on the part of the bankrupt, or collusion between him and creditors. Occasionally also many difficult questions arise out of the contending claims of the various creditors of the bankrupt.

Not only is all the bankrupt's property applicable towards the payment of his creditors, but there are instances in which effects of other parties in his custody, which could not have been retained by the bankrupt had he not become bankrupt, will vest in his assignees under the fiat. The principal enactment on this subject is 6 Geo. IV. c. 16, s. 7.

In order to provide for the due distribution of the bankrupt's property among those who have proved his debts, the bankrupt's estate is vested in assignees, who are charged with the collection and distribution of it. They are either, first, *chosen assignees*, or, secondly, *official assignees*, who are permanent officers of the Court of Bankruptcy.

The *chosen assignees* are chosen by the major part, in value, of the creditors who have proved debts to the amount of 10*l.*, subject to a power of rejection on the part of the court if they are deemed unfit for the office.

The *official assignees* are merchants, brokers, or accountants, or persons who are or have been engaged in trade, not exceeding thirty in number, who are appointed by the Lord Chancellor to act as official assignees in all bankruptcies. One of them acts with the chosen assignees in every such bankruptcy, and gives security for his conduct. The personal estate of the bankrupt, and the rents and proceeds of his real estate, are received by the official assignee, where not otherwise directed by the Court of Bankruptcy or the commissioners;

and all stock, moneys, and securities of the bankrupt must be forthwith transferred and paid by the official assignee into the Bank of England to the credit of the accountant in bankruptcy, subject to such order for keeping an account, or payment, investment, or delivery thereof, as the Lord Chancellor or the Court of Bankruptcy shall direct. Till the choice of the chosen assignees, the official assignee acts as sole assignee of the bankrupt.

Before the passing of 1 & 2 Wm. IV. c. 56, the commissioners of bankruptcy executed a deed of assignment to the assignees of all the bankrupt's property; but now the whole of the bankrupt's real and personal estate and effects, whether in Great Britain, Ireland, or the colonies, becomes absolutely vested in the assignees by virtue of their appointment; and, in case of any new assignee being appointed, it vests in him jointly with those before appointed.

Property which the bankrupt holds as trustee for others does not pass to his assignees. Whatever beneficial interest the bankrupt may have in property of his wife passes to his assignees; but property which she enjoys as a *sole trader* in the city of London, or which is settled to her separate use, does not fall within the operation of the bankruptcy.

The general rule is, that all the property of a bankrupt vests in his assignees for the benefit of the creditors from the time of the act of bankruptcy; from which it follows that all dispositions made by the bankrupt of his property between that time and the issuing of the fiat are void. This rule of law occasioned much hardship in many instances to persons who had dealt with the bankrupt in ignorance of his having committed an act of bankruptcy, and it has therefore been materially qualified by various legislative provisions.

When the bankrupt has duly submitted himself to examination by the commissioners, and has surrendered up his property and effects, and in other respects conformed to the requisitions of the Bankrupt Act, he becomes qualified to receive a certificate, which operates as a discharge from all debts due by him when he became a bankrupt, and from all claims and demands made proveable under the fiat. The mode of obtaining the certificate is regulated by 5 & 6 Vict. c. 122.

In certain cases of misconduct by the bankrupt the bankrupt is not entitled to his certificate.

The effect of the certificate is to exempt the bankrupt from the payment of all debts which might have been proved under the fiat. After obtaining his certificate the bankrupt has in certain cases a claim to an allowance out of his estate. The amount of the allowance depends on the amount which the bankrupt's estate pays to his creditors, and on the granting of the certificate.

If any surplus of the bankrupt's estate remains after the creditors are paid in full, it of course belongs to the bankrupt, and the assignees are bound, on his request, to declare to the bankrupt in what manner they have disposed of his real and personal estate, and to pay the surplus, if any, to him.

By 5 & 6 Vict. c. 122, several important alterations were made in the Court of Bankruptcy as it was established by 1 & 2 Wm. IV. c. 56, and modified by 5 & 6 Wm. IV. c. 29. The Court of Review was formed of one judge (s. 64); and district courts of bankruptcy were established (s. 46). A recent Act of Parliament (9 & 10 Vict. c. 102) has abolished the Court of Review, and the offices of Chief Judge and other judges of the Court of Bankruptcy, and has enacted that 'all the jurisdiction, powers, authorities, and privileges of the said Court of Review in Bankruptcy hereby abolished shall be transferred to and vested in and shall hereafter be exercised and enjoyed by such one of the Vice-Chancellors of the High Court of Chancery as the Lord Chancellor shall from time to time be pleased to appoint.'

The Court of Review had superintendence in all matters of bankruptcy, and jurisdiction to hear and determine all such matters of this description as were formerly brought by petition before the Lord Chancellor, and also all such other matters as by the act, or the rules and regulations made in pursuance thereof, were specially referred to this court. The proceedings before the court were by way of petition, motion, or special case, with an appeal to the Lord Chancellor in matters of law or equity; or, on the refusal or admission of evidence, such appeal to be heard by the Lord Chancellor only, and not by any other judge of the Court of Chancery. An appeal lay from the commissioners to the Court of Review, and the decision of the Court of Review on the merits as to the proof of the debt was final, unless an appeal was lodged to the Lord Chancellor within one month.

Country fiats are addressed to one of the seven district courts of bankruptcy, which are established at Birmingham, Bristol, Exeter, Leeds, Liverpool, Manchester, and Newcastle. Two commissioners, with from two to four official assignees, and two deputy-registrars, are appointed to each district court. All fees taken in these courts are accounted for to the chief registrar of the court in London. The principal fee in bankruptcy is 10*l.* on the striking of each docket.

The salaries of the judge, commissioners, and other officers of the Court of Bankruptcy, amounted, in the year ending 1st of January, 1844, to 49,382*l.*; and 12,326*l.* were paid besides as compensation to the old commissioners and other officers, of which amount 7352*l.* was paid to Lord Thurlow, Patentee of Bankrupts, and 468*l.* to the Rev. J. Thurlow, Clerk of Hanaper. The whole of this sum of 12,326*l.*, with the exception of 2433*l.* paid to thirteen late commissioners of bankrupts, goes to persons who are entitled on the Parliamentary Return 'Hanaper Officers,' of whom the Patentee of Bankrupts receives the sum above stated. This office was and is a sinecure. The judge received 2500*l.* per annum; London commissioners, 2000*l.* (1500*l.* before passing of 5 & 6 Vict.); commissioners of the country district courts, 1800*l.*; the accountant in bankruptcy (first appointed under 5 & 6 Wm. IV. c. 29), 1500*l.*; the Lord Chancellor's secretary of bankrupts, 1200*l.*; two chief registrars, 1000*l.* each; the deputy registrars in London, 800*l.*, and the deputy registrars of the

district courts, 600*l.* per annum each. The Lord Chancellor is empowered to order retiring annuities of 1500*l.* a year to the judge, and of 1200*l.* to the commissioners; and also retiring annuities of different amounts to the accountant in bankruptcy, registrars, &c. These salaries are paid out of the fund entitled the 'secretary of bankrupts' account.'

It is further enacted by 9 & 10 Vict. c. 102, s. 4, 'that from the time this act shall commence and take effect all power, jurisdiction, and authority given to her majesty's Court of Bankruptcy and District Courts of Bankruptcy, and to the commissioners thereof, in matters of insolvency, by an act passed in the sixth year of the reign of her majesty, intituled 'An Act for the Relief of Insolvent Debtors,' and by an act passed in the eighth year of the reign of her majesty, intituled 'An Act to amend the Law of Insolvency, Bankruptcy, and Execution,' and by an act passed in the ninth year of the reign of her majesty, intituled 'An Act for better securing the Payment of Small Debts,' or by the rules and orders made in pursuance of any of the said acts, shall be transferred to and vested in the Court for the Relief of Insolvent Debtors in England, and to and in the commissioners thereof for the time being, and to and in the county courts constituted or to be constituted under an act passed in the tenth year of the reign of her majesty, intituled 'An Act for the more easy Recovery of Small Debts and Demands in England, in manner hereinafter mentioned.'

The number of bankruptcies gazetted in England and Wales in 1842 was 1273, and 1112 in 1843. Of this number 322 were in the metropolis, 116 in Lancashire, and 108 in the West-Riding of Yorkshire. From Nov. 6, 1845, to Nov. 2, 1846, there were 1326 bankrupts in England and Wales.

Scotland.—In Scotland the term bankruptcy is applied, not to the process by which an insolvent trader's available funds are collected and distributed among his creditors, but to the act of subjecting persons of any class to certain ordeals which publish to the world their inability to meet the demands against them. A person who is 'notour bankrupt' in Scotland, bears a generic analogy to a person who has committed an act of bankruptcy in England, with this leading difference, that it is not a necessary characteristic of the former that he must come within the class of persons whose estates may be distributed by the process of commercial bankruptcy. In Scotland, as in England, the bankrupt, if he be within the class, is liable to the distributing process, which is there called 'sequestration.' It is necessary to keep in view that a 'bankrupt' and a 'sequestrated bankrupt' are distinct terms. Every person sequestrated is necessarily a bankrupt, but every person who is a bankrupt is not a person whose estate may be sequestrated.

The criterions by which a person may become a bankrupt have been fixed by certain statutes, the earliest of which now in force is of the year 1691. Various legislative measures were passed for preventing fraudulent alienations by insolvent persons to the prejudice of creditors, and a system for the relief of insolvent debtors who are not mercantile persons was long a branch of the common law as derived from the civilians, and has lately been remodelled by statute. [CESSIO BONORUM.] It was not, however, until the year 1772 that the legislature established a process which, like the bankruptcy system in England, should collect the available assets of a bankrupt merchant into one fund, distribute it through the hands of third parties, and, under judicial supervisance, among the creditors according to the proportion of the fund to their respective claims, and in the end discharge the bankrupt from his liabilities. Since the year 1772 there has been a succession of sequestration acts, of which the latest was passed on the 17th of August, 1839 (2 & 3 Vict. c. 42). Its main features of distinction from the immediately previous act (54 Geo. III. c. 137) are these—It enlarges the class of persons who may be subjected to the process: instead of being a process of which every step must be taken in the supreme court, the sequestration, being awarded there, is remitted to the sheriff's local court, where the routine business proceeds under the sanction of the sheriff, who has an authority bearing a general resemblance to that of the commissioner in England. The winding up of the proceedings and the taking the process out of court require the sanction of the supreme judicature. Sequestration reduces the interest which will qualify a creditor to sue for the application of the act, and abbreviates the proceedings.

Ireland.—The Irish law of bankruptcy has been gradually assimilated to the English law by several recent acts (6 & 7 Wm. IV. c. 14; amended by 1 Vict. c. 48, and 2 & 3 Vict. c. 86). There is no separate court of bankruptcy; but there are two commissioners who are empowered to act by a commission under the great seal. There are no official assignees.

BANKS, JOHN, was an attorney in London, but he left that profession to become a writer for the stage. The seven tragedies which he left in print bear dates extending from 1677 to 1696. He must have died at some time in the reign of Queen Anne. Banks is one of those dramatists who have been despised by the critics for their literary faults; but whose works have given excellent scope to the skill of great actors, and have in their day been highly popular with the play-going public. The 'Earl of Essex' kept its place on the stage till the middle of the last century, when it was superseded by the plays of Jones and Brooke, who stole successively the best parts of it.

BANKS, THOMAS, was born December 22, 1735, in Lambeth, London. His father, who was land-steward to the Duke of Beaufort, intended to have him educated as an architect, and placed him under Kent for that purpose; but young Banks had formed a decided preference for sculpture, and devoted himself to it as a profession. The Royal Academy was established in 1768, and Banks in 1770 obtained the gold medal prize for sculpture. In 1772 he went to Rome as one of the students sent there by the Academy, though, owing to his father's liberality and the portion obtained with his wife, he was not limited to the 50*l.* a year

granted by the Academy. He returned to England in 1775. Among the works which he executed in Rome a statue of Psyche excited much admiration for its symmetry, grace, and classical elegance. His success in England was not equal to his expectations. Bacon for statuary, and Nollekens for busts, were the established favourites; and Banks in 1784 accepted an invitation from the Empress Catherine, and went to Russia. After executing an allegorical group for the empress he returned to England, where he continued in the exercise of his profession, and executed many groups, single statues, and busts, among which may be especially mentioned—an alto-rilievo of Thetis consoling Achilles; the Falling Giant, which he presented to the Royal Academy on his election as a member; Shakspere, attended by Poetry and Painting, now in front of the British Institution. The monuments to Captains Westcott and Burgess, in St. Paul's Cathedral, in which the figures are naked, or nearly so, are little creditable either to his imagination or his taste. He died Feb. 2, 1805, and was buried in Paddington churchyard.

BANKS, SIR JOSEPH, was born in London, Feb. 1743. The first part of his education was under a private tutor; at nine years of age he was sent to Harrow School, and was removed when thirteen to Eton. He left Eton School in his eighteenth year, and was entered a gentleman commoner at Christ Church in Dec. 1760.

His love for botany, which commenced at school, increased at the university, and there his mind warmly embraced all the other branches of natural history. His ardour for the acquirement of botanical knowledge was so great, that, finding no lectures were given on that subject, he applied to Dr. Sibthorpe, the botanical professor, for permission to procure a proper person, whose remuneration was to fall entirely upon the students who formed his class. This arrangement was acceded to, and a sufficient number of students having set down their names, he went to Cambridge, and brought back with him Mr. Israel Lyons, a botanist and astronomer.

He left Oxford in December 1763, after having taken an honorary degree. His father had died in 1761, and he accordingly came into possession of his paternal fortune in January 1764, when he became of age.

On May 1, 1766, he was elected a fellow of the Royal Society, and in the summer went to Newfoundland with his friend Mr. Phipps, lieutenant in the navy, who afterwards made the voyage towards the North Pole. The object of this voyage was collecting plants. He returned to England the following winter by way of Lisbon. It was after his return that the intimacy commenced between him and Dr. Solander, who, visiting London with strong letters of recommendation, had been recently appointed an assistant librarian of the British Museum.

Three or four years now elapsed before Mr. Banks again quitted England. The interval was assiduously employed on the objects of his established pursuit: his favourite relaxation was fishing. When in London he frequently spent days, and sometimes nights, upon the Thames, chiefly in company with the Earl of Sandwich, who was quite as ardent in the sport as himself. His intimacy with that nobleman is said to have procured for him the opportunity of gratifying his taste for maritime enterprize, which he had soon after the pleasure of finding within his reach. The commencement of a new reign, the peace of 1763, and the administration of Lord Bute (himself a lover of science), had been marked in England by public efforts to explore those parts of the ocean which were still wholly unknown, or only partially discovered. The South Sea having been visited by Captain Wallis, and the position and general character of the island of Otaheite been ascertained, this spot was determined by the English astronomers to be peculiarly well adapted for observing the transit of the planet Venus over the disc of the sun.

A representation to this effect having been made by the Royal Society to the Government, and favourably received, the plan of a general voyage of discovery, embracing, in particular, the original object of the visit to Otaheite, was arranged, in pursuance of which the Lords of the Admiralty, at whose head was the Earl of Sandwich, commissioned the 'Endeavour,' under the command of Captain Cook, for the projected service. Banks, by the aid of his noble friend, succeeded in his wishes. In conjunction with Dr. Solander, he was appointed naturalist to the expedition, in which capacity, attended by two draughtsmen, he sailed from Plymouth Sound, August 26, 1768. The expedition reached Otaheite in the spring of 1769, and there, during a space of four months, devoted essentially to the astronomical objects of the visit, Mr. Banks acquired an intimate knowledge of the natural history of the interior, as well as of the shores and waters of the island.

The expedition quitted Otaheite on the 15th of August, and after traversing the seas surrounding New Zealand, and New South Wales, came homeward by the way of Batavia, and reached the Downs on the 12th of June, 1771, the whole period of the voyage having occupied nearly three years.

After all the privations and dangers of this voyage, it required no common strength of mind to encounter them a second time. Mr. Banks, however, at the solicitation of Lord Sandwich, made this offer to Government, which was accepted; and such was the expense of his outfit, and so extensive the preparations he made, that he was obliged to raise money for that purpose. He engaged Zoffany the painter, three draughtsmen, two secretaries, and nine servants acquainted with the modes of preserving animals and plants; but finding himself thwarted by the Comptroller of the Navy in every thing he proposed respecting the accommodations in the ships (the 'Drake' and 'Raleigh' were commissioned), he gave up, in disgust, all idea of going upon a voyage in the outset of which he had received such personal ill treatment. It was highly honourable to Mr. Banks, that, although he relinquished the voyage, he exerted himself, in every way in his power, to promote the objects of it. Dr. James Lind, a very able physician, had received the appointment of

naturalist, with a grant from parliament of 4000*l*. This gentleman, upon Mr. Banks not going, declined the offer, and Dr. John Reinhold Forster and his son, through the interest of Mr. Banks, received it. Upon Mr. Forster's return, his drawings were purchased by Mr. Banks.

In expectation of being engaged in another voyage of discovery, although not in a king's ship, Mr. Banks, with a view to keep his followers together, made a voyage to Iceland with his friend Dr. Solander. He arrived there in August 1772, and returned in six weeks. The Hebrides, which skirt the north-west coast of Scotland, lay near the track of the voyage, and these adventurous naturalists were induced to examine them. Among other things worthy of notice, they discovered the columnar stratification of the rocks surrounding the caves of Staffa—a phenomenon till then unobserved by naturalists—an account of which was published in the same year from Mr. Banks's 'Journal,' by Mr. Pennant in his 'Tour in Scotland.' The volcanic mountains, the hot springs, the silicious rocks, the plants and animals of Iceland, were all carefully surveyed in this voyage; and a rich harvest of new botanical specimens compensated for its toils and expense. But it was not to these objects alone that Mr. Banks confined his inquiries: he purchased at this time a very large collection of Icelandic books and manuscripts, which he presented, in 1773, to the British Museum; and he added another collection to it in 1783.

In 1777, when Sir John Pringle retired from the Presidency of the Royal Society, the friends of that institution thought they could not promote its usefulness better than by the election of Mr. Banks to the vacant chair. To the duties of this office he immediately devoted himself with the utmost zeal. His exertions had the effect of procuring communications in the highest degree interesting and important, and of gaining an accession of persons of rank and talent to the list of members, as well as exciting the whole body to extraordinary diligence and activity.

In March 1779, Mr. Banks married, and in 1781 was created a baronet. In 1782 he lost his friend and fellow-labourer, Dr. Solander, who died of an apoplectic fit. This loss was a severe blow; and in consequence of it he gave up all intention of proceeding with his botanical work, or of writing any thing further than a few short memoirs, published either in a detached form, or as communications to the Transactions of societies.

For the first three or four years of Sir Joseph Banks's Presidency of the Royal Society all went on harmoniously; but, notwithstanding the zeal and assiduity with which he devoted himself to the duties of his office, discontents began to rise against him, even amongst the most eminent members of the Society. A variety of complaints, the fruit of misunderstanding and prejudice, were industriously circulated in regard to his conduct. The result was a general meeting of the fellows, when a motion of confidence in favour of Sir Joseph having been put was carried by a great majority, and, the dissension soon after subsiding, the Society returned with new zeal and unanimity to its labours.

On the 1st of July, 1795, Sir Joseph Banks was invested with the Order of the Bath, and on the 29th of March, 1797, sworn of his Majesty's Privy Council. In 1802 he was chosen a member of the National Institute of France.

Towards the close of life Sir Joseph Banks was afflicted by gout to such a degree as in a great measure to lose the use of his lower extremities. He died June 19, 1820, leaving no family behind him: he was buried at Heston, Middlesex. The best likeness of Sir Joseph Banks, in later life, is the statue of him by Chantrey in the hall of the British Museum.

All the voyages of discovery which were made under the auspices of Government for the last thirty years of Sir Joseph Banks's life had either been suggested by him, or had received his approbation and support. In the affairs of the Board of Trade, of the Board of Agriculture, and of the Mint, he was constantly consulted, and he took a leading part in the management of the Royal Gardens at Kew. He was a distinguished promoter also of the interests of the Horticultural Society founded in 1804. His influence was frequently directed to soften to men of science the inconveniences of the long war which followed the French Revolution; to alleviate their sufferings in captivity; or to procure the restoration of their papers and collections when taken by an enemy. Baron Cuvier, in his 'Eloge' upon Sir Joseph Banks, mentions that no less than ten times collections addressed to the Jardin du Roi at Paris, and captured by the English, were restored, by his intercession, to their original destination. His purse was always open to promote the cause of science, and his library of natural history always accessible to those who desired to consult it. His *conversazioni* on a Sunday evening, during the sittings of the Royal Society, were attended by persons the most distinguished in literature and science, whatever was their rank in life, or country; and, during the two-and-forty years in which he continued President of the Royal Society, he was indefatigable as an official trustee in the management of the British Museum; to which institution, after innumerable gifts, he made a contingent bequest of his scientific library, together with his foreign correspondence, where both are now deposited.

Sir Joseph Banks published two single tracts:—1, 'A short Account of the Cause of the Disease in Corn, called, by the Farmers, the Blight, the Mildew, and the Rust,' 8vo, 1805; 2, 'Circumstances relative to Merino Sheep, chiefly collected from the Spanish Shepherds,' 4to, Lond. 1809. He wrote several papers in the 'Transactions' of the Horticultural Society, of the Linnæan Society, and in the 'Archæologia.'

A catalogue of Sir Joseph Banks's library, compiled by Mr. Dryander (another of Linnæus's pupils), who succeeded Dr. Solander as his librarian, was published in 1800, entitled 'Catalogus Bibliothecæ Historico-Naturalis Josephi Banks, auctore Jona Dryander, A.M., Regiæ Societatis Bibliothecario,' 5 vols. 8vo.

(*Eloge Historique de M. Banks lu à la Séance de l'Acad. Royale des Sciences, le 2 Avril*, 1821,

4to; *Biographie Universelle; Gent.'s Mag.* various years; *New Monthly Mag.* 1820.)

BA'NKSIA, an Australian genus of plants belonging to the natural order *Proteaceæ*, of very remarkable habits, and forming a striking appearance in the places where it grows. It was named in compliment to Sir Joseph Banks. It consists of bushes, or small trees, with their branches growing in an umbelled manner. The leaves are hard and dry, and, in young plants, always cut at the edges, but in old specimens undivided.

These plants are found in sandy forest land, or on rocks, over the whole known continent of Australia, but chiefly beyond the Tropic. They are called by the colonists honeysuckle trees, and are considered, in New South Wales, as evidence of bad land; but in the Swan River colony they occupy the most fertile tracts. Many species are now cultivated in the conservatories of Europe, where they are much esteemed for their handsome foliage and singular heads of flowers. None of them appear to be of much value for timber. *B. compar* and *B. serrata* (which last is said to grow thirty feet high, with a stem measuring a foot and a half in diameter) are the largest species which have been mentioned by travellers on the east coast. On the west coast, in Swan River colony, *B. grandis* reaches fifty feet in height, with a trunk two feet and a half in diameter.

A considerable quantity of honey is secreted by their flowers, and collected by the natives of King George's Sound, who are extremely fond of it.

BANN, a river in Ireland, which rises in the county of Down, about 8 miles E. of the town of Newry, in the high lands near the coast. It flows N.W. to Lough Neagh, which it enters near the S.W. corner, and issues from the N.W. corner, flowing through Lough Beg, and thence nearly N. to the North Sea, which it joins about 4 miles N.W. of Coleraine, and about 75 English miles, measured in a direct line, from its source.

BANNER, a piece of drapery attached to the upper part of a pole or staff, generally hanging loose, but sometimes fixed in a slight framework of wood. To complete the idea, such piece of drapery must be regarded as in some way indicative of dignity, rank, or command, or as carried on some occasion with which ideas of dignity are connected. The size and form are mere accidents, as indeed is the material, though the drapery usually consists of some costly stuff, the most usual material being a soft silk called taffeta. Banners are sometimes plain and of one uniform colour, but more usually ornamented with tassels and fringes, or decorated with some figure or device having reference to the person or community by whom it is raised, or to the occasion on which it is displayed. The term *standard* is usually applied to the principal banner of an army, the national banner, or a banner set up by some chief as a rallying point for his adherents. *Colours* is the name applied to the banners borne by particular regiments. A *flag* is a banner displayed on board a ship, especially as a signal. A *pendant* is a narrow flag with a long streaming tail, used to denote the vessel which carries it to be a national vessel, or man-of-war. This is sometimes written *pennon*, and a small pendant is distinguished as a *pennoncille* or *pensil*. *Ensign* is a word formed on the idea of the banner displaying *insignia*, and formerly used where we now say *colours*. The officer now called an ensign was formerly the *ensign-bearer*. This name is now applied to the national colours carried over the stern of a ship. *Streamer* is a poetic word applied to all kinds of floating banners.

The military standards of the Romans were not banners, but carvings in metal or wood, of an eagle or some other figure, elevated on a tall lance or pole. The Persians used a similar standard; and though we know but little of the standards of other nations of antiquity, there is no reason to suppose that banners, as we understand the term, were used by them.

The first notice of banners in England occurs in Bede's account of the interview between Augustine and Ethelbert, when the followers of Augustine are described as bearing banners on which were displayed silver crosses and the picture of Jesus Christ. Thus early were they used, as they continue to be by Roman Catholic countries, to add to the pomp of religious processions. The English monasteries had banners which were displayed on great anniversaries, and occasionally lent for use in the field; and some of these, besides a representation or symbol of some particular saint, contained highly valued relics. This was the case with the celebrated banner of St. Cuthbert, at Durham, which had the reputation of securing victory to those who fought under it, and was borrowed on this account by the Earl of Surrey, for use in an expedition to Scotland, early in the reign of Henry VIII. The *oriflamme*, so frequently mentioned in the chronicles and romances of the middle ages, was the banner of St. Denis, borrowed from the Abbey of St. Denis, near Paris. It was a flame-coloured banner, without embroidery, divided below into three parts, and fastened to the lance with loops of green silk.

The banners of the middle ages formed a link between the military and the ecclesiastics, between the affairs of war and the sentiments and feelings of religion; and this connection may be traced even to our own times. The pope still sends consecrated banners where he wishes success; and even in Protestant countries it is not unusual to have regimental colours blessed by a minister of religion; while the banners of the knights of the Garter and the Bath are hung respectively in the chapels of St. George, at Windsor, and Henry VII., at Westminster; churches are still the depositories of banners taken from the enemy; and banners are yet suspended over the tombs of military or naval men of distinction.

The national banner of England, that of her patron saint, St. George, consisting of a plain red cross upon a white ground, is a religious one; and whatever other banners were carried, this was, in former times, always foremost in the field. The *Union-flag* is formed by a combination with it of the crosses of St. Andrew and St. Patrick,

the patron saints of Scotland and Ireland. The lions borne as the arms of England are the personal achievement or heraldic insignia of our kings, and appear, from the time of Richard I., to have been always carried near the person of the sovereign when engaged in war. Other personal devices and cognizances have been frequently used in like way, as, for instance, the white rose of the House of York by Edward IV.

In thus carrying their personal banners into the field, the king was imitated by the earls and other persons of distinction who led their dependents into the field in feudal times. Heraldry was then, far more than now, a necessary art, for when the figure was completely cased in steel, and the face concealed by the helmet, the heraldic insignia displayed upon their shields, surcoats, and banners, afforded the only sufficient means of distinguishing one knight from another, and the banners were especially necessary to enable the soldiers to follow and rally round their respective leaders. An interesting exhibition of this custom is presented in a French poem of the reign of Edward I., relating to the siege of Carlaverock, in which we have a catalogue of the chiefs who were present, and of their heraldic insignia, which may rival in extent and minuteness the catalogue of the chiefs at the siege of Troy. As the feudal constitution of the army gave way, the use of private banners disappeared; but in the Parliamentary army they were resumed, their devices being of a new character, in accordance with the spirit of the times, often conveying some moral or religious sentiment. Distinguished persons were early attended by a banner-bearer, or *bannerer*, whose office was considered one of peculiar trust. The post of standard-bearer of England, especially, was one of high honour from an early period.

The standard used in the eleventh and twelfth centuries, being too large to be wielded by a single hand, was sometimes fixed in a scaffold resting upon a car drawn by oxen, while at the foot of the mast a priest celebrated mass every day, and ten knights, attended by as many trumpets, kept watch upon the scaffold night and day. Such a cumbrous machine was used at the great battle of the Standard, in the reign of Stephen.

While their chief use was as rallying-points, banners were also employed as signals, from a very early period. They were also carried by heralds, and the pennon-quarrée of a banner formed, as now, the drapery of a trumpet. Banners, with inscriptions or intelligible devices, have been used in all popular insurrections, as a ready means of acting upon the minds of a multitude. In all pageants, at tournaments, coronations, and funerals, they have been extensively used; and corporations and trading companies still employ them.

When the drapery of the banner was allowed to float in the air, it was usually either square or extended to a considerable length and divided at the extremity, forming the swallow-tailed banner. That of William Rufus was of the latter form, while his father's appears to consist of three shreds attached singly to the pole.

(Sir Samuel Meyrick on *Ancient Armour; Retrospective Review*, New Series, vol. i. pp. 90–117.)

BANNERET, an English title of dignity, now nearly if not entirely extinct. It denoted a degree which was above that expressed by the word *miles* or *knight*, and below that expressed by the word *baro* or *baron*. Many writs of the early kings of England run to the earls, barons, bannerets, and knights. When the order of baronet was instituted, an order with which we must be careful not to confound the banneret, precedence was given to the baronet above all bannerets, except those who were made in the field, under the banner, the king being present.

The banneret was a knight so created in the field, and this honour was conferred usually, but not always, as a reward for some particular service. Thus, in the fifteenth of King Edward III., John de Copeland was made a banneret for his service in taking David Bruce, king of Scotland, at the battle of Durham. Sometimes the grant of the dignity was followed by the grant of means by which to support it.

The rank of the banneret is well understood, but what particular privilege he enjoyed above other knights is not now known. No catalogue has been formed of persons admitted into this order, and it is presumed that they were few. The institution of the order of baronets probably contributed greatly to the abolition of the banneret. The knights of the Order of the Bath in modern times approach nearest to the banherets of former days.

BANNOCKBURN is a *quoad sacra* parish and village within the ecclesiastical parish of St. Ninian's, county of Sterling, about three miles S.S.E. of Stirling, and on both sides, but principally on the east side, of a small rivulet of the same name, which runs into the Forth below Stirling. The village has of late years become one of the most thriving and industrious in Scotland. The chief trades are nail-making, tanning, and the manufacture of tartan cloths, and other woollen articles. It has two annual fairs, of which one is becoming of considerable importance as a cattle and horse fair. The population in 1841 was 1480. The village is 29 miles N.N.W. of Edinburgh.

It is chiefly remarkable however for the great battle, so well known both in Scotch and English history, which was fought on the 24th of June, 1314, between Edward II. and King Robert Bruce, by which the independence of Scotland was established.

The numbers which fell on both sides in this great battle are variously estimated. Some of the Scotch historians computed the loss of the English at 50,000. This however includes those who were killed in the flight. The lowest computation of the English historians gives the numbers who fell on their side as 154 lords and knights, 700 gentlemen, and 10,000 common soldiers. The Scots admit that they lost 4000 men on the occasion.

Bannockburn is also celebrated in Scottish history as the place at which James III. was de-

feated, in an engagement with his rebellious subjects. In attempting to escape after his troops had been vanquished, the unfortunate king fell from his horse, and was so seriously injured, that he was carried to a neighbouring mill, where he was soon after assassinated by a priest, whom he had sent for to receive his confession and afford him spiritual consolation.

BANQUETTE, in fortification, is a step formed of earth at the foot of the interior slope of a parapet, and extending along its whole length, except where intervals are left for placing artillery to fire through the embrazures. It is formed either on the natural ground or on a rampart, and is usually three feet high; or, since troops are to stand upon it in order to fire over the parapet, its upper surface or tread is 4 ft. or 4½ ft. below the level of the crest of that part of the work. The tread is from 3 ft. to 4 ft. broad, and the rear side is generally formed with a slope whose horizontal breadth is equal to twice the height, in order that the men may easily ascend or descend. In some cases the ascent is by steps formed on the rear side; and when the parapet is more than 7½ ft. or 8 ft. high the banquette is often double, or a horizontal tread from 1 ft. to 3 ft. broad is formed at the middle of the slope.

BANS. [MARRIAGE.]

BANTAM. [JAVA.]

BANTRY. [CORK.]

BANTRY BAY is a deep inlet on the S.W. coast of Ireland, between Sheep Head and Dursey Island, in the county of Cork. It is 21 miles in length and 5 broad, safe and commodious for ships of any size, and free from dangerous rocks and shoals. At the head of the bay are two harbours. One on the S. side, opposite Bantry town, and within Whiddy Island, is called Bantry Harbour, which is quite landlocked, and perfectly secure from all winds. The other to the northward is called Glengarif Harbour: it is small, and the entrance narrow. This is also sheltered by a small island, but, from being so confined, is seldom used by any other than coasting vessels. In summer, however, the largest ships may ride in safety outside the island.

Near the entrance of Bantry Bay, on the north shore, is an excellent harbour, large and well sheltered, with water sufficiently deep for the largest ships. It is called Bear Haven, and is formed by Bear Island, at each end of which there is an entrance, and good anchorage every where within it, though the best is off Balinakilly. This harbour is well adapted for the rendezvous of a fleet, being near the sea, easy of access, spacious, and safe.

(Norie's *British Channel Pilot;* Seward's *Topographia Hibernica, or Topography of Ireland.*)

BANYAN TREE. [FICUS.]

BANYUWANGY. [JAVA.]

BAOBAB. [ADANSONIA.]

BAPAUME. [PAS-DE-CALAIS.]

BAPTA, in entomology, a genus of the order *Lepidoptera*, and family *Geometridæ*. The species of this genus are among the thin-bodied day-flying moths. Mr. Stephens, in his 'Illustrations of British Entomology,' confines this genus to two species: *Bapta bimaculata* (the white pinion-spotted), which is a beautiful white colour, and has two brown spots on the front edge of each of the anterior wings; and *Bapta punctata* (the clouded silver). This differs from the first principally in having the tips of the anterior wings clouded with brown. Both species are occasionally met with in woods in the neighbourhood of London.

BAPTISM, a well-known rite or ordinance of Christianity; one of the two sacraments of the English Reformed Church.

When baptism, as a religious rite, was first practised, is a question on which the opinions of the learned have been divided. Some early Jewish writers speak of it as a custom of their nation from very ancient times. We possess, however, the most authentic information, that in the reign of Tiberius there appeared, on the banks of the river Jordan, a prophet whose name was John, who called upon the people of Judæa to adopt stricter rules of life, to expect the immediate coming of the kingdom of heaven, and to repent. Great multitudes attended the preaching of John. He required of those who became his disciples that they should be *baptized*. This was done in the river, and the meaning of the rite seems, in this case, to have been twofold: 1, Repentance, or renouncing former opinions and practices; and, 2, Proselytism, or their taking John to be their general spiritual or religious guide and authority. On account of his requiring his proselytes to submit to this rite, the name of the Baptist was given to him. Among those who acknowledged John as a divine prophet, and received baptism at his hands, was Jesus of Nazareth, the long-expected Messiah, at whose baptism there was a supernatural appearance in the air, and a voice heard, which declared him to be the 'beloved Son of God, in whom he was well pleased.' John also bore his testimony that Jesus was the Messiah. Jesus, under the especial direction and with the peculiar assistance of the Most High, founded that great church or community in which so large a portion of the human race are now comprehended, and appointed that admission into this church should be accompanied by the rite of baptism.

It is remarkable that he did not himself baptize. But while he was employed in diffusing that new and sacred truth which he came to communicate, and in the performance of those miracles by which his claim to be a divine teacher was established, his apostles and others of his more eminent disciples did baptize, and many flocked to their baptism. (John iv. 1, 2.) This was done under the eye and with the concurrence of their master; but after his resurrection he gave a more direct sanction to the practice, and, in fact, established the rite as a perpetual ordinance in his religion, saying to his apostles—'Go ye therefore and teach all nations, baptizing them in the name of the Father, and of the Son, and of the Holy Ghost, teaching them to observe all things whatsoever I have commanded you.' (Matt. xxviii. 19.) The apostles acted according to this injunction. The rite was regarded by the apostles and

first Christians as an instituted ordinance of the Christian church. The meaning of Christian baptism differed little, if at all, from the baptism of John. It implied repentance, and faith in Christ. The washing was no inapt symbol of this change. When formally administered by some officer of the Christian church, and in the presence of a Christian assembly, it was an outward and visible sign that the convert took upon himself the profession of Christianity. On the other hand, the performance of the rite by any person who was himself a Christian, and who professed that he was performing the rite as a Christian ordinance, and in obedience to the command of Christ, was an assurance to the person baptized that he was henceforth to be acknowledged by the whole Christian community as one of themselves.

Different opinions are entertained of the amount of the advantages which ensue on the performance of this rite; which opinions have all given occasion to controversies in the church.

The manner in which the rite was performed appears to have been at first by complete immersion. The words *baptism*, and to *baptize*, are Greek terms, which imply, in their ordinary acceptation, *washing*, or *dipping*. The question, however, is not whether entire immersion were the practice in the primitive church, but whether it was regarded as so essentially a part of the ordinance that there could be no baptism without it.

The opinions of the Christian world have been much divided with respect to the time of life at which it is proper to administer the ordinance. When Christianity addresses herself to the unconverted, the proper time evidently is whenever the faith and repentance necessary are perceived to be complete; but the question relates to the case of nations which are already Christianized, and it properly assumes this form:—Shall the performance of the rite be delayed till the offspring of Christian parents are sufficiently advanced in religious knowledge to have the faith, and, if need be, the repentance of the convert? or shall those who are born in Christian households, and for whom there is the serious intention entertained by those who are their natural protectors to bring them up in the faith and knowledge of the Christian, be devoted early by their protectors to the faith of Christ, and admitted, in their still unconscious state, to whatever advantages may be supposed to attend the performance of this rite? It is alleged, in support of infant baptism, that there is nothing in the New Testament which relates to the baptism of the offspring of parents themselves Christian, but only to the baptism of converted persons, leaving us without an authoritative direction in the case; that it was natural for the first converts, who were Jews, to infer an analogy between this rite and the initiatory rite of Judaism, which, by the divine command, was to be performed in infancy, and which brought the person who received it within the scope of the promises to Abraham and his seed, as baptism did within the scope of the promises to believers in Christ; that we read in the Scriptures of whole households being baptized at once; and that infant baptism certainly did prevail in the Church at a very early period.

When baptism was received as a permanent ordinance of the Christian church, suitable places were provided, called baptisteries, which, in some instances, preceded churches, and were, in fact, the point about which other edifices arose, forming an entire church. Of these baptisteries, it is believed, none remain in England; but, in many of the larger churches of England, a portion of the building is set apart for the performance of this rite, and contains the *font*, so called from *fons*, a fountain, perhaps in reference to the original baptisteries, the springs or running streams of the East, or as the Spring of that water which was supposed to be life-giving. The maintenance of a font in the church for baptism is enjoined on every parish. The old fonts of England have capacious basins, large enough to receive the entire body of the infant. It was the practice of the English church, from the beginning, to immerse the whole body. (Fuller's 'Church History,' p. 109.) Since the latter part of the 16th century, the baptism of infants by immersion has been almost entirely disused in England. It has always been an object with the authorities in the Church of England to enforce the attendance at the public font in the church. Private baptism is rather connived at than allowed. In cases of sickness, or hazard of life, the clergyman is not to perform the full service, but only so much as may be needful, for satisfaction that the child, if it dies, die not unbaptized. The friends of the infant must still repair to the church for the completion of the ceremony. Among Dissenters the baptism of infants has been, for the most part, performed at home.

The Church requires that at baptism there shall be *sponsors*, from *spondeo*, to promise, or, in our own Saxon tongue, *godfathers* and *godmothers*, who pledge themselves that the infant shall be brought up in a Christian way. They are to be no less than three: for a male child two men and one women; for a female child two women and one man. This practice is of great antiquity in the Church.

Another incident to baptism, as administered in the English Church, is the giving a name to the child. In this Christians seem to have followed the example of the Jews who assigned a name when the rite of circumcision was performed. The name thus given during the performance of one of the sacraments is appropriately called the Christian name. The surname, or name of addition, is not on this occasion mentioned; and it is observable, that though there are frequent instances of the change of the surname in after life, the instances are extremely rare of any change in the Christian name.

The Church of England retains the signing the infant with the sign of the cross, as a token that it is hoped it will become a good soldier of Jesus Christ. This is one of the ceremonies which the English reformers thought it expedient to retain from many ceremonies with which this ordinance had been loaded in the earlier times of the Church.

(*The History of Infant Baptism*, by William Wall, D.D., 1705; *Reflections on Mr. Wall's History of Infant Baptism*, by John Gale, D.D., 1711; *Defence of the History of Infant Baptism against the Reflections of Mr. Gale and others*, by W. Wall, 1720; *History of Baptism*, by Robert Robinson, 1790.)

BAPTISTE, JEAN BAPTISTE MONOYER, commonly called *Baptiste*, was born at Lisle, in 1635. He commenced his studies at Antwerp, with the intention of becoming an historical painter; but, growing diffident of his powers in that branch of art, he had the good sense to relinquish it, and devote himself to an humbler walk, chiefly the representation of fruit and flowers, in which he showed great talent and acquired high reputation. He went early to Paris, where the spirit and novelty of his style soon attracted attention; and he was engaged to ornament the palaces of Versailles, Meudon, Marly, and Trianon. He was elected into the Academy in 1663. At the invitation of Lord Montague, then English ambassador at Paris, he accompanied that nobleman to England, where he commenced his practice by decorating Montague House (which afterwards became the British Museum) with a beautiful series of embellishments. He continued in this country nearly twenty years, and his works form conspicuous ornaments in the mansions of the various nobility and gentry by whom he was employed. Baptiste died in 1699, aged 64. He left a son, Antione Monoyer, called Young Baptiste, who practised in his manner, but who, although by no means destitute of talent, fell far short of the excellence attained by his father.

BAPTIST, JOHN GASPAR, a painter, was a native of Antwerp, and a pupil of Boschaert. He came to England during the civil wars, and served in Lambert's army; but, after the Restoration, returned to his original profession, and was much employed by Sir Peter Lely in painting his draperies and back-grounds. He worked occasionally also for Kneller and Riley. He was not without original talent, and made designs for tapestries which evince considerable skill in drawing. There is a portrait of Charles II. in St. Bartholomew's Hospital by this artist. He died in 1691.

BAPTISTERY, an ancient building, in which Christians performed the ceremony of baptism. The most celebrated existing baptisteries are those of Rome, Florence, and Pisa; the most ancient is the baptistery of S. Giovanni in Fonte, near the church of S. Giovanni Laterano at Rome, commonly said to have been erected by Constantine the Great. The plan of this building is an octagon, with a small portico at the entrance; the interior is decorated with eight most beautiful porphyry columns, the finest of the kind in Rome. The diameter of this structure is about 75 feet.

The Baptistery of Florence, which is octangular, with a diameter of about 100 feet, stands opposite to the principal entrance of the Cathedral. The three great bronze doors are celebrated for the beauty of their bas-reliefs, and for the marble and bronze figures above them.

The Baptistery of Pisa, erected between the years 1152 and 1160, by Diotisalvi, is a singular design. The plan is circular, with a diameter of 116 feet; the building is raised on three steps, and surmounted with a dome in the shape of a pear. The external elevation is divided into three stories.

The multangular edifices placed at the sides of cathedrals, which are called chapter-houses, are very similar in plan to the ancient baptistery. It is possible that they were originally used for that purpose.

BAPTISTS, a religious sect, and, in England, one part of the body known by the general name of The Three Denominations of Protestant Dissenters. As the name implies, they hold peculiar views on the subject of baptism, maintaining that this Christian rite ought to be administered by immersion, and not by sprinkling, at such an age that the ordinance can be regarded as the profession of the baptized person's own faith; and not in infancy. Such they believe was the practice of the apostolic times. In vindication of their mode of performing the ordinance, they lay great stress on the original word βαπτίζω, which signifies, as they contend, nothing but immersion. They defend the postponement of the rite from the words of the baptismal commission, in which the apostles are commanded to teach before they baptize. 'Go ye and teach all nations, baptizing them in the name of the Father, and of the Son, and of the Holy Spirit.' The reception of the Gospel being thus assumed as an indispensable qualification for baptism, the Baptists require that all to whom they administer it should repent of their sins, believe in Christ, and joyfully receive the word. A profession to this effect is made by most persons who are baptized in their communion.

The question of baptism was brought before different councils, in the 5th century, whose decisions were given in favour of infant baptism. The opposite opinions were, therefore, anathematized; and those who held them incurred the penalties attached to heresy. The schism which led to the formation of the Greek church did not remove the cause of controversy concerning baptism, but, on the contrary, increased it by the intolerant proceedings which were taken against those who refused to be silenced. The number of those who professed the offensive tenet in the beginning of the 12th century are said by Mosheim to have amounted to 80,000. From this time to the commencement of the Reformation, Germany was the chief seat of the Baptist reformers; from whence, following the course of the Rhine, they spread over Holland. Up to this time the doctrine, though so long and tenaciously maintained, appears not to have bestowed any particular designation upon those who held it. Their existence, as a distinct sect, commenced in Germany in the days of Luther, under the name of Anabaptists. [ANABAPTISTS.] The doctrine was blended with principles so fanatical and lawless, that none who had respect for the morals and order of society dared to avow it; and consequently the advocates for baptismal immersion are averse to the name of Anabaptists.

Little is known of the Baptists in England be-

fore the 16th century. Their name then appears among the various sects who were struggling for civil and religious freedom. We do not hear of any congregation of Baptists in this country before 1607. They now subsist under two denominations, General Baptists, and Particular Baptists. The latter designation is given to those who hold Calvinistic views, and who are in every respect but their distinctive doctrine the same as the Independents. The General Baptists maintain the doctrine of universal redemption; but they are divided into the Old Connexion (Unitarian), and the New Connexion (Trinitarian), the latter by far the most numerous. Among both the Particular and General Baptists there is another ground of separation, relating to the terms of communion at the Lord's Supper. Some churches (each society or congregation is a church) do not allow persons, who have not received baptism according to their views of it, to join with them in the celebration of this rite. Of this number are some of the Particular Baptists, and all the New Connexion of General Baptists. Others, however, do not scruple to meet, on that occasion, not only those of the Baptist persuasion who hold other opinions widely different from their own, but even persons who do not embrace the Baptist tenet, provided their religious faith is, in other respects, as they conceive, orthodox, and their lives conformable to their profession. This is called Free Communion. The tolerant spirit which it cultivates is making rapid progress though the whole denomination. In Ireland and Scotland the Baptists have many congregations; but neither there nor in this country do their opinions spread so fast as in the United States and North America.

(*An Historical Sketch of the Baptist Denomination;* Mosheim's *Ecclesiastical History*, vol. iv.)

BAR (in French, *Barreau*) is a term applied, in a court of justice, to an inclosure made by a partition of timber, with the view of preventing the persons engaged in the business of the court from being incommoded by the crowd. It has been supposed to be from the circumstance of the counsel standing there to plead in the causes before the court that those lawyers who have been called to the bar, or admitted to plead, are termed *barristers*, and that the body collectively is denominated *the bar;* but these terms are more probably to be traced to the arrangements in the Inns of Court. [BARRISTER; INNS OF COURT.] Prisoners are also placed for trial at the same place; and hence the practice arose of addressing them as the 'prisoners at the bar.' The term bar is similarly applied in the houses of parliament to the breast-high partition which divides from the body of the respective houses a space near the door, beyond which none but the members and clerks are admitted. To these bars witnesses and persons who have been ordered into custody for breaches of privilege are brought; and counsel stand there when admitted to plead before the respective houses. The Commons go to the bar of the House of Lords to hear the king's speech at the opening and close of a session.

A trial at bar is one which takes place before all the judges at the bar of the court in which the action is brought.

BAR, in Music, a perpendicular line drawn through the staff, and dividing a piece of music into certain equal portions or measures, in order to render its execution more easy. The term *bar* is also applied to the quantity contained in any such portion: thus we say, a bar of two minims, of six quavers, &c.; and a bar in common time, in three-eight time, &c.

Double Bars mark a conclusion. They are likewise placed at the end of each strain; and if accompanied by dots, they indicate that the

part next the side on which the dots appear is to be repeated.

BAR, a town in the province of Bahar in Hindustan, is on the south bank of the Ganges, situated in 25° 30′ N. lat., and 85° 30′ E. long. The houses in Bar are estimated to amount to 5000; they are ill built, and the whole town presents a very mean appearance; but it is a place of considerable trade. (Hamilton's *East India Gazetteer.*)

BAR. [BARROIS, LE.]

BAR-LE-DUC, or BAR-SUR-ORNAIN, the capital formerly of the duchy of Bar, now of the department of Meuse, in France, stands on the Ornain, a feeder of the Marne, at a distance of 144 miles E. of Paris, in 48° 46′ N. lat., 5° 10′ E. long., and has a population of 12,526. Bar is divided into an upper and a lower town. The upper town stands on a hill above the Ornain; it is the most ancient part of Bar, and is well built, but very little business is done in it. In this part stood the old fortress of the dukes of Lorraine, to the foundation of which, in the tenth century, Bar is said to owe its origin: it was demolished by Louis XIV. The church of St. Pierre contains a monument of René de Châlons, prince of Orange, on which is a remarkable piece of sculpture, representing a body in a state of decomposition. The lower town stretches along the Ornain, which is crossed by three stone bridges. The chief business of Bar is carried on in this part; it contains many factories, dye-houses, and workshops. The streets are wide, and well laid out; some of them are adorned with double rows of linden-trees. Before the revolution Bar contained a great number of churches and religious houses. Of the churches that remain the principal are those of St. Etienne and Notre Dame; the other public buildings are of a very ordinary character. Bar possesses tribunals of first instance and of commerce, a college, a primary normal school, a society of agriculture and the arts, and a public library. Its manufactures consist of cotton and woollen goods, cotton yarn, hosiery, handkerchiefs, and leather. The town is celebrated for its sweetmeats, and contains several breweries. The Ornain is navigable below Bar, which has thus a ready means of transit for its industrial products, and for the other items of its trade, namely, wine, iron, fir and oak planks, and firewood for the supply of Paris. There are

extensive iron-works and stone-quarries in the neighbourhood. The railroad in course of construction from Paris to Strasbourg passes through Bar-le-Duc. (*Dictionnaire de la France.*)

BAR-SUR-AUBE. [AUBE.]

BAR-SUR-ORNAIN. [BAR-LE-DUC.]

BAR-SUR-SEINE. [AUBE.]

BARABINZA STEPPE. [SIBERIA.]

BARA'BRA, or BERA'BERA, the name given by the modern Egyptians to a people of Lower Nubia, who call themselves Kenouz. The country occupied by the Kenouz extends along the Nile, between the cataract of Wady Halfa and that of Assouan. The Barabra or Kenouz are said by Champollion and others to resemble in features the people represented in the ancient Egyptian sculptures. [NUBIA.] (Balbi, *Géogr.*)

BARAHAT, the capital of the Raja of Gurwal, is situated on the N.W. bank of the Bhageerettee, in Northern Hindustan, in 30° 45′ N. lat., and 78° 22′ E. long. This town suffered very severely in 1803 from an earthquake, in which 300 of the inhabitants were killed. It was described in 1815 as having not a dozen houses standing in a properly habitable condition, and as being almost buried in a jungle of rank weeds; but it has since recovered its prosperity. Serinagur was the former capital of the province, from which it is distant 48 miles N.N.W. (Hamilton's *East India Gazetteer.*)

BARALIPTON. [SYLLOGISM.]

BARANYA, one of the subdivisions of the province of Thither Danube in Hungary, is bounded S. by the Drave, E. by the Danube, N. and W. by the circles of Somogy and Tolna. It contains 1934 square miles, and presents an agreeable alternation of hills and valleys in the northern and midland districts. There is a range of heights also in the east of Baranya, the slopes of which are covered with vineyards. The plains below them, as well as those about Mohácz, are among the most extensive levels in Hungary. The south-easternmost part of Baranya is covered with morasses. Besides the Danube and the Drave there are no important rivers in the district. The natural fertility of Baranya renders it one of the most productive regions in Hungary. It grows excellent wheat, and most other kinds of grain, fruits, and tobacco. It produces a considerable quantity of red and white wines, which are much prized. There is a great breadth of meadow, pasture, and wood lands. Sweet chestnuts are abundant, and asparagus grows in a wild state. The extensive forests afford immense crops of acorns, on which thousands of swine are fed; horned cattle are numerous, but there are few sheep; the horses are small, but mettlesome. The mineral productions of Baranya consist of limestone, marble, porphyry, mill-stone grit, slate, alum, and coals. The population is 245,000; of these about eight-tenths are Catholics, and the remainder Protestants, Jews, or Greeks. The chief towns are—FÜNFKIRCHEN or Pecs: Mohacz, which stands on the Danube, and is defended by a strong castle; it is the seat of a Greek bishop, and has a population of 7700: Siklos, in a fertile wine district on the Drave: and Petsvár, north of Pecs, which is situated among plantations of vines and other fruit-trees; there are coal-mines and marble-quarries in the environs; and in the town itself several paper-mills, and a very ancient castle. Villany, a small place N. of Siklos, has a claim to be mentioned as giving name to one of the most esteemed of the Hungarian wines.

BARAS KHOTUN, or *Bars Khotan*, the City of the Tigers, formerly a large town on the banks of the Kherlon, in the country of the Mongols; the ruins of the town lie, according to Father Gerbillon, the only European who ever visited them, in 48° N. lat., and 113° 42′ E. long. When this traveller passed the river near these ruins, they consisted of extensive remains of mud walls, and two pyramids in a state of decay. After the Moguls had been defeated and expelled from China, Toghon Timur, the Mogul emperor, built this town as the future seat of the empire, and he died there in 1370. At that time it was an extensive town, nearly seven miles in circumference. Nothing certain is known respecting its destruction. Timur's son transferred the seat of the empire to the ancient town of Karakorum, farther to the west; and this circumstance was probably the chief cause of its abandonment and final destruction. (Du Halde; Ritter's *Asia.*)

BARATIE'R, JEAN-PHILIPPE, was born January 19, 1721, at Schwabach, in the Margraviate of Ansbach. His father, who was pastor of the French Protestant church at Schwabach, took much pains with the education of Baratier. At four years of age he spoke Latin with his father, French with his mother, and German with the servant; at five he began to learn Greek, at seven Hebrew, and at nine had compiled a dictionary of the most difficult Hebrew and Chaldaic words. Baratier next translated the Travels of Benjamin of Tudela from Hebrew into French, and added copious notes, and eight interesting dissertations at the end on matters connected with the Travels. The work was finished in 1732, but was not published till 1734; 2 vols. sm. 8vo, Amsterdam. Baratier next turned his attention to theological studies, especially the Greek fathers and early councils. He published in 1735 a work entitled 'Anti-Artemonius,' in refutation of the 'Artemonius' of Crellius, the Unitarian. Baratier's father having been appointed by Frederic-William, King of Prussia, to the Protestant church at Stettin, the family removed there in 1735. In passing through Halle, young Baratier, after undergoing an examination and sustaining a public disputation, was made M.A. After his arrival at Berlin, he was made a member of the Royal Society of Sciences, and the king, who was much pleased with his conversation, invited him frequently to the palace, and made him presents of money and books. Having fixed on the law as a profession, the king appointed the elder Baratier to the French church at Halle, and granted the son a pension of 50 rixdollars a year, to be continued so long as it was necessary for him to study at the University there. He attended the courses of the professors of civil, canon, public, and feudal law, during

four years. He published several dissertations in the 'Bibliothèque Germanique,' and published in 1740 a 'Disquisitio Chronologica de Successione Antiquissima Episcoparum Romanarum inde à Petro usque ad Victorem,' Utrecht, 4to.

Baratier's constitution was naturally delicate, and in October, 1739, he took a cold, the result of which was consumption. He died October 5, 1740, in his 20th year. He left numerous works in manuscript, mostly unfinished. A 'Life' of him was written by M. Formey, 12mo, Halle, from materials furnished by his father.

(*Biographie Universelle.*)

BARB, the name of a noble breed of horses, reared by the Moors of Barbary and Marocco, and introduced into Spain by the Arabs of northern Africa, during the time in which they held dominion in that country—where, however, it has been allowed to degenerate greatly since their expulsion. It is only to a noble race of northern Africa that the term Barb is applicable; for the common breed of that country is very inferior, and much neglected. A peculiar breed of noble Barbs, called *Sh'rubah Er'reeh*, that is, Windsucker, is found in the desert of Sahara, beyond the limits of which, from change of food and climate, it soon declines. It is chiefly, if not exclusively, fed on camels' milk, and on a feed of this once a day the horse will travel almost incredible distances across the parched desert. It is principally employed in hunting the antelope and the ostrich.

In northern Africa stallions only are used for the saddle, and, contrary to the custom in Arabia, mares are never ridden, being kept only for breeding. This difference is said to arise from the fact, that the Arabs, always predatory, endeavour to come on their enemies by surprise. Stallions approaching a spot where mares happen to be kept, exert their voice in loud neighings, which would spread the alarm; but the Moorish chief, who resorts to open force, deems this of no consequence. There is something we think more plausible than true in this theory.

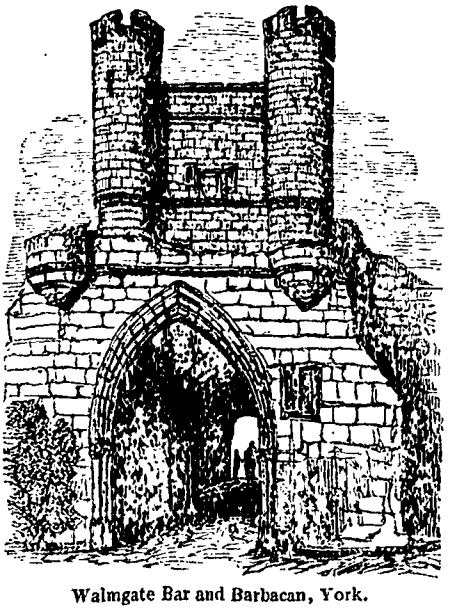
The Barb, though he has not the form which would please a member of the jockey club, possesses wonderful speed, courage, and power of endurance. The training for the saddle begins at the age of two years. They have then the mane and tail cropped, under the idea of adding by this means to their strength; but, when they have attained the age of six, the mane and tail are allowed to grow, and after this period they are never dressed nor combed; if dirty, they are simply washed in the next stream. Walking and galloping are the only paces they are allowed to practise; it is considered vulgar to trot or canter. The training of the horses for military service is very severe; and, although on ordinary occasions the Moors avoid over-heating their horses, they often keep them up for hours to the top of their speed, without a moment's intermission. The great exercise of the Moorish cavalry consists in galloping their horses for the distance of about a quarter of a mile, and then, while in full career, making them stop suddenly short, while the rider delivers his spear or fires his musket, and this is repeated, till man and horse are both fatigued. Little attention however is afterwards paid to the horses; yet they are long-lived and remarkably free from disease.

The Moors never make hay, but feed their horses upon chopped straw and barley, which the horses eat out of a nose-bag. In spring they are fed upon grass. There are no mangers in the stables, and the horses are tethered to iron pins driven into the ground.

Mr. Youatt thus describes the characters of a true Barb from Marocco, Fez, and the interior of Tripoli: 'Forehand long and slender; ill furnished with a mane, but rising distinctly and boldly out of the withers—head small and lean—ears well formed and well placed—shoulders light, sloping backward, and flat—withers fine and high—loins straight and short—flanks and ribs round and full, and with not too much band—haunches strong—croup perhaps a little too long—quarters muscular and well developed—legs clean, with the tendons boldly detached from the bone—pastern somewhat too long and oblique—foot sound and good. They are rather lower than the Arabian, seldom exceeding 14 hands and an inch, and have not his spirit, speed, or continuance, although in general form they are probably his superior.' The Godolphin Arabian, as he is generally called, the origin of some of our best racing blood, was a Barb. The true Barb is of the Arab stock, considerably modified by change of food, climate, and management.

(*The Horse*, by Youatt, in Knight's *Farmer's Library*, p. 199.)

BA'RBACAN or BARBICAN, in ancient fortification, was usually a small round tower for the station of an advanced guard, placed just before the outward gate of the castle-yard, or ballium. In cities or towns the barbacan was a watch-tower, placed at some important point of



Walmgate Bar and Barbacan, York.

the circumvallation. It had sometimes a ditch and drawbridge of its own. The street of London

called Barbican received its appellation from its vicinity to a tower of this sort attached to the city wall, the remains of which were visible within the last half-century. Spelman ('Glossary') says barbacan was a term likewise used for a hole in the wall of a city or castle, through which arrows and darts were cast out. It also signified a long narrow opening left in the walls, to drain off the water from a terrace or platform.

BARBADOES is the most eastern of the Caribbee Islands, and the most ancient of the British settlements in the West Indies. The exact date of its discovery is unknown; but no mention of it occurs prior to 1600. In all probability it was first seen by the Portuguese, in their voyages to and from South America, from whom it derived its name, which it is supposed to have obtained from the Indian fig-trees growing on the island, and which were called by them 'Barbadas,' or bearded.

The first English ship known to have touched at the island was the Olive, in 1605, on her return from Guinea: part of the crew landed, erected a cross, and took possession in the name of the king, inscribing on a tree, 'James, King of England and of this Island.' Nearly twenty years afterwards, Sir William Courteen, a merchant of London, sent out a colonizing expedition; thirty men landed, in 1624, on the spot which had been taken possession of by the Olive, and laid the foundation of a town, which, in honour of the reigning king, they called James Town. During the next twenty years, there were continual disputes between various English noblemen, who sought to outvie each other in obtaining a royal grant of the island; and rival parties of colonists frequently came into collision. But by the year 1645 matters became more settled. The civil war and religious dissensions which were raging in England contributed greatly to the rapid population of the island, and many royalist families found an asylum in it. The leeward part seems to have been first and best settled. Many of the planters had become rich, and arrangements had been made for a local government of the island. The population had in 1647 increased to 50,000, and the value of land had, of course, risen in proportion. An unrestricted intercourse existed with the Dutch very favourable to the Barbadians, but money was so scarce that barter of commodities was often necessarily resorted to, and all fees and emoluments were paid in kind.

When and whence the sugar-cane was first imported is uncertain, but in 1647 Ligon speaks of the art of making sugar as a business recently begun and little understood; and it is to the Dutch that we are indebted for the first instruction in the culture of the plant, and the manufacture of this valuable product.

During the civil war, the rival claimants to the ownership of Barbadoes carried their partisanship into that island, and the colonists were involved in turbulent proceedings until the Restoration. Then succeeded legal contests, in which the Earl of Carlisle and Lord Willoughby contended for the island, while the colonists wished to shake them both off. The colonists were finally freed from these seignoral claims by an arrangement made in 1663; and six years afterwards Barbadoes was made the head-quarters of a more extensive government, called the Windward Islands, which was defined to include all the islands to windward of Guadaloupe; that and the other islands of the Caribbean chain having been formed into a distinct command under the title of the Leeward Islands.

In August, 1675, Barbadoes was visited with a most awful hurricane. Neither tree nor house was left standing, except a few sheltered by some hill or cliff, and the whole face of the country exhibited one scene of desolation; while the coast was strewed with wrecks, and many lives were lost at sea and on shore. This was followed by other events, physical and commercial, such as a pestilence, a revolt of the negro-slaves, the imposition of a tax upon sugar, &c., which greatly retarded the progress of the colony.

In the first half of the 18th century many salutary laws were made for the good government of the colony; but the House of Assembly were frequently at issue with the executive and ecclesiastical powers in the mother country, respecting questions bearing on the interests of the colony. In the latter half of the century the Seven Years' War, the American War, and the French Revolutionary War, involved Barbadoes more or less in their consequences; and these, together with mismanagement in the Colonial Office, and frequent fires and hurricanes in the island, brought the colonists to a very impoverished state by the end of the century. A hurricane in 1780 destroyed no fewer than 3000 of the inhabitants.

In 1824 Barbadoes was created a Bishop's see, the diocese of which comprehends all the British possessions in the Caribbean Sea, with Trinidad and British Guyana. In 1831 the island was visited by a hurricane, more dreadful than had ever before been experienced; by which 5000 persons and an immense amount of property were destroyed.

In this island there is a class of people called the Tenantry. By the laws of the colony every estate is obliged to maintain a certain number of whites, in proportion to its extent. These people have an indefeasible right for life in a house and garden on the respective plantations. The militia is chiefly composed of them; and with that exception, they live in a state of complete idleness.

The constituent parts of the legislative body of Barbadoes are, first, the governor, who is appointed by and represents the crown; second, the council, a body of twelve, appointed by the king; and, third, the assembly, which consists of twenty-two representatives of the people. The governor has an authority over the civil, judicial, and military institutions of the colony, somewhat resembling that of the sovereign at home, and, like the sovereign, has a veto on any law passed by the assembly. The second constituent part of the legislative body, the council, stand somewhat in the same rank in the colonies as the peerage in England, but as the tenure of their office depends in some measure on the will of the governor,

they do not possess the same independence; and although freedom of discussion is expressly granted them, yet it is extremely circumscribed by the presence of the governor. With them may originate any bill unconnected with levies or the disposal of public money; they also stand towards the governor in the same relation as the privy council do to the king of Great Britain. The third body, the assembly, is entirely composed of the representatives of the people, annually elected, two members being sent by each parish. The qualifications for an elector and a member are the same; he must be a free and native-born subject, of twenty-one years of age, professing the Christian religion, and owning ten acres of land, or a house of the yearly value of 10*l.* sterling. On their meeting they take the state oaths, and proceed to the choice of their speaker.

Barbadoes is quite detached from the Caribbean chain, being 80 miles to the eastward of St. Vincent, the nearest island. It lies N.W. and S.E., and is of an oval form, 15 miles long, and 10 broad in the widest part. Its coasts are for the most part inaccessible to vessels of above fifty tons, in consequence of a coral reef which runs off all the eastern and northern side of the island, and is sufficient for defence; the other parts of the coast have been fortified at a great expense. The island contains 106,470 acres, nearly all of which are under cultivation: the soil in the lowlands is black, and somewhat reddish in the parts where it is shallow, on the hills chalky, marly, and near the sea-shore, sandy. The black mould is suited to the sugar-cane, which is as productive here as in any island of the West Indies, except St. Kitt's; the soil is, however, considered to be exhausted, and requires much manuring. The destruction of the woods, though it renders the country more healthful, has diminished the quantity of rain, and thereby been detrimental to the planters. Barbadoes still consumes a considerable amount of English manufactures. Of the exports sugar is the staple; but rum, ginger, cotton, and aloes, form considerable items.

The surface of the island is comparatively low, with gently-undulating hills. The climate, though warm, is perhaps as healthy as any part of the West Indies, and the heat is greatly alleviated by the trade-wind, which constantly blows over the island; indeed, the longevity of its inhabitants is a proof of its salubrity. But the awful hurricanes with which it has from time to time been visited render the value of property very uncertain. There are several bituminous springs, some of which furnish a green tar that often supplies the want of pitch and lamp-oil.

Bridgetown, the capital, is situated at the mouth of the Mole, which falls into Carlisle Bay, at the south-west end of the island; it is 2 miles in length, and half a mile wide. Though irregularly built, it contains many very handsome houses, and a large square adorned with a good statue of Lord Nelson. It contains a cathedral, which is spacious and plain, with towers which scarcely rise above the roof, for fear of hurricanes, for which reason also the churches are without steeples. Besides the churches, there are several chapels, and a great number of schools for whites and blacks. The council and assembly meet and hold their sittings in the same building with the common prison; and here also the various law-courts are held. There are some very excellent literary and scientific societies in the town, several schools, and some good libraries.

There are besides three other towns of smaller note, called Oistin's, St. James's, and Speight's: the two former are mere hamlets. Speight's town is, however, a place of considerable importance. The principal and indeed almost the only anchorage is in Carlisle Bay, off Bridgetown, where the merchant-vessels load and discharge their cargoes, the sugar being brought from the other parts of the island in small vessels called droghers. Carlisle Bay is quite open to the westward, but sheltered by a projecting tongue of land, called Needham's Point, from the trade-wind and the Atlantic swell; and except in case of a hurricane may be considered a secure port. There is a small bay also off Oistin's, where vessels occasionally anchor as they do off Speight's town. There are several small streams, besides the Mole, and the island is generally well supplied with water; but fire-wood is expensive. Stock, vegetables, and fruit are plentiful.

The population of Barbadoes in 1841 was 120,500: 12,000 children attended schools in that year. The exports in 1840 amounted to 344,297*l.*, of which sugar comprised 300,157*l.*; the imports were 599,139*l.* In 1842, 772 ships (81,049 tons) entered the island; and 739 ships (80,212 tons) left it. In the same year 41 vessels belonged to the island.

(Poyer's *History of Barbadoes; Columbian Navigator; Parliamentary Papers;* Bryan Edwards's *West Indies,* &c.)

BARBADOES CHERRY. [MALPIGHIACEÆ.]

BARBADOES FLOWER FENCE. [POINCIANA.]

BARBA'REA (from a former name, Herb St. Barbara), a genus of plants belonging to the natural order *Cruciferæ*. The species of Barbarea are perennial herbs, with fibrous roots and erect stems. The flowers are yellow, arranged in racemes; the pedicels without bracts.

B. vulgaris, Common Yellow Rocket, common Winter Cress, Herb St. Barbara, is a native, in damp moist places, of Great Britain and throughout Europe; also of North America. This plant has a bitter nauseous taste, and is sometimes cultivated as a spring salad. It is often cultivated in gardens, especially a double variety, which forms a handsome border-plant.

B. præcox, Early Winter Cress, is a native of France and Great Britain; it is abundant in North America. It is used as a salad, and is more bitter than the common water-cress. It can be raised for eating all the year round. It should be grown from seeds, a quarter of an ounce of which will serve for sowing ten feet of drill. After the leaves are cut the stem should be allowed to remain for another gathering. The finest plants may be allowed to run to seed.

B. arcuata and *B. stricta* are two species de-

scribed by Babington, and lately added to the British Flora. A few others are found in the northern parts of Europe and America. With the exception of the Double Yellow Rocket, none of the species are worth cultivating as ornamental. This plant may be propagated by cuttings, suckers, or dividing the plants at the root.

(Don, *Gardener's Dictionary;* Babington, *Manual.*)

BARBARIAN. The Greek term βάρβαρος (bárbaros) appears originally to have been applied to signify a mode of speech which was unintelligible to the Greeks; and it was perhaps an imitative word intended to represent a confused and indistinct sound. When all the races and states of Greek origin obtained a common name, the word acquired a general negative sense, and expressed all persons who were not Greeks (Thucydides, i. 3); and subsequently it denoted a lower state of civilization compared with the higher standard of the Greeks. The Romans were at first included among barbarians; afterwards *barbari* signified all who were not Romans or Greeks. After the fall of the Western empire the term was applied to the Teutonic races who overran western Europe, who did not consider it a term of reproach, since they used it in their own codes of law as an appellation of the Germans, as opposed to the Romans.

Barbarian, in modern languages, generally means a person in a low state of civilization.

BARBAROSSA. [Frederic I., Emperor of Germany.]

BARBARO'SSA, AROO'DJE, was born in the island of Metelin (Mytilene), about the year 1474, of Christian parents. His father, who followed the trade of a potter, had a family of three sons and four daughters. The eldest son, when twenty years of age, went on board a Turkish privateer, embracing, at the same time, the Mohammedan faith, when he assumed the Turkish name of Aroodje, or Orooch. Having served for several years, during which he distinguished himself by his bravery and intelligence, he was appointed commander of a galliot, which was fitted out by some speculators at Constantinople, for the purpose of cruising in the Archipelago against the merchant-vessels of nations at war with the Porte. Instead, however, of confining himself to the Archipelago, Aroodje resolved to proceed to the Mediterranean. On his way he touched at Metelin, where he found that his father was dead, and had left his family in poverty. Aroodje bestowed some relief on his sisters, and took his two brothers on board. Having met another Turkish galliot, he persuaded the master and crew to cruise in company with him and under his direction. Arriving at Goletta, the harbour of Tunis, in 1504, he was well received by the reigning Bey, Muley Mohammed, as at that time all the Moorish states of North Africa were under apprehensions from the power of Spain. His first success was off the island of Elba, where he took two large Papal galleys richly laden, and bound from Genoa to Civita Vecchia, and afterwards he took many others. The fort of Goletta was his head-quarters; there he disposed of his prizes, paying a tithe to the Bey of Tunis. Having built several more galliots, he assembled a squadron of eight good ships, two of which were commanded by his brothers, and in the course of a few years he grew enormously rich. The Christian sailors, whose terror he had become, gave him the name of Barbarossa, from the colour of his beard, which was red. In 1510 the Bey of Tunis gave him the government of the island of Jerbi, and hence he began to make territorial acquisitions. He twice attacked Boojeiah, then held by the Spaniards, but was repulsed. He at length in 1516 obtained possession of Algiers, and this was the beginning of the Turkish dominion over Algiers. Several conspiracies were formed against the usurped power of Aroodje, but they all failed, and the conspirators were punished with great severity. In 1517 a Spanish armament came into the bay of Algiers, and landed some troops; but a storm dispersed the ships, and the men who had landed were either put to death or taken as slaves. The mulatto king of Tennes also attacked Algiers by land, but was defeated, and obliged to escape into the mountains, and Tennes submitted to Aroodje.

The next victory of Aroodje was over the Arab king of Tlemsen, the most powerful chief in the country. Isaac, one of Aroodje's brothers, lost his life in this expedition. Aroodje now reigned over the greater part of the present state of Algiers, and as far west as the frontiers of the kingdom of Fez. The Spaniards of Oran, alarmed at the rapid success of such an enterprising chief, demanded reinforcements from Spain, and Charles V., in 1518, sent 10,000 men under the Marquis de Comares, with orders to drive Aroodje out of Tlemsen, and in the battle that took place Aroodje lost his life at the age of 44.

(Haedo, *Topografia e Historia de Argel;* Marmol, *Descripcion de Africa;* Morgan, *History of Algiers;* Laugier de Tassy, *Histoire d'Alger.*)

BARBARO'SSA, KHAIR EDDI'N, brother of Aroodje. His name was Hadher, but in the course of his successful career he was honoured by Sultan Solyman with the title of Khair Eddin, *i. e.* 'the good of the faith.' He is also styled by historians Barbarossa II., having succeeded his brother in the sovereignty of Algiers, and being known at sea by the same formidable name. In the following year, 1519, a new armament from Spain appeared before Algiers, which met with the same fate as the former; but more effectually to secure himself, Barbarossa agreed to become the tributary of the Sultan, Selim I., and from that time Algiers became subject to the high dominion of the Porte. Barbarossa continued to strengthen himself in Algiers, and in 1532 took possession of Tunis, in the name of Solyman, Sultan of the Turks, who in return made him capitan pasha of the Turkish fleet, in which capacity he displayed great bravery and skill in opposing the combined fleets of Spain, Venice, and Genoa, the last of which was commanded by the celebrated Doria; and he ravaged the coasts of Italy and the Grecian islands held by the Venetians, repeatedly and fearfully. At length, on the alliance

of the Turks with Francis I. against Charles V., the French and Turkish squadrons were united under Barbarossa, and they sailed together out of Marseille on the 5th of August, 1543, to attack the town of Nice, which belonged to the Duke of Savoy. People saw with astonishment the Ottoman crescent and the lilies of France combined against a Christian city, on whose ramparts floated the white cross of Savoy. Nice was obliged to surrender by capitulation, but the castle continued to defend itself until the report of Doria's approach induced Barbarossa to raise the siege. He, however, plundered the town in the night, against the articles of the capitulation, burnt part of it, and carried off 5000 of the inhabitants. Barbarossa returned to Constantinople in 1544; and he does not seem to have gone to sea any more afterwards. He died in 1546, and was buried at Beshiktash, near the entrance of the Black Sea, where he had a country-house, and where his tomb was still to be seen not many years since.

(Haedo, *Argel;* Morgan, *History of Algiers;* Robertson's *History of Charles V.*, and the other historians of that time.)

BA'RBARY, a general and rather vague denomination which has been adopted by Europeans to designate the northern part of Africa, which extends along the coast of the Mediterranean and as far inland as the great desert, from the frontiers of Egypt to the Atlantic Ocean. It embraces four great states or divisions—the Empire of Marocco, and the regencies of Algiers, Tunis, and Tripoli, with their respective dependencies. The appellation of Barbary appears to have been derived from Berber, by which the Arabs designated the people who inhabited this region before the Saracen conquest. Such at least seems to be the derivation assumed by the Arabian historians and geographers, who use the word Barbary or Berbery in speaking of North Africa. Others derive Barbary from *barbarus*, 'barbarian.' The natural, geographical, historical, and political features of this wide region, are treated under the heads ALGIERS; ATLAS; BERBER; MAROCCO; TRIPOLI; TUNIS.

The region which we call Barbary is called by the Arabs of Egypt and of Asia, Moghreb, or 'the West,' and the people Moghrebins. The language of the Moors is called the Western Arabic, and differs from the Arabic of Egypt and Syria. Some of the Arab tribes of the interior, however, are said to have retained their original language, the Koreish, or Eastern Arabic. The principal races that inhabit Barbary are:—1. The Moors, who live in or near the towns, and who are a very mixed race: many of them are descended from those who were driven out of Spain in the 15th and 16th centuries. 2. The Arabs, who are mostly nomadic, and tend their flocks on the plains of the interior. 3. The Berbers, or Kabyles as they are called in Algiers and Tunis, who chiefly inhabit the mountains and the valleys of the Atlas. 4. The Blacks, from Soudan, who are mostly slaves. 5. The Jews, who are very numerous in the towns. 6. The Turks, who are the militia of the three regencies, and have children by Moorish wives, who are called Kooloolis.

The length of Barbary from E. to W. may be reckoned about 2000 miles, from Bomba, the eastern frontier town of the regency of Tripoli, to the coast of Mogadore, in Marocco. The breadth of the country varies greatly. It is greatest in Marocco, where the inhabited districts, in the provinces of Darah and Sus, appear to extend southward to about the 29th degree, or the latitude of Cape Nun, whilst the northernmost point of the same empire at Ceuta is 35° 50′, giving, therefore, a breadth from N. to S. of about 470 miles. In the meridian of Algiers, the inhabited country does not seem to extend farther S. than about the 33rd degree N. lat., where is the district of the Beni Mozak. The southernmost parts of the inhabited country of Tunis are nearly under the same parallel. In the regency of Tripoli, the tract of the inhabited land is much narrowed by the great indentation of the coast, produced by the Syrtes, where, especially at the innermost recess of the great Syrtis, the sands of the great desert almost touch the sea-shore. But at various distances, in a southern direction across the waste, are several oases, such as Fezzan, Ghadames, and Audjelah, which, being dependencies of the regency of Tripoli, must be considered as parts of Barbary. The eastern limits of Barbary may be traced by a line departing from the northern coast east of Bomba, about 25° E. long., and running in a southern direction between the oasis of Audjelah and that of Siwah or Ammon, which last is considered as a dependency of Egypt.

Islamism is the religion of Barbary: all the tribes even of Berbers are said to profess it, at least nominally. A great number of Jews are found in all the principal towns, where many of them carry on various branches of profitable trade. The blacks, who are very numerous in Barbary, and who come originally from Soudan, or the countries S. of the Great Desert, are, if they may be said to have any religion at all, Pagans.

BARBA'STRO, the chief town of a very fertile district of the same name, in the province of Huesca, in Aragon. It is situated on the Vero, which is crossed by stone bridges. Barbastro is the seat of a bishop, and has a population of 7000.

BARBAULD, ANNA LÆTITIA, was the only daughter of the Rev. John Aikin, D.D., and the sister of John Aikin, M.D. Miss Aikin was born June 29, 1743, at the village of Kibworth Harcourt in Leicestershire, where her father was at that time master of a boys' school.

Her early education was superior to what was then considered fitting for young ladies. She had a tolerable knowledge of Latin, besides some acquaintance with Greek. Her father removed with his family to the town of Warrington when she was fifteen years of age. At Warrington the society among which she lived was such as to fix her tastes in the direction they had taken, and to enlarge the sphere of her knowledge. Miss Aikin had early shown a taste for poetry, but it was not until the year 1773, when she was thirty years of

age, that she yielded to the persuasions of her brother, and consented to the publication of a selection from her poems. The success of this volume at once established her reputation.

In 1774 Miss Aikin married the Rev. Rochemont Barbauld, a dissenting minister, descended from a family of French Protestants, who had taken refuge in England in the reign of Louis XIV. Mr. Barbauld was educated in the academy at Warrington, and at the time of his marriage had been recently appointed to the charge of a dissenting congregation at Palgrave in Suffolk. He opened a boarding school for boys, and his intelligent and industrious wife became his active assistant in the business of instruction. After a few years thus devoted, Mrs. Barbauld was solicited to receive several little boys as her own peculiar pupils; and among this number may be mentioned Lord Denman, the present Chief Justice of England, and Sir William Gell. It was for the use of these her almost infant scholars that she composed her 'Hymns in Prose for Children.' In 1775 Mrs. Barbauld published a small volume, entitled 'Devotional Pieces,' &c. About the same time also she wrote that admirable little volume, her 'Early Lessons,' a publication which has ever since been a standard work, and though frequently imitated yet stands unrivalled.

The school at Palgrave was continued with success for eleven years; but this continued mental exertion impaired the health of its conductors. After a residence of a year or two abroad they settled at Hampstead, where Mr. Barbauld received a few pupils. Mrs. Barbauld took an active interest in the stirring politics of that time, and wrote on the subjects of the Test Acts and the Slave Trade. She contributed several papers to her brother's 'Evenings at Home.'

Mr. Barbauld became, in 1802, pastor of a Unitarian congregation at Newington Green, and at this time he changed his residence to Stoke Newington. The chief inducement to this removal was the desire felt by Mrs. Barbauld and her brother to pass the remainder of their lives in each other's society. This wish was gratified during twenty years, and was interrupted only by death. Shortly after this, Mrs. Barbauld's husband, to whom she had been united for more than thirty years, fell into a state of nervous weakness, and died in November, 1808. Mrs. Barbauld continued to employ herself in literary undertakings. In 1811 she published a political poem, which was not very favourably received. This attempt was considered a mistake; her proper business was the education of the young.

Her spirits were greatly tried during the later years of her life by the loss of her brother, who died in 1822. Her constitution, naturally excellent, slowly gave way under an asthmatic complaint; and on the 9th of March, 1825, after only a few days of serious illness, she died, in the 82nd year of her age. In domestic and social life Mrs. Barbauld was characterized by strong sense, deep feeling, high moral principle, and a rational but ardent piety.

BARBEL (*Barbus*, Cuv.), a genus of abdominal malacopterygious fishes, belonging to the Carp family (*Les Cyprins*, Cuv.), and inhabiting fresh waters. Generic characters:—dorsal and anal fins short; the second or third ray of the dorsal fin in the form of a strong and formidable spire; four fleshy about the mouth, namely two on the snout, and two at the angles of the upper jaw.

The Barbels are not exclusively carnivorous; they feed also on aquatic plants and roots, and bore with their snout into the soft earth of the banks, in order to obtain them. The species are numerous, both in the Old and New World. Many attain to a very large size.

The common Barbel (*Barbus vulgaris*) is found in most of the larger rivers of Europe; it abounds in the Thames, especially about Shepperton and Walton, affording good sport to the angler; but it is worthless for the table, being coarse and bony. 'During summer,' says Mr. Yarrell, 'this fish in shoals frequents the weedy parts of the river; but as soon as the weeds begin to decay in autumn, it seeks deeper water, and shelters itself near piles, locks, and bridges, which it frequents till the following spring.' It feeds on slugs, worms, and small fish, and spawns in May. The Barbel grows to a large size, and weighs often from 8 to 10 lbs.—Mr. Yarrell records one the weight of which was 15½ lbs. The strong serrated spine of the dorsal fin should be avoided by the fisherman in handling this fish, as it is a dangerous weapon. The common Barbel needs no detailed description.

A closely allied species called the Binny (*Barbus lepidótus*) abounds in the Nile, where it grows to a large size, some weighing 70 lbs. It is much esteemed, and consequently captured in great numbers; but as fish, when dead, will not keep in Egypt, the fishermen, having hauled up their lines, and secured the fish, put a strong iron ring through the jaw, and attaching a stout cord to the ring, return the fish to the river, and fasten the cord to the shore; consequently they have always a stock of live fish ready for sale. The bait used is a date steeped in honey, and several of these, each concealing a hook, are stuck into a mass consisting of oil, clay, flour, honey, and chopped straw; into this, when dropped into the deep water, the fish greedily bore, and arriving at the dates, ravenously swallow them, and are of course caught by the hook concealed within; the cord attached to each hook is not held by the fisherman, but fastened to a palm branch struck into the bank, with a small bell suspended to it. The fisherman sits near, pursuing some occupation, and is warned by the ringing of the bell when a fish is hooked. He ascertains to which of his lines it is attached, pulls it out, and secures it as just described.

(*Bruce's Travels.*)

BARBER-SURGEONS. [SURGEONS.]

BARBERI'NI, an Italian family, originally from Florence, which was raised to a high rank among the Roman nobility in consequence of the elevation of one of its members, Cardinal Maffeo Barberino, to the papal chair in 1623, when he assumed the name of Urban VIII. [URBAN VIII.] Urban had three nephews, two of whom were made cardinals, and the third prefect of Rome, and they ultimately, after some vicissi-

tudes, became possessed of the fief of Palestrina, which had formerly belonged to the Colonna family. The Barberini have ever since ranked among the first Roman nobility, several individuals of their name having been successively raised to the rank of cardinals, while the lay representative of the family bears the title of Roman prince, and is possessed of estates at Palestrina, Albano, and in other parts of the Roman state. In the palace of the Barberini at Palestrina is the celebrated mosaic taken out of the Temple of Fortune of Prænestе. [PALESTRINA.] The palace Barberini at Rome is a vast structure, built by Bernini, and gives its name to the square before it. It contains a museum, a gallery of paintings, and a library, which was collected by Cardinal Francis Barberini, one of the nephews of Urban VIII. The library is rich in valuable MSS.; its catalogue was printed at Rome in 1681, in 3 vols. folio. There is also a fine villa, with extensive gardens, belonging to the same family, at Rome, near the Thermæ of Diocletian, and another in the neighbourhood of Albano.

BARBERINI VASE. [PORTLAND VASE.]

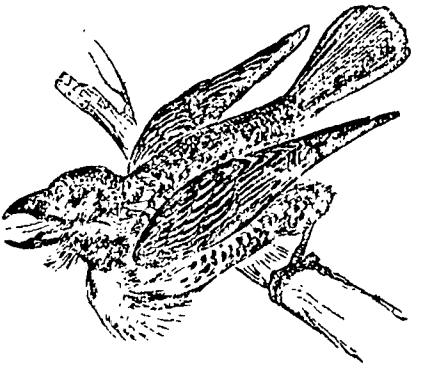
BARBERRY. [BERBERIS.]

BARBETS, a family of birds belonging to the somewhat heterogeneous order termed *Scansores* (*Les Grimpeurs*, Cuv.), in which the toes are zygodactyle.

The Barbets (*Les Barbus* of the French, *Bucco*, Linnæus) are distinguished by their large conical beak, puffed out at the sides of its base, which is bearded with five tufts of bristles directed forwards: one of these tufts is behind each nostril, one on each side of the lower mandible, and the fifth at the symphysis. The wings are short, the proportions heavy, and the flight low. They live on insects and fruits, and breed in the holes of trees: they generally associate in small flocks, and many species are richly coloured. They are indigenous in Asia, Africa, and America. This family is divided into various genera, of which we select the following by way of illustration:—

1. *Pogonias* (Illiger). The upper mandible furnished with two strong teeth on each side; beard stiff and full. Country, Africa and India. According to Cuvier the species are chiefly frugiverous.

The Bristly Barbet (*Pogonias hirsutus*) is a native of Africa, and remarkable for a tuft of bristles on the chest. Throat, head, and neck, deep black; upper plumage brown and spotted, and marked with sulphur yellow. Under plumage greenish sulphur, spotted with blackish. Length 7 inches.



Bristly Barbet (Pogonias hirsutus).

2. *Bucco* (Cuvier). Bill conical, slightly compressed, and a little elevated in the middle. Plumage gay; country Africa and Asia. During the breeding season these barbets go in pairs, but congregate in small flocks during the remainder of the season.

The Buff-faced Barbet (*Bucco Lathami*) is generally of a deep olive green, the forehead, sides of the head and throat being of a dull buff colour. Tail dusky and short. Length 6 inches.

3. *Tamatia* (Cuvier). Bill elongated, compressed and slightly curved at the extremity. Head large, tail short, habits melancholy and solitary. Food consisting entirely of insects. Country South America.

The Great-billed Puff-bird (*Tamatia macrorhynchus*, Swainson), which gives a good idea of this genus of Puff-Birds, as they are called, is a native of Brazil. Plumage black and white. Length 8 inches.

'There is something,' says Mr. Swainson, 'very grotesque in the appearance of all the puff-birds; and their habits, in a state of nature, are no less singular. They frequent open cultivated spots near habitations, always perching on the withered branches of a low tree, where they will sit nearly motionless for hours, unless, indeed, they descry some luckless insect passing near them, at which they immediately dart, returning again to the identical twig they had just left, and which they will sometimes frequent for months. At such times the disproportionate size of the head is rendered more conspicuous by the bird raising its feathers, so as to appear not unlike a puff-ball; hence the general name they have received from the English residents in Brazil, of which vast country all the species, I believe, are natives. When frightened, this form is suddenly changed by the feathers lying quite flat. They are very confiding, and will often take their station within a few yards of the window. The two sexes are generally near each other, and often on the same tree.'

BARBEYRAC, JEAN, was born at Beziers in Lower Languedoc, on the 15th of March, 1674. His parents were Calvinists, and upon the revocation of the edict of Nantes, in 1686, retired from France, and took up their abode at Lausanne in Switzerland, at which place Barbeyrac was educated. His father designed him for the church; but his taste led him to the study of jurisprudence. In 1697 he became teacher of the belles lettres in the French College at Berne, were he remained about fourteen years. During this period he published in the periodical publications of France and Holland several small treatises upon subjects connected with natural and international law; and in 1709 appeared the first edition of his 'Traité de Jeu,' upon which his early reputation was principally founded. A posthumous edition of this work, considerably enlarged and improved,

was published at Amsterdam in 1737. In 1711 he was appointed by the Senate of Berne to the chair of law and history, then lately established at the Academy of Lausanne. The second edition of Barbeyrac's translation of Puffendorf's 'Law of Nature and Nations,' appeared in 1712, 2 vols. 4to. This valuable work is enriched with numerous notes by the translator, and a preface by way of introduction. The second volume contains Barbeyrac's inaugural dissertation on being appointed professor at Lausanne. In 1714 he commenced a new version of Grotius's treatise 'De Jure Belli et Pacis,' with notes, which display much historical research and a profound acquaintance with the law of nations. By this work, and by his translation of Puffendorf, he established his reputation as a jurist throughout Europe; and in 1717 he accepted an invitation to become professor of law at the University of Groningen. A few years after his establishment at Groningen he compiled his 'Histoire des Anciens Traités,' consisting of a chronological collection of ancient treaties from the earliest times to the death of Charlemagne, with full historical notes and illustrations; it was published by him as a supplemental volume to the 'Corps Universel du Droit des Gens.' He also translated into French Bynkershoek's 'Traité du Juge compétent des Ambassadeurs.' Barbeyrac died at Groningen in 1729.

BARBEZIEUX. [CHARENTE.]

BARBIERI. [GUERCINO.]

BA'RBITON, the name of a musical instrument in use among the ancients. It was a kind of lyre.

BARBOU, the name of a family of French printers, who long rendered themselves famous for the correctness as well as elegance of the works which issued from their presses.

Jean Barbou, the first of the name who is known, was settled at Lyon, where he printed the works of Clement Marot, 1539. His descendants continued to exercise their art for more than two centuries. Two brothers of the family settled at Paris, Jean-Joseph Barbou in 1704, and Joseph Barbou in 1717. Joseph-Gérard Barbou, nephew of the two Barbous last-mentioned, became a bookseller in 1746, took the printing-office of his uncle Joseph's widow in 1750, and soon afterwards engaged in the series of classics which bears his name.

BARBOUR, or BARBER, JOHN, a divine, historian, and poet of Scotland, was born, as is supposed, at Aberdeen, according to Sir David Dalrymple about the year 1316; according to other authorities, in or about the year 1330. Having received a learned education, he entered into holy orders, and was promoted by King David II. to the archdeaconry of Aberdeen, in 1356. His love of learning was so strong, that he continued to prosecute his studies even after his promotion; and with this view he prevailed upon his sovereign to apply to King Edward III. for permission to reside for a time at Oxford: the letter of safe-conduct for which, with three scholars in his company, all coming to perform scholastic exercises, is preserved in Rymer's 'Fœdera.'

Although the archdeacon was famed for his extensive knowledge in the philosophy and divinity of the age in which he lived, he gained a greater reputation, even at that time, by his poetry, in which he composed a history of the life and glorious actions of King Robert Bruce. While engaged in this work, in 1365, he obtained permission and safe conduct from King Edward III. to travel through England into Wales, with six horsemen, his attendants. Dr. Jamieson fixes the date of Barbour's death, with seeming accuracy, at the close of the year 1395.

The value of Barbour's work, as an historical record, was early acknowledged (see the continuator of Fordun's 'Scotichronicon,' xii. 9); and it is remarkable, that though Barbour was a Scotsman, his versification and language are more intelligible to a modern English reader than that of any other poet of the fourteenth century, his great contemporary Chaucer himself not excepted.

The first known edition of 'The Bruce' was published at Edinburgh in 1616, in 12mo; but an earlier is believed to have existed. The best edition is that by Dr. Jamieson, 4to, Edinburgh, 1820.

BARBUDA. [ANTILLES; WEST INDIES.]

BA'RCA, the name of a district in the eastern division of the regency of Tripoli. [TRIPOLI.] The name Barca is the modern form of the Greek name Barke, a colony of Cyréne (Herod. iv. 160). It is stated by Scylax to have been 100 stadia from its harbour, which became afterwards the town called Ptolemais, now Tolometa. The situation of Barca appears to have been in the plain of Merge, a high table-land on the hills of Cyrenaica above Tolometa. (Beechey's 'Narrative of an Expedition to the Northern Coast of Africa;' Della Cella, 'Viaggio da Tripoli alle Frontiere d'Egitto.') Herodotus gives an interesting account of Barke, of its rivalry with Cyrene, and of the invasion of the Persians from Egypt, who took Barke by treachery after a long siege, and carried away a great number of its inhabitants into Asia, where Darius, the son of Hystaspes, settled them in Bactria (iv. 204). The territory of Barke occupied the western part of Cyrenaica, and its inhabitants seem to have been a mixture of Greeks from Cyrene and of native Libyans. When that country became subject to the Ptolemies, these kings built the town of Ptolemais, which drew away from Barke most of its remaining Greek inhabitants. Barke however in the first ages of Christianity had its bishops distinct from those of Ptolemais. After the Saracens conquered Egypt they entered Cyrenaica, and Barke or Barcah, as they called it, became their chief town in that province. Hence the Arab geographers speak of the kingdom of Barca, which is synonymous with Cyrenaica. Cyrene long before this was in ruins. [CYRENE.]

Under the Fatimide caliphs of Egypt the oppressions of the Saracen governors obliged the people of Barca to emigrate, and most of them passed into Egypt. Della Cella, however, mentions a treaty of commerce in 1236 between the republic of Genoa and Busacherino, a Mussulman chief, who styles himself 'Lord of Africa,' by which the Genoese were allowed to trade 'from

Tripoli to the extremity of the kingdom of Barca.' Since that time the town of Barca has entirely disappeared, but the name has remained in use among the Arabs to indicate the country which once belonged to it. About 1550 Sultan Solyman, having conquered Tripoli, united the country of Barca to it, and made a pashalik of the whole.

Taucheira, afterwards under the Ptolemies called Arsinoe, was a town of Barca, and its walls, which were repaired by Justinian (Procopius, Περὶ Κτισμάτων, lib. vi.), still remain in a good state of preservation. It has resumed its original name, slightly altered to Tocra, and its ruins are occupied part of the year by wandering Arabs. Ptolemais, or Tolometa, is likewise in ruins and deserted, as well as Berenice, now Bernic, and Apollonia, the former port of Cyrene. Bengazi has about 2000 inhabitants; most of the houses are built of mud, and are liable to be washed away by the heavy winter rains. Derna is a more considerable town than Bengazi, and has a somewhat better appearance. Both places carry on a little trade by sea. Bengazi provides Malta with bullocks. The rest of the country is occupied by nomadic tribes, as in the time of Herodotus. The whole of the Libyan desert to the westward of Egypt, and as far as Fezzan, is often called the Desert of Barca by European travellers and geographers.

BARCAROLLE, a kind of song in the Venetian language, sung by the gondoliers at Venice. These airs are often composed for the common people, and often by the gondoliers themselves. The airs are generally simple, but full of melody, and frequently have considerable refinement. Formerly most of the gondoliers knew by heart the greater portion of 'Gerusalemme Liberata' of Tasso, and sang it in their gondolas in alternate stanzas. But Tasso is no longer sung by the gondoliers; they have still however their songs in response to each other. The old barcarolle was sung in parts, at stem and stern of the same boat, by its own gondoliers. The well-known airs 'La Biondina in Gondoletta,' and 'O Pescator dell' Onde,' are pleasing specimens of this species of song.

BARCELLOS. [Entre-Douro-e-Minho.]

BARCELO'NA (Barcíno, Βαρχίνων, Ptolemy), a fortified city and port of Spain, on the Mediterranean, in the principality of Cataluña, or Catalonia, of which it is the capital. It stands on a gentle eminence, between the river Besos on the N., and Llobregat on the S., in 41° 22′ N. lat., 2° 10′ E. long., and has a population of about 120,000.

An ancient town on the same site is said to have been the capital of the Laletani, a nation inhabiting the country extending from the Pyrenees to the river Ter. However this may be, Barcelona was founded here about 235 B.C., by Hamilcar Barcas, or Barcino, who gave to it the name of his family. When the Carthaginians were expelled from Spain in 206 B.C., Barcelona fell into the hands of the Romans, who made it a colony, with the additional name of Faventia. In A.D. 411 the Gothic king Ataulphus made his triumphant entrance into it. During the contests with the Moors in Spain it frequently changed masters, and was for awhile an independent county, but in 1131 it became permanently united to Aragon. In 1640 the Barcelonians rose against Philip IV., and the place was besieged by the Marquis de Los Velez, but the inhabitants forced him to raise the siege, and, assisted by the French, resisted the troops of Philip for twelve years. During the struggles between the houses of Austria and Bourbon for the throne of Spain, Lord Peterborough besieged and took Barcelona for Charles of Austria, in 1706; and it was held for him till 1714, when, after a desperate defence, it was taken by assault by the forces of Philip V., under the command of the Duke of Berwick.

From this time Barcelona enjoyed peace till the commencement of the war with France under Bonaparte, for whom it was taken in 1809, by General Duhesme; and it has since suffered repeatedly and severely, as well from foreign as domestic warfare. In 1841 and 1842 particularly, insurrections, chiefly on account of commercial regulations, were with difficulty repressed, and only with great loss. In the last-named year the fort of Montjuich only remained in possession of the government, from whence, by order of Espartero, then regent, the town was bombarded, a great part destroyed or damaged, and a contribution of 12,000,000 reals exacted.

Barcelona is divided by a pleasant promenade, called La Rambla, into two almost equal parts, the old city and the new. In the old part of the town the streets are narrow and winding. In the modern part the streets are wide and regular, and will bear comparison with the best streets in Paris and London. The houses are generally four or five stories high, built of brick, and furnished with numerous windows and balconies. The churches are numerous, and very ancient. The cathedral, founded in 1298, is an elegant gothic building, and stands on the highest part of the old town. It is surmounted by two noble towers, and is famous for the splendour of its stained-glass windows, and for its monuments, among others that of Ramon Berenguer and his wife. The churches of Santa-Maria-del-Mar, San-Pablo-del-Campo, Santa-Catalina, San-Miguel, Santa-Anna, San-Jaime, and others, are remarkable for their antiquity, their elegant structure, or their decorations. Of the other public and private buildings the most remarkable are—the Palacio-de-la-Diputacion, in which the sittings of the Audiencia, or Supreme Courts of Cataluña, are held, and in which are deposited the archives of Aragon, the most complete collection of the kind in Europe, coming down from the year 874; the buildings on the Plaza-de-Palacio ('palace-square'), among which are the residence of the captain-general of Cataluña, the Lonja or Exchange, the Custom House, and the Puerta-de-la-mar ('sea-gate'); the Convent-de-la-Merced, and that of Santa-Clara; the new prison; and the theatre, which is one of the largest and best conducted in Spain. The environs of the town are delightful: the plain in which it stands is studded with neat country seats, and laid out in gardens

extending to the curved line of low hills between the Besos and the Llobregat.

Barcelona is the seat of a bishop. It contains 8 hospitals, a university, an ecclesiastical seminary, a society of belles-lettres, several colleges, and literary and scientific establishments, in which 4000 students are taught gratuitously, 4 public libraries, schools of painting, navigation, surgery, and practical medicine, and a school for deaf-mutes.

The city is de ended on the land side by the castle of Monjuich, situated on an eminence at the south-west of the city, a citadel on the north-east, strong walls, wide ditches, and numerous batteries; and on the sea side by a wall 380 feet long and 50 wide, which is a favourite lounge with the citizens. The citadel was built in 1716, to keep the townsfolk in order; it is a regular pentagon in shape, fortified after the manner of Vauban, and capable of garrisoning 8000 men. The Barcelonese have always understood the object of its erection, and have made many attempts to pull it down, the latest of which was in 1841, when the people, led on by the municipality, destroyed some of the outer works. On the sea side is the fort San Carlos, connected with the citadel by a double covered way, completely surrounding on the land side the suburb of Barceloneta.

Barcelona is the most important manufacturing and trading town in Spain. The staple manufactures are cotton and silk. The commerce of Barcelona, owing to a variety of causes, but principally to oppressive restrictions on the importation of foreign goods, to the independence of the South American states, and to the civil wars, has greatly fallen off from its former prosperity. The harbour is formed by a long mole which runs in a southerly direction, and has a lighthouse and batteries near its extremity. It has 18 or 20 feet water within the mole, but it is exposed to the winds in the bay. Between the mole and Monjuich there is a bar at the entrance of the harbour, which frequently has not more than 10 feet water, owing to the deposits of the two rivers. The bar is occasionally lowered by dredging vessels so as to allow large ships to enter the harbour. The imports are cotton, sugar, coffee, cocoa, indigo, and other colonial products, chiefly from Cuba and Puerto Rico, hemp, coals, corn, deals, salt fish, hides, iron, hardware, &c. The trade with the Levant, the colonies, and France, as well as the coasting trade, is pretty active. The exports are wrought silks, soap, fire-arms, paper, hats, ribands, wine, brandy, oil, vermicelli, cork, bark, fruits, &c. There entered the harbour in 1842, 3667 vessels, with a tonnage of 189,117, the value of the cargoes being 3,651,750*l*. In the same year 2872 vessels cleared with a tonnage of 147,269, and cargoes valued at 3,007,404*l*. Of the 3667 vessels which entered in 1842, 3450 were Spanish, principally employed in the coasting trade, while only 69 were British. Of the latter 52 were freighted with coal, 6 with iron and bricks, and 6 with machinery, gas-pipes, &c.; and of the 69 no less than 65 cleared in ballast. The so-called Barcelona nuts are shipped to England from Tarragona. The number of vessels belonging to Barcelona is small, and is said to be decreasing. The port charges on a Spanish ship of 300 tons is 9*l*. 11*s*. 2*d*., while on a British vessel of the same burden they are 55*l*. Notwithstanding that most kinds of manufactured goods are prohibited, it is undeniable that large quantities of the prohibited articles are imported into this as into most other ports of Spain. Steamers ply regularly to Marseille and Cadiz, putting in at the principal maritime towns on these routes. Eighteen foreign consuls reside in the city.

Barcelona is entitled to the honour of having compiled and promulgated the famous code of maritime law known by the name of 'Consolato del Mare;' and the earliest authentic notices of the practice of marine insurance, and the negotiation of bills of exchange, are to be found in her annals. On this subject, as well as on many others connected with the former commerce of Barcelona, the *Memorias Historicas sobre la Marina, Comercio, y Artes de Barcelona*, by Capmani, in 4 vols. 4to, is a most valuable work.

From the 'Mercado,' or Price Current, of Barcelona, we are enabled to give the quantities of the principal imports into Barcelona for the year 1846. They are as follows:—8,000,000 lbs. of sugar, 115,000 cwts. of salt fish, 114,000 hides, 3,250,000 lbs. of cocoa, 2,000,000 lbs. of coffee, 50,000 tons of coal, 16,000,000 lbs. of cotton, and 280,000 lbs. of indigo. In the year 1846 the export of wine amounted to 30,000 pipes, nearly all of which went to the West Indies.

The suburb of Barceloneta is a small and pleasant town on the south-east of the city, between the port and the lighthouse. It consists of twenty-four parallel streets, intersected by fifteen others at right-angles, all 20 feet wide. The houses are all uniform, built of brick, and one story high. This suburb is chiefly inhabited by sailors and others employed in the navy or merchant-vessels. Its population is 5000.

(M'Culloch's *Commercial Dictionary*, 1844; Macgregor's *Commercial Statistics*, 1844; Ford's *Handbook of Spain*.)

BARCELO'NA, the chief town of the province of Barcelona, in the department of Maturin, and republic of Venezuela, in South America. It stands in 10° 10′ N. lat., and 64° 47′ W. long., on a small river, the Neveri, about three miles from the shores of the Caribbean Sea. The town is ill built and very filthy. Nearly opposite, on the right bank of the Neveri, stands a small fortress, called El Morro, which protects the harbour. The æstuary of the Neveri is so shallow as not to admit vessels of any considerable size, and is besides exposed to the north-east, north, and north-west winds. At the distance of about three miles from the shore is a small rocky island, called Borracha, inhabited by fishermen, which on its south side affords a safe anchorage for ships of the largest size. Barcelona is a very unhealthy place: it had in 1807 a population of 15,000 persons, half whites, and half mulattoes and negroes. The population is now stated to be 6000. The trade of Barcelona was formerly considerable in cattle, horses, mules, jerked beef, and hides, which were taken to the West Indies: the town is now chiefly

engaged in the contraband trade with the island of Trinidad.

BARCELONETTE. [ALPES, BASSES.]

BARCKHAUSIA, the name of a genus of plants belonging to the natural order Compositæ, the tribe Cichoraceæ, and the sub-tribe Lactuceæ. The British species are—*B. taraxacifolia* and *B. fœtida*. The first species has a stem one or two feet high, yellow flowers, purple beneath, and is found in limestone districts. The second has a stem from six to twelve inches in height, with yellow flowers. It grows in chalky places in England, but is a rare plant.

B. setosa, a German species, has been lately found in several districts of Great Britain, but it appears most probable that this species has been introduced by means of clover and other seeds used for agricultural purposes.

(Koch, *Flora Germanica;* Babington, *Manual of British Botany; Phytologist*, vol. i.)

BARCLAY, ALEXANDER, was an elegant writer of the sixteenth century, but whether English or Scotch by birth is disputed. He was educated at Oriel College, Oxford, about 1495. After finishing his studies there, he went into Holland, and thence into Germany, Italy, and France, where he applied himself assiduously to the languages spoken in those countries, and to the study of their best authors. Upon his return home, he became chaplain to Bishop Cornish, who appointed him one of the priests or prebendaries of the college of St. Mary Ottery, in Devonshire. After the death of his patron he became a monk of the Benedictine monastery of Ely, where he continued till the suppression of the monastery in 1539. On the 30th April, 1552, he was presented by the Dean and Chapter of Canterbury to the rectory of Allhallows, Lombard Street, in London, but did not enjoy that preferment above the space of six weeks. He died in the June following at Croydon, in Surrey, where he was buried in the church. That Barclay was one of the refiners of the English language, and left many testimonies behind him of his wit and learning cannot be denied.

The work by which he is more commonly known is 'The Shyp of Folys of the Worlde,' fol. Lond. R. Pynson, 1509. This work was partly a translation and partly an imitation of a German work of the same title.

BARCLAY, WILLIAM, a civilian, father of the author of 'Argênis,' was born in Aberdeenshire, in 1546. In early life he attached himself to the court of Mary Queen of Scots, but the misfortunes of that princess closing the path to preferment, in 1573 he emigrated to France. With many other Scotsmen of the period, he studied civil law under Cujacius at Bourges. In 1578 he became professor of law in the then recently erected University of Pont à Mousson, in Lorraine, of which his uncle Edmund Hay was the first rector. In 1600 he published a work in favour of despotic principles: 'De Regno et Regali Potestate.' Having quarrelled with the Jesuits, he resigned his chair in 1603, and proceeded to England. His defence of despotic power suited one of the leading opinions of King James, but his adherence to the Roman Catholic faith interfered with his receiving any promotion directly from the king. In 1605 he was appointed Dean and Professor of Civil Law at Angers. In the same year he there published in 8vo, a commentary on the titles of the Pandects 'De Rebus Creditis' and 'De Jure-jurando.' He died the same year (1605) at Angers. (Irving, *Lives of Scottish Writers*, i. 210-233.)

BARCLAY, JOHN, was born, according to the portrait prefixed to his 'Argênis,' at Pont à Mousson in Lorraine. John studied at the college of the Jesuits in his native place, and the order, observing the dawning of his genius, attempted, according to their usual policy, to add so promising a name to their own illustrious list of brethren. This was opposed by the father, who in 1603 went to England accompanied by his son. He is said by Bayle to have written and printed, when nineteen years old, notes on the 'Thebais' of Statius. In 1604 he dedicated to James I. part of the famous 'Satyricon,' generally known by the name of 'Euphormio,' which he bestowed on himself as author. What will now, perhaps, be considered the most interesting part of this curious work, is the fourth book, which in 1614 he published under the title 'Icon Animarum.' It commences with remarks on the pursuits and character of man at the different ages of his life, and contains a series of sketches of the inhabitants of the various known countries of the world. He married at Paris in 1606, and settled in London, but in 1615 he removed to Rome, where Bayle says he enjoyed the patronage of Paul V. In 1621 was published the first edition of the work by which his name has been best known, 'Argênis,' a romance full of incident and description. This work, as well as the 'Satyricon,' is written in Latin, and the style has received the commendations of the greatest scholars. It is generally published with a key to the real names supposed to be represented in fictitious characters. Thus Meleander is said to represent Henry III. of France; Poliarchus, Henry IV., &c. The difficulty however of finding parallels in real history for all the persons and events, suggests that this explanation has no better authority than analogy with the 'Satyricon,' in which real persons were undoubtedly represented under fictitious names. 'Argênis' appears to be entirely a romance, with occasional allusion to historical events. Its popularity was of long duration. The admiration of Cowper and D'Israeli have made the name familiar to modern English readers. In 1628 there was published an English translation of it in 4to, with the title 'John Barclay his Argênis, translated out of Latine into English: the prose vpon his maiesties command by Sir Robert Le Grys, Knight, and the verses by Thomas May, Esq.' Another translation appeared in 1636, and a third in 1772, with the title 'The Phœnix, or the History of Polyarchus and Argenis.' Barclay died at Rome, on the 12th of August, 1621, before he had completed his fortieth year. (Dalrymple, *Life of John Barclay.*)

BARCLAY, ROBERT, was born Dec. 23, 1648, at Gordonstown, in the shire of Moray,

His father was Colonel David Barclay, of Ury, the lineal representative of an ancient family who had for five centuries ranked amongst the landed proprietors of Scotland. The extravagancies of Robert Barclay's grandfather lost the patrimonial possessions, and David, his father, who was the eldest of several sons, went into the army, and served as a volunteer under Gustavus Adolphus, king of Sweden. Having attained the rank of Major, he remained abroad till the civil wars broke out in his own country, when he returned home, and became colonel of a regiment of horse, on the side of the Royalists. On the accession of Cromwell's party to power, he retired from his military employments, married, and purchased a house at Ury, near Aberdeen, which became the seat of the family.

This gentleman had three sons. Robert, the eldest, after receiving the rudiments of his education in his native country, was sent to Paris to pursue his studies under the direction of his uncle, who was rector of the Scots College in that capital. His deportment and character so endeared him to his uncle, that he offered to make him his heir, and to settle a large estate immediately upon him, if he would remain in France. The offer was at once rejected. He had been won over to the Roman Catholic faith, and his father was opposed to his continuance in the country. The father had been converted to the views of a sect which had then existed only ten years, and he became a member of the Society of Friends.

After an interval of a few years Robert followed the example of his father, and in the year 1667 avowed himself a Quaker. This change of opinion had not been produced without a degree of thought and investigation almost beyond his years, for he was not then more than nineteen. It also gave a decided bias to his future studies. He learned the Greek and Hebrew languages, in addition to the Latin and French, in which he had made great proficiency in France. To his other acquirements he added an acquaintance with the writings of the fathers, and with ecclesiastical history. No sect ever encountered in its origin more persecution and derision than the Quakers; though it is an error to suppose that this was owing to their adopting as a distinguishing badge certain eccentricities of dress, manners, and conversation. The Friends, at their origin, did not adopt any peculiar marks; they only dressed like all the sober religious people of that day, and abstained from all extravagancies; they kept strictly to this plainness, when all other people were frightened out of it, after the restoration of Charles II., under the stigma of puritanism. But the vicinity of Aberdeen was not more free than other parts of Britain from that misjudging spirit which affected to discover, under this garb and plainness of manners, a deep-rooted aversion to religion and civil government. The meetings of the Society, which, when not silent, breathed nothing but charity and meekness, were prohibited, and those who attended them were taken before magistrates, and committed to prison. From such intolerance even the family respectability of the Barclays did not preserve them. They bore their share in the sufferings of those times.

Robert Barclay no sooner saw how much of this ill-will arose from the misapprehensions of the public concerning the principles of the Quakers, than he set himself to correct them. A book having been written by a Scotch clergyman, embodying the principal charges which had been brought against the doctrines and views of the Quakers, he endeavoured to vindicate them, in a treatise published at Aberdeen in the year 1670, under the title of 'Truth cleared of Calumnies.' A reply being made to this publication, in which all the offensive statements were repeated, Barclay put forth a rejoinder, entitled 'William Mitchell Unmasked.'

In the same year that Robert Barclay became an author he married Christian, daughter of Gilbert Mollison, a merchant of Aberdeen. The character of this lady is extolled by all who speak of her. After his marriage he continued to reside at Ury, where, in patriarchal simplicity, the families lived together in the greatest happiness during the life of his father, which continued until within a short time of his own death. Two years after this event, he took the extraordinary resolution of walking through the streets of Aberdeen clothed in sackcloth and ashes. The motive and design of his making himself such a 'spectacle to men,' is detailed in what the writer calls 'A seasonable Warning and serious Exhortation to and Expostulation with the Inhabitants of Aberdeen, concerning the present Dispensation and Day of God's living Visitation towards them.'

Barclay believed, as the Society of Friends now do, that divine revelation is not incompatible with right reason, yet he believed, as the Friends also now do, that the faculty of reason alone, unassisted by divine illumination, is unable to comprehend or receive the sublime truths relative to that redemption and salvation which came by Jesus Christ. To show that the tenets held by the Society were capable of a rational vindication, Barclay employed all the powers of his vigorous intellect, and produced a succession of works, designed and calculated to accomplish this object. His most elaborate treatise is entitled, 'An Apology for the true Christian Divinity as the same is held forth and practised by the People called in scorn Quakers.' This and a previous work entitled 'Theses Theologicæ,' were originally printed in Latin, and afterwards translated by the author and published in English. In style and execution they have been deservedly admired.

The discipline or church government of the Society of Friends was as much defamed as their religious opinions. Their regulations were vindicated by Barclay in a work wherein he contrasts the internal government of the Quakers with the anarchy of the Ranters and the hierarchy of the Romanists, justifying the discipline of his sect, and defending its members 'from those who accuse them of confusion and disorder, and from such as charge them with tyranny and imposition.' The publication of this treatise engaged its author in a long altercation with some persons of his own persuasion, who took offence

at various parts of it, as tending to violate the rights of private judgment and to restrain the operations of the Spirit. Their opposition, being discountenanced by the society, soon passed away, and the work itself rose into such favour among the sect, that its title was changed, at one of its yearly meetings, to 'A Treatise on Christian Discipline,' and it became the standard authority on all matters to which it relates.

The importance attached by Robert Barclay to the internal order of the body, and his desire to preach the gospel (which was indeed his strong motive), induced him to accompany William Penn and George Fox to Rotterdam and Amsterdam, for the purpose of consulting the Friends in the Netherlands on some important regulations connected with their system of church government. For the promotion of this and other objects connected with the prosperity of the society, he frequently went to London to attend its annual meetings. His character and connections gave him influence in quarters where the presence of such a man might be supposed to be least welcome. He was known at court, where he was well received, and treated with marked respect by Charles II. The circumstances which first led him to the palace are but imperfectly known. His father had been a sufferer in the civil wars, and the predilections of the family were known to be in favour of the Stuart dynasty. Beyond this we possess no information. His dedication to Charles II., at the beginning of 'The Apology,' so justly admired for its high tone of patriotism and independence, shows, that whatever else might have secured him such a continuance of royal favour, it was not servility or flattery.

The few latter years of Robert Barclay's life were spent in the quiet of his family, in which his mild and amiable virtues found their happiest sphere of exercise. His death was occasioned by a violent fever, which came on immediately after his return from a religious visit to some parts of Scotland. He died October 3, 1690, in the 42nd year of his age.

The intellectual superiority of Barclay places him at the head of all the writers of his sect. His works contain the only systematic view of their opinions and principles. In his moral character he was free from every reproach, and his temper was so well regulated, that he was never seen in anger.

BARCLAY, JOHN, a Presbyterian clergyman, and founder of the small sect called Bereans, whose peculiar standard of faith is contained in the 11th verse of the 17th chapter of the Acts of the Apostles, where it is said of the Jews of Beroea 'That they received the word with all readiness of mind, and searched the Scriptures daily, whether those things were so.' He was born at Muthill in Perthshire, in 1734, and studied at the University of St. Andrews, where he took the degree of A.M. In 1759 he was licensed as a probationer by the Presbytery of Auchterarder. In 1763 he became assistant of the minister of Fettercairn in Angusshire. Here he became the great popular preacher and religious leader of the district. In 1766 he published a paraphrase of the Book of Psalms, with 'A Dissertation on the best means of interpreting that portion of Scripture.' Some tenets supposed to lurk in this production called out the zeal of his presbytery. On the death of the clergyman to whom he was assistant, in 1772, the presbytery not only defeated his attempt to be appointed successor, but refused him the necessary testimonials for accepting a benefice elsewhere, and he then left the Church of Scotland, and became the leader of a sect of which a few congregations still exist. He preached for some time in Edinburgh, and subsequently in London and Bristol. In London he kept open a debating society, where he supported his doctrines against all impugners. He died on the 29th of July, 1798.

BARCO'CHEBAS (Shimeon Bar Cochba, *the Son of the Star*), was the title of a false Messiah, who applied to himself the prophecy of Balaam, 'There shall come a star out of Jacob, and a sceptre shall rise out of Israel,' &c.

Trajan persecuted both the Jews and the Christians. His animosity towards the Jews was probably increased during his expedition against the Persians, A.D. 107, at least we see that he became more zealous in his persecution about A.D. 108. The oppression experienced by the Jews stimulated them to rebellious commotions, and they put to death many thousands of Greeks in Cyprus, Cyréne, and other places, when Trajan removed the legions from these provinces at the commencement of his second expedition against the Parthians, about A.D. 115 and 116. After the death of Trajan, A.D. 118, the Emperor Hadrian appointed J. Annius Rufus governor of Judæa. This man adopted very harsh measures against the Jews, who consequently began secretly to collect arms, A.D. 120. Soon after the return of Hadrian from his second journey to the East, about A.D. 130, the rebellion broke out. Shimeon Bar Cochba gained influence, partly by a reputation for miraculous powers, and partly by his intrepidity. He took Jerusalem about A.D. 132 without difficulty, as the garrison had probably left the town to attack the rebels. The taking of Jerusalem so animated the courage of the friends of liberty, that Rufus was no longer able to resist them. The rebels occupied 50 fortified places, and 985 villages.

On this the Emperor Hadrian ordered his most able commander, Julius Severus, to leave his post in Britain, and repair to Palestine; but the time which elapsed during his journey was favourable to the rebels. After his arrival, Julius Severus wisely avoided battles, but took a number of fortified places before he marched against Jerusalem, which he took and destroyed after sustaining great losses. The Jews, after the capture of the city, concentrated their forces in the mountain-fortress of Bethar, which was probably the same as Betharis, in the neighbourhood of Bethron, on the north-west side of Jerusalem. While Julius Severus was gradually re-conquering the country, Bar Cochba still played the king in Bethar, for three years. According to Talmudical statements

Bethar was taken, A.D. 135, by the Romans on the 9th day of the month of Ab, the anniversary of the burning of the temple under Titus. It has been stated that on this occasion 580,000 Jews perished, but this must be greatly exaggerated. Bar Cochba fell in the combat, and his head was brought into the Roman camp.

(*Allgemeine Geschichte des Israëlitschen Volkes*, von Dr. J. M. Jost; *Tsemach David*, to the year of the Jewish æra 3880, and other Jewish chronographers, who refer to the respective passages of the Talmuds of Babylon and Jerusalem.)

BARD, an appellation of uncertain etymology, chiefly appropriated to the earliest poets of the Celtic tribes.

Lucan (i. 447) describes the office of the bard, and gives his name:—

> You, too, ye Bards! whom sacred raptures fire
> To chaunt your heroes to your country's lyre;
> Who consecrate in your immortal strain
> Brave patriot souls in righteous battle slain.—Rowe.

Tacitus ('Germania,' 3) calls the songs of the bards 'barditus.'

The information, however, which remains to us from classical sources relating to the bards is very scanty. Strabo (p. 197) says that the bards (βαρδοι) were singers of hymns and poets among the Gauls. They were, no doubt, originally spread over the greater part of Western Europe, but gave way to southern civilization; and it is from their latest retreats only, in Wales and Ireland, that we gain any materials for their history.

By the laws of Hoel Dha, made about the year 940, the *Bardd Teulu*, or court-bard, was a domestic officer. He occupied the eighth place in the prince's court: he held his land free: the prince was to allow him a horse and a woollen robe, the queen a linen garment. At the three principal feasts, Christmas, Easter, and Whitsuntide, he was to sit next to the prefect of the palace, who delivered the harp into his hand; and at the same festivals he was to have the robe of the *disdain*, or steward, for his fee. When a song was required, the bard who had gained the badge of the chair (in musical contest) was first to sing a hymn in glory of God, after that another in honour of the prince, and then the Teuluwr, or bard of the hall, was to sing some other subject. He was also to sing the praises of the British monarchy, at the head of the detachment, when drawn up for fight. When invested with this office, the prince was to give the bard a harp, and the queen a ring of gold. Any slight injury perpetrated on the royal bard was to be compensated by a fine of six cows and a hundred and twenty pence; his murder at a hundred and twenty-six cows. The marriage-fine of his daughter was estimated at a hundred and twenty pence. Her nuptial present was thirty shillings, and her dower three pounds. ('Leges Wallicæ,' edited by Wotton, fol. Lond. 1730, lib. i. cap. 19, pp. 35, 36, 37.)

The *Pencerdd Gwlad* was another domestic bard of the higher order, who frequented the courts of the Welsh princes, though he was not a regular officer of the household. His privileges are described in the 'Leges Wallicæ,' lib. i. cap. xlv. pp. 68, 69. (Pennant's 'Tour in Wales,' p. 462.)

'The bards of Wales,' says Pennant, 'were supposed to be endowed with powers equal to inspiration. They were the oral historians of all past transactions, public and private. They related the great events of the state; and, like the Scalds of the northern nations, retained the memory of numberless transactions, which otherwise would have perished in oblivion. They were likewise thoroughly acquainted with the works of the three primary bards, viz. Myrddyn ap Morfryn, Myrddyn Emrys, and Taliesin ben Beirdd. But they had another talent, which probably endeared them more than all the rest to the Welsh nobility, that of being most accomplished genealogists, and flattering their vanity, in singing the deeds of an ancestry derived from the most distant period.'

The Welsh bards were reformed and regulated by Gryffyth ap Conan, king or prince of Wales, in the year 1078. (Warton, 'Hist. Eng. Poetry,' vol. i. Diss. 1.)

Pennant gives a minute account of the Eisteddfods, or sessions of the bards and minstrels, which were held in Wales for many centuries: one was held at the town of Caerwys; another at Aberfraw in Anglesea, for the bards of that island and the neighbouring county; and a third at Mathraval, for those of the land of Powis. The two last places were the residences of princes; and Caerwys had a royal palace that stood below the town, the residence of Llewelyn ap Gryffydd. The judges at the eisteddfods were appointed by commission from the Welsh princes, and, after the conquest of Wales, by the kings of England.

A commission for holding an eisteddfod at Caerwys, in 1568, was, in Pennant's time, in the possession of Sir Roger Mostyn, together with the silver harp which had from time immemorial been in the gift of his ancestors, to bestow on the *chief of the faculty*. This badge of honour was about 5 or 6 inches long, and furnished with strings equal to the number of the Muses. The commission, of which Pennant has given the form (as well as an engraving of the harp), is the last which was granted. It was dated 23rd Oct. 9 Eliz.

Though since the time of Queen Elizabeth no royal commission has been issued for holding an eisteddfod, exertions have not been wanting of later years for the revival of the bardic profession, and encouragement of Welsh literature. The Gwyneddigion Society was established for this purpose in 1770, and the Cambrian Society in 1818. Annual meetings have also been held for the recitation and reward of prize-poems and performances upon the harp; and another society has since been formed, called the Cymmoridion, or Metropolitan Cambrian Institution.

The Irish carry the history of their bards to the earliest date of the supposed Milesian invasion. The details of that history, in a diffuse form, are given in Walker's 'Memoirs of the Irish Bards,' 4to, Lond. 1786.

Spenser ('View of the State of Ireland,' fol. Dubl. 1633, p. 52) gives no favourable idea of the Irish bards of his time. He speaks of them as

'so far from instructing young men in moral discipline, that they themselves do more deserve to be sharply disciplined; for they seldom use to choose unto themselves the doings of good men for the arguments of their poems.' And he goes on to give particulars of their evil doings.

(For further information, exclusive of the works already quoted, the reader may consult Evans's *Dissertatio de Bardis;* Jones's *Musical and Poetical Relics of the Welsh Bards, with a History of the Bards and Druids,* 4to, Lond. 1794; Sir Richard Colt Hoare's *Giraldus Cambrensis,* vol. i. p. 300—319; and Beauford's *Origin and Learning of the Irish Bards.*)

BARDSEY, a small island in the Irish Sea, belonging to Carnarvonshire, in North Wales, near the north point of Cardigan Bay. Its distance from the nearest point of the promontory of Braich y Pwll, in Carnarvonshire, is about 2½ miles: its length is somewhat more than 2 miles by 1 in breadth, comprising about 370 acres of land, of which nearly a third is occupied by a mountainous ridge, the sea front of which presents perpendicular and projecting cliffs, in which the hazardous trade of taking eggs, by the adventurer being let down by a rope from the top of the cliff, is practised during the resort of puffins and other birds in the breeding season. Bardsey is only accessible to the mariner on the S.E. side, where there is a small well-sheltered harbour, capable of admitting vessels of thirty or forty tons burden. The soil of the island is tolerably fertile, producing excellent barley and wheat. The population in 1841 was 90. The name of the island (Bards'-Ey) means the Isle of Bards. There was formerly an abbey of some celebrity on it, which was suppressed by Henry VIII. Numerous graves lined with stone, a large building, said to have been the abbot's lodge, and a ruined chapel or oratory, are the only remains.

(Pennant's *Tour in Wales;* Bingley's *North Wales;* Evans's *Beauties of North Wales;* Dugdale's *Monasticon,* edit. 1823.)

BARDSTOWN, or BAIRDSTOWN. [KENTUCKY.]

BAREILLY, a town in Hindustan, capital of the district of Bareilly, which is included in the province of Delhi and government of the North-Western Provinces. The town, which is situated in 28° 25′ N. lat., 79° 23′ E. long., was ceded to the British in 1802, together with the district, and was made the seat of a civil establishment and a circuit court. Bareilly is a large town, and was estimated, in a survey made in 1822, to contain about 66,000 inhabitants, two-thirds of whom were Hindoos, and the rest Mahommedans and others. Bishop Heber, who was there in 1824, says, 'Bareilly is a poor ruinous town, in a pleasant and well-wooded but still a very flat country.' The inhabitants manufacture swords and daggers, household furniture, pottery, and various articles of brass and cabinet work, jewellery, embroidery, &c. (Hamilton's *East India Gazetteer.*)

BAREITH. [BAIREUTH]

BARETTI, JOSEPH, was born at Turin in 1716. He was originally a clerk in a commercial house, but acquired a taste for literature, and was engaged in translating Corneille. He had early applied to the study of the English language, and in 1751 he came to London, where he employed himself as a teacher of Italian. Having become known through the publication of his 'Italian Library,' he was appointed secretary to the Royal Academy of Painting. He held this situation till his death in 1789; having, during his residence in London (which was only interrupted by a few years' sojourn in Italy), published 'A Journey from London to Genoa,' and 'An Account of the Manners and Customs of Italy—both containing matter which is still interesting. He also wrote a dissertation in French 'Sur Shakspeare et M. de Voltaire,' in which he refuted many errors into which Voltaire had fallen in speaking of Shakspeare.

His 'Italian Grammar' was a useful book; and his 'Italian and English Dictionary,' in 2 vols. 4to, superseded the former one of Altieri; it has since gone through several editions. He also compiled a 'Spanish and English Dictionary.'

One evening as Baretti was going to the Academy he found himself unexpectedly involved in a street brawl. Being attacked by several men, he drew his penknife and wounded one of the assailants, who soon after died. He was tried on the capital charge, made his own defence, and was acquitted by the jury. Dr. Johnson, Mr. Burke, and Mr. Garrick, on the trial, gave favourable evidence as to his character. In 1782 Baretti obtained an increase of his salary as secretary to the Royal Academy, which, added to the profits derived from his literary labours, enabled him to live in decent comfort till his death, which took place in his 75th year. He was acquainted with many of the English literary men of his time, and especially with Dr. Johnson, with whom he was in habits of friendship.

BARFLEUR. [MANCHE.]

BARGAGLI, SCIPIONE, was born at Siena, in Tuscany, of a patrician family, about the middle of the 16th century. He became distinguished as an elegant writer. Bargagli's principal works are—'I Trattenimenti,' 4to, Venice, 1587, which by some is called Bargagli's novels; 'Dell' Imprese,' 4to, Venice, 1594, a work of considerable erudition concerning the origin and symbolic language of devices and mottoes in the ages of chivalry; 'Il Turamino, ovvero del Parlare e dello Scriver Sanese,' 4to, Siena, 1602, a dialogue on the various dialects of Tuscany, but especially that of Siena. Bargagli wrote other minor works both in prose and verse. He died in 1612.

His brother Girolamo, who was a professor of law in his native city, wrote a book called 'Dialogo dei Giuochi che nelle Vegghie Sanesi si usano di fare,' 8vo, Venice, 1575, which is an explanation of the numerous social games which used to be and are still occasionally played in Italy among friendly parties assembled to pass together the winter evenings.

BARGAIN AND SALE. The word bargain is from the French *barguigner,* which signifies 'to dispute about the price of a thing which a man

wishes to buy' (Richelet). The origin of the word is uncertain. A bargain and sale seems to express the two sides of the contract of buying and selling anything; but the expression bargain and sale is used in English law in a more limited and technical sense.

A bargain and sale is a mode of transferring the ownership of land; it is in fact nothing more than what all buying and selling is, an agreement of the seller to give his land to the buyer for a fixed sum of money. Before the Statute of Uses, a man often bargained and sold his land to another for a sum of money, and this was a perfect contract of sale, and as such required nothing further to be done. But in order that the ownership of the land should be transferred to the buyer, it was necessary that he should obtain seisin of it. If he did not obtain this seisin, the seller who retained seisin of the land was considered to be seised of it to the use of the buyer: in other words, he was the legal owner of the land, not for his own use, but for the use of the buyer.

The effect of the 27 Hen. VIII. c. 10, called the Statute of Uses, was to convert the use created by such bargain and sale into a legal estate. For instance, if a man had agreed to buy a piece of land for 1000*l.*, or any other sum, the statute gave the purchaser or bargainee a legal estate in the land to the same extent that he had in the use by virtue of the bargain and sale. In fact, the statute made the transfer of ownership in land as simple and easy as it can be made (though that was not the direct object of the statute), for it dispensed with the ceremony of formal delivery of seisin. The terms of the statute only apply to cases in which the seller has a freehold interest in the land. A contract for the sale of land then, or a bargain and sale of land, gives to the buyer that interest in the land which is called a use; and the statute converts the use into a complete legal estate. The statute does not extend to copyhold lands. (Sanders, 'Uses,' &c., i. 241.)

The effect of the statute was very different from what was intended. The secret nature of uses is mentioned in the preamble to the statute as one reason for destroying uses; yet the effect of the statute was to enable any person who had a freehold interest in land to transfer to another any legal estate in that land, without any formality of giving or taking possession, and without the evidence of any written document. The 27 Henry VIII. c. 16, enacted that no bargain and sale should pass an estate of inheritance or freehold, unless made by writing indented, sealed, and enrolled in one of the king's courts of record at Westminster, or with the custos rotulorum, and two justices of the peace, and the clerk of the peace of the county or counties where the lands bargained and sold lay, or two of them at the least, whereof the clerk of the peace is to be one: the enrolment to be made within six months after the date of the writing. The act contains an exception of lands within cities, boroughs, or towns corporate, where the mayors or other officers have authority, or have lawfully used to enrol any evidences, deeds, or other writings.

The enrolment of a bargain and sale is a copy of the deed upon parchment preserved in the records of the court, and as the statute requires this to be made within six months, without saying *calendar* months, it is understood, according to a well-known rule of law, to mean lunar months, consisting each of twenty-eight days. But the statute for the abolition of fines and recoveries (3 and 4 Wm. IV. c. 74) provides (s. 41) that bargains and sales made in pursuance of that act shall be good if enrolled within six *calendar* months.

By the Stamp Act (55 Geo. III. c. 184), in order that a bargain and sale, as consisting of one deed, may not pay a lower duty than a conveyance by lease and release, which consists of two, the additional duty which, if the conveyance had been by lease and release, would have been incurred by the lease, is accumulated upon the deed of bargain and sale.

If a man who is seised of an estate of inheritance or freehold, bargains and sells a term of years in his land, the statute (27 Hen. VIII. c. 10) gives to the buyer a legal estate, and the instrument does not require enrolment; for the 27 Hen. VIII. c. 10. does not apply to the creation of a leasehold estate.

BARGE COURSE, a term applied to that part of the tiling of a roof which projects over the gable end of a building; the under part of which is stuccoed. To protect this stucco from the weather, two boards, called *barge-boards*, following the inclination of the roof, are often attached to the gables of old English houses, fixed near the extremity of the barge-course, and carved in the gothic style.

BARHAM, REV. RICHARD HARRIS, was born Dec. 6, 1788, at Canterbury, where his family had resided for many generations. He was an only son, and his father, who died in 1795, left him a small estate. In 1802 his right arm was severely shattered by the upsetting of the Dover mail, in which he was travelling to St. Paul's School, London. His life was despaired of for some time, but he ultimately recovered, and regained the use of his arm. From St. Paul's School he removed to Brasenose College, Oxford, where, during a short but severe illness, he first entertained the thought of entering into the church, though he had previously to this intended to become a lawyer, and did afterwards become for a short time a pupil to a conveyancer. Having passed his examination for holy orders, he was admitted to the curacy of Ashford in Kent, whence he removed to Westwell, a few miles distant. Mr. Barham married in 1814, and shortly afterwards was presented by the Archbishop of Canterbury to the rectory of Snargate, and he obtained at the same time the curacy of Wareham, the former in Romney Marsh, Kent, a district much frequented by smugglers, and the latter on the verge of it. The breaking of one leg and the spraining of the other by the overturning of a gig gave him occasion to employ himself in the composition of a novel entitled 'Baldwin,' which was published without attracting any notice. Soon afterwards he became a candidate for a vacant minor canonry in St. Paul's cathedral, and though

his friends thought he had no chance of success, he was duly elected in 1821. He thenceforth devoted much of the time not required by his professional duties to contributions in prose and verse to the periodical publications of the day. He was the author of 'My Cousin Nicholas' in Blackwood's 'Magazine,' and about one-third of the articles in Gorton's 'Biographical Dictionary' were written by him.

In 1824 Mr. Barham received the appointment of a priest in ordinary of the Chapel Royal, and shortly afterwards was presented to the rectory of the united parishes of St. Mary Magdalene and St. Gregory by St. Paul, London.

Till the year 1837, when the first number of Bentley's 'Miscellany' appeared, Mr. Barham had been an anonymous and comparatively unknown writer; but the 'Ingoldsby Legends,' a series of humourous tales in verse, which appeared in rapid succession in that work, brought him so much reputation that his pseudo name of Ingoldsby no longer concealed him, and he became generally known as the author. In 1842 he was appointed divinity reader in St. Paul's Cathedral, and he was permitted to change his living for the more valuable rectory of St. Faith, London.

On the 28th of October, 1844, when the Queen visited the city to open the new Royal Exchange, Mr. Barham, who was a witness of the procession, caught a severe cold, from which he never recovered. He died June 17, 1845.

Mr. Barham was personally acquainted with Theodore Hook, the Rev. Sydney Smith, and several other of the distinguished wits of his day, and was, like them, a frequent diner-out; but he never neglected his more serious duties, and was much respected by those who knew him.

The 'Ingoldsby Legends' have been published in 3 vols. post 8vo. 'A Memoir of the Rev. Richard Harris Barham,' by his son, the Rev. R. H. D. Barham, precedes the Third Series.

BARI, TERRA DI, a province in the kingdom of Naples nearly coinciding with that part of ancient Apulia which was called Peucetia. It is bounded N. by the Adriatic, E. and S.E. by the Terra d'Otranto, S. and S.W. by the province of Basilicata; and W. by that of Capitanata. The province lies between 40° 45′ and 41° 19′ N. lat., 15° 54′ and 17° 33′ E. long.: its length is about 80 miles, its average breadth about 30. The area is estimated at 2204 square miles, and the population in 1839 was 455,203. The greater part of the province lies N. of the ridge of the Apennines, which breaking off from the main chain in the north-west of the province of Basilicata runs in an easterly direction to the extremity of the Terra d'Otranto. The highest summits are those of Monte San Agostino and Monte Lupolo. A small portion of the province lies on the southern slopes of this ridge. The chief river is the Ofanto, the ancient Aufidus, which runs on the western border of the province. There are several lakes, the principal of which are those of Battaglia, Jacomi, and Sassano, which neither receive any streams, nor have any known outlet. The temperature is mild and healthy, except in summer, when the heat is excessive, and dries up the springs, so that the want of pure water is then severely felt. The soil in the plains, which cover a great part of the province, especially along the seaboard, consists of a deep and very rich vegetable mould resting on a calcareous subsoil. Agriculture is the chief occupation of the inhabitants. From the town of Bari northwards great quantities of wheat are grown. Two kinds of it are cultivated, the common wheat for bread, and a small-grained hard wheat (grano duro), which is preferred for maccaroni, and is exported to Naples and elsewhere under the name of Barletta corn, from the harbour of Barletta where it is shipped. The principal farmers of this part of the province have formed themselves into a company, so that the corn trade of Barletta is entirely in their hands. After providing for seed and their home consumption, they hold their surplus corn in readiness to send to Barletta, where a register is kept of the quantity which each has to sell. In the neighbourhood of the town of Bari, the culture changes from corn to the olive, and the oils of Bari are reckoned at Naples the best in the kingdom. In the eastern and southern parts of the province only enough corn for the consumption is grown, the farmers' chief care being here also the olive; but the oils are only of ordinary quality. The other crops are tobacco, cotton, flax, almonds, and other fruits. Capers, liquorice, and the soda plant are also abundantly grown. The best wines are those of Trani, Bitonto, and Terlizzi. Among the domestic animals, asses, goats, and pigs are numerous; the horses are small; buffaloes, and sheep famous as in ancient times for their fine wool, are reared. A little silk is produced. The fisheries and saltworks along the coast are very valuable. The province has no manufactures of importance; but shipbuilding is carried on in most of the towns along the coast. The trade is chiefly carried on by sea with Naples, Venice, Trieste, and the coast of Dalmatia, and consists of the agricultural products mentioned above. The old Roman roads are almost the only roads in the province.

The chief towns on the coast are—BARLETTA: TRANI: Bisceglia, a walled and ill-built town on a rock near the sea; it is the seat of a bishop, and has a population of about 11,000, and some trade in wine: Molfetta, a well-built episcopal town, in which there is a cathedral, several churches, some linen manufactures, saltpetre works, and a population of 13,000: Giovenazzo, the ancient Natiolum; population 7000: BARI: Mola, the ancient Turris Juliana, an ill-built town, which has some trade by means of its port; population 9000: Polignano; population 4000: and Monopoli, a well-built fortified town, the seat of a bishop who is a suffragan of the Holy See; it has some cotton and linen fabrics, which with oil and wine are its chief articles of trade; population 19,000; in the neighbourhood are seen the ruins of the ancient Egnatia, and a great number of dwellings cut out of the limestone rock. In the interior the principal towns are—Andria, a well-built town standing in a beautiful plain; it is the seat of a bishop, has a cathedral, a college, and a population of 13,000: Canosa, the ancient Canusium, which is

built on a hill on the right bank of the Ofanto; population 4000: Ruvo, the ancient Rubi, a walled town, the residence of a bishop; it has an orphan asylum, two churches, several monasteries, and a population of 16,000: Bitonto, an episcopal town, which has a beautiful cathedral, 12 churches, an hospital, and seminary; a delicious wine called *zagarello* is produced near this town; population 15,000: Minervino, a bishop's seat; population 9000: Noja, in a rich oil and wine district south of Bari; population 4000: Conversano, the ancient Norba, which is the seat of a bishop, possesses a fine cathedral, several convents, an ecclesiastical seminary, an hospital, and a population of 7400; the town stands on a hill in a very rich district, producing wine, oil, almonds, cotton, flax, &c.; it was formerly the chief town of the government of the Normans: Putignano, which has manufactures of cottons, fustians, and coarse woollens; population 8000: Gioia, on the summit of the eastern Apennines on the road from Bari to Taranto: ALTAMURA: and Gravina, on a tributary of the Bradano, which is the residence of a bishop, has a cathedral and 5 other churches, a college, several convents, and a population of 9000.

(Macgregor's *Commercial Statistics; Géographie Universelle.*)

BARI, the *Barium* of the Romans, the chief town of the province of Bari, and the seat of an archbishop, stands on a slip of land which projects into the sea, 140 miles E. by N. of Naples, in 41° 8′ N. lat., and 16° 55′ E. long. The most remarkable building in Bari is the Gothic church and priory of St. Nicholas, which contains many splendid monuments. The castle also is a large and old structure. The town itself is surrounded by walls, and the streets are narrow and winding. It contains 19,000 inhabitants, and has an appearance of bustle and opulence. A manufacture peculiar to this place is the *acqua stomatica*, a cordial made of aromatic herbs and spices, which is generally drunk after coffee, and is much in request all over the kingdom. The port of Bari is formed by two moles; it is the most frequented port in the province next to that of Barletta. The principal exports are oil, corn, and wine. Bari has a college, which confers masters' and bachelors' degrees.

BARI'DIUS, in Entomology, a genus of the order *Coleoptera*, and family *Curculionidæ*. These are cylindrical little beetles which feed upon aquatic plants. They are generally of a black colour, and more or less covered with a whitish down.

BARILLA is the commercial name given to the impure carbonate of soda imported into this country, principally from Spain, the Canary Islands, and Sicily. The best is brought from Alicante, in the neighbourhood of which place it is prepared chiefly from the *Salsola soda*. The plants are usually gathered in September, and, after they have been allowed to become heated by being thrown together in heaps, are dried in the sun. In October the plants are burned in a hemispherical kiln dug in the earth; and the soda contained in them is fused and collected in masses, which have a hard and spongy consistence; and this, when broken into fragments, is ready for shipment.

The carbonate of soda is largely used in the manufacture of soap and glass, and for other purposes. From 1829 to 1834, the average annual importation of barilla into Great Britain was 252,000 cwts. The importation in 1843 was only 51,980 cwts.; and at the present time (1847) it is hardly imported at all. This change has been occasioned by the production of carbonate of soda from common salt through the agency of sulphuric acid, salt having become much cheaper from the repeal of the duty, and sulphuric acid also, from improvements in the manufacture. The quantity of carbonate of soda now consumed annually is calculated to be seven times as much as the largest importation of barilla in any single year.

BARIS, in Entomology, a genus of the order *Coleoptera*, and family *Curculionidæ*. The species of this genus feed upon the dead parts of trees. One of the species, *Baris lignarius*, feeds upon the elm-tree, both in the larva state and in that of the perfect insect. When the little beetle is about to lay its eggs, it generally selects the interior of a hollow tree for that purpose, and bores a hole with its short snout in the dead wood, where it is still tolerably sound; this being accomplished, it enters the hole, hinder part first, deposits its eggs, and dies: the hole being only just the size of its cylindrical body, it thus forms a protection for its young, by stopping the hole so that no other insect can enter. It is not known that it ever attacks any other wood but that part where the sap has ceased to flow, and consequently the tree can receive no injury from this little weevil.

BARITA, a genus of birds called Crow-Shrikes, placed by Cuvier among the shrikes, and by Vigors among the crows. Characters of the genus:—Bill hard, long, and powerful; convex above, slightly hooked at the extremity, near which both mandibles are notched. Nostrils lateral; legs stout, outer toe joined at its base to the middle toe; claws strong.

The Piping Crow (*Barita Tibicen*), which we select by way of example, is common in New South Wales, frequenting the Blue Mountains in small troops, and building a nest in trees. The

Piping Crow (*Barita Tibicen*).

nest consists of sticks, and is lined with grass. The young are generally three in number. This bird is said to make a loud piping noise in the morning while perched on the branch of some elevated tree. It is not migratory. In captivity the piping crow is very amusing from its archness and its great powers of mimicry. It imitates the voices of men and animals, and easily learns to whistle tunes, its notes being loud and clear. Food in a great measure, if not wholly, insects, reptiles, and small animals generally. This bird equals a jay in size. Back of the neck, upper part of the back and shoulders, bluish white; the rest of the plumage generally black.

BA'RIUM, a peculiar metal, discovered by Davy in 1807: it is the basis of the alkaline oxide or earth *barytes*, from which it is obtained by various chemical processes.

Barium resembles silver in appearance: it is much heavier than water, for it sinks even in sulphuric acid, though surrounded by bubbles of gas: it oxidizes readily in water by decomposing it, with the evolution of hydrogen gas, and thus a solution of barytes is obtained. By exposure to the air it is slightly covered with a crust of barytes. It fuses before it becomes red hot, and at this temperature it acts upon glass, without being volatilized; when exposed to the air, and moderately heated, it burns with a deep red light. It may be flattened a little, so that it is to a certain extent a malleable metal. Barium has, however, as yet been obtained only in small quantities, and consequently its properties are but imperfectly known.

Oxygen and barium combine to form two compounds, the *protoxide of barium*, usually called *barytes* or *baryta*, and the *peroxide of barium*. The protoxide is met with combined with sulphuric acid, forming *heavy spar*, or *cawk*, termed chemically sulphate of barytes, and with carbonic acid, constituting the mineral termed *witherite*, or carbonate of barytes; it may be procured by decomposing either of these native compounds. It is of a greyish white colour; when moistened with water it becomes very hot, and in a short time falls into a fine white powder; if more water is added, it becomes a crystalline and very hard mass. The specific gravity of barytes is about 4.0; it is extremely poisonous, has an acrid, alkaline, caustic taste, and requires a high temperature to fuse it. Barytes is composed of 1 atom oxygen and 1 atom barium. It combines in two different ways with water; producing the *hydrate of barytes*, and *barytes water*. The *peroxide of barium* is composed of 2 atoms of oxygen and 1 of barium. It is decomposed by acids, and is used in preparing the peroxide of hydrogen.

Neither azote nor hydrogen unite with barium.

Chlorine and barium combine to form one chloride, consisting of 1 atom chlorine and 1 atom barium. It is prepared by the action of muriatic acid on carbonate of barytes. It is much used in solution as a chemical re-agent.

Sulphur and barium combine, and probably in several proportions, but these sulphurets have not been closely examined. *Phosphorus and barium* are made to combine by the action of phosphorus on barytes. Phosphuret of barium decomposes in water; phosphuretted hydrogen gas is evolved, and hypophosphite of barytes remains in solution.

Iodine and barium unite and form an iodide, which is very soluble in water, and crystallizes in acicular crystals, which deliquesce slightly by exposure to the air.

Bromine and barium unite to form colourless rhombic crystals. *Fluorine and barium* combine to form crystalline grains of bromide of the metal.

The oxide or earth *barytes* unites with several acids, and produces salts, of which the following are the chief:—

Acetate of barytes.—This salt is produced by the action of acetic acid on barytes. It consists of slender prismatic crystals, which effloresce by exposure to the air; they dissolve in 1.75 part of cold water, and in 1.03 of boiling water. The taste of this salt is saline and bitter: it is decomposed by the fixed alkalies and their carbonates, by carbonate of ammonia, and by sulphuric acid. It consists of 1 atom of acetic acid, 1 of barytes, and 3 of water.

Carbonate of barytes.—This substance occurs to a considerable extent as a mineral product. It is a dense substance, its specific gravity being about 4.331; it is sometimes translucent and nearly colourless, but is often opaque. It sometimes occurs crystallized, and the primary form is a right rhombic prism, but it usually has the form of a six-sided prism. It is nearly insoluble in water, and is poisonous. It is used for the purpose of dissolving in various acids to procure barytic salts, and, when heated with charcoal, also for preparing barytes, especially when it is wanted merely in solution in water. It consists of 1 atom of carbonic acid and 1 atom of barytes.

Muriate of barytes.—This salt presents the form of rhombic crystals, composed of 1 atom of muriatic acid, 1 of barytes, and 1 of water; it is used as a chemical re-agent. *Nitrate of barytes* appears as octahedric crystals, composed of 1 atom of nitric acid, and 1 of barytes: it is sparingly soluble in water, and is decomposed at a strong heat. The crystals contain no water.

Sulphate of barytes.—This compound occurs largely in many parts of the earth, especially in the lead mines of the north of England: it occurs both amorphous and crystallized. In the former state it is sometimes colourless and transparent, and frequently opaque. The crystals are often very large, and the primary form, subject to many varieties, is a rhombic prism. It is extremely heavy, its specific gravity being about 4.7. It is unalterable by air or by water, and is scarcely affected by heat. It is composed of 1 atom of sulphuric acid, and 1 of barytes. When sulphate of barytes is only moderately heated with carbonaceous matter, a solar phosphorus is formed, which is called the *Bolognian Phosphorus*.

BA'RIUM, CHLORIDE OF—*Medical Properties of.*—This compound never occurs native, but is always obtained either by the decomposition of the native carbonate of barytes, or witherite, as directed by the London Pharmacopœia, or of the sulphate, or heavy-spar, as directed by the Edinburgh College.

Chloride of barium possesses acrid-narcotic properties, its taste being irritating and burning. It resembles medicinally chloride of calcium, but is more potent; in poisonous doses its action is similar to arsenic, with this difference, that it requires a larger dose to destroy life, and while its local action is less marked, producing less disintegration of the stomach, it is more rapidly absorbed and produces death more speedily. It is rarely employed as a means of self-destruction, or of intentional injury to others. Fortunately an efficient antidote exists in agents readily procured, and invariably efficacious if speedily administered. Any alkaline sulphate, such as Epsom or Glauber salts, or sulphuric acid greatly diluted, will instantly form an insoluble and harmless sulphate of barytes. Medicinally this compound is employed in very minute doses in various forms of scrofula. It possesses slight tonic powers, improves the appetite, and promotes absorption, reducing the glandular enlargements. It once enjoyed, chiefly from the testimony of Hufeland, a high celebrity. But, like many other muriates once confided in for the removal of scrofula, it has almost fallen into disuse, particularly since iodine has become known.

BARJOLS. [Var.]

BARK, in vegetable physiology, is the external coating of the stem and branches of plants, ensheathing the wood. In woody Exogens it separates spontaneously from the wood in spring and summer, and in herbaceous plants of the same class it may be easily removed with a little care; but in Endogens and Acrogens it is so continuous with the central part of the stem, that it can never be divided except by violence, and by lacerating the tissue which lies immediately below it. This difference arises from the manner in which the plants of these three great natural classes respectively grow. Exogens add annually new matter to the inside of their bark and the outside of their wood, which renders it necessary that a spontaneous separation of wood and bark should take place in order to make room for the newly generated substance; but Endogens, which grow by addition to their centre, and Acrogens, by elongation of their point, require no such separation.

In its anatomical structure bark consists of a mass of cellular tissue pierced longitudinally by woody matter, which is composed entirely of woody tubes without any trace of vessels, but which is sometimes accompanied by long fistular cavities, in which resinous, or milky, or juicy, or other secretions are lodged.

In the first year of its existence bark is a cylinder, the woody matter of which is a continuation of that of the wood itself. In Endogens and Acrogens it undergoes no material increase or alteration subsequently, unless it be that the parts are increased in quantity without shifting their position. But in Exogens, in consequence of their wood being annually augmented by external additions, as before stated, the bark undergoes annual changes. Corresponding with the annual additions to the wood are annual additions to the inside of the bark, consisting of a cellular layer overspreading the whole of the inside, and then a layer of woody matter, which answers to the spaces of wood included between the medullary processes. These annual additions, which are called the *liber*, or *endophlœum* (whence books, which were written upon such layers properly prepared, were called *libri*), must therefore be exactly the same in number as the annual layers of wood, and would be arranged with equal regularity if the bark were not affected by any disturbing cause. But, in consequence of the wood's perpetual increase in diameter, there is an incessant lateral strain upon the liber, so that after the first year there is little trace of regularity to be discovered in the structure of the bark. It soon becomes a mere confused mass of woody tubes and cellular tissue, in which all trace of annual concentric formation has disappeared. The manner in which it was originally generated is however said to be detected in some plants, by the facility with which the bark will peel into layer after layer; but it may be doubted whether this phenomenon is not more connected with the original arrangement of the ultimate vesicles of the bark than with the annual formations. These layers are sometimes so numerous, that as many as 150 have been separated on a single tree.

When young, the bark is overspread with a thin transparent skin, called cuticle, which may be pulled off, and which allows the green matter with which its cells are at that time filled to be seen through it; but this is soon ruptured by the expansion of the bark, and is never renewed. The green matter forms a cellular envelope called *epiphlœum*, which, after exposure to the air, becomes brown, and loses its vitality; so that the bark of an exogenous tree consists, after a year or two, of living matter in the inside, and of dead matter on the outside. There is a perpetual tendency to throw the dead part off, which is evinced either by rending into perpendicular fissures, such as are seen upon old trunks, or by peeling away layer after layer, as in the birch-tree, or by the rejection of irregular plates of inconsiderable size, as in the plane-tree. The cork of commerce is formed by the expansion of the suberous layer, or *mesophlœum*, and is the dead part of the bark of the cork-tree, which is readily separated at the time when the living portion adheres firmly to the wood.

That the bark of Exogens is thus continually perishing externally and renewing internally, is proved by a very simple experiment. Let a name be cut upon the bark of a rapidly growing tree; in a few years the letters will have disappeared. Or let a nail be driven into the bark; in time its head will be distinct from the substance in which it was originally buried, the upper part will next become visible, and in course of time the nail will be entirely thrown off.

In Endogens the only alteration which takes place in the bark, from the period of its first formation, consists in its becoming more fibrous, and losing its green colour. In Acrogens it becomes simply harder.

The bark is always of considerable thickness in proportion to the wood, especially in younger

branches, and it contains a considerable quantity of air in the cavities of its cells. These two circumstances render it well adapted for one of its functions, namely, that of protecting its newly formed wood and its own liber from the effect of changes in temperature. This is more amply provided for in trees of cold climates than in those of hot ones. For example, the bark of the Douglas fir, which bears the utmost inclemency of cold on the north-west coast of America, is exceedingly thick; and in the birches, which are among the most hardy of northern trees, it is the quantity of air which lies among the tissue that gives to their bark the white appearance for which it is remarkable, and that, from its buoyancy, renders it particularly well adapted for the sides of canoes.

Another supposed function of the bark is the carrying downwards those juices which have been elaborated in the leaves. There is, however, reason to question whether there is a descent of the sap of this kind. All the peculiar secretions of plants are undoubtedly formed in the cells in which they are found, and the notion of the descent of the sap has been founded on the fact of a general diffusion of the sap throughout every part of the plant.

It sometimes happens that bark has another and a different function to perform, as in what are called succulent plants, which have no leaves except rudimentary organs, that perish almost as soon as they are generated: such are *stapelias* and *cacti*. In these subjects the bark undoubtedly performs the function of the leaves.

It is in bark that we find the essential principles of the oak, the larch, and other trees used by tanners; and of the cinnamon, the cinchona, and other aromatic or febrifugal species; and that we procure, by wounding it, such matters as resin and gum, which readily flow from incisions made in it. As all such secretions are formed in consequence of evaporation from the leaves, it would follow that the proper time for collecting them is at the period when the leaves have performed their office for the year, and all superfluity of moisture has been parted with: this period is winter, or the season of torpor. But, as at that time the liber adheres firmly to the wood, the spring is more frequently chosen for barking; and theory would say, that the proper time is just at the moment when the sap begins to be in motion, and the liber and sap to separate, and before the secretions have been diluted or dissolved by the ascent of fluid from the earth. But this will obviously depend upon the nature of the substance which is sought for: for example, the greatest quantity of tannin is found in the youngest liber; therefore, bark for tanners' purposes should be stripped just before it begins to adhere to the wood after the leaves are fully formed, and when they are in full action; because at that time the whole of the liber which is formed during the year is developed, and few chemical changes have begun to take place in its constituent parts. Turpentine, again, will only flow in the summer; and therefore that which is to be obtained by a spontaneous emission must be sought for at that season.

Independently of its chemical properties, bark is of great occasional importance for its organic products. The woody tubes of the liber are often so tough as to be fit for cordage; and ropes have been manufactured from that of the willow, the lime, the cocoa-nut, the *hibiscus tiliaceus*, and many other plants. The liber of the lime-tree, the bread-fruit tree, and the paper mulberry, is torn into slips and manufactured into useful mats; or, in the case of the two latter, is macerated and beaten in water till it becomes thin enough to be used as linen. A most elegant preparation of the liber is obtained from the lace-bark tree of Jamaica, a kind of spurge-laurel (*Daphne*): in that plant it is very white, separates freely into a great number of layers, and may be easily converted into a substance very much resembling lace. This is effected simply by pulling the liber sideways, when its woody tubes separate into a delicate net-work of lozenge-shaped meshes.

BARK. Several kinds of bark, being used for processes in the arts or for medicines, enter largely into commerce. Of the former class are oak bark, cork bark, mimosa or wattle bark, and quercitron bark; and the most important among the latter is Jesuits' or Peruvian bark. [CINCHONA.] Some others, such as CINNAMON and CASSIA, are noticed elsewhere.

Oak bark is extensively, and was formerly almost exclusively, used in tanning, for which it is valuable on account of the large proportion which it contains of the peculiar astringent called *tannin*. Sir H. Davy has shown that 8½ lbs. of oak bark are equal in efficiency to 2¼ lbs. of galls, 3 lbs. of sumach, 7½ lbs. of the bark of the Leicester willow, 11 lbs. of the bark of the Spanish chestnut, 18 lbs. of elm bark, or 21 lbs. of common willow bark. The quantity of tannin, however, varies both with the age of the trees, and with the season in which they are cut; being more abundant in the bark of young than of old trees, while if taken in the spring the bark has four and a half times the quantity, in a given weight, that it would have in the winter. For the mode of using oak bark, see TANNING.

Cork bark, or *Cork*, is the outer bark of an evergreen oak (*Quercus suber*), which grows abundantly in Portugal, Spain, the south of France, and Italy. Most of the cork bark used in Europe is supplied by Spain and Portugal, but that of the best quality by France. As the cork is really dead bark, it may be carefully removed without injuring the tree, which may be stripped every eight or ten years, beginning when it is fifteen years old. At each successive stripping the produce becomes greater in quantity, and better in quality. The inner bark, which contains much tannin, cannot be removed without destroying the tree. Cork bark is usually charred lightly when taken from the tree, to improve the texture by closing the pores; but this process, which is liable to impart a disagreeable flavour to liquors stopped with cork so treated, is not required for the thinner but closer layers of young bark. The lightness of cork recommends its use as floats for fishing-nets, for life-preservers, for insuring the buoyancy of life-boats, and for similar purposes;

while its compressibility and elasticity, being combined with a closeness of pore which prevents the passage of liquids, render it valuable for stopping bottles and casks.

Mimosa, or *Wattle bark*, is collected from two species of Mimosa which abound in New South Wales, Van Diemen's Land, and New Zealand, where it is employed in tanning. It contains about 150 lbs. of pure tannin in a ton of bark, which is about three-fifths of the proportion yielded by the best white oak bark; and it imparts a reddish colour to the leather.

Quercitron bark is the produce of the *Quercus nigra*, or *tinctoria*, a North American oak, and is used as a yellow dye. The colouring matter resides wholly in the inner bark; and care is needful in extracting it to avoid any admixture of the tannin of the bark, which would give a brown tinge.

BARK, PERUVIAN. [CINCHONA.]

BARK-BED, in Horticulture, is a bed formed of the spent bark used by tanners, placed in the inside of a brick pit in a glazed house, constructed for forcing, or for the growth of tender plants.

The object of a bark-bed is to produce artificial warmth by the fermentation of the materials of which it consists, and at the same time to keep the atmosphere of the house constantly damp. Gardeners use it for all plants which require what they call bottom heat, that is to say, for all species which are natives of tropical climates, and for pine-apples especially; but it is not employed in the cultivation of greenhouse plants, except sometimes for striking their cuttings.

In constructing a bark-bed, the coarsest bark which can be obtained after the tanners have used it should be selected, because it is found that the slowness of the fermentation and consequently the steadiness of the heat given off, is in proportion to the size of the fragments of bark employed: small tan, broken into minute pieces by machinery, although often the only material to be had, should consequently never be used if it can be avoided. After having been slightly dried by being spread in the sun, the tan is first laid in heaps, covered with mats, until fermentation has commenced; it is then transferred to the brick pit, in which it is finally to remain. Having been lightly but evenly arranged in the pit, and the glass roof of the house having been closed, the tan is left to undergo fermentation; which at first is violent, evolving more heat than any plants could bear. But in a few days it subsides; and when the temperature of the bed has fallen to 96° it is in a proper state to receive the pots, which are to be plunged in it. The heat will gradually, but very slowly diminish to 60°, below which it is scarcely desirable, in the opinion of gardeners, that the tan should be retained; but the temperature may a second time be raised to 70° or 80°, by turning the tan over, or fermentation may be further renewed by the addition of a small quantity of yeast. The temperature of the tan is generally judged of by feeling the end of a stick which is thrust into the centre of the bed; but, as it is impossible to use so rude a test as this with any accuracy, it is now more customary to employ what is called a Breegazzi's thermometer, which consists of a common thermometer introduced into the hollow end of a pole, and thus protected from being broken when thrust into the tan.

BARKAL, JEBEL BARKAL, an isolated sandstone-rock in Nubia, about a mile from the right bank of the Nile, in 18° 31′ N. lat., and 31° 46′ E. long. The rock rises abruptly on all sides, and quite perpendicularly on the side towards the river, to the height of nearly 400 feet, forming a wide plateau at the summit. Its circumference at the base is about twenty-five minutes' walk. The remains of several great temples lie between the mountain and the river. The most remarkable are that called the Typhonium, and the Great Temple. The Typhonium, the best preserved of all, was dedicated to Typhon, or the evil genius, as appears from several figures of Typhon still remaining. The temple is 108 feet in length; its entrance faces the S.S.E. The fore-part of the temple is a regular construction; and the further or inner part is excavated in the rock itself.

The Great Temple, one of the largest monuments in Nubia, is at some distance from the rock; it was entirely a constructed edifice, but the walls are now a heap of ruins, and the bases and fragments only of its seventy-eight pillars are discernible. Two enormous propyla, each 65 French feet long and nearly 40 feet in thickness, form the front of the temple; the entrance between them is 13 feet wide. The first, or outer hall, is 126 feet long and somewhat less in width; the lateral walls are 7 feet thick. The second hall is 146 feet long and 85 feet wide. The third chamber is 53 feet long and 41 feet wide, and it was separated by partition-walls from two lateral chambers of smaller dimensions. A passage 13 feet wide leads from this chamber into the next. It is 36 feet square, and also stands between two lateral chambers. At the farthest end, facing the entrance, is an altar of grey granite, 4 feet 9 inches square at the base; the sides are beautifully sculptured. Behind the granite altar is a narrow opening which leads into various small chambers, communicating with each other. These formed the farthest extremity of the building, the whole length of which is nearly 500 feet, according to Rüppel, in a line S.E. by S. and N.W. by N., the front being to the S.E.

Before the northern entrance of a ruined building, two lions of red granite were found. They are about seven feet in length. These two lions were brought from Barkal by Lord Prudhoe, in 1832, and they are now placed at the entrance of the Egyptian Room in the British Museum. The material is a flesh-coloured granite; and the execution possesses a high degree of merit. Both of the lions are in a reclining posture, one lying on his right side and the other on the left.

At a quarter of an hour's distance from Mount Barkal, and both to the N.W. and S.W. of it, are two groups of small pyramids, many of them in good preservation. The largest of these which are entire is about 40 feet high. Several of them

have small exterior temples attached to one side, with an outer door and an inner one walled up, leading apparently into the interior of the pyramid. The first European traveller who visited the ruins of Barkal was Mr. Waddington; he was followed by Cailliaud in 1821; and Cailliaud was followed by Dr. Rüppel in 1824–5, who has given a very minute description of them.

(Waddington's and Hanbury's *Visit to Ethiopia;* Cailliaud, *Voyage à Meroë;* Rüppel, *Reisen in Nubien, Kordofan, und Petrläischen Arabien.*)

BARKER, ROBERT, born at Kells in the county of Meath, Ireland, was the inventor and patentee of panoramas. He practised originally as a portrait-painter in Dublin and in Edinburgh. The first picture of the kind which he painted was a view of Edinburgh, exhibited in Edinburgh in 1788, and in London in 1789, but with indifferent success. His second panorama was a view of London from the Albion Mills, and it was exhibited, with complete success, in Castle Street, Leicester Square, and afterwards in Germany. He built, and opened in 1793, with a panorama of Spithead, the present panorama exhibition-rooms in Leicester Square, now the property of his son, who has surpassed his father in the same description of painting. He died in London, in 1806.

BARKER, EDMUND HENRY, was born in December, 1788, at his father's vicarage of Hollym, in Yorkshire. He entered in 1807 as a student of Trinity College, Cambridge, but he did not take a degree, having (it is said) scrupled to subscribe the bachelor's oath. Upon leaving the university, he became amanuensis to Dr. Parr, in whose house at Hatton he resided for several years. He then married and settled at Thetford, in Norfolk. The last few years of his life were marked by painful reverses of fortune. They were spent chiefly in London, where he died, after a short illness, on the 21st of March, 1839.

Mr. Barker's labours as a writer and editor were very great. He was a constant contributor to Valpy's 'Classical Journal.' He edited, with English notes, for the use of schools, portions of several of the classics, both Greek and Latin; among which were Cæsar, Tacitus, and Cicero, Xenophon, and Demosthenes. He superintended the English impression of Anthon's edition of Lemprière's 'Classical Dictionary,' and of Noah Webster's 'English Dictionary.' He also joined with Professor Dunbar in the compilation of a Greek and English Lexicon. Mr. Barker was also, as is universally understood, the real efficient editor of Valpy's reprint of Henry Stephens's 'Thesaurus Græcæ Linguæ,' Lond. 1816-1828, 10 vols. fol.

BARKER, BENJAMIN, a landscape-painter of Bath, and the brother of the more distinguished Thomas Barker. His works are little known. He was however a painter of considerable ability: his execution was happy and natural, and he was equally happy in the spots which he selected for the subjects of his pencil. He published a set of 48 views, engraved in aquatinta by Theodore Fielding. He died in March 1838, aged 62. (*Art Union*, February, 1843.)

BARKING. [ESSEX.]

BARKWAY. [HERTFORDSHIRE.]

BARLAAM. This person would be of very little consequence, but for the fact that he is nearly the last of those who wrote in Greek on mathematics, and that his work is a curious illustration of the arithmetic which preceded the introduction of algebra and the Indian notation. Bernard of Seminara in Calabria was born about the end of the 13th century. He took the vows as a member of the order of St. Basil at an early age, and the name of *Barlaam* at the same time. He died probably about 1348.

The mathematical work of Barlaam consists entirely of arithmetic and arithmetical geometry, then called Logistic. It was written in Greek, in six books. The first book is on the addition and subtraction of fractions; the second on their multiplication and division; the third on the multiplication and division of sexagesimals; the fourth on operations with surfaces and lines by means of numbers; the fifth on ratios, the sixth on numerical data. Delambre has reviewed the third book ('Hist. d'Astrom. Anc.,' v. i. p. 320.) It altogether gives us but a poor idea of the science of the age, and justifies Delambre's remark, that Barlaam must have had more leisure than ingenuity.

Barlaam is said to have written a work on right-angled triangles; and there is in the catalogue of De Thou's library the title of a work of his as follows: 'Arithmetica Demonstratio eorum quæ Euclides Libro II. in Lineis demonstravit.' (No date or place.)

BARLÆ'US, or CASPAR VAN BAERLE, was born at Antwerp, in 1584, studied theology at Leyden, and took orders. In 1617 he was made professor of logic in the University of Leyden. Having taken the part of the Arminians against the Gomarists, he was dismissed from his situation in 1619. He then applied to the study of medicine, in which he received his doctor's degree at Caen in Normandy. In 1631 he was made professor of philosophy and eloquence in the newly established University of Amsterdam. He died at Amsterdam in 1648. He wrote numerous works, chiefly in Latin; several poems, 2 vols. 8vo., Amsterdam, 1645; an interesting history of Brazil, under the administration of Maurice, count of Nassau, with the following title, 'Rerum per Octennium in Brasilia et alibi nuper gestarum sub Præfectura J. Mauritii Nassoviæ Comitis, Historia,' fol., Amsterdam, 1647. Brazil was then possessed partly by the Dutch, and partly by the Portuguese. Among his Latin poems is 'Britannia Triumphans,' which was written on the accession of Charles I. to the throne. Barlæus's Dutch poems are written in an easy and pure style, and contain many fine conceptions. His 'Epistolæ' were published after his death, 2 vols. 8vo., Amsterdam, 1667.

BARLE'RIA, a genus of plants belonging to the natural order *Acanthaceæ*. The species are natives of various parts of the East Indies: a few of them have been introduced into our gardens, of

which *Barleria lupulina*, with its large bracts resembling hops, and *B. prionitis*, a common swamp plant in Java, are the most remarkable. They all require to be cultivated in a hot-house, and are propagated readily by cuttings.

BARLETTA, a large seaport town in the province of Bari, in the kingdom of the Two Sicilies, is situated on the Adriatic, 112 miles E.N.E. of Naples, in 41° 20′ N. lat., and 16° 18′ E. long.; population 28,000. The town is well built, and the streets are wide and well paved. The harbour is protected by a mole and by a small island, on which a lighthouse is built; it is frequented by vessels of small burden, not having depth enough for larger ships. In one of the principal streets, near the church of St. Stephen, is a colossal bronze statue, 17 feet high, said to be that of the Emperor Heraclius. The cathedral of Barletta is a Gothic building, with a high steeple; in the interior are some ancient granite pillars brought from Canosa. Barletta is surrounded by an old wall, and has a citadel which commands the harbour. It is a thriving place, and one of the most pleasant provincial towns of the kingdom. It is much frequented by Dalmatian traders, and has an important trade in corn [Bari, Terra di], salt, wool, lamb and kid skins, and other produce.

BARLEY is a grain too generally known to require a minute description. It is readily distinguished from other grain by its pointed extremities, and by the rough appearance of its outer skin, which is the corolla of the flower closely enveloping the seed, and, in most varieties, adhering strongly to it. [Hordeum.]

Of all the cultivated grains, barley is perhaps that which comes to perfection in the greatest variety of climates, and is consequently found over the greatest extent of the habitable world. It bears the heat and drought of tropical regions, and ripens in the short summers of those which verge on the frigid zone. In genial climates, such as Egypt, Barbary, and the south of Spain, two crops of barley may be reaped in the same year, one in spring from seed sown the preceding autumn, and one in autumn from a spring sowing.

Agricultural writers in general have distinguished the different species of barley, either from the time of sowing them, into winter barley and spring barley; or, from the number of rows of grains in the ears, into six-rowed, four-rowed, and two-rowed, or flat barley. Another distinction may be made between those which have the corolla strongly adhering to the seed, and those in which it separates from it, leaving the seed naked; from which circumstance these are called naked barleys. Without entering into any discussion whether these differences are sufficient to constitute distinct species, or are to be considered as varieties produced by climate, soil, or cultivation, we shall only observe that those kinds which are hardier, and will bear the winters of our climate, may also with success be sown in spring, as is the case with the Scotch bere or bigg. There seem, in fact, to be only two very distinct species of barley generally cultivated: one which produces three perfect flowers, and as many seeds united at the base, at each joint of the *rachis*, or middle of the ear, alternately on each side, and another, in which the middle floweret is perfect, and the two others barren, forming a flat ear, with only one row of grains on each side, as our common spring barley. The first species has sometimes the middle floweret small or abortive, and consequently only four rows of grains, giving the ear a square appearance, but that this is only an occasional deviation is proved by its returning to the perfect ear with six rows, in rich soils, and under proper cultivation.

Winter barley is mostly sown in those countries where the winters are mild, and the springs dry, as in the south of France, Italy, and Spain, or in those where the snow lies deep all the winter, and where the sun is powerful immediately after the melting of the snow in spring, as is the case in parts of Russia, Poland, and some parts of North America. In most climates, where the winter consists of alternate frost and thaws, and the early part of spring is usually wet, as is the case in England, Scotland, and Ireland, the young barley is too apt to suffer from these vicissitudes, and the spring-sown barley gives the more certain prospect of a good crop: but the grain of the latter is seldom so heavy as that which has stood the winter, and, being harvested later, it interferes with the wheat harvest, which is an inconvenience.

The winter-sown barley is generally of the six-rowed sort, of which the bere or bigg is an inferior variety, but being hardy, and of rapid growth, it is well suited to exposed situations and inferior soils. The Siberian barley, a variety of which, with naked seeds, has been highly extolled by foreign agricultural writers, especially by Thaer, under the name of *Hordeum cœleste*, seems to be a superior sort in rich soils, not only for its heavy and nutritious grain, in which particulars it is said to approach to the quality of rye, but also for its succulent stems and leaves, which make it by far the best sort to sow for the purpose of green food, for cattle and sheep; and, if fed off early, the roots will, in a rich soil, shoot out an abundance of fresh stems, and produce a good crop of grain at harvest.

The barley most commonly cultivated in England is that which has only two rows. It is almost universally sown in spring. The varieties produced by difference of soil and cultivation, as well as by seed occasionally brought from other countries, are innumerable; they have been divided by most agricultural writers into the early ripe sorts and the late ripe, from the period of their being fit to reap. But this is a distinction which is not very accurate. It is well known that hot gravelly soils bring any grain to perfection in less time than the stronger and colder soils, and that the produce acquires from the soil in which it grew a disposition to ripen earlier or later. This property it retains for a few seasons, by some modification of its vegetating power, to which, for want of a better name, that of *habit* may be given, being analogous to the alterations produced on living animals by habit. Thus seed sown repeatedly in a light dry soil becomes early ripe, and that sown on heavy moist land late ripe,

although originally the same. The early ripe grain is always less heavy than the late ripe; and from these circumstances the experienced cultivator of barley chooses his seed from such land as may modify the habit produced by his own, giving him a crop with as heavy a grain as his soil can produce, and within a convenient period.

The cultivation of all the varieties is nearly the same, and is best understood in the counties of Essex, Norfolk, and Suffolk, in which a great quantity of excellent barley is produced and malted for the London market. In the light soils, barley is, invariably sown after turnips, which have been fed off the land by sheep, or been drawn to feed the cattle in winter in the yards or stalls, who, by means of an abundance of litter, make a vast supply of manure ready for the next turnip crop.

When the soil is of a strong compact nature, but fertile at the same time, and turnips cannot well be fed off the land, nor taken off in carts, on account of the damage which would be done to the soft moist soil in winter, by the tread of the sheep, or the wheels of the carts, recourse is sometimes had to a long fallow during eighteen months, from harvest till the second spring, giving the land the benefit of two winters' frosts, a tillage in autumn, in summer, and in two springs. Thus the land is perfectly cleaned, and, if properly managed, quite mellow and fine; and the barley sown on such land always produces a crop, not only abundant, but of the best quality. The loss of time by so long a fallow is amply repaid by the state of the land and the subsequent crops. It was once the universal custom to sow wheat after a fallow, and barley after wheat, unless clover was sown with the wheat, which was the first step to improvement; but after the barley another fallow became necessary. By sowing barley after the fallow, the land is much more perfectly cleaned, and the clover sown with the barley is the best preparation for the wheat, which may be succeeded by beans; and, if these are well manured and properly hoed, another crop of wheat may be taken before a second fallow is necessary. By comparing the probable produce of the two different rotations, the advantage will be evident in favour of that which begins with barley.

The quantity of barley sown formerly was four or five bushels per acre: but, if the land is duly prepared and the seed good, from two to three bushels is an ample allowance, especially if sown by the drilling machine, which it always ought to be; for, if the land be too rough to allow of drilling, it is scarcely fit to sow barley in, and oats will be a more advantageous grain.

The proper time for sowing barley depends much on the season and the state of the land. The best practical rule is, to sow as soon after the middle of March as the ground is dry. Earlier sowings may sometimes succeed well, but in this climate cold wet weather often prevails in the end of February and beginning of March, and this is by no means favourable to young plants of barley. The early-sown crops are however in general the heaviest, especially the sorts which ripen later: they require less seed, having more time to tiller before the hot weather draws up the stems. There are, however, seasons when the later-sown crops are the best. A good rule is to sow a quick-growing sort when the sowing is unavoidably deferred, and in this case more seed must also be allowed.

The depth at which the seed should be deposited depends on the nature of the soil and on the season. Winter barley need only be slightly covered, and will tiller astonishingly in good light soils. As a general rule, a depth of from one and a half to three inches, according to the nature of the soil, is most likely to enable the seed to sprout well, and give a sufficient hold of the land by the roots to avoid the danger of lodging. It is of consequence that all the seeds be deposited at a uniform depth, to ensure their shoots rising at the same time: for, where some rise earlier and some later, it is impossible to reap the whole in good order; some of the ears will be too green, while others are shedding the seed from being too ripe. This is one reason why the drilled crops are, in general, so much more regular in their growth than the broadcast. After sowing barley it is useful to pass a light roller over the land, across the stitches, if there are any, to press the earth on the seed, and prevent too great evaporation of the moisture. When the plants begin to tiller, another rolling, and in some cases a slight harrowing, to loosen the surface and thin out the plants where they grow too close, is very useful. This also is the best time to sow clover and grass seeds, if not done with the first rolling.

The practice of sowing clover, rye grass, or other seeds, with the barley, is almost universal, and is considered as one of the great modern improvements in agriculture.

As soon as the ears of the barley begin to droop and lose their purple hue, acquiring a light straw colour, before the grain is quite hard, it should be reaped. This is usually done by mowing it with a scythe, having a hoop, or an appendage called a *cradle*, fixed to it, so as to lay the swathe regularly: but where there is a sufficient supply of labourers, at reasonable wages, it is far more profitable to have it reaped with the sickle, or, what is better, with the Haynault scythe, a short broad scythe used with one hand, while a light hook is held in the other to lay the straw even, so as to be readily tied up into sheaves. A little practice enables a man to reap twice as much corn in the same time with this instrument as with the reaping-hook. Binding into sheaves is a great advantage; much less corn is shed, which, in the common method of raking into heaps, often amounts to more than would fully sow the same extent of land. The sheaves set up on end are in less danger from the weather, and, when the stack is built, all the ears may be laid inward and much grain saved, which, if on the outside, would soon be the prey of birds: smaller stacks may be made, and the danger of heating entirely avoided.

Barley requires care in thrashing, to break off all the awns close to the grain. A thrashing machine does not accomplish this perfectly by only

once passing the straw through the rollers; it is consequently usually put through a second time, especially if it has not been tied into sheaves. It is often necessary, after the barley is thrashed, to effect this by another operation, which is called *hummeling*, for which purpose several different kinds of instruments are used.

The diseases to which barley is subject while growing are those which attack all other grain—the smut, the burnt ear, blight, and mildew; but it is less liable to these than wheat. The greatest enemy is a wet harvest. It is so apt to germinate with the least continuance of moisture, that even before it is reaped it often exhibits an ear in full vegetation, every grain having sprouted. It is then of little value, and even when this is checked by dry weather, or in the kiln, the grain is so impaired as to be fit only to feed fowls and pigs. A strong plant of clover, by keeping the wet longer about the barley, often contributes to increase this evil, as has been hinted before.

The principal use of barley in this country, and wherever the climate does not permit the vine to thrive, and no wine is made, is to convert it into malt for brewing and distilling. The best and heaviest grain is chosen for this purpose, and, as it must have its germinating power unimpaired, the least discoloration, from rain or heating in the stack, renders it suspected, and consequently not so saleable. It is, however, still fit for being ground into meal, for feeding cattle and pigs, when it is not used for human food; or it may be made into pot barley by the process of shelling.

The produce of barley on land well prepared is from 30 to 50 bushels, and more, per statute acre, weighing from 45 to 55 lbs. per bushel, according to the quality. It is said to contain 65 per cent. of nutritive matter; wheat contains 78 per cent. A bushel of barley weighing 50 lbs. will therefore contain about 32 lbs. of nutriment; while a bushel of wheat weighing 60 lbs. contains 47 lbs. Good oats weighing 40 lbs. contain about 24 lbs. of nutritive substance; so that the comparative value of wheat, barley, and oats, in feeding cattle, may be represented by 47, 32, and 24, the measure being the same.

Barley has always been considered as possessing medicinal virtues; decoctions of it have long been used for the sick, especially in all pulmonary complaints; and, with the addition of some vegetable acid, it is extremely grateful in fevers, allaying thirst, and giving such a degree of nourishment as is indispensable, without exciting the circulation.

BARLEY, PEARL, is the small round kernel which remains after the skin and a considerable portion of the barley have been ground off. Barley from which only the outer husk or skin has been removed is called *Pot Barley*.

Both these preparations of barley are made by means of mills constructed for the purpose, and differ only in the degree of grinding which the grain undergoes. In the mill originally used, and still common in Germany and France, the barley is rubbed between a pair of small mill-stones, the upper one of which has several grooves in its lower surface, mounted at such a distance from one another, that they rub without breaking the grains. The mill-stones are surrounded by a case, the rim of which is formed of thin plates of iron perforated from the outside with a punch, so as to resemble a nutmeg-grater; and the dashing of the grain against its rough surface, when it is thrown out from between the stones, completes the rubbing off of the husk or skin; and leaves the grain naked and slightly rounded. This is *pot-barley*; and *pearl-barley* is produced by continuing the process until a further portion of the outside of the grain is rubbed off. The powder or meal which flies off through the perforated case forms excellent food for cattle, pigs, and poultry. In some such mills, a grooved apparatus of hard wood is substituted for the upper stone.

In another kind of mill, originally introduced from Holland, and generally used in Scotland, an ordinary grindstone of about 3 feet in diameter is made to revolve upon an horizontal axis, while a perforated case, similar to that above described, surrounds it, and revolves in the same direction, but with a much slower motion. The barley is put in at an opening in the circumference of the case, and the effect is produced by the violent tossing which it receives between the stone and the case. This kind of mill is much more easily constructed and kept in order than the former, and is well adapted for use with hand-labour.

Pot and pearl-barley are very wholesome and nutritious, and it is to be regretted that they are not more used as food by the labouring classes in England, as they are in Scotland, Germany, and Holland. The essential oil of barley, which gives it its peculiar taste, resides chiefly in the skin and adjacent parts of the grain; the interior is a purer farina, more nearly resembling that of wheat. This farina, obtained by grinding pearl-barley in a common mill, is called patent barley, and used extensively for making barley-water; but if the essential oil possesses any medicinal properties, it is evident, from what was observed before, that common pot-barley would be preferable for making a decoction of barley when prescribed as a remedy. The great use of pot and pearl-barley is in broths, stews, and puddings, as a substitute for rice. It swells, and unites well with the fat and oily matter extracted from meat in boiling. Even the bran, having been steeped in water, and allowed to ferment till it becomes acid, is relished by the lower orders in the mess called *sowens*. In Holland, pot-barley, boiled in butter-milk and sweetened with treacle, is a common mess for children and servants.

BARLEY, POT. [BARLEY, PEARL.]

BARLEY-BREAK, a popular pastime often referred to by old writers, played by six people, three of each sex, from which, according to Nares's 'Glossary,' our very puerile game of *tag* seems to be derived. The name seems to have some connection with the custom of playing it among the stacks in a corn-yard.

BARLOW, FRANCIS, painter and engraver, born about 1626. He was instructed by a portrait-painter, but he preferred landscapes, birds, fishes, and animals, in which he excelled. John Overton published 12 prints by Hollar, after Barlow,

representing various sports, of hunting, hawking, and fishing. Barlow etched some of the plates of his own illustrations to Ogilby's translation of Æsop's Fables, and also part of the plates in the folio book of poems entitled 'Theophila,' published for Edward Benlow in 1652. There is also a book of birds by Barlow, engraved by W. Faithorn. He died in 1702.

BARLOW, JOEL, an American author and diplomatist, was born about 1754. In 1774 he entered as a student at Yale College, Newhaven. In 1778 he took the degree of Bachelor of Arts, and, on leaving college, at first applied himself to the study of the law. Four of his brothers were in the revolutionary army; and he had himself, as a volunteer, been present at several skirmishes and one severe conflict. Some friends advised him to qualify himself for the office of a chaplain in the Massachusets line of the American army, and accordingly he applied with diligence to theological studies for about six weeks, at the end of which he was licensed to preach as a congregational minister, and immediately after repaired to the army. Barlow remained in this situation until the end of the war. In 1781 he married Miss Baldwin of Newhaven, and during the same period he occasionally occupied himself in the composition of patriotic songs and addresses, which, with those of Dr. Dwight and Colonel Humphreys, are considered to have had much effect in inspiriting the American soldiers. While in the situation of chaplain, he also planned and nearly accomplished a poem on the discovery and prospects of America.

When Great Britain acknowledged the independence of the United States, in 1783, Barlow declined the duties of a parochial minister, and reverted to his original profession of the law. With this view he proceeded to Hartford, where he established a weekly newspaper. He also employed himself in preparing for the press his poem, 'The Vision of Columbus,' which was published by subscription in 1787. He went to England in 1788, and upon the breaking out of the French Revolution became actively engaged in London with the more prominent supporters of republican principles, and published some political works displaying as much violence as ability. He was one of a deputation sent by the Constitutional Society to the French Convention. Having settled in Paris, he engaged in commercial speculations, and realised a considerable fortune. In 1795 he received from his own country the appointment of consul-general at Algiers, with instructions to proceed to Barbary and conclude treaties with the several states for the purpose of procuring the liberation of such American citizens as were kept in slavery. He accomplished this benevolent work, and then returned to Paris, where he resumed his commercial operations, and continued to reside till 1805, when, after an absence of seventeen years, he returned to his native country. After his return, Barlow appears to have chiefly employed himself in altering his 'Vision of Columbus' into the form in which, in the year 1808, it finally appeared under the title of 'The Columbiad.' In attempting an epic it is obvious that Barlow much over-rated his own powers. In 1811 President Madison appointed him minister-plenipotentiary to the court of France. In the year 1811 Barlow once more embarked for Europe. He landed at Cherbourg in September 1812, and immediately proceeded to Paris, where, in the absence of Napoleon, he was received by the minister of foreign affairs. It became desirable that he should have a personal conference with the emperor, who had then commenced the Russian campaign of 1812. He therefore proceeded to join Napoleon at Wilna; but he was exposed to so much privation and hardship that his strength was exhausted, and an inflammation of the lungs came on, under which he rapidly sunk into a state of extreme debility. He died on the 26th of December, 1812, at Zarnawica, a small village in the neighbourhood of Cracow.

(*Public Characters*, 1806; *Biographie Nouvelle des Contemporains*, &c.)

BARM. [YEAST.]

BARMEN, a town situated in the valley of Barmen, in the circle of Elberfeld, in the Prussian Rhein-Provinz. The valley of Barmen extends about five miles along both banks of the Wupper, between two ranges of hills which run eastwards from Elberfeld, and are about a mile and a half apart. It is literally studded with cloth-factories, cotton and silk mills, bleaching-establishments, dye-houses, soaperies, tobacco-factories, potteries, warehouses, and a variety of other buildings for the manufacture of linen, ironmongery, metal and plated goods, chemical products, &c. In the valley stand the large villages of Rittershausen, Wichlinghausen, Wupperfeld, Gemarke, and Barmen. These have been lately incorporated into one town under the name of Barmen. The united population amounts to 27,000; and the annual value of the industrial products of this busy district are stated to be nearly a million sterling. Barmen is 20 miles E. of Dusseldorf, and stands on the railway between Minden and Aix-la-Chapelle, which passes through Dusseldorf. (Balbi, *Géographie*; Macgregor's *Statistics*.)

BARMOUTH. [MERIONETHSHIRE.]

BARN, a building in which agricultural produce is stored, to protect it from the weather and keep it in safety. Such buildings are needed in all countries where the climate does not permit the corn to be thrashed in the field and immediately put into a granary; and they were formerly large enough to contain the whole produce of a farm, whether hay, corn, or straw. Owing to the improved practice of stacking hay and corn in the open air, modern barns are much smaller, their chief use being to contain a thrashing-floor, and as much corn in the straw as it may be intended to thrash out immediately.

The thrashing-floor, which is required even where thrashing-machines are used for thrashing out the smaller seeds, such as clover and the grasses, is usually in the middle of the barn, and made of stone, brick, oak, or tempered earth, those of oak, formed of planks two inches and a half thick, dowelled or ploughed and tongued together, being considered the best; and it is

often so arranged that a loaded waggon may be drawn in upon it, so as to throw the corn at once into the *bays*, or ends of the barn. As, however, this is liable to injure the floor, it is better to provide a separate covered way for the waggons at the end of the barn, in which case, if a thrashing-machine be used, the floor may be raised about seven feet from the ground, leaving a useful space beneath for the winnowing-machine, for receiving the separated corn and straw, and for other useful purposes. Where the floor is not thus raised, a free current of air beneath it is a great advantage, and will justify, in some cases, the use of beech, elm, or deal planks, instead of oak. Free circulation of air is also important in all other parts of a barn.

Barns are built of stone, brick, timber, or, in some places, of dry rammed earth in the manner termed *pisé*. [BUILDING.] If roofed with tiles, they should be bedded in coarse hay, which is more effectual than mortar in preventing the drifting of snow; and, if with thatch, reeds are to be preferred to any other material, because they afford no lodgment for vermin, and afford an excellent protection against the weather.

Hay is now seldom put in a close barn, experience having shown that it keeps much better in the open air in ricks. But where a considerable quantity of hay is tied up in trusses for the market, it is extremely useful to have a building with a roof to protect them from the wet, and to load the carts under shelter. For this purpose a kind of barn is contrived, which some call a *Dutch barn*, but which may very properly be called a *skeleton barn*, being the frame of a barn without the boarding. Another contrivance, of similar character, is used in Holland, in which a pentagonal thatched roof is made to slide up and down a series of vertical poles, on which it may be secured by pins at any required elevation. The lower ends of the poles are well braced together by a timber framing, which rests upon a brick foundation. Its chief use is for hay, which may be deposited safely in either large or small quantities, the roof being raised when additions are made, and lowered as the hay is taken off the top for use.

BARNABAS, ST., though not of the number of the twelve chosen by our Saviour, is nevertheless styled an apostle by the primitive fathers, as well as by St. Luke, to whom that portion of the Scriptures called the 'Acts of the Apostles' is ascribed. (Acts xiv. 14.) Barnabas's divine vocation, and the share he took in the apostolic labours, obtained him this title. From St. Luke also we learn (Acts iv. 36) that he was by descent a Levite of the country of Cyprus, then largely inhabited by Jews, and that his first name was Joses, or Joseph. He received that of Barnabas (meaning 'the son of consolation') from the apostles, as appropriate to his character for pre-eminence in works of charity. The 'Laudatio S. Barnabæ Apostoli,' by Alexander, a monk of Cyprus, says that his parents brought him in his youth to Jerusalem, to Gamaliel, by whom he was instructed in the law and prophets with St. Paul. (See also Baronii 'Annal.' ad ann. xxxiv.) There is at least probability in this, as he was the person to whom St. Paul applied, shortly after his conversion, to introduce him to the society of the Apostles. The first mention of Barnabas in Scripture is in one of the passages already quoted, where (Acts iv. 34) it is related that the primitive converts at Jerusalem lived in common, and that as many as were owners of lands or houses sold them, and brought the price, and laid it at the apostles' feet; on which occasion, with the exception of Ananias (in the next chapter), no one is particularly mentioned but Barnabas. Barnabas afterwards preached the gospel in different parts, together with St. Paul (Acts xv. 36); but upon a dissension about the person who was to accompany them in a journey which they proposed to the churches of Asia, which they had planted, they separated from each other: Barnabas went with Mark (the person about whom the dispute originated) to Cyprus; and Paul went with Silas to Cilicia. What became of Barnabas after this, or whither he went, is uncertain. The manner of Barnabas's death is also uncertain.

There is still extant an epistle ascribed to St. Barnabas, consisting of two parts. The first is an exhortation and argument to constancy in the belief and profession of the Christian doctrine; particularly the simplicity of it, without the rites of the Jewish law. The second part contains moral instructions. This epistle was written in Greek; but Lardner says that the first four chapters, or sections, and a part of the fifth, are wanting in the Greek copies. It is, however, entire in an ancient Latin version. Archbishop Wake has printed a translation of it. In this epistle there is no express mention of any book of the New Testament; but there is a text or two of the New Testament in it, with a mark of quotation prefixed; and the words of several other texts are applied. From one passage it seems evident that the Temple of Jerusalem was destroyed at the time of writing it. Lardner thinks that this epistle is probably by Barnabas, and certainly ancient, and written about A.D. 71 or 72.

BARNACLE, or BERNICLE (*Lepas*), a genus of marine animals, the body of which is inclosed in shelly valves. [CIRRIPEDA.]

BARNACLE-GOOSE (*Anser Bernicla*). [BERNICLE-GOOSE.]

BARNARD, SIR JOHN, was born at Reading in Berkshire in 1685. His parents being of the sect called Quakers, he was educated in a school at Wandsworth in Surrey, under a teacher of that persuasion, but he conformed, in his nineteenth year, to the Church of England, and was baptized at Fulham by Dr. Compton, then Bishop of London. He ever afterwards continued a zealous member of the established Church.

When only fifteen years of age, young Barnard was taken into the counting-house of his father, who was a considerable wine-merchant in London, and such were his assiduity and aptitude for business, that the principal management of the concern was soon intrusted to him. When thus engaged, he was chosen to argue the case of the wine merchants against a bill supposed to affect

their interest then pending in the House of Commons,—a task which he accomplished with so much ability and success that the bill was withdrawn. At this time Mr. Barnard was thirty-six years of age.

He was soon afterwards elected a member of parliament for the city of London, which he continued to represent during nearly forty years. From his first election he constantly took an active part in the debates, and, owing to his knowledge upon commercial and financial questions, proved a very useful member of parliament; he generally voted with the party opposed to the administration of Sir Robert Walpole. In 1730 he opposed a bill to prevent any subject of Great Britain from advancing money by way of loan to foreign princes or states, without license being first obtained from his majesty, on the grounds that it would render Holland the mart of money to the nations of the continent, that it would prevent the English merchants residing in Portugal from prosecuting a very profitable business, that of granting temporary loans to the King of Portugal, and that the clauses of the bill which went to compel the discovery on oath of loans to foreign princes would convert the Court of Exchequer into a court of inquisition. In consequence of this opposition the bill was greatly modified before it passed into a law.

In 1732 Mr. Barnard, who four years before had been elected an alderman of London, received the honour of knighthood on presenting an address to the king to congratulate him on his return from Germany. In 1737 Sir John Barnard served the office of lord mayor of London, and in the same year brought forward a plan for reducing the interest of the national debt to the general rate of interest, which was then very low. The measure proposed by Sir John Barnard was defeated by the minister proposing to include in its operation the whole of the public creditors,—a proposal which was deemed so chimerical, that the supporters of the bill gave up their object, and the measure was lost. It is somewhat curious to observe the strides that have since been made in this country with regard to financial operations. This plan has been since successfully adopted on several occasions.

In 1745, during the rebellion in Scotland, he assisted in supporting public credit, in union with many of the leading merchants of London, by binding themselves to receive the notes of the Bank of England in payment of all debts and bills. In 1758 Sir John Barnard retired from public life, and on that occasion received a vote of thanks from his fellow-citizens for his long and various services. He lived six years in retirement, and died at Clapham, Aug. 29, 1764, in the 80th year of his age.

BARNARD-CASTLE. [DURHAM.]

BARNAUL, or BERNAUL. [SIBERIA.]

BARNES, JOSHUA, was born in London in the year 1654. He was educated at Christ's Hospital, and afterwards went to Emmanuel College, Cambridge. He was elected Regius Professor of Greek at Cambridge in 1695; in 1700 he married Mrs. Mason of Hemingford, a widow lady with a good jointure, a large part of which he devoted to the publication of his Homer; in 1711 he wrote to Harley three letters, which are preserved in the Harleian Collection (Br. Mus. 7523), praying for preferment, but in vain. He died in 1712. His widow erected a monument to his memory at Hemingford. His original writings are of little value: one is a history of Edward the Third, 1686 8, fol. His name is best known for his edition of Homer, 1711, 2 vols. 4to., and of Euripides, 1694, fol.; and his name preserved from oblivion by its connection with that of Dr. Bentley. (See Monk's 'Life of Bentley.')

BARNET. [HERTFORDSHIRE.]

BARNEVELDT, JAN VAN OLDEN, was born at Amersfoort, in the province of Utrecht, in 1547, of an ancient and noble family. In 1564 he went to the Hague to prosecute his studies as an advocate. After spending five years in the study of the law, and, according to the fashion of the times, of divinity, between Heidelberg and the Hague, he settled as an advocate in the latter place in 1569. His practice soon became considerable: he was appointed one of the advocates of the court, and in 1576 was chosen counsellor and pensionary of Rotterdam. In 1575 Barneveldt married a lady who did honour to his choice.

While the struggle between the Netherlands and Philip II. was at its height, Barneveldt, who was early distinguished for his patriotic ardour and impatience of the yoke of Spain, did not let either his advocate's gown or his habits as a civilian prevent him from occasionally discharging the duties of a soldier. In 1573 he assisted as a volunteer at the memorable siege of Haarlem, and was only prevented by illness from taking part in the still more memorable siege of Leyden, in 1575.

In 1585 the prospects of the United Provinces were most disheartening. They had just lost their leader, William of Orange, to whose firmness, calm sagacity, and unconquerable zeal for his country's welfare, they were mainly indebted for their honourable position in the eyes of Europe. William fell by the hand of an assassin on the 10th of July in the preceding year. The Spanish arms, directed by the Prince of Parma, were almost every where triumphant, and it appeared hopeless to continue the struggle without the aid of foreign powers. Under these circumstances the States-General opened negotiations with France and England, from whom they had received promises of assistance. From the commencement of the struggle the inhabitants of the Netherlands were anxious for a monarchical form of government, and it became a matter of deliberation whether the sovereignty of the new state should be offered to a member of the royal family of France or to the Queen of England. Henry III. was too much engaged with the war of religious factions which then distracted his own kingdom to aid the insurgents, and accordingly referred them to the good offices of the Queen of England. On the 29th of June, 1585, a deputation, headed by Barneveldt, made a formal offer of the sovereignty of the revolted provinces to Elizabeth, who refused the proffered sovereignty,

but entered into a treaty, by which she bound herself to aid them with 5000 foot and 1000 horse, advancing at the same time a considerable sum of money, to be repaid at the end of the war. The command of these troops was entrusted to Elizabeth's favourite, Dudley, Earl of Leicester, but he was unsuccessful, soon became unpopular, and was ultimately recalled. In all the events of this period Barneveldt, who now held the office of advocate-general, or grand-pensionary, had a large share.

In 1603 the States-General despatched an embassy to England, nominally to congratulate James I. on his accession, but in reality to prevent his concluding a treaty of peace with Spain. The conduct of the embassy was trusted to the sagacity and experience of Barneveldt. No ordinary address and perseverance were required to overcome the feelings which James entertained towards men whom he did not hesitate to denounce as rebels. It jarred so much with James's high notion of the royal authority to countenance men in arms against their king, that he could not be prevailed upon to give the ambassadors a formal audience. Barneveldt was however supported by the Duke de Sully, the French ambassador, and the result of these negotiations was, that James attached his signature to a treaty drawn up by Sully, which bound the kings of France and England to aid the States by a secret advance of money, to be followed up by actual hostilities against the Spanish king if he should resent this clandestine assistance. Barneveldt failed, however, to persuade either of the kings to send an army to aid the brave defenders of Ostend, then in the third year of its memorable siege.

The truce of twelve years between Spain and the United Provinces, signed on the 9th of April, 1609, which was effected almost entirely through the influence and firmness of Barneveldt, exposed him to unworthy suspicions. Though he had obtained the means of extorting from the Spanish court a recognition of the independence of the United Provinces as a preliminary condition to all negotiation, he was denounced as one who had received bribes from that court for the purpose of establishing the Spanish yoke and the Catholic faith; and so strong was the popular delusion, and so fierce the opposition of Prince Maurice, that Barneveldt, at one period of the negotiation, resigned his office of Grand Pensionary in order to avert the calamities of a civil war. At the solicitation, however, of the States-General, he resumed his office, and, strongly supported by the ambassadors of France and England, overcame all difficulties after a struggle of two years, and a truce was concluded.

A struggle now commenced between the war and the peace party; the contest, in fact, of the civil power with the military—between Maurice the Stadtholder and Commander-in-Chief, and Barneveldt the Grand Pensionary, in which the religious feelings of the Arminians, to whom Barneveldt adhered, and the Calvinists, who were favoured by Maurice, became also strongly excited.

It is not necessary to detail the steps by which Maurice of Nassau, after a struggle of ten years, triumphed over Barneveldt and the States, and usurped the sovereign power. Barneveldt was denounced by Maurice's party as one who had sold himself and country to Spain and popery: and, as he had openly espoused the doctrines of Arminius, he was denounced by the Calvinist preachers as leagued with the Catholic monarch in his designs against the Protestant worship. In 1616 Barneveldt's influence was increased by his having obtained from James I. the restoration of the Cautionary Towns, which had been given up to Elizabeth as securities for the money which she had lent the States by the treaty of 1585. The debt due at the time by the United Provinces to England amounted to 8,000,000 florins; but Barneveldt, by adroitly taking advantage of James's necessities and avarice, had the debt cancelled by a prompt payment of about one-third of the amount.

The question upon which the great struggle between Barneveldt and the Stadtholder finally turned was the calling a national synod, to which the point at issue between the Arminians and the Gomarites should be referred. This Barneveldt opposed, confusions and tumult ensued, and he called upon Maurice, as the commander of the military force, to aid the civil authorities in suppressing them; but Maurice encouraged the confusion, and the Arminians were every where assaulted and persecuted. In this embarrassment Barneveldt formed a militia, composed of the citizens, in Arnhem, Leyden, and Utrecht: this body was called by the Dutch name of Waartgelders. Maurice immediately marched his army against the militia, disarmed them, took possession of the Arminian towns, deposed the Arminian magistrates, and openly assumed absolute authority. The States-General, overawed by his boldness, and jealous of the fame and influence of Barneveldt, ratified all his proceedings, and at his bidding took decisive steps towards summoning a national synod, November 13, 1618. [Dort, Synod of.] Previous to this, Barneveldt and his friends, Grotius and Hoogerbeets, had been arrested (February 21, 1618) by the States-General, acting under Maurice. The trial of the prisoners commenced Nov. 19, 1618. It was in vain that Barneveldt protested against the illegality of the whole proceedings, and that he triumphantly refuted all the charges urged against him: he was found guilty, among other things, for 'having brought the church of God into trouble,' and sentenced to death. It was deemed, however, expedient not to carry the sentence into effect till it had received the sanction of the decision of the synod, which then held its sittings. The synod closed its sittings on the 9th of May, 1619, with a denunciation of all those who had opposed the Calvinist clergy. On the 14th of May Barneveldt was beheaded on a scaffold erected in the court-yard of the Hague, where he met his fate with that calm courage which attended him throughout life. As he bowed his head to the axe, he exclaimed, 'O God! what is man!' A letter which he wrote the night before his execution to his wife is still preserved, and is a touching monument of his firmness and affection.

(Cerisier, *Tableau de l'Histoire Générale des Provinces Unies;* Auberry du Maurier, *Mémoires pour servir à l'Histoire de la République des Provinces Unies, contenant les Vies du Prince d'Orange, de Barneveldt,* &c.)

BARNEY, JOSHUA, was born at Baltimore, in North America, July 6, 1759. He entered the sea service when only eleven years of age, and distinguished himself early. When the rupture with England took place, he determined to adopt the cause of the land of his birth. He was appointed master's mate in a sloop of war called the Hornet, and so signalized himself by his bravery and good conduct, as to obtain, when scarcely seventeen, the commission of lieutenant in the United States navy.

After this, Lieutenant Barney was for some time constantly employed on board small vessels of war, and exhibited great zeal and activity in the performance of his duty. In the course of four years he was twice taken by the English and exchanged, and in 1780, when not yet twenty-one years of age, he had married, and was again in active service on board the United States ship Saratoga. This vessel captured several British vessels, and Barney, being placed as prize-master on board one of these, which was in an almost sinking condition, was again captured by an English 74-gun ship, and sent as a prisoner to England.

Having escaped from the prison in which he was confined, and reached his home in March 1782, he was immediately appointed to command a small ship of war, one of a squadron fitted out for the protection of trade in the Delaware. While thus employed, Barney was attacked by two ships and a brig belonging to the British navy, and by a combination of stratagem and bravery succeeded in capturing and securing one of the ships. For this he received the thanks of the legislature of Pennsylvania, accompanied by a gold-hilted sword; and, his prize being fitted out and commissioned in the American navy, he received the command.

Commodore Barney was afterwards sent with despatches to Dr. Franklin at Paris, and returned to America with a British passport, bearing despatches which announced the signing of preliminary articles of peace between England and America. He was at this time only twenty-five years of age.

When the war between England and America broke out in 1812, Barney was appointed by his government to the command of a flotilla, to be employed for the protection of Chesapeake Bay. While engaged in this service, Commodore Barney was taken prisoner by General Ross, but liberated on his *parole*. He joined in a land attack at Bladensberg, on an expedition of the English proceeding against Washington. In this attack he received a wound in the leg, which never thoroughly healed. He died at Pittsburg, Dec. 1, 1818.

BARNSLEY, a market-town and township in the West Riding of the county of York, in the parish of Silkstone, in the wapentake of Staincross. It is 172 miles N.N.W. of London, 39 miles S.W. of York, 9 miles S. of Wakefield, and 13 miles N. of Sheffield.

Barnsley, being in a straight line between Sheffield and Wakefield, both ancient and important towns, derived advantage from the intercourse carried on between them. But the great cause of its prosperity was the early establishment of manufactures. Wire-works were in existence here in the time of James I. These works afterwards are said to have furnished the best wire in the kingdom, and it was greatly in demand for making needles. But Barnsley has in a great measure lost its ancient trade, and has acquired a new one, to which its present prosperity is almost entirely owing.

The linen trade is now the chief support of Barnsley. Its fabrics are linen-cloth, damasks, diapers, drills, ducks, checks, and ticks. The great improvements which Barnsley has made in the production of these articles, is a main cause of the prosperous state of the town. In damasks and drills it is said that Barnsley stands unrivalled. There are extensive bleaching-works and dye-houses, as well as spinning-machinery, all connected with the staple commodity of the town. The numerous coal-mines and the iron-works in the immediate neighbourhood find occupation for hundreds of people. There are several iron-foundries in Barnsley. The commerce of the town is greatly aided by the Dearne and Dove canal, which passes near the town and connects it with the river Don. The Barnsley canal communicates with the Yorkshire river Calder.

The church of Barnsley is considered as a chapel of ease to Silkstone. It is a perpetual curacy, and is in the diocese and in the gift of the Archbishop of York. Another church has been erected by the assistance of the parliamentary commissioners. There are several dissenting congregations, of different denominations. Besides several Sunday schools, there is a National School, which was erected by the trustees of George Ellis's charity, and a free grammar school built and endowed in 1665 by Thomas Keresforth, which is free for the teaching of Latin and Greek to children belonging to the parish of Silkstone, but is a pay-school for all other branches of learning.

The population of Barnsley in 1831 was 10,330; in 1841 it was 12,310, but this included the hamlets of Old Barnsley, Measbro, Kinston-Place, and Old Mill.

(*Communication from a correspondent in Yorkshire; Population Returns.*)

BARNSTABLE, a sea-port and post-town in the United States of North America, capital of Barnstable county, Massachusetts, is situated in 41° 42′ N. lat., 69° 17′ W. long., on the south side of Barnstable Bay, which opens into Cape Cod Bay. There is a bar across the mouth of the bay, with 6 or 7 feet of water. From 50 to 60 fishing and coasting vessels belong to the port. Barnstable is 74 miles S.E. from Boston. The population in 1842 was 4301. (Haskel and Smith, *United States Gazetteer.*)

BARNSTAPLE, a parliamentary borough and sea-port town of Devonshire, is situated on the eastern bank of the river Taw, in a broad and

fertile valley, bounded by a semi-circular range of hills, in 51° 12′ N. lat., 4° 4′ W. long., 172 miles W. by S. of London, and 38 N.W. of Exeter. Barnstaple is a very ancient town, and probably existed previously to the reign of King Athelstan, who is said to have built a castle here, and to have erected the town into a borough. At the time of Domesday survey, there were forty burgesses within the walls, and nine without.

Barnstaple returns two members to the House of Commons. The population of the parliamentary borough in 1841 was 10,259. The population of the municipal borough and parish, which are coincident, was 7,902.

Barnstaple is a neat and generally well-built town, and may be regarded as the metropolis of North Devon. A large number of respectable families have been induced by the pleasantness of its situation and the comparative cheapness of provisions to settle there. Barnstaple has of late years greatly increased, and is still increasing in importance. Many new houses have been built, and are now building, particularly in the suburbs on the London road, named Newport. The river spreads to considerable breadth, but it is shallow, and accumulations of mud and sand have blocked up the harbour to all but small vessels. A fine quay stretches along the river side to a great length, and is terminated at one end by a handsome piazza. The river is crossed by an ancient stone bridge, of sixteen arches, which has been widened in a very ingenious manner by ironwork on each side, supporting foot-paths and a railway. The church, dedicated to St. Peter and St. Paul, is a spacious old building, with a handsome spire.

In consequence of the increasing disadvantages of its harbour, much of the trade of Barnstaple has been transferred to Bideford. Nevertheless, it still enjoys the advantage of being the port for an extensive and improving inland district, and carries on a steady trade. There are lace-manufactories in the town, and also establishments for the manufacture of baizes, shalloons, tammies, hose, pottery, and fishing-nets, which afford employment to a considerable number of persons. There is an endowed grammar-school, a charity-school for teaching English, a national school, almshouses, an infirmary, &c.

(Lysons' *Magna Britannia;* Risdon's *Chorographical Survey of Devon; Communication from Barnstaple.*)

BAROACH, a city of Hindustan, in the province of Gujerat, and presidency of Bombay, capital of the district of Baroach. The district and city were ceded to the British by a treaty with Dowlut Rao Sindia in December 1803.

The city of Baroach is situated in 21° 40′ N. lat., 73° 4′ E. long. It occupies a spot of high ground on the north bank of the Nerbudda, about 20 miles from its entrance into the Gulf of Cambay, and about 200 miles N. from Bombay. The city is of considerable extent, but a great part of it is now in ruins. It was a place of great trade in the time of the Emperor Akbar, to whom it surrendered in 1572. The Nerbudda, in this part of its course, is 2 miles wide, but very shallow, so that only vessels of small burden can come up to the town.

The situation of Baroach corresponds exactly to that of Barygaza, or Barugáza. The ancient history of this place is given in Dr. Vincent's 'Commentary on the Periplus of the Erythræan Sea.' At the epoch to which the 'Periplus' belongs, the city of Barygáza was a very considerable emporium of commerce, receiving gems, spices, silk stuffs, and other productions of the interior of India, for exportation to Egypt, and thence to Rome. It imported, in return, Italian, Greek, and Arabian wines, gold and silver, and other metals, together with glass, 'girdles or sashes of curious texture,' and some other European productions.

The modern Baroach maintains a considerable trade with Bombay and Surat, to which places it sends cotton, grain, and seeds. This traffic is carried on in boats which draw little water, and which are impelled by large lateen sails. The population is about 33,000, of whom about 20,000 are Hindoos, 10,000 Mohammedans, and 3,000 Parsees.

BARODA, the capital and residence of the Mahratta chief, known as the Guicowar. The territories of the Guicowar (who is also called sometimes the Maharaja of Gujerat, and sometimes the Maharaja of Baroda), are chiefly in the peninsula of Gujerat, but there are considerable portions also in Cutch and Cattywar, intermingled with the territories of Great Britain, Sindia, and several tributary rajas. Baroda is situated in 22° 17′ N. lat., and 73° 18′ E. long. It was a large and wealthy town during the reign of Aurungzebe; and Sir John Malcolm, who visited Gujerat in 1830, says that the city was at that time 'one of the richest cities, in point of commercial and monied capital, of its extent in India.'

The fortifications at Baroda are not strong: the walls are slightly built, and would afford but little protection against any attack on the part of European troops. The streets of the town are tolerably wide, and the houses very high, at least for India, chiefly built of wood, with tiled sloping roofs. The palace is a large building four stories high, with wooden galleries projecting over each other. There are some tolerable pagodas, but no other buildings worthy of notice. The population is probably about 100,000.

The assumption of sovereign power on the part of the Guicowar family took place early in the 18th century. Previously to that time, Pillajee Guicowar had been simply *potail*, or head manager of the public concerns of a village.

A treaty of amity was entered into by the East India Company's government with Futteh Singh Guicowar in 1780, but little intercourse ensued between the two governments until 1802, when Anund Rao Guicowar applied to the governor of Bombay for assistance to put down the rebellion of Mulhar Rao, a member of his family, who was striving to obtain the sovereign authority in Gujerat. A small force was despatched to his assistance, and the rebellion was entirely suppressed. The treaty which at this time was concluded with the Guicowar contained an under-

taking, on the part of the British, to liberate that prince from the state of thraldom in which he was then held by his mercenary Arab troops, who were in consequence ejected from Gujerat. Treaties were afterwards made with the Guicowar in 1802, in 1805, and in 1817, by which the relations between the British government and the Guicowar were arranged.

The present Guicowar, Syagee Rao, succeeded his brother, Ahnund Rao, in 1819. In 1820 new arrangements were made with him; and for many years there was considerable difficulty in providing for the payment of the debts of this state. Those difficulties however have been overcome, and the British authorities and the Guicowar have for several years been on the most amicable terms. The Guicowar's income is estimated at about 80 lacs of rupees, or 800,000*l.* per annum.

The greater part of the population of the territories of the Guicowar is composed of Bheels and Coolies. There are, besides, a few Mohammedans, Hindoo merchants, and Rajpoots. The Bheels chiefly inhabit the wilder parts of the territory. The Coolies form more than one-half of the entire population. These two tribes are supposed to have been originally the same people, and to have been the aborigines of Gujerat. Their principal employment is agriculture.

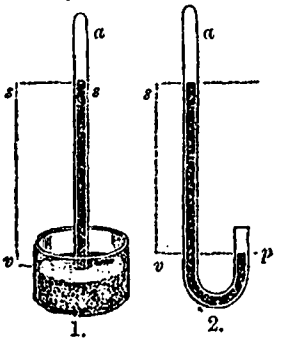
(Heber's *Journey through the Upper Provinces of India; Report of the Committee of the House of Commons on the Affairs of India.*)

BARO'METER, from two Greek words signifying *the measurer of weight*, is only applied to those instruments in which a column of air is weighed against a column of mercury.

The phenomena of the common pump, which were known before the Christian æra, were long explained by the simple maxim that 'nature abhors a vacuum,' without any attempt to discover the reason of the supposed abhorrence, until, in the time of Galileo, the pump-makers of the Duke of Florence found that water would not rise higher than thirty-two feet, or thereabouts. They applied to Galileo for a solution of this problem, but he does not seem to have discovered the true cause of the phænomenon. His pupil Torricelli, however, imagined that the weight of the atmosphere might be the counterpoise to the thirty-two feet of water; and applied himself to try this hypothesis by experiment. He saw that, if it be a weight of air which counterpoises the thirty-two feet of water, by the substitution of mercury instead of water the height of the column necessary to counterpoise the weight of air would be reduced in the proportion in which mercury is heavier than water. For instance, that, if mercury be fourteen times heavier than water, bulk for bulk, the fourteenth part of thirty-two feet, or about two feet four inches, would supply the place and produce the effect of the water. He accordingly filled a tube, more than three feet long, and open at one end only, with mercury; and then, stopping the open end with the finger, he placed the tube in an open vessel of mercury with the open end downwards. On removing the finger, the mercury in the tub sank until it stood in the tube at about twenty-eight inches higher than the mercury in the vessel. He thus discovered what is at this time considered the best form of the barometer.

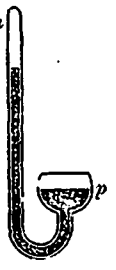
Torricelli died shortly afterwards (1647), leaving his great discovery not quite complete. The invention, however, was taken up by Pascal, Mersenne, and others in France, and by Boyle in England. The latter, by means of the air-pump, was enabled to subject air of different degrees of density to the test of the barometer. Pascal did the same; and, in addition, first suggested (in 1647), that if the mercury were sustained by the weight of the air, it would necessarily fall in ascending a high mountain, by the diminution of the superincumbent column of air. He accordingly requested his relative, M. Perrier, to try the barometer at the summit and the base of the mountain of Puy de Dôme, in Auvergne, and the result was that the mercury, which at the base stood 26¼ inches (French), was only 23⅛ inches at the summit. Pascal afterwards found the same result sensibly shown in the ascent of a church tower and of a private house. The continual variations in the altitude of the mercury naturally led to the idea of using the barometer as a *weather-glass*, while the frequent smallness of the amount of such changes rendered it desirable so to construct the instrument that their effect should be multiplied and rendered as plainly visible as possible. Hence many modifications of the original form of the instrument were soon introduced, some of which provided for the fact, that, since an alteration of level in the tube produces also an alteration in the cistern, the difference of levels cannot be exactly seen by simply reading off the height of the mercury against a fixed scale of inches.

In the annexed diagrams *a* represents in every case the closed or vacuum end of the tube, and *p* the place where the mercurial or other column communicates with the atmosphere. The diagram marked 1 represents the simple apparatus of

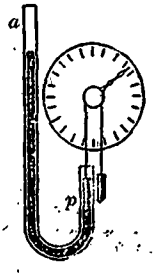


Torricelli, above described, in which, from *a* to *s* is the vacuum, or at least the space filled only with the *vapour of mercury*, noticed below. 2 represents the *siphon barometer*, which was early adopted as a more convenient form than that of Torricelli, but which has this disadvantage, that the variation of levels is equally divided between the two limbs of the siphon, and is

therefore not so distinctly visible at the point *s* as in Torricelli's, where, if the surface of the mercury in the cistern were twenty times as great as in the tube, the variation of level in the tube would be twenty times as great as in the cistern. 3 is a form of siphon barometer which provides for the attainment of this important difference. Descartes, Huyghens, and Dr. Hooke, devised barometers in which the use of one or more fluids of different specific gravity in connection with mercury was tried as a means of obtaining more distinct indications of very small changes of level; and many other forms of simple mercurial barometers have been constructed. One contrived by Amontons, consisting of a conical tube of glass closed at the smaller end, partially filled with mercury, and then inverted, is more simple and elegant in principle than any other; but the obtaining of a tube of the requisite accuracy is almost an ideal supposition. One contrived by Gay-Lüssac for portable purposes permits the access of air to the mercury only by a hole too minute to allow the escape of mercury. Fortin's is a Torricellian barometer with a contrivance for raising or lowering the bottom of the cistern by a screw, so as to adjust the lower level of the mercury exactly to the zero point before commencing an observation. Hooke's *wheel barometer*, though too inaccurate for scientific use, is very much used as a weather-glass; for which it may answer well enough, if it be remembered that it is not the *state* of the barometer which furnishes any probable test of the weather, but the *change* which is taking place for the time being. This change is indicated by it pretty distinctly, though it cannot be trusted for showing either the exact amount of the change, or the exact height of the column of mercury. In this contrivance, represented in fig. 4, a weight is placed on the mercury of a siphon barometer, and nearly counterpoised by another weight connected with it by a string, which passes over a pulley. The movement of the mercury causes this floating weight to rise and fall, and consequently the pulley, which carries an index, to turn more or less on its axis.



3.



4.

In order to construct good barometers the mercury must be perfectly pure and good, and free from the small coating of air which adheres to all bodies in their natural state. The interior of the tube must also be freed from this coating of air, which, if allowed to enter with the mercury, would in time expand and render the vacuum above the mercury imperfect. All these ends are gained, in a great degree, by boiling the mercury in the tube previously to inverting it and thus forming the vacuum. A part of the mercury should first be boiled in the tube, and the rest added in a hot state; after which the boiling should be repeated. One of the best tests of a good vacuum is when, by shaking the tube, the mercury strikes the glass at the closed end of the tube with a hard, well-defined, and instantaneous tap. The vacuum can never be quite perfect; for, generally speaking, a small quantity of air will remain; and, besides this, mercury itself will rise in vapour into the presumed vacuum, though not to so great a degree as to cause any perceptible pressure, and not more than it would rise in the air. If there be moisture in the supposed vacuum, the mercury will sink on applying the hand, or any other warm substance.

To observe the temperature of the mercury, which, by altering its bulk, affects the indications of the barometer, a thermometer is attached to the best instruments, the bulb of which is in the cistern. All observed heights should be reduced to what they would be at some given temperature, say the freezing point of water. It must be remembered that the scale itself, on which the heights are measured, expands or contracts with the mercury. If the two expanded or contracted equally, there would be no occasion for any correction; but, if the mercury expand more than the scale, it is the difference of the expansions by which the observed height will be wrong. Mercury expands more than the material of any scale which is ever employed. The expansion of the barometer-tube itself need not be attended to. The consequence of it is, that more mercury is drawn out of the cistern to form the requisite column; but the height of the column is unaltered. The height observed requires another correction for the *capillary* repulsion, by which it stands somewhat lower than it otherwise would do; but in a siphon barometer like fig. 2 such correction is unnecessary, because the depressive force is equal on both sides. In all other barometers the capillary action of the cistern is insensible, owing to the magnitude of its diameter, so that only that of the tube need be attended to. From these and some other causes it will be seen that no great reliance can be placed upon the result of a single observation; but the great value of the barometer as an instrument of exact observation lies in the facility with which it can be used, and the ease with which the mean of a large number of observations may be obtained.

In using the barometer as a weather-glass, it must be remembered that no rule which can be given will always hold true. The rising of the mercury usually presages fair weather, and its falling foul weather, as rain, snow, high winds, and storms, the lowest fall being found in great winds, though unaccompanied by rain. In very hot weather the falling of the mercury usually foreshows thunder; in winter, the rising presages frost; in frosty weather a continued fall foretells a thaw, and, in a continued frost, a rise indicates the approach of snow. If a change of weather follows very close upon a change in the barometer, it may be expected to last but for a short

time, and *vice versâ;* and where the motion of the mercury is unsettled, changeable weather may be anticipated.

BAROMETZ, a singular vegetable production, of which, under the name of Scythian Lamb, many fabulous stories are told. It was said, among other things, to be part animal, part vegetable, and to have the power of devouring all other plants in its vicinity. It is, in reality, nothing more than the prostrate hairy stem of a fern called *Aspidium Barometz*, which, from its procumbent position and shaggy appearance, looks something like a crouching animal, just as the hairy tawny end of the *Trichomanes canariensis* looks like a hare's foot, whence its English name of *Hare's Foot Fern*. Darwin has some fanciful verses about the barometz in his 'Botanic Garden,' canto i. l. 279.

BARON, BARONY. Sir Henry Spelman ('Glossarium,' 1626, voce *Baro*) regards the word Baron as a corruption of the Latin *vir:* but it is a distinct Latin word, used by Cicero, for instance. The Spanish word *varon*, and the Portuguese *barão*, are slightly varied forms. The radical parts of *vir* and *baro* are probably the same. The word *barones* (or *berones*) first occurs, as far as we know, in the book entitled 'De Bello Alexandrino' (cap. 53), where barones are mentioned among the guards of Cassius Longinus in Spain; and the word may possibly be of native Spanish or Gallic origin.

The word baron, in England, appears to have always denoted a person belonging to a particular class. The barons were those who held lands of a superior by military and other honourable services, and were bound to attendance in the courts of their superior to do homage, and to assist in the business transacted there. Spelman quotes from the 'Book of Ramsey' a writ of King Henry I., in which he speaks of the barons of the honour of Ramsey. In the earliest of the Pipe Rolls in the Exchequer, which belongs to the thirty-first year of Henry I., there is mention of the barons of Blithe, by which is meant the great tenants of the lord of that honour, now call the honour of Tickhill. The court in which these tenants performed their services is still called the Court Baron, more correctly the court of the barons.

As the earls and bishops, and other great landowners, to use a modern expression, had a number of persons who held parts of their lands for certain services to be rendered in the field or in the court, so the lands which those earls and great landowners possessed were held by them of the king, to whom they had in return certain services to perform of the same kind with those which were due from their tenants; and, as those tenants were barons to them, so were they barons to the king. But as these persons were, both in property and in dignity, superior to the persons who were only barons to them, the term became almost exclusively applied to them; and the barons in the early history of the Norman kings of England, are the persons who held lands immediately of the king.

In the writers on the affairs of the first two centuries and a half after the Conquest, the barons were tenants in chief of the crown. After the Conquest, there was an actual or a fictitious assumption of absolute property in the whole territory of England by the king, and grants of large tracts were made both to ecclesiastics and laymen. But the king retained in his own hands considerable tracts of land, as chaces or parks, to yield to him a certain annual revenue, to be as farms for the provision of his own household, or to be a reserve fund, out of which to reward services which might be rendered to him. These lands formed the demesne of the crown, and are what are now meant when we speak of the ancient demesne of the crown.

The indexes to 'Domesday-Book' present us with the names of about 400 persons who held lands immediately of the king. But 'Domesday-Book' does not present us with a complete account of the whole tenancies in chief, because — 1, the four northern counties are omitted in the survey; and, 2, there was a creation of new tenancies going on after the date of the survey, by the grants of the Conqueror or his sons of portions of the reserved demesne; and there were changes which caused a fluctuation in the number. In proportion to the extent and value of the lands given by the king, services were to be rendered. The services were of two kinds: first, military service, that is, every one of those tenants (or holders) was bound to give personal service to the king in his wars, and to bring with him to the royal army a certain quota of men, corresponding in number to the extent and value of his lands; and, secondly, civil services, which were of various kinds, sometimes to perform certain offices in the king's household, to execute certain duties on the day of his coronation, to keep a certain number of horses, hounds, or hawks, for the king's use, and the like. They were also bound to personal attendance in the king's court when the king summoned them, and to do homage to him, to acknowledge themselves to be his *homines*, or *barones*, and to assist in the administration of justice, and in the transaction of other business in the court of the king.

These were the rude beginnings of the modern parliaments, assemblies in which the barons are so important a constituent. But among the great tenants of the crown there was diversity both of rank and property. Some of them had also a title which descended to their posterity: these are the *comites* of 'Domesday-Book,' where, by the Latin word *comes*, they have represented the earl of the Saxon times. Among those to whose names no mark of distinction is annexed, there was great diversity in respect of the extent of territory granted to them.

All these persons, the earl included, were the barons, or formed the baronage of England. They were all equally bound to render their service in his court when the king called upon them. Two classes of barons, however, appear in early documents; the greater and the less barons. It is not certain wherein the distinction consisted; but it has been conjectured that the lesser barons arose out of the practice of some of the greater barons making grants to persons, who were to hold of them as they held of the king.

Many of these Lesser Barons, or Barons of the Barons, became the progenitors of families of rank and consequence in the country. Their tenancies were sometimes so extensive, that the holders of them were enabled to exhibit a miniature representation of the state and court of their chief: they affected to subinfeud; to have their tenants doing suit and service. The process of subinfeudation was checked by a statute of King Edward I., passed in the eighteenth year of his reign, commonly called the statute *Quia Emptores*, &c., which directed that all persons thus taking lands should hold them, not of the person who granted them, but of the superior of whom the grantor himself held.

It seems to be generally admitted that the same persons who were bound to suit and service in the king's court constituted those assemblies which are called by the name of parliaments, so frequently mentioned by all our early chroniclers, in which there were deliberations on affairs touch the common interest. Unfortunately the number of public records which have descended to us from the first hundred and fifty years after the Conquest is exceedingly small, and that those which remain afford little information respecting this most interesting point of inquiry.

There is no reasonable doubt that the parliament of the early Norman kings consisted of the persons who were bound to service in the king's court by the tenure of their lands. But in the reign of King Edward I., when we obtain some precise information respecting the individuals who sat in parliament, we do not find that they were the whole body of the then existing tenantry in chief, and that there were among those who came by the king's summons, and not by the election and deputation of the people, some who did not hold tenancies in chief at all. The solution of this difficulty is not easy. The committee of the House of Lords, which sat during several sessions of parliament to collect every thing which could be found touching the dignity of a peer of the realm, made a very instructive Report in 1819. This has been followed by reports on the same subject by other committees. They all confess that great obscurity rests upon the original constitution of parliament.

We are now arrived at a time when the word *baron* acquired a sense still more restricted. Later than the reign of Edward II. we seldom find the word *baron* used in the chronicles to designate the whole of that body who had compelled the kings to yield the charters. The counts or earls, from this time, stand out more prominently as a distinct order. There were next introduced into that assembly dukes, marquesses, and viscounts; to all of whom was given a precedence before those barons who had not any dignity, strictly so called, annexed to the service which they had to render in parliament. The baron thus became the lowest denomination in the assembly of peers. The term also ceased to be applied to those persons who, though they possessed a tenancy in chief, were not summoned by the king to attend the parliament; and the right or duty of attendance, from the time of King Edward I., has been founded, not, as anciently, upon the tenure, but on the writ which the king issued for their attendance.

Out of this has arisen the expression *barons by writ*. The king issued his writ to certain persons to attend in parliament, and the production of that writ constituted their right to sit and vote there. Copies of these writs were taken, and are entered on the close roll at the Tower. The earliest are in the latter part of the reign of King Henry III., in the forty-ninth of his reign. The received opinion has been that a heritable dignity was thus created; and that the barony would endure as long as there were heirs of the body of the person to whom the king's writ had issued. Upon this, the received opinion, there have been many adjudications of claims to dignities, and yet the Lords' Committee on this subject express strong doubts respecting the doctrine, and contend that there are persons to whom the king's writ issued, and who took their seat accordingly, to whose heirs similar writs never went forth, though there was no bar from nonage, fatuity, or attainder.

The practice, however, has been hitherto to admit that proof of the issuing of the writ, and of obedience to it, by taking a seat in parliament, or what is technically called proof of sitting, entitles the person who is heir of the body of a person so summoned to take his seat in parliament in the place which his ancestor occupied. Nevertheless, it would seem, from the report of the Lords' Committees, that in cases in which one person of a family has been summoned at some remote period, and no other of his known posterity near his time, this was no creation of the dignity of a baron, or of a peer in parliament, which could be claimed at this distance of time by any person, however clearly he might show himself to be the heir of the body of the person so summoned. But that, in cases in which the writ and the sitting can be proved respecting several persons in succession in the same line, as in Mauley, Roos, Furnival, Clifford, and many other families, there is a heritable dignity created, liable to no defeazance, and that this dignity may be claimed by any person who at this day can show himself to be the heir of the body of the person to whom the original writ issued. The expression, heir of the body, has the same legal meaning as in the descent of land according to the old law: accordingly the son of a female heiress can succeed to the title of his mother, and take the seat in parliament which his mother could have occupied if she had been a male.

Lands may be divided, but a dignity is indivisible. Accordingly, if the representative of one of the ancient barons of parliament die, leaving four daughters and no son, his lands are descendible among his four daughters, as parceners. But the dignity does not descend to the eldest or any daughter in preference to her sisters. It therefore falls into abeyance. [ABEYANCE.] But if three of the four die without leaving issue, or if the issue of three of them become extinct, the barony will then revive, and the surviving sister, if alive, or the next heir of her body, will become entitled to the dignity, and may, on proof of the

necessary facts, claim a writ of summons as if there had been no suspension.' Again, the king may select one of the daughters, and give to her the place and precedency which belonged to her father; and then the barony will descend to the several heirs in succession of her body, as entire as if there had never been any abeyance. But this does not interfere with the rights of the other co-heirs, who, and whose posterity, remain in precisely the same position in which they stood before the king determined the abeyance in favour of a particular branch.

The establishment of a class of barons whose dignity is descendible to the male issue only of the original grantee is supposed to have originated in the reign of King Richard II., who in his eleventh year created John Beauchamp of Holt, a baron, not merely by writ of summons to parliament, but by a patent, in which it was declared that he was advanced to the same state, style, and dignity of a baron, and that the same state, style, and dignity should descend to the male heirs of his body. This precedent was followed in subsequent reigns; and the great majority of persons who now occupy the barons' bench in parliament are the male representatives of persons on whom the dignity has been conferred, accompanied by a patent, which directs the course of its descent to be in the male heirs of the original grantee.

The privileges of the barons in no respect differ from those of the other component parts of the House of Peers. [PEERS OF THE REALM.]

The most complete information on this subject is contained in the printed 'Report from the Lords' Committees, appointed to search the Journals of the House, and Rolls of Parliament, and other Records and Documents, for all matters touching the Dignity of a Peer of the Realm.'

Barony is used in Ireland for a subdivision of the counties; they reckon 252 of the districts called baronies. Barony here is equivalent to what is meant by hundred or wapentake in England.

It remains to notice three peculiar uses of the word baron:—

1. The chief citizens of London, York, and of some other places in which the citizens possess peculiar franchises, are called in early charters not unfrequently by the name of 'the barons' of the place.

2. The Barons of the Cinque Ports are so called, probably for the same reasons that the citizens of London and of other privileged places are so called. [CINQUE PORTS.]

3. The Barons of the Exchequer. The four judges in that court are so called, and one of them the Chief Baron. [EXCHEQUER.]

BA'RONAGE. This term is used to signify the whole of the nobility of England, without regard to the distinction of dukes, marquesses, earls, viscounts, and barons, all of whom form what is now sometimes called the baronage. In this sense the term is used in the title of the 'Baronage of England,' by Sir William Dugdale, who was the Norroy King at Arms, and one of the last survivors of the eminent antiquarian scholars of the 17th century.

The first volume of Dugdale's Baronage was published in 1675; the second and third, which form together a volume not so large as the first, in 1676. The work professes to contain an account of all the families which had been at any period barons by tenure, barons by writ of summons, or barons by patent, together with all other families who had enjoyed titles of higher dignity, beginning with the earl of the Saxon times.

One of the great merits of the work is the careful reference to authorities. A passage in the preface contains a striking truth: 'As the historical discourse will afford at a distance some, though but dim, prospect of the magnificence and grandeur wherein the most ancient and noble families of England did heretofore live, so will it briefly manifest how short, uncertain, and transient earthly greatness is; for of no less than two hundred and seventy in number, touching which this first volume doth take notice, there will hardly be found above eight which do to this day continue; and of those not any whose estates, compared with what their ancestors enjoyed, are not a little diminished; nor of that number, I mean two hundred and seventy, above twenty-four who are by any younger male branch descended from them, for aught I can discover.'

BARONET, an English name of dignity, which in its etymology imports a Little Baron. But we must not confound it with the Lesser Baron of the middle ages [BARON], with which the rank of baronet has nothing in common; nor again with the banneret of those ages. [BANNERET.]

This order originated with King James I., who, being in want of money for the benefit of the province of Ulster in Ireland, hit upon the expedient of creating this new dignity, and required of all who received it the contribution of a sum of money, as much as would support thirty infantry for three years, which was estimated at 1095*l.*, to be expended in settling and improving the province of Ulster.

The principle of this new dignity was to give rank, precedence, and title without privilege. He who was made a baronet still remained a commoner. According to the terms of the patent, the banneret acquired—1, precedence in all commissions, writs, companies, &c., before all knights, including knights of the Bath and bannerets, except such knights bannerets as were made in the field, the king being present; 2, precedence for the wives of the baronet to follow the precedence granted to the husband; 3, precedence to the daughters and younger sons of the baronet before the daughters and younger sons of any other person of whom the baronet himself took precedence; 4, the style and addition of baronet to be written at the end of his name, with the prefix of Sir; 5, the wife of the baronet to be styled Lady, Madam, or Dame. It was stipulated, on the part of the king, that the number of baronets should never exceed two hundred; and that, when the number was diminished by the natural process of extinction of families, there should be no new creations to supply the places of those extinct, but that the number should go on decreasing.

The earliest patents bear date on May 22, 1611. It was not till 1622, a little before the death of King James, that the number of two hundred was completed.

At the death of James two hundred and five patents had been issued; and the number of members of this order is now understood to have no other limit than the will of the king. In the time of Charles II. the custom was to remit the payment of the money for the support of the soldiers; and a warrant for this remission is now always understood to accompany the grant of a patent of baronetcy. The old rule of requiring proof of coat-armour for three descents has in numerous instances not been insisted on. With these variations the order has remained unchanged.

Various works have been published on the Baronetage of England. A 'Baronetage' usually called Wootton's, appeared in 1741, in five large volumes, 8vo. This is the best work of the kind. Another appeared in 1775, in three volumes, 8vo; and about the beginning of the present century appeared Mr. Betham's account of the families of the then existing baronets, in five volumes, 4to.

James I. designed to establish an order of baronets in Scotland for the encouragement of the planting and settling of Nova Scotia. He died however before any proceedings had been taken. His successor adopted the scheme, and in 1625 granted certain tracts of land in Nova Scotia to various persons, and with them the rank, style, and title of baronets of that province, with precedency analogous to the precedency given to the baronets of England. It was proposed that the number should be limited to 150. There were frequent creations of this dignity till the union with Scotland in 1707, when the creations ceased.

Baronets of Ireland were instituted by King James I. in 1620, for the same purpose with the baronets of England. The money was paid into the Irish Exchequer.

BARO'NIUS, CÆSAR, was born October 31, 1538, at Sora, in the kingdom of Naples. His father was Camillo Baronio, his mother Porzia Febonia, both of noble families. He received his first education at Veroli. He studied divinity and law at Naples, and afterwards at Rome, where he placed himself under the discipline of St. Philip de' Neri, the founder of the congregation of the Oratory, by whom, after he was ordained priest, he was attached in 1564 to the congregation of the church of St. John the Baptist in that city. In 1593, St. Philip de Neri, having laid down the office of superior of the congregation of the Oratory, appointed Baronius his successor; and Pope Clement VIII. not only approved the choice, but some time after made Baronius his confessor, and also a cardinal, June 5th, 1596. Baronius died at Rome, June 30th, 1607.

Baronius was a man of piety, probity, and learning. He undertook his most celebrated work, his 'Annales Ecclesiastici,' or 'Ecclesiastical Annals,' when he was thirty years of age, and continued for thirty years collecting and digesting his materials. The first volume of this work, which contains the first century after Christ, was published in 1588; the twelfth and last, which concludes with the year 1198, was printed in 1607, under the pontificate of Paul V. These twelve volumes contain the history of the twelve first ages of the church. Baronius left materials for three more volumes, which were used by Raynaldus (Odorico Rinaldi) in his Continuation of Baronius's Annals.

Mazzuchelli ('Scrittori d'Italia,' fol. Brescia, ii. pt. i. p. 387) enumerated nineteen different works of Baronius in print and manuscript.

The great work of Baronius has been severely criticised by Holstenius, Isaac Casaubon, Comber, and others, on account of its alleged errors and mistakes; but these, perhaps, are not more numerous than are to be expected in a work of such great extent. Besides Rinaldi's, there are two other continuations of Baronius's Annals: one to the year 1572, by Bzovius, 9 vols. fol. 1616–1672; the other extending to 1639, 2 vols. fol. Paris, 1639.

BARONY. [BARON.]

BAROSCOPE, the *perceiver of weight*, is a term which has sometimes been applied to the barometer.

BAROUSSE. [QUATRE-VALLE'ES; PYRENE'ES, HAUTES.]

BAROZIO. [VIGNOLA.]

BARQUICIMETO, the capital of the province of Barquicimeto [VENEZUELA], in the republic of Venezuela, stands in a healthy situation on a high plain, in 9° 50′ N. lat., 69° 20′ W. long. The city, which was founded by the Spaniards in 1522, was destroyed by an earthquake in 1812. Previous to this disaster it had a population of 15,000. It has been since rebuilt, and the population now amounts to about 12,000.

BARR. [RHIN, BAS.]

BARR, or BARRA, a petty kingdom of Western Africa, at the mouth of the Gambia, and on its northern bank, containing an area of about 250 square leagues. This and some neighbouring kingdoms on the Gambia were founded by Amari-Sonko, a Mandingo warrior, apparently for the purpose of facilitating the operations of the traffic in slaves. When Amari-Sonko died, his conquests were divided among his three sons, who respectively became sovereigns of Barra, Kollar, and Badibou. Their descendants still reign; and the memory of these events is preserved by tradition among the people. The territory of this small state is in general well cultivated, and contains a large number of considerable villages. The forests do not occupy more than one-eighth of the surface, which is rather marshy, but very fertile. (Golberry's *Fragmens d'un Voyage en Afrique*, 1802.)

BARRA, or BARRAY. [HEBRIDES.]

BARRACK, from the Spanish *barracas*, meaning small cabins such as fishermen build upon the sea-coast, is a term which was at first applied only to the huts occupied by soldiers in an encampment. Such barracks are generally made by fixing four poles in the ground and laying four others across them; the walls being afterwards built up with sods, wattles, or what the place may afford, and the top planked, thatched, or covered with turf. Barrack, in a wider sense, is

now applied to the permanent buildings in which both officers and men are lodged in fortified towns or other places.

The word barrack does not occur in our older dictionaries, though it is found in Phillips's 'World of Words,' fol. London, 1706; and a writer in a periodical paper, entitled 'Common Sense,' No 105, published in 1739, speaks of permanent barracks for the lodging of troops as then just introduced. Subsequently, when wanted, they were built under the direction of the Board of Ordnance, by whom they were supplied with bedding and utensils, but the articles which were extraordinary were under the direction of the Secretary-at-War.

Great opposition was made in parliament, at the commencement of the French revolutionary war, to the erection of barracks on an extended scale, as being inimical to the liberties of the country, but the practice of quartering soldiers upon the inhabitants of a town or village was found to be attended with so many inconveniences that the opposition to the proposed measure was at length withdrawn.

In 1792 the state of public affairs induced the minister to give orders for building, with the utmost despatch, cavalry barracks in various parts of the kingdom; and Colonel De Lancey, then deputy-adjutant-general, was requested to undertake the arrangement of this branch of the public service. In January 1793, he was appointed superintendant-general of barracks, and on the 1st of May that year the king's warrant was issued for their regulation. More extensive authority was given to him by a warrant dated May 30th, 1794, when he was appointed to the office of barrack-master-general to the forces. But, as this seemed to interfere with the duties and powers of the Board of Ordnance, a new warrant was issued in 1795, defining the powers of the barrack-master-general, and those of the Board of Ordnance; under which warrant Lieutenant-General De Lancey acted in all subsequent transactions.

During the year 1806 the offices of barrack-master-general and deputy barrack-master-general were suppressed, and the superintendence of the barrack establishment was vested in a board consisting of four commissioners, one of whom was a military man; but, since the year 1834, that superintendence has reverted to the master-general of the Ordnance.

The total expenditure on buildings for the purposes of barracks in Great Britain, Ireland, and the islands of Guernsey, Jersey, and Alderney, between the years 1793 and 1819, amounted to the sum of 7,972,083*l.* 6*s.* 9¾*d.* In consequence of the increase of the army, as well as the change in the stations of troops which have been rendered necessary by the adoption of railway communications, many additional barracks have been constructed, and others are now in the course of being erected.

(James's *Military Dictionary; Reports of the Commission of Military Inquiry*, 1806; and *Barrack Accounts of Expenditure, &c.*, ordered by the House of Commons to be printed, 1820.)

BARRAMAHAL, a district of Hindustan lying between 12° and 14° N. lat., and to the east of Mysore. The territories belonging to this district were ceded to the British government in 1792, by the treaty of Seringapatam. After the capture of Seringapatam in 1799, several districts of the Carnatic were added to it; and the whole are now included in the divisions of Chingleput and Salem of the Presidency of Madras.

BARRA'S, PAUL JEAN FRANÇOIS NICOLAS, COUNT DE, a member of the French Directory, and an important actor in some of the principal events of the French Revolution, was born June 30, 1755, at Foux, in the department of the Var. His family was one of the most ancient among the nobility of Provence. In 1775 he entered the army, and went twice to India. When the revolution commenced, he became one of its warmest partisans. Though he joined in the attack on the Bastile, he condemned many of the excesses which followed; but the part which he took was a decided one. He was a member of the Jacobins' Club from its commencement, and was engaged in the affair of August 10, 1792, which virtually terminated the existence of the monarchy. Being sent to the National Convention as representative of his native department, he voted unconditionally for the death of Louis XVI. He took an active part in the proceedings of the Convention, in which he opposed Robespierre. On the 9th Thermidor (July 27, 1794) Barras, Tallien, and some other deputies presented themselves to the Convention. Tallien denounced Robespierre, who was arrested, and sent to prison, from which however he escaped. Henriot, commander of the Parisian guard, a creature of Robespierre's, marched on the Convention, which, in its imminent peril, named Barras general-in-chief, and charged him with its defence. Barras got together some troops, and arrested Robespierre, who, with some of his partisans, was immediately executed. At a subsequent crisis of the Revolution, that of the 13th Vendémiaire (Oct. 5, 1795), the Convention again named Barras general-in-chief. The success on this occasion was chiefly owing to Bonaparte, to whom Barras, recollecting his services at Toulon, had confided the command of the artillery; and he afterwards obtained for Bonaparte that of the army of Italy. The anarchists being put down by the 13th Vendémiaire, the directorial government was formed, of which Barras was a member. It did not work well, and the *coup d'état* of the 18th Fructidor (Sept. 4, 1797) was resolved upon as a means of effecting its more complete consolidation. For the third time Barras was invested with dictatorial powers, and success again attended his efforts. Two members of the Directory, Barthelemy and Carnot, about forty members of the legislative Council of Five Hundred, eleven members of the Council of Elders, and other individuals, were ordered to be transported to the swamps of Guiana, where several of them died. Carnot escaped into Germany. The power of the Directory, however, was far from being firmly fixed. The affair of the 30th Prairial (May 18, 1799) shook it to its foundations. The legislative councils now resumed their

independence, curtailed the dictatorial power of the Directory, and obliged three of the directors to give in their resignation. Barras contrived to remain in office, though he had opposed this movement: but he, and Sieyes, now one of the directors, were united as to the necessity of overthrowing the constitution of the year 3. General Bonaparte, having been apprized of these intrigues by his brother Lucien, left the army in Egypt, and arrived in Paris for the purpose of carrying his own personal projects of ambition into execution. Seconded by Sieyes, he effected the revolution of the 18th Brumaire (Nov. 9, 1799), the immediate result of which was his nomination as First Consul. From this period the power of Barras was annihilated. In 1813 Barras was inculpated in a conspiracy, and underwent an examination; after which he was exiled to Rome, but remained still under the watchful eyes of the French police. Here he was again accused of being connected with a conspiracy, but the preliminary investigations into its character and ramifications were broken up by the fall of Napoleon. In 1814 he took up his residence at Paris. In 1815, foreseeing new troubles about to burst on France, he withdrew from Paris, but returned on hearing of Napoleon's disembarkation, though during the Hundred Days he accepted no public employment. Afterwards he resided at Chaillot, near Paris. He died in January 1829. (Carnot's *Mémoires*, in the *Histoire du Directoire*, Paris, 1801.)

BARRATRY, BARATRY, or BARRETRY. The original derivation of this word is extremely uncertain. In English law it has a twofold signification. First, barratry is a misdemeanour at common law, and consists in frequently exciting and stirring up disputes and quarrels either by litigation in courts or otherwise; and, secondly, it denotes a fraud, or such a degree of culpable negligence as amounts to fraud or bad faith, committed by the master or mariners of a ship with relation to the ship or cargo under their care, by which the owners or freighters may be injured. The Italian word *barratrare*, from which the term barratry in this latter sense is immediately derived, means *to cheat* generally.

I. As to the misdemeanour of barratry at common law.

This offence is very vague and indefinite in its nature, and has been little noticed in modern times by courts of justice. By 12 Geo. I. c. 29, s. 4 (revived and made perpetual by 21 Geo. II. c. 3), if any person convicted of common barratry shall practise as an attorney, solicitor, or agent in any suit or action, the judge or judges of the court where such suit or action shall be brought shall, upon complaint or information, examine the matter in a summary way in open court, and, if it shall appear that the person complained of has offended, shall cause the offender to be transported for seven years.

II. Barratry by masters or mariners of ships.

This offence is only a subject of importance with reference to marine insurances. From the earliest times, a loss by the barratry of the master or mariners has formed a subject of indemnity by underwriters in British policies of insurance. 'It is somewhat extraordinary,' says Lord Mansfield, in the case of Nutt *v.* Bourdien ('Term Reports,' vol. i. p. 330), 'that this term should have crept into insurances, and still more that it should have continued in them so long, for the underwriter insures the conduct of the captain (whom he does not appoint, and cannot dismiss) to the owner, who can do either.'

The term barratry in policies of insurance means every species of fraud and knavery in the master or mariners of the ship by which the freighters or owners are injured. Barratry may be committed by a wilful deviation tending to defraud the owner, by smuggling, by running away with the ship, by sinking or deserting her, or by delaying the voyage by any means or for any length of time, with a fraudulent intent.

(Selwyn's *Nisi Prius*, tit. 'Insurance;' and Park *On Insurance*.)

BARRAUX. [ISE'RE.]

BARRE'GE. [PYRENE'ES, HAUTES.]

BARREL is a word found in some shape, in several European languages, as a large vessel for holding liquors. In the old English measures it was used to denote

31½ gallons of wine,
32 gallons of ale,
36 gallons of beer.

But the ale and beer barrels were equalized for every part of England except London by a statute of the 1st of William and Mary, and thirty-four gallons were made the barrel of beer or ale. The wine gallon, by a statute of Anne, was declared to be 231 cubic inches, and the beer gallon (which did not differ from the ale gallon) was usually reckoned as 282 cubic inches; consequently the dimensions of the four barrels were as follows:—

	Gall.	Cubic in.
Wine barrel	31½	7316½
Ale ditto (London)	32	9024
Ale and beer ditto (England)	34	9588
Beer ditto (London)	36	10,152

In imperial gallons of 277.274 cubic inches, now in use, these measures are as follows:—

	Imp. galls.
Wine barrel	26¼
Ale ditto (London)	32 $\frac{32}{33}$
Ale and beer ditto (England)	34 $\frac{34}{35}$
Beer ditto (London)	36 $\frac{36}{39}$

Many other barrels were in use to denote certain quantities of goods usually sold in barrels; thus the barrel of salmon or eels was 42 gallons, that of soap 256 pounds, &c.

The word barrel means, in common use, also any hollow cylinder, such as the barrel of a gun, a jack, or a hand organ.

BARRELIER, JAMES, a distinguished botanist, born at Paris, in 1606, was educated for the medical profession, but he abandoned medicine for theology, and in 1635 took the vows of the order of Dominicans. In 1646 he was appointed assistant to the general of the order of Dominicans, and accompanied him on his visits to the different convents. In this way he traversed the south of France, Spain, and Italy. During

these excursions he collected plants and other objects of natural history. He made drawings of the plants, which he caused to be engraved, with a view to their publication. He returned to Paris in 1672. Here he laboured to perfect his work, till he died of asthma, 17th September, 1673. He bequeathed his MSS. to the library of a convent, but soon after his death all his collections were dispersed, and some were burnt. The copper-plates escaped, and were collected and published by Antoine de Jussieu, who supplied descriptions, in the place of those which had been destroyed.

BARREN FLOWERS, in Botany, are either those which bear only stamens without a pistil, or which have neither stamens nor pistil.

BARREN LAND, in Agriculture, is that in which the plants generally cultivated do not prosper or arrive at maturity. This barrenness may arise from various causes. The texture of the soil may be such that the moisture essential to vegetation cannot be retained, or that the fibres of the roots cannot penetrate in search of food. The first is the case in loose silicious sands, the second in rocks and indurated clays. It is seldom that either of these soils can be rendered productive, so as to repay the expense of cultivation, unless under particular circumstances. The most barren sands will become productive by irrigation, and in that case the labour applied to improve their texture, by the admixture of more tenacious earth, may be fully repaid. The vine may be made to grow in the fissures of the hardest rocks, where the climate is favourable; and terraces may be formed, by which the soil brought on them may be retained; but in general loose sands and rocks ought to be left to their natural state of barrenness.

There are, however, in all countries tracts of land which are barren and waste in their present state, but which, for want of better soils to employ and feed an increasing population, are well worth improving, and will ultimately repay the labour bestowed on them. According to the 3rd Report of the Committee on Emigration, it appears that the relative acreage of cultivated and uncultivated land in Great Britain, Ireland, and the British Islands, was as follows:—

	Cultivated. Acres.	Uncultivated. Acres.	Total. Acres.
England	26,632,000	6,710,400	32,342,400
Wales	3,117,000	1,635,000	4,752,000
Scotland	5,265,000	14,473,930	19,738,930
Ireland	12,125,280	7,316,664	19,441,944
British Islands	383,690	735,469	1,119,159
Total	46,522,970	30,871,463	77,394,433

Looking at this table, it is impossible not to ask whether so very large a proportion of the surface of the British dominions in Europe may not remain uncultivated, more from want of industry and skill than from insuperable barrenness.

The most prevalent causes of barrenness in land are a deficiency or an excess of water: the methods of remedying these are explained under IRRIGATION and DRAINING. Supposing that the moisture has been regulated, and that the land is to be brought into cultivation, the first thing to be done is to remove obstructions and impediments, whether they be rocks, stones, trees, or shrubs, or only the heath and coarse grasses which generally cover waste lands. Rocks may be quarried or blown to pieces, and so may stones too large to be removed whole. If the nature of the stones is lamellated, and they will split, wedges of soft iron driven into holes made in the direction of the layers, readily divide them into flat pieces extremely convenient for use. Trees must be grubbed up by the roots, and it saves labour to cut the roots below the ground while the tree is standing, and draw the tree over by means of ropes fixed to the top; the stem becomes a lever, by which the roots are more easily drawn out. Useless shrubs are readily cut down, and serve for fuel; their roots are seldom difficult to grub up; a simple and powerful instrument for this purpose is a very strong iron three-pronged fork, having the prongs twenty inches long, and a strong ashen handle, twenty feet long, fixed firmly into it, to the end of which a rope is fastened; this is driven obliquely under the roots, and by means of a log as a fulcrum it forms a lever when pulled down by the ropes.

There are two methods by which the heath and grass of the surface may be got rid of: by mowing them close to the ground, and ploughing in the roots, or by paring the surface and burning it. If the soil consists of clay or loam containing the yellow ore of iron, and if the ashes, after the sods have been burned in heaps, are of a bright red colour, the effect of burning the surface will be generally advantageous, even where the soil is already deficient in vegetable matter. But if the soil is a sharp sand, and the ashes are white and loose, burning destroys the small portion of clay and vegetable matter in the soil, without compensating the loss by any advantage, and in this case burning the surface is inexpedient. The roots of the heath must be grubbed up by spades and mattocks, or by means of a strong plough; they may then be gathered and burned, but the grass must be ploughed in, and not too deep at first, that it may soon rot; a coating of lime ploughed in will accelerate the decay of the grass. This kind of soil requires the addition of vegetable and animal matter to supply the humus in which it is deficient, and the principal attention must be directed to this object.

When the surface is very uneven, so as to form hillocks and hollows, in which the water is apt to stagnate, levelling is a necessary process. The most effectual way of doing this is by the wheelbarrow and shovel; but, if the soil is loose and sandy, it may be best done by means of the *mollebart*, a Flemish instrument, consisting of a kind of large shovel, drawn along by a horse, and guided by a man. The small fields of Flanders are often levelled by this means. In France a somewhat more complex kind of mollebart has been patented.

The land being now inclosed, fenced, and drained where requisite, obstacles to the plough removed, and in a tolerably level state, it remains only to consider how it may be most advantageously cultivated, so as in the end to repay the first and great outlay. Some lands which have lain waste for ages, for want of a proper spirit of enterprize, are found to consist of a tolerable depth of moderately fertile earth. These must be treated like a garden newly formed, and trenched as deep as possible; mere exposure to the air and frost will often make them highly productive, and in this case the only caution necessary is not to exhaust them at first; on the contrary, their fertility should be increased by such crops and manuring as will always restore more humus than has been consumed by vegetation. Lime excites new land wonderfully, and no manure is more active, provided there be vegetable matter in the soil, or added at the same time. The lime renders the natural humus soluble and active, and, if put on injudiciously, will soon leave none for future crops. Bone-dust and ashes are also useful on new land.

Some soils, such as that of Bagshot Heath, consist of a loose sandy surface soil, beneath which is an impervious stratum, called the *iron pan*, formed by the deposition of iron particles from the sand. Until this pan is broken through, the ground cannot be made fertile; but by trenching, neutralizing the salts of iron with lime or chalk, manuring, marling, ploughing, and a course of turnip husbandry, many portions of Bagshot Heath have been brought into a thriving state.

Many of the poor lands of Flanders have been rendered fertile by pasturing cattle upon them, aided by a neighbouring farm; and it is agreed that animal manure is the best of all agents for this work, aided by paring, burning, marling, and other operations: where manure is not abundant, it is deemed better to grow common broom or furze for the first year or two, and not apply animal manure till a foundation of decayed vegetable refuse has been incorporated with the soil.

Poor, wet, stiff lands must be divided by deep ditches, ploughed in high ridges, and be as much as possible exposed to the wind and frost. Instead of turnips, grasses must be sown, such as suit the soil. Paring and burning the surface are here generally useful in the first instance, and may sometimes be repeated with advantage.

There is another kind of barren soil, which extends over large tracts. [Bog; Moor; Peat.] Some soils are rendered infertile simply by the presence of some noxious ingredient, such as an acid. In such case it is necessary to apply lime, or some other ingredient that will neutralize the acid.

The unproductive state of waste lands in many populous countries has suggested the employment of the poor and friendless on their improvement, and it has been thought a more enlightened charity to expend the money, which would otherwise be given in simple temporary relief, in such a manner as to make the labour of paupers available to their future comfort and independence. In some places portions of land have been given absolutely, or at a nominal rent, to paupers, in order that they might cultivate and gradually improve them; and where the soil is naturally good, and requires only to be worked and tilled, the plan has been attended with great success. But where a barren waste can only be improved by artificial manures and expensive operations, it is folly to expect this to be done by labour alone, without considerable capital; and neither the judicious managers of public funds, nor prudent speculators on their own account, will venture to lay out much capital on the chance and with the hope that a naturally indolent and idle class of men shall make it productive either to themselves or those who have advanced the funds.

It is near increasing manufactures, where land acquires a greater value, that barren land is soon converted into fertile fields. It is there, also, that the improvement of waste lands is most profitable. The neighbourhoods of Aberdeen, Birmingham, Manchester, and Sheffield, among many others, furnish examples of the greatest industry and perseverance in overcoming the natural barrenness of the soil.

In order to encourage the cultivation of poor wastes, and at the same time to secure the right to tithes, when the land should have been fully improved, an act of parliament was passed in the reign of Edward VI. (2 & 3 Edw. VI. c. 13), by which *barren* and *heath* land brought into cultivation, and converted into arable land or meadow, shall pay tithe of corn and hay after seven years from the first cultivation, which seems to release such lands from all claims for tithes during that period, other than had been paid before in its waste state, viz. that of wool, lamb, and the milk or young of cattle depastured on it. But, by the interpretation given to the words of the statute in several important decisions, it is only the very *poorest soils*, which will produce nothing without extraordinary manuring, and which are *suapte natura steriles*, which have enjoyed this exemption; but woodland grubbed up, commons inclosed, fens drained, and lands recovered from the sea by embankments, at a great expense, unless protected by an especial act of parliament obtained for the purpose, are subject to a payment of one-tenth of the produce, or an equivalent composition, from the first year that any crop is produced upon them.

BARRET, GEORGE, an Irish landscape-painter, was born at Dublin in 1732. In 1764 he obtained a 50-guinea premium from the Society of Arts in London, the first premium given by that Society for landscape. He was one of the original members of the Royal Academy, founded in 1768, and towards the close of his life he was Master Painter to Chelsea Hospital, an appointment which he procured through his friend Burke. He died at Paddington in 1784. Barret's landscapes are bold and natural in design, but his colouring is somewhat peculiar and heavy. He painted also in water-colours, and executed a few etchings.

BARRI, GIRALDUS DE, or SYLVESTER GIRALDUS, more generally known by the name

of GIRALDUS CAMBRENSIS, was the fourth son of William de Barri, by Angharath, daughter of Nesta, daughter of Rhys ap Theodor, prince of South Wales, and was born in or about 1146, at the castle of Manorbeer, in Pembrokeshire. He was sent to St. David's, where his uncle David Fitzgerald, at that time bishop of the see, undertook the care of his education. When twenty years of age, he went to the University of Paris, where he remained for three years, and acquired great fame for his skill in rhetoric. On his return to England, about 1172, he entered into holy orders, and obtained preferment both in England and Wales. Finding that the Welsh were very reluctant in paying tithes of wool and cheese (more particularly in Pembroke and Cardigan), he applied to Richard, archbishop of Canterbury, and obtained the appointment of legate in Wales to rectify these and other abuses. He executed this commission with great success. He likewise attempted to reform the morals of the clergy, and was peculiarly severe against all priests who had wives. The old Archdeacon of Brecknock, who opposed his remonstrances on this account, was at first suspended, and afterwards deprived, a sufficient maintenance only being assigned to him from his former preferment, which was bestowed upon the legate.

On the death of David Fitzgerald, the canons of St. Davids elected Giraldus his successor; but the election was after some dispute objected to by Henry II.; and Peter de Leia, a Cluniac monk of Wenlock in Shropshire, was chosen Bishop of St. David's. Giraldus retired to the University of Paris, and prosecuted his studies there. He returned home in 1180, and found the diocese of St. David's in confusion. Peter de Leia had quarrelled with the canons and inhabitants, and was driven from his see, the administration of which was committed by the Archbishop of Canterbury to Giraldus. He held it three or four years, when the bishop was restored.

About the year 1184 Giraldus was induced by King Henry II. to reside at court; soon after which he was sent as a pacificator to Wales. In 1185 he was appointed preceptor to Prince John, whom he accompanied to Ireland as secretary and privy-councillor; but the prince returned after a residence of some months, leaving Giraldus behind, who stayed to complete and digest the collections which he was making for his two works on the topography and conquest of Ireland. In 1187 he returned to England, when, having finished his work on the topography of Ireland, he read its three divisions (*distinctiones*), on three separate days, before public audiences in the University of Oxford.

In 1188 he accompanied Baldwin, archbishop of Canterbury, in a journey through the rough and mountainous parts of Wales, in order to preach to the people the necessity of a crusade. The more lasting fruit of this journey was his work entitled 'Itinerarium Cambriæ.'

In 1199 the see of St. David's again became vacant, and Giraldus was unanimously elected by the chapter. Yet he was again disappointed by the opposition of Hubert, archbishop of Canterbury, and the pope finally declared his election null. Soon after this, Giraldus resigned his archdeaconry in favour of Philip, the youngest son of his brother, Philip de Barri; but he still retained various ecclesiastical preferments.

Giraldus passed the last seventeen years of his life in revising his works and composing others. He died at St. David's, in the 74th year of his age, and was buried in the cathedral church, where his effigy remains upon an altar tomb beneath an ornamented arch.

Giraldus has left a catalogue of his works, as well as a long history of his actions, both printed by Wharton in his 'Anglia Sacra.' Sir Richard Hoare has given a full account of such manuscripts of his works as exist in the several libraries in the British Museum, in the Archiepiscopal Library at Lambeth, at Bene't (Corpus Christi) College, and in the public library at Cambridge, and in the Bodleian. Sir Richard Colt Hoare, in 1806, published the 'Itinerary of Archbishop Baldwin through Wales,' translated into English, and illustrated with views, annotations, and a life of Giraldus, 2 vols. 4to.

BARRICADE, from the French word *barrique*, is a military term used for an obstruction formed in the streets of a town, or on roads in the country, in order to check the advance of an enemy. The more important barriers are constructed of palisades planted in the ground, strengthened by struts, and rendered proof against shot by means of *sand-bags*, or of gabions filled with earth: loopholes are cut for the purpose of firing through them. Barricades on roads are sometimes of a similar kind, but they are generally formed of such materials as are at hand. Posts planted in the ground, with field-gates or hurdles, against which earth is thrown, are used; and often a line of loaded carts or of felled trees forms the only obstacle to the enemy besides that which is created by the fire of the defenders. On board of ship a barricade is a strong wooden rail supported by stanchions extending across the foremost part of the quarter-deck. The upper part, which contains a double rope-netting, above the rail, is stuffed with full hammocks, to intercept the motion and prevent the effect of small shot in an action. (*Aide Mémoire to the Military Sciences*, 1845; Falconer's *Marine Dictionary*, by Dr. Burney, 1815.)

BARRIER, from the French word *barrière*, in Fortification, is a term applied to a chain of military posts protecting the frontiers of a country. It signifies, also, a wall of strong timbers enclosing an area [STOCKADE], or protecting a passage. In some part of a barrier is a gate usually formed of two parts, opening in the middle, and frequently musket-proof, being made of strong timbers in vertical and horizontal positions, with diagonal braces. (*Aide Mémoire to the Military Sciences*, 1845.)

BARRIER ISLAND. [ZEALAND, NEW.]

BARRIER, TREATY OF THE, signed at Antwerp, November 15, 1715, between the Emperor of Germany, the King of Great Britain, and the States-General of the United Provinces, for the purpose of defining the boundaries of the United Provinces and France, of which England

and Austria were to be the guarantees. (Koch, *Traités de Paix; L'Art de vérifier les Dates.*)

BARRING-OUT, a practice formerly common in schools, and still practised in some schools in the north of England, 'by which,' as described in Dr. Johnson's Life of Addison, 'the boys, when the periodical vacation drew near, growing petulant at the approach of liberty, some days before the time of regular recess took possession of the school, of which they barred the doors, and bade their master defiance from the windows.'

This singular custom long prevailed in many public schools, and in the statutes of Witton School, near Northwich, in Cheshire, founded by Sir John Deane, A.D. 1558, its observance by the scholars is directed.

BARRINGTON, THE HONOURABLE DAINES, the fourth son of John Shute, first Viscount Barrington, was born in 1727. He was called to the bar in 1749. Though he never acquired any eminence in practice, his family possessed considerable influence with some of the most powerful members of the Pelham Administration, by means of which early in life he obtained successively several lucrative offices. In 1757 he was made a puisne Welsh judge. He continued to hold the office of Welsh judge until the year 1785, when, being possessed of an ample income, he gave up all public employments except the place of commissary-general of the stores at Gibraltar, and retired to his chambers in the Inner Temple, of which society he was a bencher. He died in the Temple on the 11th March, 1800. The most important of Mr. Barrington's numerous writings is a book entitled 'Observations upon the Statutes, chiefly the more ancient, from Magna Charta to the 21 Jac. I. c. 27,' which was first published in 1766. The design was to introduce a project, which is detailed in an appendix, for repealing obsolete and useless statutes, and reducing acts which relate to the same subject to one uniform and consistent law. It is a work which fully deserves the high reputation it has obtained. Mr. Barrington devoted much attention to the investigation of the celebrated geographical problem respecting a North-West Passage. He published the result of his researches in 1775; and when this subject came again under discussion, in 1818, his tracts were republished with an appendix by Colonel Beaufoy. Mr. Barrington was also the author of several papers in the 'Archæologia' on local antiquities, and of a great variety of essays in the 'Philosophical Transactions,' and other periodical publications, on subjects connected with natural history. Many of these were collected and published by himself in 1781, under the title of 'Miscellanies on various Subjects.'

BARRISTER. The etymology of this word has been variously given. In French the word *barreau*, which signifies a bar of wood or iron, is also used to signify 'a place in the audience where the advocates plead, and which is closed to prevent the press of people.' (Richelet, 'Diction.') From the word *bar* such a term as barrister may have been formed. But in England it is said that the term barrister arose from the arrangement of the halls of the different Inns of Court. The benchers and readers, being the superiors of each house, occupied on public occasions of assembly the upper end of the hall, which was raised on a *dais*, and separated from the rest of the building by a bar. The next in degree were the *utter* barristers, who, after they had attained a certain standing, were called from the body of the hall to the bar (*i. e.* the first place outside the bar), for the purpose of taking a principal part in the mootings or exercises of the house; and hence they probably derived the name of *utter* or outer barristers. The other members of the Inn, consisting of students of the law under the degree of utter barristers, took their places nearer to the centre of the hall and farther from the bar, and from this manner of distribution appear to have been called *inner* barristers. The distinction between utter and inner barristers is at present abolished: the former are called barristers generally, and the latter are called students.

The degree of utter barrister, though it gave rank and precedence in the Inn of Court, and placed the individual in a class from which advocates were always taken, did not originally give any authority to plead in courts of justice. In the old reports of the proceedings of courts, the term is unknown; serjeants [SERJEANT] and apprentices at law, who are supposed by Dugdale to be the same persons, being the only pleaders or advocates mentioned in the earlier year-books. In the time of Stow, however, who wrote in the latter part of Elizabeth's reign, it is clear that utter barristers were entitled to act as advocates, as he expressly says that persons called to that degree are 'so enabled to be common councillors, and to practise the law both at their chambers and at the barres.'

The serjeants, who, before the allowance of utter barristers to plead in courts, appear to have been the only advocates, were called from the Inns of Court by the king's writ, which was only issued at the discretion of the crown, and generally as a matter of favour; and, indeed, this continues to be the case to the present day. In process of time it became convenient and necessary to enable utter barristers to practise; but, some time after they began to act as advocates in the superior courts, the terms upon which they were called to the bar, and allowed to plead, were prescribed by the Privy Council. Since the Commonwealth, the authority to call persons to the degree of barrister-at-law has been tacitly relinquished to the benchers of the different societies, and is now considered to be delegated to them from the judges of the superior courts; and accordingly the practice has been, in the cases where a claim to be called to the bar has been rejected, to appeal to the judges, who either confirm or reverse the decision of the benchers. Previously to a general arrangement made by all the Inns of Court in 1762, the qualifications for being called to the bar varied extremely. But it was determined in 1762, by all the Inns of Court, to adopt a common set of rules in this respect; and, at present, the general rule as to qualification in all the Inns of Court is,

that a person, in order to entitle himself to be called to the bar, must be twenty-one years of age, have kept twelve terms, and have been for five years, at the least, a member of the society. No examination of any kind is required before a person is called. If he be a Master or Bachelor of Arts of either of the English universities, or of Trinity College, Dublin, it is sufficient if he has kept twelve terms and has been three years a member of the Inn by which he desires to be called to the bar. The expense of being called to the bar amounts to between 80*l.* and 90*l.*, exclusive of the three years' commons and the admission fees. In order to qualify a person for the bar in Ireland, he must have kept eight terms at one of the four Inns of Court in London, and nine terms at the King's Inn in Dublin. [ADVOCATES, FACULTY OF; COUNSEL; INNS OF COURT.]

The following statement of the regulations as to the admission of advocates in the ecclesiastical and admiralty courts of Doctors' Commons, and in the provincial court of York, is taken from a Parliamentary Return (No. 282, sess. 1844). A candidate for admission as an advocate must deliver in to the office of the vicar-general of the province of Canterbury a certificate of his having taken the degree of Doctor of Laws. A petition, praying that the candidate may be admitted an advocate, is then presented to the archbishop, who issues his fiat for the admission of the applicant, directed to his vicar-general, who causes a rescript or commission to be prepared, addressed to the official principal of the Arches Court of Canterbury, empowering and requiring him to admit the candidate an advocate of that court. This commission contains a proviso that the person to be admitted shall not practise for one year from the date of his admission. The candidate is admitted on one of the regular sessions of the Arches Court; the rescript of the archbishop being first read, and the oaths of allegiance and supremacy with two other oaths being taken. This admission in the Arches Court qualifies the person for practising in any of the other ecclesiastical courts of Doctors' Commons. The present number of advocates is 24.

Advocates admitted in the Arches Court of Canterbury are admitted to be advocates of the High Court of Admiralty of England upon their alleging such their admission in the Arches Court. The present number of advocates is 24.

The advocates of the provincial courts at York must be barristers-at-law; and they are admitted as advocates of the Consistory Court there, with power to practise in all other the archbishop of York's courts, by virtue of his grace's fiat directed to his chancellor: the stamp-duty on their admission is 50*l.* But it is not required that they should be doctors of civil law, nor does the constitution of Archbishop Pickham, 9 Edw. I., 1221, apply to them. The present number of advocates is two. The admitted advocates of the courts have exclusive right to practise therein, though in cases of difficulty, counsel on the northern circuit are occasionally taken in to their assistance.

BARRISTER, in Scotland. [ADVOCATES, FACULTY OF.]

BARROCCIO, FEDERIGO, was the son of an eminent sculptor, and born at Urbino, in 1528. His first master was Battista Venezano, under whom he studied till his twentieth year, when he went to Rome, where he practised under the auspices of Cardinal della Rovera, whose palace he ornamented with several frescoes. He returned to his native town after an absence of four years, and painted a picture of St. Margaret, for the Confraternity of the Holy Sacrament. This, and other works, procured him such reputation, that he received an invitation from Pope Pius X. to assist in the embellishments of the Belvedere palace, on which Zucchero was also engaged. Here he executed the Annunciation in fresco on one of the ceilings, and a picture of the Holy Virgin with the Infant Saviour, with Saints, &c. Having finished these commissions, he returned to Urbino, and contributed to the Cathedral of S. Lorenzo at Perugia an altar-piece of the Taking Down from the Cross. During the pontificate of Gregory XIII., Barroccio again visited Rome, where he painted a picture of the Last Supper, for the Chiesa della Minerva; also for the Chiesa Nuova, the Visitation of the Virgin Mary to Elizabeth, and the Presentation in the Temple. These two last are considered to be his finest performances. Barroccio's style of colouring and effect was formed on that of Correggio, but it is the usual fate of imitators to transmit an exaggeration of some prominent peculiarity, rather than the intrinsic excellence of their models. Barroccio died at Urbino, in 1612, aged 84. He sometimes handled the graver, and has left several plates, executed with great spirit and correctness.

BARROIS, LE, or the territory of the duchy of Bar, formed part of the estates of the old dukes of Lorraine. It took its name from the chief town, Bar-le-Duc or Bar-sur-Ornain. This territory, which was 80 miles long and 40 wide, is now distributed among the departments of MOSELLE, MEUSE, MARNE (HAUTE), and VOSGES.

BA'RROS, JOAO DE, a Portuguese historian, born about 1496. He was placed, while a boy, in the court of King Emmanuel as a page. Young Barros showed an early disposition for study, and especially for the study of history. In 1522 Barros was sent as governor to St. George da Mina, on the Guinea coast. Three years after, he was recalled to Lisbon, and appointed treasurer to the colonial department, and afterwards agent-general for the colonies. While he held this office he availed himself of the valuable documents to which he had access, in order to compose his great work, 'Asia Portugueza,' or the history of the discoveries and establishments of the Portuguese in the Indian Seas. He divided it into four 'Decadas' of ten books each. The fourth Decade was left by Barros in manuscript at his death, and not published for a long time after. Diego do Couto, historiographer of India to Philip II. and Philip III., had previously taken up the continuation of Barros's first three Decades. The best edition of Barros's work is that of 1778, from the royal press, Lisbon, 9 vols. 8vo. Couto's continuation, as far as the eighth Decade, was

published also at the same press in eight vols. 8vo., 1778-1783, with a life of Couto. Barros is considered by the Portuguese as their best historian, both for the matter of his history and the manner of his composition. He died at his estate of Alitem, near Pombal, in 1570.

BARROW. [TUMULUS.]

BARROW, a river in Ireland, has its source in the Slievebloom Mountains, in Queen's County, a short distance N.W. from Mountmelic. The Barrow flows first to the east, through the town of Portarlington to the borders of the county of Kildare at Monasterevan, and then, taking a direction nearly south, it divides King's County and Queen's County from Kildare. Still flowing southwards, it passes through the county of Carlow, and afterwards forms the line of separation between Wexford on the east, and Kilkenny and Waterford on the west, and joins the sea at Waterford Harbour. At Ringwood, two miles above the town of New Ross, the Barrow receives the Nore; and their united stream is afterwards augmented by the Suir, which joins it to the east of the city of Waterford. The junction of both these streams with the Barrow takes place on its right or western bank. The Barrow is navigable to Athy, in the county of Kildare, about 65 miles in a direct line from its mouth; and the communication is afterwards continued to Dublin by means of a branch of the Grand Canal. Vessels of 200 tons burden can ascend the river 25 miles to the town of New Ross, which by this means is enabled to carry on a valuable export trade in agricultural produce. A considerable bar, which occurs just below the junction of the Barrow and the Nore, prevents the further passage of vessels of any great burden, except at certain states of the tide. The trade higher up is carried on by means of barges; and great quantities of corn and butter are thus annually sent down to Waterford for exportation. Much expense has been incurred in the improvement of the navigation of the Barrow, and the increase of the downward trade in consequence has been very great. The improvement of the Barrow navigation has also been made instrumental in reclaiming much land which was previously liable to injury from flooding; and it has otherwise proved of great advantage to the districts through which the river flows, by giving ready and cheap access to the markets of England for the agricultural produce of the south-eastern counties of Ireland. (Wakefield's *Account of Ireland; Reports to Parliament of the Board of Inland Navigation in Ireland.*)

BARROW POINT, the north-western extremity of the Continent of America, is the remotest point of arctic discovery made through Behring's Straits. It is 126 miles to the north-east of Icy Cape, which was the extreme point reached by Cook; and 146 miles west of Cape Beechey, the termination of Sir John Franklin's indefatigable labours in these seas. Point Barrow is a long sandy point projecting several miles; it is about one mile and a half wide at the narrowest part, and becomes broader towards the point, which was found thickly covered with the winter habitations of the Esquimaux. It presents one of the features common in those seas of the accretion of land by the pressure of the ice forcing up the sand from the shallow water and forming low swampy points interspersed with lakes. The natives were very numerous. Point Barrow lies in 71° 23½′ N. lat., 156° 21½′ W. long. (Beechey's *Voyage to the Pacific and Behring's Straits.*)

BARROW'S STRAIT, which connects the Polar Sea with the north-west part of Baffin's Bay, was first discovered by Baffin, in 1616, who, however, supposing the land to be continuous, gave it the name of Sir James Lancaster's Sound. It was explored in 1819 by Captain Parry, who named it Barrow's Strait, from John Barrow, Secretary of the Admiralty, a zealous promoter of north-west discovery. The strait is about 250 miles in length, and from 30 to 45 in breadth. Both shores are steep and cliffy, and the water of a great depth. The icebergs in the strait are very large. The parallel of 74 degrees north latitude runs through the Strait. (Parry's *First Voyage to the Polar Regions.*)

BARROW, ISAAC, was the eldest son of Thomas Barrow, linendraper to Charles I., and descended of a respectable Suffolk family. He is supposed to have been born in October 1630; but this has been disputed on the strength of an expression of his own, reported by a friend, implying that he was born on the 29th of February. However this may be, he was placed first at the Charterhouse, and afterwards at Felstead school in Essex. In the first he gave but little promise of excellence, his principal delight being in fighting, and his general habits negligent; so that his father is reported to have wished that, if it pleased God to take any of his children, it might be Isaac. At the second school he acquired a good character, and in December, 1643, he was entered at Peterhouse College, Cambridge, under his uncle, Isaac Barrow, who was a Fellow of the college. But by the time (February 1645) the nephew began his residence at the university the uncle had been ejected by the Presbyterians, and the nephew accordingly removed to Trinity College. His father, in the meanwhile, had suffered losses for his adherence to the cause of Charles I., and it is said that young Barrow was indebted for his support to the well-known Dr. Hammond. He was scholar of his college in 1647; B.A. in 1648; fellow in 1649; and M.A. in 1652; *ad eundem* at Oxford, 1653; B.D., 1661; D.D. (by mandate), 1670. These testimonies to his merit (the two last excepted) were the more remarkable, as he was always a stanch Royalist.

Barrow was led to his mathematical studies instead of beginning by them. He had at first intended to practise physic, and had studied accordingly, but on his accession to a fellowship he began to study theology, as required by the statutes of the college. He found by his own wants that a divine must be a chronologist, a chronologist an astronomer, and an astronomer a geometer. To the mathematics he therefore applied himself; he had in the meanwhile, as all his writings show, closely studied the learned lan-

guages, so that, on the resignation of the Greek professor, he was recommended to that chair. This he did not gain, being suspected of Arminianism; and the disappointment, together with the unfavourable character of public events to his views, induced him to go abroad. He travelled (1655-1659) through France and Italy to Smyrna and Constantinople, thence again to Venice, and through Germany and Holland home. After his return he was episcopally ordained, a little before the Restoration. The neglect with which he was treated after that event, and the distich in which he celebrated it,

'Te magis optavit rediturum, Carole, nemo,
Et nemo sensit te rediisse minus.'

are well known; but in 1660 he was chosen Greek professor at Cambridge, and in 1662 Gresham professor of geometry. But this last he resigned in 1664, holding its duties to be incompatible with those of the Lucasian professorship, to which he was appointed by Mr. Lucas at the institution of that chair in 1663; and this again he resigned in 1669 in favour of a pupil, a young man whom he considered as of the highest promise, aged 27, and named Isaac Newton: indeed his whole history is one of resignations of profit upon principle. He had previously been offered a good living upon condition of instructing the son of the donor; he rejected the offer as simoniacal. His uncle gave him a small living in Wales, and Dr. Seth Ward, bishop of Salisbury, made him one of the prebendaries of that cathedral. He applied the revenues of both preferments to charitable purposes, and resigned them when Charles II., in 1672, appointed him master of Trinity College. In this capacity he exerted himself to form a library, the want of which had been long felt. His letters to various individuals to induce them to subscribe to the undertaking are preserved in the edifice which they were, through his energy and the influence of his high character, the means of erecting, and which is one of the most beautiful works of art in the university. He likewise remitted to the college several expenses which statute or custom might have compelled them to incur for the maintenance of his office. He died very young, considering his reputation, May 4, 1677, aged about 47, and was buried in Westminster Abbey: he left his manuscripts to Tillotson (afterwards archbishop), and Abraham Hill, his biographer.

On the moral and personal character of Barrow there does not seem a shade which can enable any one to deny him the highest degree of human excellence. His energy of mind is sufficiently attested by the quantity of his writings—by the successful variety of his studies—by the extraordinary opinion of him formed by his associates, when compared with the degree of interest his writings present to posterity; which is always, in our opinion, proof of a lustre cast upon writings by personal character—and by the erection of Trinity College Library above mentioned. The quarrelsome disposition of his boyhood subsided into rational and even reasoning courage, under the discipline to which he subjected his mind. It is related of him, that being once attacked by a large dog which was kept chained all day, but let loose at night for the security of the house (in which he was a visitor, and in the garden of which he was wandering early in the morning), 'he catched him by the throat, threw him, and lay upon him, and whilst he kept him down, considered what he should do in that exigency: once he had a mind to kill him, but he quite altered this resolution, judging that it would be an unjust action, for the dog did his duty, and he himself was in fault for rambling out of his lodgings before it was light. At length he called out so loud that he was heard.' Being attacked by Algerines during his voyage to Smyrna, 'he betook himself to his arms, stayed upon the deck, cheerfully and vigorously fighting, till the pirate, perceiving the stout defence the ship made, sheered off and left her. I asked him why he did not go down into the hold, and leave the defence of the ship to those to whom it did belong. He replied, It concerned no man more than myself: I would rather have lost my life than have fallen into the hands of those merciless infidels.'

Dr. Barrow never married: his fellowship prevented his doing so in earlier life, and on his appointment to the mastership he had the permission rescinded, which was granted in the patent. Mr. Hill says he judged it contrary to the college statutes.

We are now to consider Dr. Barrow in two lights, as a mathematician and a theologian. And in the first of these characters, without denying him high praise, we regret that the kind of language which has frequently been used concerning him should oblige us to differ from many great authorities. Without biassing the reader by the names of these, we shall quote some extracts from different writings:—

'He may be esteemed as having shown a compass of invention equal if not superior to any of the moderns, Sir Isaac Newton only excepted.' This was written by one who knew Vieta, Wallis, Descartes, and Leibnitz. 'He has been excelled only by his successor, Newton' (in geometry). 'The same genius that seemed to be born only to bring hidden truths to light,' &c. &c. This is quoted and agreed to by an encyclopædist of some authority in this country, who however does not state what these hidden truths were. 'Barrow, scarcely an inferior name,' that is, to Newton, is the unguarded expression of a contemporary of great note. We must dissent entirely from such an extent of praise, as having tendencies injurious to correct biography, and not allowable even as the hyperbole which writers on that subject usually employ. We shall now make some quotations from foreigners, and, as in the former case, without names. 'The *Lectiones Opticæ* is full of profound researches in the properties of curves.' 'His *Lectiones Opticæ* are worthy to figure by the side of his *Lectiones Geometricæ*. In this work Barrow, quitting the route marked out by other opticians, applied himself principally to discuss questions which had not been treated at all, or which had not been sufficiently elucidated. Among other things he treats the theory of foci, which, except in a small number of cases, were

then determined by experiment. Barrow gave a complete solution of all the cases of the problem, by an elegant formula. This book, as well as the *Lectiones Geometricæ*, is a mine of curious and interesting propositions, to which geometry is always applied with particular elegance.'

The preceding is, in our opinion, the best description which could be given of Barrow's mathematical writings, in as few words.

Barrow produced in a geometrical form that prelude to the differential calculus which goes by the name of the method of tangents. It was, in point of fact, what was afterwards the fundamental notion of the differentials of Leibnitz, and, in Newton's language, asserted the ultimate equality of the ratio of the differences of two ordinates and abscissæ to that of the ordinate and subtangent. It was so like the previous method of Fermat, that Montucla calls it Fermat's method simplified.

Popular religious writers, endeavouring to impress on their readers the argument in favour of Christianity, arising out of the greatness of the minds which have received it, have frequently, not being well acquainted with the sciences, handled their subject unskilfully, and distorted the proper proportions of different reputations. Barrow, the eminent mathematician, and the most upright and consistent of men, one of the first theologians of his day, of varied and deep knowledge upon so many subjects, has often, in this way, had the splendour of all his different characters made to shine upon the only one in which he was viewed for the time, namely that of a mathematician. The French encyclopædists, whose bias lay in an exactly opposite direction, have fallen into a similar error, by representing him as an 'obscure mathematician and theologian.'

The character of Barrow as a theological writer has always stood high among the English divines. His sermons, as Le Clerc observes, are rather treatises and dissertations than harangues; and he wrote and re-wrote them three or four times. They are always cited as exact and comprehensive arguments, the produce of a grasp which could collect and of a patience which could combine all that was to be said upon the subject in question.

BARRY, Island. [GLAMORGANSHIRE.]

BARRY, LODOWICK, was the author of a comedy called 'Ram-Alley, or Merry Tricks,' which was first printed in 1611, and will be found in the successive editions of Dodsley's Old Plays. Both for liveliness of incident, and for spirit and humour in dialogue and in character, it is one of the very best of our Old English dramas. In regard to the author nothing is known with certainty.

BARRY, JAMES. This distinguished artist was born in Cork, October 11, 1741. His father was a coasting-trader, who had not the slightest tincture of those endowments by which his son became distinguished, and regarded his predilection for literature and the arts with extreme aversion. But young Barry made such rapid progress in his scholastic acquirements as to excite the attention of his superiors. At the age of two-and-twenty, Barry went to Dublin, where he exhibited, at the Society of Arts, an historical picture, which he had recently executed. The subject was drawn from a tradition relating to the first arrival of St. Patrick in Ireland. This work introduced Barry to Edmund Burke, who discerned in it such evidence of genius as induced him, shortly afterwards, to take the artist with him to England, where he gave him all the advantages of his powerful patronage, and in the ensuing year sent him to Rome. Barry's irritable temper, although the accounts of it have been somewhat exaggerated, was no doubt a source of annoyance both to himself and others. Shortly after his arrival in Rome, he became involved in a series of disputes with the artists and *virtuosi*, which being reported to Burke, that gentleman sent him a long letter of admonition.

He remained in Rome five years, and during that time was elected a member of the Clementine Academy at Bologna. In 1770 he returned to England, destitute of all but art, but justly confident in his acquirements, and anxious to distinguish himself. About this time a project had been formed by Sir Joshua Reynolds and other leading artists, for decorating St. Paul's Church with Scriptural paintings; Barry was associated in the undertaking, and he selected the subject of the Jews rejecting Christ. The artists offered their works gratuitously, but this liberal proposition was discountenanced, and refused by the authorities connected with the Cathedral. During his residence on the continent, Barry's indignation had been greatly excited by opinions prevalent there on the subject of British genius. Winckelmann and Du Bos had asserted that the English were incapable of excellence in any of the higher walks of art; and Barry, attaching more importance than was due to such sweeping conclusions, undertook to give them a regular refutation. In 1775 he published an 'Inquiry into the real and imaginary Obstructions to the Acquisition of the Arts in England.' In this work he traces and points out with great perspicuity the real causes, political and others, by which the progress of the arts had been impeded in this country. Shortly afterwards Barry proposed to the Society for the Encouragement of Arts, Manufactures, and Commerce, to paint, gratuitously, a series of pictures, illustrative of the position, that the happiness of mankind is promoted in proportion to the cultivation of knowledge. His offer was accepted, and the works now decorate the great room of the institution in the Adelphi. The series consists of six pictures, namely, Orpheus reciting his verses to the wild inhabitants of Thrace; a Grecian Harvest-Home; the Victors at Olympia; the Triumph of the Thames; the Society distributing their Prizes; and Final Retribution. These subjects, dissimilar and somewhat heterogeneous as they may appear, are brought to bear on the general subject with wonderful force and unity; and we are impressed, while regarding them, with the conviction that such a work could neither have been conceived nor executed except by a mind of the very

highest order. The picture on which Barry may rest his most indisputable claim to fame is that of the Victors at Olympia. The picture is not only a splendid example of pictorial skill, but embodies whatever impressions have been transmitted to us by poetry or history of those celebrations. When Canova was in England, he declared that, had he known of the existence of such a work, he would, without any other motive, have made the voyage to England for the purpose of seeing it.

Having completed this work, Barry must have felt conscious that he had at least secured that which had been the chief aim of his life—the reputation of a great painter. This object was obtained by no slight sacrifices; for his task had been pursued, through seven years, amidst all the hardships of poverty and privation. It would be gratifying were we able to add that he received from public admiration or sympathy a reward at all proportioned to his deserts. The result was far different. He was permitted by the society to whom he presented this magnificent gift to exhibit his pictures in the room which they decorate. The receipts of this exhibition scarcely amounted to 500*l.*, to which, however, the society added a vote of 200*l.*, and this sum comprises nearly the whole produce of his professional career. It can excite no surprise that, under those circumstances, his natural irritability became exasperated. Barry's disputes with the Royal Academy were another source of bitterness to him. He had been elected Professor of Painting to that body in 1782, and his altercations with the members were perpetual. The members felt so annoyed at his attacks, that they preferred against Barry a formal body of charges, and, in a general assembly, expelled him from the Academy. Shortly after this event, the Earl of Buchan, moved perhaps by an impression that Barry had been treated unjustly, as well as by admiration of his talents, set on foot a subscription in his favour, which amounted to about 1000*l.* With this sum it was proposed to purchase him an annuity, but the close of his career was at hand, and the kind intentions of his friends were rendered unavailing. His life had been a series of the most wretched privations; and he sunk under an attack of pleuritic fever, which his obstinate rejection of medical aid in the first instance rendered fatal. He died Feb. 6, 1806. His remains, after lying in state in the great room of the Society of Arts, in the Adelphi, were interred in St. Paul's Cathedral.

Among the literary works of Barry may be mentioned his six lectures delivered at the Royal Academy, and a fragment on Gothic architecture.

(Barry's *Life and Works*, vol. i. p. 136.)

BARRY, COMTESSE DU. MARIE-JEANNE GOMART DE VAUBERNIER was born in 1744. Her reputed father was an exciseman. Having gone to Paris with her mother, when she was about fifteen, she became acquainted with Count Jean du Barry, a fashionable rake of his day, who made her his mistress for a short time, and afterwards introduced her to Lebel, valet-de-chambre to Louis XV., by whom she was presented to the king. She at once captivated the licentious monarch, who wished her to have a title, in order that she might appear at court, and Guillaume du Barry, Count Jean's brother, consented to lend himself to the wish of the king by marrying her, after which she was introduced to the court at Versailles as Countess du Barry in 1769. The court of France during the Regency and the subsequent reign of Louis XV. was the abode of the most barefaced profligacy. Every thing was sold and every thing was obtained through the intrigues of vicious women. When Louis XV. died in 1774, the Countess du Barry was shut up in a convent near Meaux; but some time after Louis XVI. allowed her to come out, restored to her the residence of Luciennes, which had been built for her by the old king, and allowed her a pension. She was almost forgotten when the Revolution broke out; but she then showed herself grateful for the treatment which she had experienced from Louis XVI., and she repaired to England, careless of danger, in 1793, in order to sell her jewels, the produce of which she intended for the use of the queen and her children, who were then prisoners in the Temple. On her return from England she was brought before the revolutionary tribunal, on the charge of 'being a conspirator, and of having worn mourning in London for the death of the tyrant.' She was condemned, and was executed, Nov. 6, 1793. (*Biographie Universelle.*)

BARS, a county in the circle of Hither Danube, in Hungary, containing an area of 1044 square miles, is bounded N. by the county of Thurocz, E. by those of Honther and Zolyom or Sohl, S. by those of Comorn and Gran, and W. by that of Neutra. The northern districts are very mountainous, as they are crossed by the Klyan range of the Carpathians: this range is said to afford the finest gold in Europe. South of this range are the Schemnitz and Pukantz chains, which extend to the banks of the Gran. Another branch of the same range extends in a southerly direction as far as the mountains which divide this circle from those of Gran and Comorn. But, in general, the whole of Bars south of Lewenz is a complete level. The principal rivers which water this county are the Gran, the Zsitva or Sitva, and the Neutra, all of which fall into the Danube. Among many minor streams is the Kremnitz, which impels several works on its banks. The soil, in the north, affords good pasturage to great numbers of horned cattle and sheep; in the south, where much grain and some wine are produced, it is extremely fertile. Gold, silver, malachite, copper, and iron ore, are found near Königsberg and Kremnitz. Amethysts, chalcedony, cornelian, semi-opal, jasper, agate, crystal, obsidian, syenite, porphyry, basalt, millstone-grit, &c., are also among the mineral products. There are warm sulphuretted waters at Skleno, and chalybeate springs at Eisenbad.

The population of Bars is about 138,000. Some gipsy tribes roam through the country as tinkers, &c., but no Jew is permitted to set foot within it. The county contains—two free mining towns, Kremnitz [Cremnitz], and Königsberg (Uj-Banya), on the Gran, which has about 3900 inhabitants: 11 market towns, the principal

of which are Levenz or Leva, population 3600; and Aranyos-Mároth, population 1800: and 190 villages. Bars, from which the county takes its name, is a market-town on the Gran, belonging to Prince Esterhazy, and was once a celebrated fortress, better known under its German designation, Bersenburg.

BARSOWITE occurs massive and in granular distinct concretions. Colour snow-white. Fracture splintery or imperfectly foliated. Hardness 5.5. Specific gravity 2.740. Occurs in the Ural Mountains. Analysis: Silica, 49.08; alumina, 32.76; lime, 18.16.

BART, JEAN, was born at Dunkerque in 1650. While yet a boy he went to Holland, served under the celebrated Admiral de Ruyter, and became a thorough seaman. When Louis XIV. declared war against Holland in 1672, Bart returned to Dunkerque, and entered on board a privateer, which was very successful in its cruise. He then fitted out a sloop with two guns and thirty-six men, and, having met a Dutch man-of-war in the Texel, he boarded her, took her, and brought her into Dunkerque. He next joined several speculators who fitted out a ten-gun ship, and gave him the command of it. In this he was equally successful, till at length his name became known at court, and Louis XIV. sent him a gold medal and chain, with the rank of lieutenant in the royal navy. In the war against Spain, Jean Bart had the command of a frigate in the Mediterranean, and made many prizes. When the war broke out between France and England in 1689, Bart and the Chevalier de Forbin commanded two ships of war; and, while they were escorting a fleet of merchantmen, they were attacked by two English frigates. After a desperate fight, the two French ships were taken and carried into Plymouth. Bart and Forbin escaped soon after by cutting through the bars of the window of their prison with a file. On their return, the king made them both captains.

In 1690 Bart took the command of a forty-gun ship, and joined the Brest fleet under Admiral de Tourville: he contributed materially to the advantage obtained by the French off Dieppe over the English and Dutch allied squadrons on the 10th July. The following year Bart obtained from the Minister of Marine the command of a squadron of small vessels, with which he sailed out of Dunkerque, passing through the English blockading squadron, and went into the North Sea, where he made numerous prizes; he landed also on the coast of Scotland, where he plundered several villages.

After the defeat of the French at the battle of La Hogue, at which he was not present, Bart sailed from Dunkerque with three frigates, made a descent on the English coast near Newcastle, and plundered and burnt some villages. In 1694 he attacked a Dutch fleet under Rear-Admiral Vries, boarded the admiral's ship, and took her, after having mortally wounded the admiral himself with his own hand. By this victory he recovered from the Dutch a fleet of 300 vessels laden with corn from the Baltic, and bound to France, which country was then suffering under a severe dearth.

The peace of Ryswick, in September 1697, having put an end to the war, Bart retired to live with his family. He died at Dunkerque in April 1702, at the age of fifty-one. His eldest son, François, became a vice-admiral, and died in 1755.

(*Life of Jean Bart*, translated from the French, by the Rev. Edward Mangin, M.A., London, 1828; *Biographie Universelle.*)

BARTAN, or BARTIN, River. [PARTHENIUS.]

BARTAS, GUILLAUME DE SALUSTE DU, was born about the year 1544, at Montfort in Armagnac, and brought up to the profession of arms. Being of the reformed religion, he became gentleman of the chamber to Henry IV. during that prince's contest for the throne; served him in several missions at foreign courts; and was present at the famous battle of Ivry, four months after which he died of his wounds.

Du Bartas is a striking instance of the perishable nature of reputation founded on literary fashion and a popular subject. In his own time he was accounted so great a poet, that his principal work, giving an account of 'the Week, or Seven Days of the Creation,' and founded probably on the 'Sette Giornate' of Tasso, went through thirty editions in less than six years; was translated into Latin, Italian, Spanish, German, and English; and obtained the applause of his most illustrious contemporaries, including Spenser. Yet his own countrymen now accuse him of utter want of judgment; of low, extravagant, and disgusting imagery; and of pedantic compounds of words in imitation of the ancients. What was pedantry, however, in this respect, with Du Bartas, might have helped, in greater hands, to give fire and elevation to the French language, had the idiom itself permitted it. The same compounding of words, which came to nothing in old French poetry, was so warmly received in England, through the medium of Du Bartas's translator, Sylvester, that, in conjunction with the like daring in Chapman's 'Homer,' and Sir Philip Sidney's 'Arcadia,' it avowedly helped to enrich the poetry of our native country; and to Sylvester are traced some of the most beautiful compound epithets of Milton and Fletcher. Dryden records with amazement his having admired Sylvester's 'Du Bartas' when a boy, and his thinking 'inimitable Spenser a mean poet' in comparison. How, then, did it happen that Spenser himself found something to admire in Du Bartas at a riper age? Because, being a greater poet than Dryden, he had the more natural piety and imagination; was disposed to think better of the author for the sake of his subject, and was able to do more justice to what was good in him here and there. Du Bartas, with reference both to his subject and his genius, may be styled the French Blackmore.

(*Biographie Univ.*; Sylvester's *Du Bartas.*)

BARTER is the exchange of one thing for another. The term is properly applied only to the exchange of movable things. Barter of course implies that there are two persons who exchange, and two things or two sets of things which are exchanged against one another. Each person

transfers to the other the ownership or title that he has to the thing which he parts with. Barter is simply the giving of one movable thing for another, without reference to any standard of value. When a man gives any thing for the precious metals in the form of coin, or for a promise to pay in the precious metals in the form of coin, or for paper money which has an ascertained value in specie, the transaction is a sale. There is no sale without a price, that is, a money value, which is given on the one side as an equivalent for some thing, not money, which is given on the other side.

If two persons exchange things with reference to a money value, as if one man gives one hundred pounds' worth of wheat at the current price for one hundred pounds worth of cotton wool at the current price, the transaction is still exchange or barter: the price has only been used as a means of making the exchange a fair transaction. If two persons exchange things on which they have agreed to put a money value, and the two things have an unequal money value, so that one party has also to give a sum of money to another, the transaction may be considered a sale.

Pure barter only takes place among barbarous nations, or between barbarous people and the traders of civilized nations. The exchanges of civilized nations are effected in the form of sale, which is more convenient for all parties. A recurrence to barter among a people who have been accustomed to effect their exchanges by sale, would indicate a want of gold and silver coin, and also a want of mutual confidence; and both these wants would indicate great disorder in the social body.

BARTER, a rule of arithmetic, introduced into books which teach rules without principles, but which, though a necessary and usual application of arithmetic, would be too obvious a consequence to be introduced into any system of demonstrative arithmetic. It means the exchanging of goods against goods, not against money.

BARTFELD, a free imperial town in the county of Sàros, the most north-easterly county of Hungary. It is situated on the Töpl, not far from the frontiers of Galicia. Bartfeld carries on a brisk trade in wine, hemp, and linens. The population amounts to about 5000. It lies in 49° 16 N. lat., and 21° 18′ E. long. In its immediate neighbourhood are the two chalybeate springs to which strangers resort in very considerable numbers, at all seasons of the year: they are accounted the finest mineral waters in Hungary.

BARTH, a maritime town of Pomerania, 10 miles N. W. of Stralsund, stands at the entrance of the river Barth into the Binnen-See, an arm of the Baltic. It has manufactures of soap and tobacco, builds ships, and carries on a brisk export and import trade. The number of inhabitants is 3800.

BARTHELEMY, JEAN-JACQUES, was born near Aubagne in Provence in 1716. At twelve years of age he entered the College of the Fathers de l'Oratoire, at Marseille, and went next into the Seminary of the Jesuits. In 1743 he proceeded to Paris, where he made the acquaintance of Gros de Boze, secretary to the Academy of Inscriptions and Belles Lettres, and keeper of the king's cabinet of medals. In 1745 Gros de Boze took Barthelemy as his assistant in the cabinet, and, after Gros' death, Barthelemy succeeded him as keeper. His career was a fortunate one. He travelled for the purpose of collecting medals for the king's cabinet; he wrote on his favourite subject of antiquities; he was loaded with substantial favours. Barthelemy made a good use of his income; he assisted many of his less fortunate brethren in the career of science, he provided for his nephews and nieces, and continued himself to live soberly and modestly. The work which has made his name popular is his 'Voyage du Jeune Anacharsis en Grèce,' 4 vols. 4to., Paris, 1788, and 7 vols. 8vo., 1789. He supposes a young Scythian, of the name of Anacharsis, acquainted with the language of the Greeks, to have made a journey into Greece in search of information, and to have resided many years in its principal cities, between 363 and 337 B.C. The greater part of this period corresponds with the reign of Philip of Macedonia, till the battle of Chæronea, after which Anacharsis is made finally to leave Greece and return to Scythia, where he is supposed to have compiled a narrative of his travels and observations in Greece. The work is in the form of a tour or journal of a residence of many years in Greece. This form is certainly attractive to the general reader, but perhaps not well calculated to give sound information in a department of learning so extensive and multifarious. The admixture of fiction with real facts is not very favourable to strict historical accuracy.

The French Revolution, which found Barthelemy immersed in his favourite studies, deprived him at once of his income, of about 25,000 francs. Though he submitted to this without a murmur, the gloom of despondency seized him when he saw his best and oldest friends led to prison, and thence to the scaffold. He himself, then nearly eighty years of age, was denounced as an aristocrat, and suddenly taken to prison. The arrest of the aged Barthelemy, however, proceeded merely from some obscure informer; the Jacobins themselves were ashamed of it, and Danton procured his release the next day. Citizen Paré, then Minister of the Interior, offered Barthelemy the place of chief librarian of the Royal Library, which he refused. He now felt weary of life: even literary and scientific pursuits had no longer any attractions for him. He expired in his house in Paris, April 30, 1795.

BARTHEZ, PAUL JOSEPH, a physician and physiologist, was born at Montpellier, in 1734. At first he was inclined to the church; but his father subsequently induced him to study medicine. In 1756 he was employed as physician to the army, which he soon quitted, after being attacked with severe fever, and returned to Paris, where he became associated with the leading philosophers of the day as joint editor of the 'Journal des Savants,' and of the 'Encyclopédie Méthodique.' In 1759 he was appointed professor at Montpellier. In his lectures he promulgated the doctrines he had announced in his early essays, which he afterwards enlarged and published,

'Oratio de Principio Vitali Hominis,' 4to., Montpellier, 1773; 'Nova Doctrina de Functionibus Corporis Humani,' Montpellier, 1774. Another work gave more scope for the development of his views, 'Nouveaux Elémens de la Science de l'Homme,' 8vo., Montpellier, of which a second edition was published by him at Paris, in 2 vols. 8vo., 1806.

In 1774 he was made assistant chancellor, and afterwards sole chancellor, of the University of Montpellier. In 1780 he was summoned to Paris, to assume the duties of consulting physician to the king, and first physician to the Duke of Orleans. He continued to practise his profession with increasing reputation for ten years, when the struggles of the Revolution drove him from the metropolis. He took refuge at Carcassonne, where he practised medicine gratuitously, and devoted himself to study, the result of which was a treatise, 'Nouvelle Méchanique des Mouvements de l'Homme et des Animaux.' Some years afterwards, the faculties of medicine having been re-established, he was appointed honorary professor at Montpellier. In 1802 he was appointed physician to the Emperor Napoleon, and soon after published a treatise 'Des Maladies Goutteuses,' 2 vols. 8vo., which is deemed inferior to his former publications.

After an attack of fever, he expired Oct. 15, 1806, aged seventy-one. He left behind him two works, which were afterwards published,—'Traité du Beau,' 8vo., Paris, 1807; and 'Consultations de Médicine,' 2 vols. 8vo., Paris, 1810.

(Lordat, *Exposition de la Doctrine Médicale de M. Barthez; Biographie Universelle.*)

BARTHOLI'NE, THOMAS, was born at Copenhagen, Oct. 20, 1616. After some years' study at the university of his native place, following the example of his father, he visited the most celebrated schools of Europe, at almost all of which he published some work; thus leaving at each a memorial of his assiduity and talents. First, in 1637, he went to Leyden, where he resided for three years, and where afterwards he republished the 'Anatomiæ Institutiones' of his father Caspar Bartholine, with additions, 1641, 1 vol. 8vo. Thence he went to France, and spent two years between Paris and Montpellier. From France he went to Padua, where he lived three years. After visiting the greater part of Italy and passing over to Malta, he returned to Padua, and thence proceeded to Basel, where he took the degree of doctor of medicine in 1645. In the following year he returned to Copenhagen with a large collection of books. In 1647 he was appointed professor of mathematics in the University of Copenhagen, which situation he exchanged the following year for the chair of anatomy. During the time he held this office he published a great many works on subjects more or less connected with anatomy and medicine, as well as other subjects. Some of these treat of anatomical discoveries then or recently made, the most celebrated of which was the discovery of the lymphatic vessels, the merit of which he assigns to himself, though his claim is contested in favour of Rudbeck, a Swedish anatomist, who, in October and November 1650, and the greater part of the following year, made many experiments to discover the course and termination of the lacteals.

Another important work of Bartholine's is entitled 'Dissertatio Anatomica de Hepate defuncto novis Bilsionorum Observationibus opposita,' Copenhagen 1661, 8vo. Up to the time of Bartholine the liver was supposed to be the sole organ of sanguification, a doctrine which he disproved in this and other works. In 1661, his health being very delicate, he resigned his professorship, and retired to the country. Surrounded by his books, he hoped to spend the remainder of his life in study and tranquillity, but in 1670 a fire destroyed his house, his library, and his manuscripts. After this unfortunate event he returned to Copenhagen, where the king appointed him his physician, and, in addition to his salary, granted him an exemption from taxes. The University of Copenhagen nominated him librarian; and afterwards, in 1675, the king appointed him a member of the grand council of Denmark.

His works altogether amount to sixty-six, one of the last of which was 'De Peregrinatione Medicâ,' Copenhagen 1674, fol., being an account of his travels, with his advice to his two sons how to travel with advantage. He died at Copenhagen, Dec. 4, 1680, in the 65th year of his age.

(*Encyclopédie Méthodique;* Haller's *Bibliotheca Medica, et Bibliotheca Anatomica.*)

BARTHOLINE, THOMAS, son of the preceding, born in 1659, became eminent in the science of jurisprudence, in the prosecution of which, after studying at the University of Copenhagen, he proceeded to those of Leyden, Paris, Leipzig, and Oxford. On his return home, he was appointed professor of history and civil law, and held the offices of assessor of the consistory, secretary to the king, antiquary, and keeper of the royal archives. He died November 5th, 1690. He published: 'De Longobardis,' 4to., 1676; 'De Holgero Dano,' 8vo., 1677; 'De Equestris Ordinis Danebrogici à Christiano V. instaurati Origine,' fol.; 'De Causis Mortis à Danis Gentilibus contemptæ,' 4to.; 'Antiquitatum Danicarum Libri Tres, 4to., 1689; 'De Legendis Libris;' 'Orationes et Carmina.' He left also, but unfinished, an Ecclesiastical History of the North. On his work 'De Causis Mortis' Gray founded his 'Descent of Odin.' (Moreri, *Diction.* ii. p. 90; Chalmers's *Biogr. Dict.* vol. iv. p. 74.)

BARTHOLOMEW, ST., MASSACRE OF, is the name by which the inhuman slaughter of the Huguenots at Paris, in the year 1572, is known. It is called the 'Bartholomew Massacre,' or simply 'the Bartholomew,' because it occurred on the 24th of August, St. Bartholomew's Day. The details of the occurrences which led to it, and the results, with the share taken by the Queen, Mary de' Medici, King Charles IX. and others are to be found in Davila's *History of the Civil Wars of France;* De Thou's *History;* Sully's *Mémoires;* and other histories.

BARTHOLOMEW, ST., Island. [ANTILLES; WEST INDIES.]

BARTOLI, DANIE'LE, was born at Ferrara, in 1608. At the age of fifteen he entered

the Order of the Jesuits, of which Order he became the historian. He divides his subject by treating successively of the different parts of the world in which the Order had established itself. He began with Asia, 'Istoria della Compagnia di Gesù, l'Asia, Parte Prima,' fol., Rome, 1653. In this volume he treats of the first missionaries sent by the Jesuits to the East, beginning with Francisco Xavier, who was styled the Apostle of the Indies. Bartoli published next, 'Il Giappone, Seconda Parte dell' Asia,' fol., Rome, 1660; perhaps the most interesting of his works. The rapid diffusion of Christianity in Japan, and its subsequent total eradication by fire and sword, are remarkable historical events. Bartoli's narrative embraces the whole history of Christianity in Japan, from the landing of its first preacher, Xavier, in 1549, till its complete extinction, in 1637, when Japan was closed against all Europeans, with the exception of the Dutch, who were allowed to trade at the harbour of Nangasaki. The book contains many interesting particulars; he drew his facts from original documents, and shows the faults which the Christians committed, and which contributed to their ruin. Bartoli's next publication was 'La Cina, Terza Parte dell' Asia,' fol., Rome, 1663. This work, which embraces also the missions to Cochin China and Tonkin, concludes Bartoli's account of Asia—an account replete with interest, for these may be looked upon as the heroic times of the Order of Jesuits. He next published 'L'Italia, Prima Parte dell' Europa,' fol., Rome, 1673; and 'Dell' Inghilterra, Seconda Parte dell' Europa,' fol., Rome, 1667. This is a history of the English Catholics, principally under Elizabeth and James I. Bartoli wrote also the life of Ignatius de Loyola, the founder of the Jesuits. He wrote also many minor works—On Morals; on Physical Phenomena; on the Italian Language. Bartoli was appointed Rector of the Gregorian or Roman College in 1671. He died at Rome, in January 1685, aged seventy-seven years. (Mazzuchelli, *Scrittori d'Italia.*)

BA'RTOLI, PIETRO SANTO, an Italian painter and engraver, born at Perugia in 1635. As an engraver he obtained a great reputation, more however from the subjects and the number of his prints than for any particular excellence of execution. He studied painting under Nicholas Poussin, from whom he probably, in some degree, derived his great love of the works of ancient art. As a painter he did very little beyond copying, in which he was so excellent, that even Poussin himself had difficulty in distinguishing between his own pictures and the copies made of them by Bartoli. Bartoli had a correct appreciation of the merits of Greek design, and, though technically his prints have little excellence, they are in most cases true to their originals. His prints, mostly etchings, which amount to many hundreds, are chiefly from ancient bassi-rilievi or paintings in the ruins in or about Rome and other Italian cities. Bartoli died in 1700.

BARTOLOZZI, FRANCESCO, was born in Florence in 1730. He received his first instructions in drawing in the Florentine academy. Here his acquaintance commenced with Giovanni Cipriani, with whom his name became afterwards intimately associated by their joint productions in art. Bartolozzi commenced engraving under Joseph Wagner, of Venice, and when the term of his engagement with that master had expired he married a Venetian lady, and went to Rome, whither he had been invited by Cardinal Bottari. Here he established his reputation by his fine plates from the life of St. Nilus, and by a series of portraits for a new edition of Vasari. Having completed these works, he returned to Venice, where he was engaged by Mr. Dalton, librarian to George III., to engrave a set of drawings by Guercino, which having accomplished, that gentleman invited him to England to continue engraving for him on a stipend of 300*l.* per annum: this offer Bartolozzi accepted. Some of the earliest performances by which Bartolozzi distinguished himself in England were designs for tickets for the select performances at the Opera House; and he evinced so much talent in these limited subjects, and obtained such popularity, as to excite the jealousy of the celebrated engraver Strange, who pronounced him incapable of executing any thing else. This illiberal remark brought on its own refutation. Bartolozzi immediately commenced his engraving of Clytie, after Annibale Carracci, and that of the Virgin and Child, after Carlo Dolce. These plates are well known; they are in the highest degree brilliant and spirited. Bartolozzi engraved a prodigious number of the paintings and drawings of Cipriani, who had likewise settled in England: the styles of the painter and engraver harmonize admirably; grace, elegance, and suavity, are the characteristics of each, and their works for a considerable time held almost unrivalled possession of the public favour. The prevailing fault in the plates from Cipriani is a certain ultra-refinement, an excess of softness and finishing incompatible with vigorous style; but this objection must lie chiefly against the painter. Bartolozzi showed that when engaged on the works of more efficient masters he could transmit them to the copper with adequate force and effect. One of Bartolozzi's earliest patrons was Alderman Boydell, for whose Shakspeare Gallery he engraved a number of fine plates.

In the year 1802 Bartolozzi received an invitation from the Prince Regent of Portugal to settle at Lisbon, as superintendent of a school of engravers. He left England in his 75th year, and was received at Lisbon with all the respect due to his distinguished talents. He died in that capital in his 88th year.

BARTON, ELIZABETH, the 'holy maid of Kent,' first becomes known to us in 1525, as servant at an inn at Aldington in Kent. She was subject to epileptic fits, and in the paroxysms of her disorder vented her feelings in incoherent phrases and exclamations, which Richard Master, parson of the parish, took advantage of to make people believe that she was an instrument of divine revelation. This opinion began to gain ground, and a successful prediction as to the death of a child

established her reputation. She soon after entered the convent of St. Sepulchre's at Canterbury, and became a nun.

In this new situation her ecstasies and revelations were multiplied, and she became generally known by the appellation of the 'holy maid of Kent.' Several persons of distinction, 'nobles as well as spiritual persons,' to quote from the statute, believed in her divine mission, among whom were Bishop Fisher, Archbishop Warham, and Sir Thomas More.

Had this poor creature confined her prophecies to the common occurrences of life, or even to the current topics of religious controversy, it is more than probable that she would have been permitted to die in peace; but, led by her zeal, or more probably worked upon by others, she boldly denounced the divorce then in progress of Queen Catherine, and prophesied the death of the king. The government at length proceeded to take active measures against her and her adherents. Accordingly, in November 1533, the nun, with five priests and three lay gentlemen, her accomplices, were brought before the Star Chamber, and sentenced to do public penance as impostors at St. Paul's Cross. It is stated by the more zealous anti-Romish writers, that the nun did confess herself to be an impostor; but the nun's confession, whatever were its motives, availed her nothing. From the pillory she and her companions were led back to prison, where they lay till the following January, when they were attainted of high treason. On the 21st April, 1534, the nun was beheaded at Tyburn, together with the five priests.

There are some small discrepancies in the accounts of this woman's confession and of the execution of herself and her accomplices. The credit and countenance which Fisher, bishop of Rochester, and Sir Thomas More had given to her, were among the articles of accusation against these two persons.

(Strype's *Annals*, vol. i.)

BARTON, BENJAMIN SMITH, was born in the year 1766 at Lancaster, in Pennsylvania. His father was a respectable episcopal clergyman. After gaining the essential parts of a learned education under Dr. Andrews of Philadelphia, Mr. Barton prosecuted the study of medicine in the university of that city.

In 1785 Mr. Barton accompanied his uncle, Dr. Rittenhouse, and the other American commissioners, in fixing the western boundary of Philadelphia. When about twenty-one, he embarked for Great Britain with a view to completing his medical education at Edinburgh, where he remained about two years; owing, however, to some dissatisfaction with two of the professors, he went to Göttingen to graduate, although he had distinguished himself at Edinburgh by gaining the Harveian prize of the Royal Medical Society for his dissertation on the medical qualities of henbane. Upon his return to America Dr. Barton established himself in Philadelphia as a physician, and soon found practice. His reputation for attainments in natural science introduced him so speedily into notice, that when only twenty-four he was appointed professor of natural history and botany in the college of Philadelphia, and thus was the earliest teacher of natural science in North America. This office he continued to hold for six-and-twenty years, zealously and successfully dispersing annually through the different sections of the United States a number of well-grounded naturalists. In 1802 Dr. Barton was elected vice-president of the American Philosophical Society; when thirty he became professor of materia medica; upon the death of Dr. Rush he succeeded him in the chair of the practice of medicine, which he held till his death; and in the year 1809 he became president of the Philadelphia Medical Society. In a short time, however, his incessant labours, and the heavy duties of his professional avocations, produced their usual effects; his constitution gradually wore down beneath the perpetual struggle between severe bodily infirmity and an ever-restless mind; till at last, after visiting Europe in a vain attempt to restore his shattered powers, he died in December 1815.

(*Biographical Sketch of Professor Barton*, by his Nephew.)

BARTON-UPON-HUMBER. [LINCOLNSHIRE.]

BARTSCH, ADAM VON, was born at Vienna in 1757. He was educated in the School of Engraving at Vienna, under Professor Schmützer. In 1781 he was appointed keeper of the prints of the royal collection, which led eventually to the publication of his well-known work, 'Le Peintre-Graveur,' in 21 vols. 8vo., 1803 21, which is a description of the greater part of the works of the principal engravers of Europe, and to which he now chiefly owes his reputation. His etchings also are numerous. He died at Vienna in 1821.

BARTSIA (in honour of John Bartsch, M.D., a friend of Linnæus), a genus of plants belonging to the natural order Scrophulariaceæ. There is only one British species, the *B. alpina*, which is a rare plant, and only found in alpine pastures. The *B. odontites* of Smith's 'English Flora' is now referred to the genus Euphrasia, as *E. odontites*. *B. alpina* is also found in subalpine regions, throughout Europe. *B. maxima* is a native of Candia, and attains a height of one and a half or two feet. *B. trixago* is a native of the south of Europe and Asia. *B. acuminata* is found in America. *B. viscosa* of Smith is now *Trixago viscosa*. Babington and Koch both adopt the genus Trixago, but the latter refers *B. viscosa* of Smith to the genus Euphrasia.

BARUCH. Among the various individuals called by the name of Baruch, none is so generally known as Baruch the son of Neriah, the son of Maaseiah. This Baruch was the scribe and assistant of the prophet Jeremiah. During the reigns of Josiah, Jehoiakim, Jehoiachin, and Zedekiah, kings of Judah, Jeremiah warned the princes and people of the land of Judah, denouncing their sins, exhorting them to repentance, and foretelling the approaching calamitous judgments of the Lord. In the fourth year of the reign of Jehoiakim, about B.C. 607, while Jeremiah was closely confined, he received a

divine command to cause all the prophecies which he had uttered to be written in a roll. He accordingly summoned Baruch, the scribe, who wrote from the mouth of Jeremiah all the words of his former denunciations. Baruch received from Jeremiah the further command to take the roll and read its contents in both the interior and the entrance of the temple. When the purport of the message contained in the roll was declared to the princes, they summoned Baruch into their presence, and caused him to read the roll before them. The awful tidings so deeply impressed the princes, that they endeavoured to communicate them to the king, advising at the same time both Jeremiah and Baruch to seek safety in concealment. After having heard the commencement of the roll, Jehoiakim cut it in pieces, and cast it into the fire, which was kindled on the hearth of the winter-house in which he sat. Jehoiakim commanded his servants to apprehend both the prophet and the scribe; but they were already concealed (B.C. 606). After the destruction of Jerusalem, when Nebuchadnezzar led the Jews captive to Babylon, Baruch and his master Jeremiah obtained permission to remain in Palestine, and to choose their place of residence; but both were afterwards carried into Egypt, by Jochanan Ben Kareach, B.C. 588. (Comp. Jer. xxxii. 12-16; xxxvi. 4, 17, 27, 32; xliii. 3-6; xlv. 1, 2. 'Josephi Antiquitates,' x. 9, 1.) From some of these passages we learn that Baruch was present at the destruction of Jerusalem. Concerning the close of Baruch's life there exists a diversity of opinion. According to one tradition, Baruch died in Egypt; another asserts that he went from Egypt to Babylon, and died there twelve years after the destruction of Jerusalem, leaving a celebrated disciple in the person of Ezra, the scribe, and subsequent leader of the Jews.

The most ancient copies of the book of Baruch still extant are written in Greek; but, on account of supposed Hebraisms in the style, some learned men are of opinion that it was originally written in Hebrew. It has been published, with the rest of the Apocrypha, in a Hebrew translation, by Seckel Isaac Frænkel, Leipzig, 1830.

The authenticity of the book of Baruch was not recognized either by the ancient Jews or the fathers of the Christian church. But the Council of Trent anathematizes those who exclude it from the canon of the Old Testament.

Further information concerning the book of Baruch may be found in the Introductions to the Old Testament, by Eichhorn, Jahn, Berthold, De Wette, and others.

(Grüneberg, *Exercitatio de Libro Baruchi Apocrypho.* Gött. 1796, 8vo.)

BARYTES. [BARIUM.]

BARYTO-CALCITE, a mineral which occurs in considerable quantity, both crystallized and massive, at Alston in Cumberland. The form of the crystal, an oblique rhombic prism, is variously modified by a number of planes. Its lustre is vitreous, inclining to resinous; the hardness = 4; and the specific gravity = 3·66. The atomic constitution is believed to be 1 atom of carbonate of barytes, and 1 atom of carbonate of lime.

BA'RYTON, or BARITONE (from βαρὺς, heavy, grave, and τόνος, tone), the male voice, the compass of which is between that of the tenor and the base. *Baritenor* has been suggested as a better name.

BARYTON, is also the name of an instrument similar to the VIOL DA GAMBA, invented in 1700, but now entirely disused.

BARYTOSTRONTIANITE. [STRONTIUM.]

BAS, or BATZ, an island off the north coast of the department of Finisterre in France. It lies N.N.W. of the town of Roscoff, is about 3 miles long and 2 broad, and is distant from the main land about three quarters of a mile. A lighthouse, with a revolving light of the first class, eclipsed every alternate minute, is erected on a hill 223 feet above the sea level in 48° 45′ N. lat. 4° 2′ W. long. The island contains three villages: four batteries, and two forts, one on the east the other on the west side of the isle, form its defences. The men are exclusively devoted to fishing, the women cultivate the soil, which is bare and unproductive. (*Dictionnaire de la France.*)

BAS, or BAS-EN-BASSET. [LOIRE, HAUTE.]

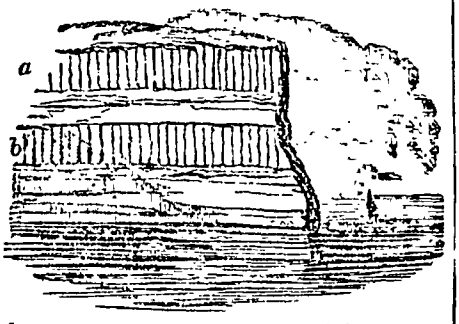
BASAITI, MARCO, one of the best of the early Italian painters, was born in the Friuli, probably about the middle of the 15th century. He lived chiefly in Venice, where he was the rival of Gian Bellini, to whom he was even superior in some respects, especially in composition, in accessory groups, and in the management of the landscape or scene. He was perhaps inferior to Bellini in modelling the features, but he was quite equal to him in expression and in colouring, if not his superior in the latter respect. Some of Basaiti's works are still, for colour, among the most brilliant paintings extant. There are still several of his works in Venice. His masterpiece is the Calling of St. Peter and St. Andrew, in the Academy of Venice, formerly in the old church della Certosa. There is a beautiful Descent from the Cross, by Basaiti, in the Gallery of Munich. (Moschini, *Guida per la Città di Venezia*, 1815.)

BASALT, a hard dark-coloured rock of igneous origin. The chemical composition is variable, as appears from different analyses, two of which, by Beudant (1) and Phillips (2), are beneath, and illustrate this fact:—

	(1) Beaulieu.	(2) Saxony.
Silica	59·5	44·50
Alumina	11·5	16·75
Lime	1·3	9·50
Magnesia	0·0	2·25
Soda	5·9	2·60
Potash	1·6	0·00
Oxide of iron	20·2	20·00
Oxide of manganese	0·0	0·12

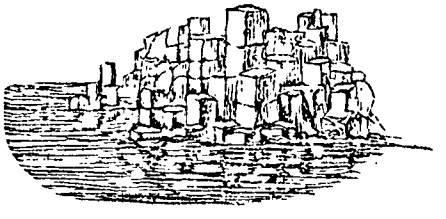
Basalt can only be considered as a variety (and a comparatively recent variety) of that mass of melted rock which has been ejected at various periods from beneath the crust of the globe, and to which various names have been assigned, according to the characters which circumstances have impressed upon different portions of it. Basalt is a rock of very extensive occurrence on the surface of the earth, and is very frequently

found in the vicinity of volcanoes, both extinct and active. The greatest mass yet observed is that noticed by Colonel Sykes in the Deccan, constituting the surface of many thousand square miles of that part of India. When basalt occurs in horizontal tabular masses, and is columnar, the columns are generally perpendicular, as at *a* and *b* in the annexed figure. When basalt forms

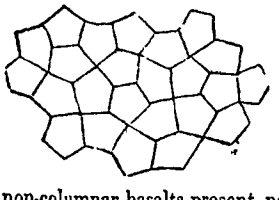


the substance of a perpendicular dyke, cutting through other rocks, and is columnar, the columns are usually horizontal. Basaltic columns are sometimes also curved, and of this mode of occurrence there is a beautiful example in the island of Staffa.

When basaltic columns are jointed, and exposed to the destructive action of breakers on a coast, they often, as in the annexed sketch, present the appearance of some great ruined work of art. Such deceptive appearances are, however, not con-



fined to coasts, for in some countries, and especially in India, masses of basalt rise suddenly from the plains, and the broken columns, shooting upwards, may readily at a distance be mistaken for buildings. When viewed from above, the heads of a number of basaltic columns, if unbroken, appear like a pavement composed of numerous polygonal pieces of stone fitted into each other, as in the following figure :—



Some non-columnar basalts present no trace of any particular arrangement of parts, while others show a globular structure, so that when the rock becomes much decomposed it has the appearance of numerous bomb-shells and cannon-balls cemented together by a ferruginous substance. This globular structure is sometimes also apparent when the decomposition of the rock has not been considerable, being well exhibited in the concentric arrangement of coats of basalt round centres at variable distances from each other, in the manner represented beneath.

Other basalts are amygdaloidal, containing a variety of substances, such as agates, onyxes, and other minerals, which have been infiltrated into cavities formed by bubbles of gas or vapour while the rock was in a state of fusion. [DYKE; GIANT'S CAUSEWAY; STAFFA.]

BASCINET, BASINET, or BASNET, was a light helmet, so called from its resemblance to a basin, generally without a visor, though it appears that the visor occasionally accompanied it. Bascinets were worn in the reigns of Edward II., Edward III., and Richard II., by most of the English infantry.

BASE, in Music, from *βάσις* (basis), the base or foundation, the lowest part, whether vocal or instrumental. This word is frequently written *bass*, but the etymology, and more especially the pronunciation, are decidedly in favour of the orthography here adopted, which is sanctioned by Dr. Johnson and other authorities.

BASE, or BASS, a name sometimes given to the VIOLONCELLO.

BASE. [COLUMN.]

BASE-CLEF. [CLEF.]

BASE, CONTINUED. [CONTINUED BASE.]

BASE, DOUBLE. [DOUBLE BASE.]

BASE-FEE. [ESTATE; RECOVERY; TENANT-IN-TAIL.]

BASE, FIGURED. [FIGURED BASE.]

BASE, FUNDAMENTAL. [FUNDAMENTAL BASE.]

BASE, GROUND. [GROUND BASE.]

BASE, THOROUGH. [THOROUGH BASE.]

BASE VOICE, the lowest male voice, the usual compass of which is from G or F below the base staff, to D or E above it, but some few voices exceed the limits here assigned; and both Handel and Purcell wrote passages which require a base compass of two octaves.

BASEL, BASLE, or BALE, the most north-western of the 22 Swiss cantons, is bounded E. by Aargau, S. and S.W. by Soleure, W. by Berne and the French department of Haut-Rhin, N. and N.E. by Baden and the Rhine. It extends about 23 miles, from N.W. to S.E., and has an average breadth of about 9 miles. Its form is very irregular. The area of the canton is 180 square miles, and its population is 54,000. The greater part of the canton lies upon or between offsets of the Jura Mountains, the principal ridge of which divides the southern part of the canton from Soleure. The northern part of the canton slopes towards the banks of the Rhine, and forms a plain round the

town of Basel. This part of the territory is very fertile in corn and wine; the rest abounds in rich pastures, which feed great numbers of cattle and sheep. The Rhine supplies good fish in abundance. The other river of the canton is the Birs, which rises in the Münster Thal, in the canton of Berne, enters the canton of Basel at Æsch, and joins the Rhine about half a mile east of the town of Basel. It is subject to sudden floods.

The Canton of Basel is divided into seven districts, two of which are north of the Rhine, and the others are south of that river. In the year 1833, in consequence of internal disputes, which caused the Diet to interfere, the town of Basel, with the two districts north of the Rhine, and a narrow strip of ground to the south adjoining its walls, was formed into a separate republic called Basel Town: the rest of the canton, composed of the other five districts, forms another republic called Basel Country, with Liestall, a town of about 2000 inhabitants, for its capital. Each of these two states sends a deputy to the Diet; but the two have only one vote between them, and if they do not agree the vote is null. About 9-10ths of the people are Protestants, according to the Helvetic confession of faith. The language is a dialect of German, but French is generally understood.

BASEL, BASLE, or BALE, formerly the capital of the canton of Basel, now of the republic of Basel Town, in Switzerland, is the largest, though not the most populous town in Switzerland. It stands in 47° 33′ N. lat., and about 7° 35′ E. long., on the Rhine, which divides it into two parts, Great Basel on the left bank, and Little Basel on the right bank of the river: these are connected by a wooden bridge. The population is 20,452. The streets of Great Basel are mostly confined and crooked; in the suburbs and Little Basel they are broad and regular. There are many public fountains in the town, several of which are adorned with sculpture. The cathedral, which stands in an elevated part of the town, is a remarkable structure. Its two steeples are each 205 feet high. Adjoining it is the great hall in which the council of Basel held its sittings from 1431 to 1448. The town-house contains two large and finely ornamented halls. The town has several other public buildings, among which are the post-office, the casino, and the theatre. The Pfalz, near the cathedral, which is a terrace raised on a wall 75 feet above the Rhine, and planted with chestnut-trees, commands a beautiful prospect of the river, the town, and the country. Besides a university, Basel contains a great number of religious, literary and scientific societies, schools, and several public and private libraries: the university library is very valuable, and contains a collection of paintings, drawings, and wood-cuts by Holbein. There are several charitable institutions. The chief manufacture of the town and of the canton is silk ribands; which are exported to the amount of 12,000,000 francs annually, principally to America. The transit trade also employs many hands. Business in bills of exchange, and the wine and book trade are also considerable. There are likewise, large tanneries, tobacco manufactories, &c. Basel stands at the termination of three great lines of railway; one along the right bank of the Rhine which is opened from Freiburg, about 20 miles N. of Basel, to Frankfort-on-the-Main, and is in course of completion to Basel; the second on the left bank of the Rhine which is completed between Basel and Strasbourg, and is to extend to Brussels; the third, now (1847) in course of construction, will pass through Dijon to Paris. (*Communication from Zürich*; Murray's *Handbook of Switzerland.*)

BASEL, or BASLE, COUNCIL OF. [COUNCILS.]

BASEMENT, in Architecture, is the lowest story of a building, forming the base of a private house or public edifice. This feature of a building should possess externally the character of strength; and, accordingly, in the designs of Palladio and the other great masters of the Italian school, we find that the basement has a massive appearance, capable of sustaining the order or orders which are often placed above it. In edifices used as dwellings the basement is high; but in churches and other public buildings it is usually kept low. Some basements are as high in proportion as the floor or story placed above it, while others are not more than a third or half of the height. The proportions of basements vary according to the conveniences required in the lower story, or to the importance attached to the floor or floors which they may support. In basements the masonry is usually rusticated and set upon a plinth, on which there is sometimes a moulded base; the upper part of the basement is surmounted with a broad band, under which, at times, mouldings are employed. A cornice is also used occasionally instead of the band.

In the beautiful palaces of Rome and Florence the basements are finely proportioned. For geometrical representations of these buildings we refer to the architectural work of MM. Percier et Lafontaine, entitled 'Palais de Rome et de Florence.' The published designs of Palladio, Vignola, and Scamozzi, may also be consulted with advantage by the student in architecture.

BASHA. [PASHA.]

BASHAN is called by the Septuagint Βασάν, by Josephus and Ptolemy Βαταναία (Batanæa). Bashan belonged to Gilead in the widest sense, but in a stricter sense it was distinguished from and situated to the north of Gilead. Bashan bordered in the north upon the Syrian districts Geshuri and Maachathi: in the south it did not reach to the river Jabbok. Its western boundary was the Jordan. The eastern limits are undefined.

Bashan was a kingdom under Amoritish sovereigns who resided in Ashtaroth and in Edrei. Og was the last king of the Amoritish dynasty. In the battle of Edrei, about the year 1452 B.C., the Israelites smote Og, with his sons, and all his people, until there was none left alive; and they possessed his land. Moses gave Bashan unto the half tribe of Manasseh, B.C. 1451. At the commencement of the Christian æra Bashan belonged to the tetrarchia of Philippus, and afterwards to the tetrarchia of Agrippa II.

(*Holy Scriptures*; Josephus, *Antiquities of the Jews.*)

BASHEE ISLANDS, a cluster of 5 islands and 4 rocky islets, lying between the islands of Luzon and Formosa. The five islands, which are inhabited, were named by Dampier, who visited them, Bashee, Orange, Groat, Monmouth, and Grafton Islands. The inhabitants are a strong athletic race, very inoffensive in their manners. The Spaniards took possession of these islands in 1783. The governor resides on Grafton Island, on the western side of which is a good anchoring-ground. The islands are plentifully supplied with water, and produce sugar-canes, plantains, yams, and other vegetables. They likewise contain numerous flocks of goats, and a great abundance of hogs.

BASHKIRS. [RUSSIA; SIBERIA.]

BASIL. [OCYMUM.]

BASIL, BASILI'US, Bishop of Ancyra, A.D. 336, was one of the greatest enemies to the Arians, but was still considered as the head of the Semi-Arians, who maintained that the Son was similar to the Father in his essence, not by nature, but by a peculiar privilege. This opinion Basil not only maintained, but procured to be established by a council held at Ancyra in the year 358; and subsequently defended it both at Seleuceia and Constantinople against the Eudoxians and Acacians, by whom, after being charged with many crimes, he was deposed in 360. He had the reputation of being a man of learning and eloquence.

BASIL, or BASILI'US (*Βασίλιος*, Basileius), commonly called ST. BASIL, and on account of his learning and piety surnamed the Great, was born at Cæsarea in Cappadocia, about the year 326. In his earlier years he received instruction from his father, but went afterwards and studied at Antioch and Constantinople. The famous Libanius was his master, according to some writers; but it appears more probable that he was his fellow student. He afterwards went to Athens. At Athens Basil formed a close intimacy with Gregory of Nazianzus. He returned to his native country about the year 355, and taught rhetoric. Some time after this he travelled into Syria, Egypt, and Libya, to visit the monasteries of those countries, where he found the lives of the monks so exemplary, that he resolved, upon his return home, to follow their example, and accordingly he instituted an order of monastic life in the province of Pontus. Upon the death of Eusebius in the year 370, he was chosen his successor in the bishopric of Cæsarea. It was with some reluctance that he accepted this dignity, but no sooner was he raised to it than the Emperor Valens began to persecute him because he refused to embrace the doctrine of the Arians, of which, indeed, he and Gregory of Nazianzus were strenuous opponents. He ceased, however, at length, to molest Basil, who continued to take a part in most of the controversies of the age. He died January 1, 379, his constitution being much impaired by the austerities of a monastic life.

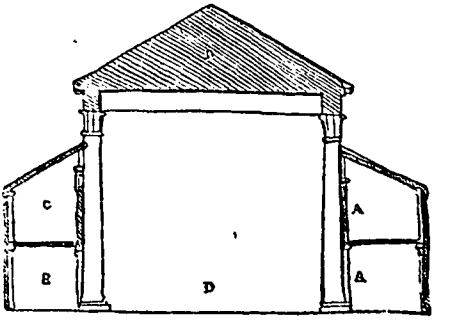
Cave has given a list of St. Basil's works. Lardner says many writings have been ascribed to him without ground. Several of his detached pieces were printed before the year 1500; but the first edition of the whole works, in Greek, issued from the press of Frobenius, folio, Basel, 1532, with a preface by Erasmus.

(Cave's *History of the Fathers of the Church*, folio; Lardner's *Credibility of the Gospel History*; Suidas, *Basileius of Cæsarea.*)

BASIL, MONKS OF ST. When St. Basil, bishop of Cæsarea, retired into Pontus, about the year 358, for the convenience of himself and his followers he founded a monastery, to which he gave a written rule for its regulation, the first of the kind that had appeared, and which was soon adopted in numerous other monasteries. This rule shortly spread itself over the East, and, according to the generality of writers, was not very long in passing to the West. Those who adopted it styled themselves of the order of St. Basil; and St. Basil's Rule was, in fact, the parent of that which was afterwards framed by St. Benedict. Moréri gives 1057 as the date when the order was introduced in the West. St. Saviour, at Messina, is now considered as its chief monastery in the West. The monks of St. Basil in Spain follow the Greek ritual, those of Italy the Latin. The Greek monks are chiefly of this order, which exists to a great extent in Russia. The order of St. Basil was never, that we know of, introduced into England.

BASI'LICA, from the Greek *βασιλικὴ*, literally signifies a royal residence: but we have no account of any royal residence being specially called by that name. The Romans gave the name of Basilicæ to those public buildings with spacious halls, often surrounded with wide porticoes, many of which were built at different times in the various Fora of Rome. [FORUM.] They were usually called after the person who caused them to be built.

The principal feature of the Basilica was a large roofed building, supported on columns. The roof, which was called the *testudo*, rose high above the other part of the structure, which consisted of two galleries, called *porticus*, placed one above the other, and round the internal sides of the central building. The porticus was covered with a lean-to roof, the upper part of which commenced below the capitals of the columns which supported the testudo. The light was admitted between the



D, D, Testudo; A, A, Parastaticæ; B, Lower Portico; C, Upper Portico.

spaces formed by the under line of the architrave of the testudo, the upper line of the lean-to roof,

and the perpendicular lines of the columns. At the end of the central part of the interior a raised platform formed the tribunal for a magistrate. The term testudo, as its name implies, is strictly the roof of the central part; but the term is also extended to signify the whole of the central space, which corresponds to what we call the nave of a church: the porticoes correspond to the aisles.

The Basilica was not only used as a hall for the administration of justice, but afforded also convenient shelter to the merchants who transacted business there. The size and proportions of these edifices varied according to circumstances.

It is probable that Rome possessed Basilicæ in all the different Fora of the city. Of these the Basilica Ulpia, which formed a part of the Forum Trajanum is the only one of which there are considerable remains left; it is represented on the reverse of a copper coin of Trajan.

Another Basilica, of the Corinthian order, was discovered on the Palatine Hill. A large edifice in the Forum, called the Temple of Peace, has also been named the Basilica of Constantine.

The most perfect Basilica of antiquity exists in Pompeii, constructed on the south-west, and consequently the warm side of the Forum. This edifice is 220 feet by 80. The testudo rose to the height of about 60 feet, judging from the diameter of the portions of the columns still remaining.

The early Christian churches of Rome may be considered as the best resemblances of the Roman Basilicæ. In some of them are still found many of the characteristics of the ancient Basilicæ. There are twelve churches in Rome called Basilicæ, the oldest of which dates from about the time of Constantine, and is even said to have been built by that emperor. The Marquess Galiani remarks, that the first churches were looked upon as tribunals in which the bishops and others administered penance to the guilty, and the eucharist to the absolved. We may therefore observe, in accounting for the resemblance which the early Christian churches bear to the ancient Basilicæ, that nothing could appear at first sight more appropriate than the idea of imitating a tribunal of justice in the construction of the new churches, in which the bishops and priests were to administer a kind of spiritual justice. This remark is well supported by the fact of the bishop's throne being placed in the apsis, or arched recess corresponding to the curved recess or hemicycle, as it was called, of the ancient Basilica. It is, however, more probable that the obvious convenience of the Basilicæ led the early Christians to adopt the principles of that form of building, as these edifices were both light and spacious, and better adapted to the ceremonies of the new religion than the temples of the Pagans.

Not only the apsis, but the general form of the nave and aisles, of our ancient cathedrals is evidently borrowed from the Italian church Basilica. The same is also true of the old village churches of England. The nave corresponds to the testudo, and the side aisles to the porticus; the windows of the nave, which externally are seen above the lean-to roof of the aisles, correspond to the opening between the upper part of the columns of the testudo.

Modern Basilicæ exist at the present day in Italy, applied, as the ancient were, to civil purposes. Palladio gives the name of Basilicæ to such public buildings, many of which are found in the Italian towns.

BASILICA (*βασιλικὰ, βασιλικὸς νόμος*), a Greek code, which was commenced about A.D. 876, by the Emperor Basilius I., and completed by his son Leo VI. the philosopher. It was revised by the order of Constantine VII., about A.D. 945.

The Basilica comprised the Institutes, the Digest or Pandect, Code, Novellæ, and the Imperial Constitutions made after the time of Justinian, in sixty books, which are subdivided into titles. The extracts from the Digest are placed first under each title, then the constitutions of the Code, and next the extract from the Institutes and the Novellæ. The Basilica does not contain all that the Corpus Juris contains, but it contains some things which are not in the Corpus Juris.

An edition of the larger part of the Basilica, by Fabrot, was published at Paris in 1647, 7 vols. fol. A new edition by Heimbach is now (1847) in the course of publication.

BASILICA'TA, one of the 15 provinces of the kingdom of Naples, which nearly coincides with the ancient Lucania, is bounded W. by the Gulf of Policastro and the Principato Citra, N.W. and N. by the Principato Ultra, the Capitanata, and the Terra di Bari, N.E. and E. by the Terra d'Otranto and the Gulf of Taranto, and S. by the province of Calabria Citra. It lies between 39° 56 and 41° 8′ N. lat., 15° 18′ and 16° 50′ E. long. The greatest length of the Province from the Ofanto in the north to the mouth of the Trecchina in the Gulf of Policastro is 82 miles; its greatest breadth is 55 miles: the area is estimated at 3500 square miles; and the population in 1839 was 460,868.

In the north-western angle of the province the main ridge of the Apennines divides into two chains, one of which runs E. through the Terra di Bari and the Terra d'Otranto, while the other runs S. to the Strait of Messina, sending forth numerous off-sets, which cover the greater part of the province. A small portion of Basilicata, in which are the towns of Ravo, Melfi, and Venosa, lies N. of the eastern ridge of the Apennines. Another portion of the province extends for about 12 miles from Sapri to the Trecchina along the Gulf of Policastro and on the western side of the

southern chain of the Apennines. But the main part of the province lies E. of this southern chain, and between it and the Gulf of Taranto. The rivers Bradano, Basiento, Agri, and Sinno run through it from W. to E. into the Gulf of Taranto. About 10 miles from the Gulf, the mountain ridges subside into a low plain consisting of an alluvial soil, which runs about 24 miles in length along the shore, and has been celebrated in all ages for its great fertility. In this plain, between the Bradano and the Basiento, stood the ancient Metapontum, from the materials of which it is said the modern town of Bernalda is built. Several ruins of magnificent temples are still seen in the neighbourhood of Bernalda. Between these same rivers stands the Torre di Mare, built on the sea-shore by the Anjevine kings. It is now a mile inland: indeed a great part, if not the whole of this extensive plain, seems to have been formed by the deposits of the rivers above named, all of which rise in the high ridges of the Apennines, and at certain seasons of the year become swollen, and carry down large quantities of mud. Between the Sinno and the Agri, the ancient Siris and Aciris, was the site of Heraclea, which is supposed to have been near Polycoro. The chief products of this plain are wheat, maize, hemp, tobacco, liquorice, oil, and silk: these form the principal exports of the province, and are shipped at the mouth of the Sinno, where there is an open road frequented by vessels. Basilicata produces a good deal of wine: the best growths are those of Tursi, Melfi, Chiaramonte, Ferrandina, Pisticcio, and Montalbano. Turpentine is made from the pine which flourishes on the Apennine; but there is not much forest land in the province. Cows are not very numerous; but there are great numbers of swine, sheep, and goats. These flocks suffer greatly from wolves, which often attack them from the mountain districts. There are few horses, and those are of an inferior breed: the mule is preferred, as better suited to the country. Of the mineral wealth of the province little seems to be known. The principal roads through the province are those from Naples to Calabria, from Salerno to Taranto through Potenza, and that through the plain along the Gulf of Taranto.

The province is divided into four districts, which are named from the chief town in each, viz. Melfi, Matera, Potenza, and Lagonegro. The chief town is Potenza, which is the residence of the Intendente of the province, and the seat of a bishop. The chief civil and criminal tribunals are held in it; there is also a royal college. The town, which is fortified, contains a fine cathedral, and several churches, two of which are collegiate. It is 14 miles E. by S. of Naples, and 79 miles W. of Taranto, and has a population of 10,000. Matera stands on the right bank of the Gravina, a feeder of the Bradano, 43 miles E. of Potenza. It is the seat of an archbishop, contains a cathedral, a college, and a population of 12,000. Melfi is in the northern part of the province, between the Ofanto (the ancient Aufidus) and the Mons Vultur of Horace: it is 26 miles N. of Potenza, and has a population of 9000. Melfi is the seat of a bishop, who is an immediate suffragan of the Holy See. Lagonegro stands at the foot of the Apennines, near the lake of Lagonegro, 37 miles S. of Potenza, and 7 E. by N. of Policastro. It has a population of 5000, and some manufactures of cloth and hats. Among the other towns worthy of being mentioned are—Acerenza or Cirenza, the ancient Acherontia, which gives title to the archbishop who resides at Matera; it stands on a high hill above the Bradano, and has a population of 6000: Francavilla, near the right bank of the Sinno; population 2000: Stigliano, in an excellent wine and oil district 27 miles S.W. of Matera; population 4000: Tursi on a rising ground between the Sinno and the Agri, which is the seat of a bishop, and is said to have been built by the Saracens in the ninth century; population 5000: Maratea, near the Gulf of Policastro; population 5000: Oppido, in a fertile wine district N. of Potenza, near the Bradano; population 5000; a good deal of silk is produced in the neighbourhood of this town: and Venosa, the ancient Venusium, and the birthplace of Horace, 9 miles E. of Melfi, in a pretty and fertile country; it is a well-built town, contains a fine cathedral, 5 parish churches, an abbey, in the church of which there are many splendid marble monuments; it has also several fountains, which are fed by a beautiful aqueduct; Venosa is the seat of a bishop, and has a population of 6000. In most of the towns of the province there are many vestiges of the Romans. The principal lakes are the Lago di Pesola from which the Bradano springs, and the Lago di Santa Maria del Piano, in which the Basiento has its source.

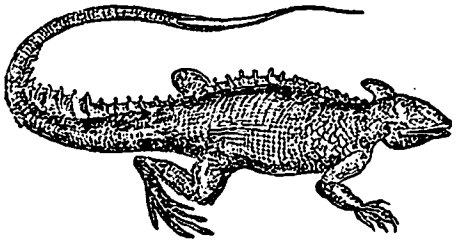
(Keppel Craven's *Tour through the Southern Provinces of Naples;* Swinburn's *Two Sicilies;* Macgregor's *Statistics;* Balbi, *Géographie; Géographie Universelle.*)

BASILISK (*Basiliscus,* Laurenti), a genus of Saurian reptiles belonging to the Iguanian family, and confined to America. We need scarcely say that the Basilisk, or royal serpent of the ancients (the *Cockatrice,* as it is rendered in our translation of the Scriptures), and to which so many fabulous properties were attributed, is not to be regarded as in any way connected with the genus to which zoologists now apply so formidable a title.

The genus *Basiliscus* is closely allied to *Iguana,* but differs in wanting femoral pores, and in having only the rudiment of a dewlap under the throat, which is succeeded by a well-marked transverse fold. A triangular elevation of skin, sustained by a cartilage, rises vertically from the middle longitudinal line at the back of the head, giving a singular aspect to the animal, which appears as if crowned with the cap of liberty. The body is covered with small keeled scales, disposed in transverse bands; those of the under parts are larger. A scaly dentelated ridge runs from the occiput along the back to the extremity of the compressed tail; and in the males of one of the two known species this crest is transformed on the back and the base of the tail into a finlike elevation, supported by the elongated spinous processes of the vertebral column. The head is covered with small keeled plates. The tympanic

membrane is large and oval. The palate is furnished with teeth.

The *Hooded Basilisk* (*Basiliscus mitratus*, Daudin) is a native of Guiana and other parts of South America. It attains to a considerable size, measuring upwards of two feet in length.



Basilisk.

Notwithstanding its formidable appearance, it is in reality very harmless, and feeds principally, it is said, upon grains and fruits. Like the Iguana, it is arboreal in its habits, and is active on the branches of the trees; but it often takes to the water, and, lashing its long compressed tail from side to side, swims with great ease and rapidity. The conical cap of skin is said to be capable of being inflated with air, or emptied at pleasure, as is the large dewlap of the Iguana. It is the male of this species that is so remarkable for the development of the dorsal crest. The general colour is of a yellowish brown, passing into white beneath; a longitudinal stripe of white edged with black extends from each eye to the sides of the black, and there blends with the general tint; the throat is marked with bands of lead colour, and this tint prevails on the sides of the neck.

The other species is termed the Banded Basilisk (*Basiliscus vittatus*, Weigmann). It is a native of Mexico, and has the dorsal crest far less developed; it is a simple dentated ridge. The abdominal scales are keeled.

M. Daudin, under the title of *Basiliscus Amboinensis*, describes a large lizard from Amboyna, which agrees in nothing with the Basilisk, except in being frugivorous and in having an elevated crest on the basal portion of the tail. It belongs to the genus *Istiurus* of Cuvier, 'Règne Anim.' ii. p. 41.

(*Erpétologie Générale*, par Messrs. Dumeril et Bibron, vol. iv. p. 179.)

BASILIUS I., the Macedonian, Emperor of Constantinople, was born of poor parents in the village of Macedonia, towards the beginning of the ninth century. When twenty-five years of age he proceeded to Constantinople, when he acquired the favour of the Emperor Michael III., became his chamberlain A.D. 861, and married one of Michael's concubines. In 866, Michael made Basilius his colleague in the empire, and in the following year was murdered by him.

Basilius was proclaimed emperor; and his conduct on the throne was wise and equitable. He re-established order, enforced the strict administration of justice, corrected the abuses that had crept into every branch of the administration under the profligate reign of Michael, and began the compilation of a code of laws which was completed by his son and successor Leo. [BASILICA.] He dismissed the intriguing Photius, who had usurped the patriarchate, and re-established the patriarch Ignatius. He assembled a general council at Constantinople in 869, to which Pope Adrian II. sent his legates, and in which Photius was condemned, and a temporary reconciliation between the eastern and western churches effected. He recovered the greater part of Asia Minor from the Saracens, and carried the arms of the empire beyond the Euphrates in 872. Basilius made a treaty with the Russians of Kiew, and sent them an archbishop, who converted many of that nation to Christianity, and from that time the Russians acknowledged the authority of the Greek Church. At the end of 877 Ignatius died; and Photius being restored by Basilius to the patriarchal see, fresh dissensions broke out between the Greek and the Roman Churches. Basilius died in 886 of a blow which he received from a stag while hunting. He left a book of advice (Κεφάλαια παραινετικά) addressed to his son Leo, which is divided into sixty-six short chapters, containing many good maxims for his conduct. Another work by Basilius, also addressed to Leo, has been published by A. Mai in vol. ii. of his 'Vatican Collections,' pp. 679 681.

BASILI'US II. was the son of the Emperor Romanus the younger. Upon the death of Romanus in 963, the crown was usurped by Phocas, who, six years after, was put to death by John Zimisces. Zimisces took the crown for himself, but acknowledged, as his successors, Basilius and his younger brother Constantine, who were then minors. When Zimisces died in 975, the two brothers were proclaimed emperors under the guardianship of the eunuch Basilius. The reign of Basilius was one continual warfare against the Saracens, the Bulgarians, the Sclavonians, the Emperor Otho III., and the Longobard dukes of Benevento. The war against the Bulgarians began in 981, and lasted till 1014, when Basilius defeated Samuel, king of the Bulgarians, and ravaged the country round Philippópolis. Wlodimir, Grand Duke of the Russians, married the sister of Basilius, after having received baptism in 988, and abolished paganism throughout his dominions. Basilius died in 1025, after a reign of fifty years. His brother Constantine succeeded him as sole emperor. Basilius was a successful warrior, but rapacious and tyrannical.

BASILOSAURUS, the generic title proposed by Dr. Harlan for a fossil animal, which he regarded as belonging to the reptiles; the relics, consisting of teeth, collected in tertiary strata on the river Washita in Louisiana, are now proved by Professor Owen to have belonged to an animal allied to the Manatee and Dugong, to which, from the peculiar form of the grinders, he has given the generic term *Zeuglodon*. (*Mag. of Nat. Hist.*, May, 1839, p. 209.)

BASIN is a geographical term which is used in such expressions as the basin of a sea, the basin of a lake, the basin of a river, and it in-

cludes all the countries drained by, the waters that run into such sea, lake, or river.

If the basin of a sea runs far inland, and comprehends a great extent of country, it commonly contains large and fertile plains, maintains a numerous population, and at some period of history civilization has made considerable progress within its limits. Thus the basin of the Bay of Bengal comprehends countries not much less than half of Europe in extent. Accordingly we find, not only that it is, and ever has been, much frequented by vessels, but also that at a very early period civilization made considerable progress, and that at all times the arts of peace have been greatly cultivated within the limits of this basin.

On the other hand, if the basin of a sea is of small extent, the surrounding country is poor, its inhabitants backward in civilization, and its ports only occasionally resorted to by vessels. Such is the case with the Arabian Gulf, of which the basin commonly coincides with its shores, and in no place probably extends more than 20 miles inland. It is true that many ships now, as in ancient times, navigate the gulf; but it must be recollected that this activity is (now as formerly) caused by the trade between Europe and India, and not by any inducement found in the basin of the gulf itself.

The basins of lakes offer likewise several varieties. Those which are commonly called mountain-lakes, but with more propriety valley-lakes, have in general a very narrow basin, being inclosed on all sides by mountains. Many of them receive a river at one extremity, in which case their basin runs up such river to its source. The lakes of plains have, in general, a much larger basin, as they receive the drainage of a more extensive country, as the lakes of North America and those of Russia.

The first thing to be considered is the extent and form of a river-basin. It is commonly widest in the middle of its course, where it receives the most and the largest tributaries. At the source, and towards the mouth, the basin grows narrower. But this rule is subject to exceptions. The basin of the Nile probably exceeds 1000 miles in width in the upper part of its course, but in the middle of its course it is in many places less than 15 miles in width. The Danube, on the other hand, preserves nearly the same width at its mouth as it attains higher up in its course.

The boundaries of river-basins deserve peculiar attention. The upper parts of the course of large rivers generally lie in very mountainous countries, and here a communication between the different river-basins can only be effected by roads, as is the case with the rivers which descend from the southern and northern declivities of the Alps. Sometimes the whole boundary of a river-basin, or the greater part of it, is formed in this way, and consequently presents great obstacles to inland communication. Of this description are the river-basins in Spain and Portugal. But the middle and the lower parts of their course often lie through a plain or country of undulating surface, and in such a region a water communication may be effected by means of canals.

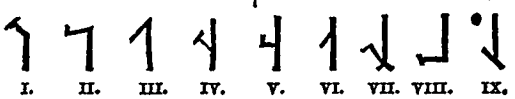
The internal structure of the basin also requires examination. Most rivers traverse a country which rises slowly towards their sources, and the ascent is only rapid in the upper part of their course; but some rivers, after issuing from the mountains which give them origin, traverse, in their course to the sea, plains of different elevation. Thus the Danube traverses three extensive plains, that of Bavaria, of Hungary, and of Bulgaria, which are respectively 1000, 300, and 100 feet above the sea level. Plains of such different elevation above the sea must of course differ materially in productions, soil, and climate.

Whenever a river, with its tributaries, traverses an extensive basin, the surface of this basin in general presents a great variety of geological formations. As the upper branches, in such a case, take their origin at a great distance from the sea, they commonly lie in primitive rocks, but the river gradually descends to rocks of more recent formation, until, on its approach to the shores of the sea, it comes to an alluvial soil, which is partly its own produce and partly that of the sea into which it empties itself. Such is the case with the Rhine. The bed of a river is, for the most part, the best index to the constituent parts of the basin which it traverses, by laying open to observation the different strata of which the adjacent mountains, hills, and plains are composed.

BASIN. In geology, depressions of the strata occasioned by synclinal dips are thus designated, especially such as are on a large scale. Thus the tertiary basins of London, Hampshire, and Paris, resting on chalk; the coal-basin of South Wales, resting on old red sandstone, and, in a larger sense, the European basins between the Ural, the Scandinavian chains, and the Pyrenees, Alps, &c. Some of these basins are due to the original circumstances of deposition; others have acquired their configuration from elevations and depressions of particular geographical areas.

BASING, JOHN, or DE BASINGSTOKE, who received his name from the place of his nativity in Hampshire, was an extraordinary person for his time. Though the date of his birth does not appear to be fixed, we know that he was alive in the year 1230, and studied not only at Oxford and Paris, after the custom of the age, but also at Athens. Leland says that at his return he brought with him to England various Greek manuscripts, which, together with his proficiency in that tongue, caused Hugh Grosseteste, bishop of Lincoln, a great restorer of that language, to promote him to the archdeaconry of Leicester. Matthew Paris tells us that John de Basing introduced into England a knowledge of the Greek numeral letters: 'This Master John, moreover, brought the Greek numeral figures into England, together with their symbols, and the knowledge of their import and explained them to his particular friends. By which figures, also, letters are represented; and, what is most remarkable, any number is represented by a single figure, which is not the case in the Roman numerals, or in ordinary arithmetic.'

The figures, however, which are given in facsimile in the 'Variantes Lectiones,' here copied, are neither like Greek letters nor the ordinary Arabic numerals. Basing met with the invention



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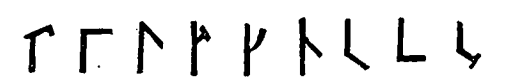


X. XX. XXX. XL. L. LX. LXX. LXXX. XC.

at Athens, but Matthew Paris was mistaken in imagining that the Greeks used any such system of notation. Matthew Paris records the death of John de Basing under the year 1252.

BASINGSTOKE. [HAMPSHIRE.]

BASKERVILLE, JOHN, a celebrated printer, was born at Wolverley in Worcestershire, in the year 1706. He does not appear to have been brought up to any particular business. In 1726 we find him keeping a writing-school at Birmingham, and in 1745 he engaged in the japanning business at the same place, by which he acquired considerable wealth. His taste for literature, and the arts connected with it, led him to direct his attention towards the improvement and perfection of the art of printing. The most obvious improvement to be effected was in the shape of the letters. Mr. Caslon, previous to Baskerville's attempts at letter-founding, had cut a variety of matrices of more beautiful shapes than those of the Dutch types which, up to his time, had been imported into England. Baskerville carried the art to a higher degree of perfection; and even now his types would, in many respects, be considered models. By his unceasing efforts the art of printing was raised to a degree of perfection previously unknown in this country.

His printing establishment does not appear to have been profitable to him. From a passage in a letter to Walpole, it would appear that in 1762 he was desirous of withdrawing from the business; After 1765 little or nothing issued from his press. It is most likely that the typographical improvement which he was the means of effecting was not sufficiently appreciated at the time, and that his efforts were not very liberally encouraged.

Mr. Baskerville was married, but died without issue, Jan. 8, 1775. He was a man of fertile invention, but he left to others the task of executing his designs. By the constant endeavours which he made to attain excellence in the various processes connected with the arts of japanning and printing, they were both greatly improved.

BASLE. [BASEL.]

BASNAGE. Few families have produced so many individuals of literary distinction and moral worth as the family of Basnage. Many of its members were zealous and able supporters of Protestantism in France.

1. NICHOLAS BASNAGE, being compelled to leave France on account of his adherence to the reformed religion, fled to England, and became the minister of a congregation at Norwich. He afterwards returned to France, and became pastor of a reformed church at Carentan.

2. BENJAMIN BASNAGE, the son of Nicholas, born in 1580, died in 1652, was, during fifty-one years, pastor of the church which his father had held at Carentan. He was a zealous defender of the reformed religion in France.

3. ANTOINE BASNAGE, the eldest son of Benjamin, was born in 1610. After the revocation of the edict of Nantes, he escaped to Holland in 1685, and died in 1691 at Zutphen, in which place he had held a pastoral charge.

4. SAMUEL BASNAGE de Flottemanville, son of Antoine, was born at Bayeux in 1638. He preached at first in his native place, but escaped with his father to Holland in 1685. He died a preacher at Zutphen in 1721. His works, which are voluminous, are in French and Latin.

5. HENRI BASNAGE de Franquenay, the youngest son of Benjamin Basnage, was born 1615, at St. Mère Eglise, in Lower Normandy. He studied for the bar, and became one of the most able and eloquent advocates in the parliament of Rouen. He died in 1695. His complete works were published in 2 vols. fol., Rouen, 1776.

6. JAQUES BASNAGE de Beauval, the eldest son of Henri, born at Rouen, 1653, was the most celebrated member of his family. He was sent when very young to Saumur, to study under the famous Tanaquil le Fèvre, and became the favourite pupil of his master. He studied theology at Geneva and at Sedan. On his return to Rouen he was received into the ministry in September 1676, and became pastor of the reformed church in that city. He married, in 1684, Anne du Moulin. The church at Rouen being closed by authority in June 1685, Basnage obtained permission from the king to retire to Holland; and accordingly he settled at Rotterdam, in which place he was a stipendiary minister, until, in 1691, the consistory, influenced by Heinsius, appointed him pastor of a church at the Hague. At the Hague he not only exerted himself in his religious duties with indefatigable zeal, but was also employed in state affairs. Basnage was the friend of the Grand Pensionary Heinsius, and while in Rotterdam had a weekly meeting with Pæts, Bayle, and other scholars. He carried on a correspondence with several princes, noblemen, and ministers of state, and with many scholars in France, England, Germany, and Italy. He was scarcely less esteemed by Catholics than by Protestants. Voltaire said that Basnage was fitter to be a minister of state than of a parish. He died 1723, in his seventy-first year. His works, of which a complete list would be very long, are chiefly on theology and ecclesiastical antiquities.

7. Henri Basnage de Beauval, the younger son of Henri Basnage de Franquenay, and brother of Jaques Basnage, was born at Rouen, Aug. 7, 1656, followed the profession of his father. On the revocation of the Edict of Nantes in 1687, he took refuge in Holland, and died there, March 29, 1710, aged 54 years.

(Niceron, *Mémoires pour servir à l'Histoire des Hommes Illustres*, tome iv. pp. 294, 310.)

BASQUE LANGUAGE. This language, Léngua Bascongáda, called also by the Spaniards Bascuence and Vizcaino, is spoken by the people who inhabit the Basque Provinces and part of Spanish and French Navarre. The people call themselves Euscaldunac, their country Euscalerria, and their language Euscara, or Escuara. The elementary syllable in all these words is *Eusc* or *Esc*, which appears in the forms *Ve-c* and *Osc* in such names as Vesci, Osci, &c. Balbi, in his *Atlas Ethnographique*, places the Euscara in the first family of the European languages, and classes it with the Celtic. The testimonies adduced to prove that the Basque language was spoken by all, or nearly all, the primitive inhabitants of Spain and Portugal, are so numerous and conclusive as to amount almost to a demonstration. The etymology of the words denoting the ancient names of mountains, rivers, and towns, in almost every part of the peninsula, is one of the strongest proofs. The examples of words in which the first element appears to be Basque are perhaps the most striking: such is *acha, aitza*, a rock, which in names of places assumes the form *asta*. Modern names which contain the element are, Asteguieta, Astobeza, Astorga, &c. In Spanish names mentioned by Roman writers the element *asta* also occurs, as in Asta, Astigi, Asta-pa (a dwelling at the foot of a rock), Astures, Asturica, and the river Ast-ura (rock-water).

All the radicals in the language are significative, even the names of the letters of the alphabet. The Basques write as they speak, and the sound of their letters, whether vowels or consonants, is fixed. The language possesses a great variety of terminations. Besides terminations equivalent to all those existing in English, it has frequentative, diminutive, and augmentative ternations, like the Spanish and Italian. Verbal nouns are formed with the termination *ari* or *arija*, to denote a physical actor, and *lia*, to denote a moral one; as *gudarija*, a warrior, *iracuslia*, a teacher or doctor. For the abstract substantives it has likewise two terminations, *tassuna* and *querija*; the former denotes a natural, and the latter a moral quality, defect, or perfection. Thus, *zoratassuna* denotes madness, as a physical derangement of the mind; *zoraquerija*, an inclination to madness from a strong passion. The possessive terminations are three, *cua*, to denote something contained in the thing expressed by the word; *arena*, to denote the possessor; and *ez* or *ezco*, to express the matter of which it is formed: as *echcua*, contained in or belonging to the house; *guizonarena*, of the man; *olezcua*, made of wood. The Basque substantives have no sign to express the relation of gender. There is but one article, which is *a* for the singular, and *ac* for the plural. This sign forms the characteristic of nouns as to number, and is in all cases affixed to the substantive: as *guizona, man-the; guizonac, men-the.* As the preposition is always affixed to the noun, there may be said to exist as many cases as there are prepositions.

The verbs are divided into simple, or those expressing a single action, as *icassi*, to learn by oneself; double, as *i-ra-cassi*, to learn by the assistance of another; simple active, as *iltendot*, to kill; and active transitive, as *iltendeutzat*, to kill another. The moods are eleven, and the tenses, according to some Basque grammarians, amount to forty-six. Every verb can be conjugated in twenty-six forms, showing the different relations of the agent to the action and to the object which it affects. The relation of the speaker to the person spoken to is also expressed by particular terminations. These relations are with regard to sex and dignity. Thus there are five different terminations, viz. masculine and feminine, from an inferior to a superior, and *vice versâ*, and also between equals.

The syntax is very simple, and subject to fixed rules. In every sentence the substantive is placed first, then the article, then the adjective, then the adverb, followed by the verb, and lastly the object, with the preposition affixed to it. Example:—*Seme oquer bat-ec emon-d-eus-cuz arduraone ec;* the literal meaning—'Son-crooked-one, given-us-has-to, cares-these;' which means, a bad son has caused these troubles to us. This order is that in which, generally speaking, an illiterate Basque places the words when he attempts to speak Spanish, for which reason the Spaniards call *concordancia Vizcaina* a bad construction.

(Larramendi, *Diccionario Trilingue;* Erro, *Alphabeto Primitivo;* Astarloa, *Apologia de la Léngua Bascongáda;* Hervas, *Catálogo de las Léngnas;* W. Humboldt, *Inquiries respecting the First Inhabitants of Spain*, Berlin, 1821.)

BASQUE PROVINCES, The (*Las Provincias Vascongadas*) are situated in the north of Spain, and consist of the provinces of Alava and Guipuzcoa, and the señoria of Vizcaya, or Biscay. Alava, the most southern of the three, is bounded S. by the Ebro, W. by the province of Burgos, E. by that of Navarra, and N. by the sierra, or mountain chain, which forms the continuation of the Pyrenees westward. Biscay, Guipuzcoa, and a very small portion of the north-western part of Alava, lie to the north of this sierra, and between it and the Bay of Biscay. The señoria of Biscay has on the west the province of Santander, and on the east that of Guipuzcoa, which is itself bounded E. by Navarra and the French department of Basses Pyrenées. The Basque provinces form a pretty regular triangle, the altitude of which from the Ebro to the Bay of Biscay is about 67 miles, and the base, which rests on the bay, is about 90 miles. Their united area is 3000 square miles, of which Biscay contains 1280, Alava 1092, Guipuzcoa 628. The population, according to the census of 1827, was for Biscay, 144,875; Alava, 92,807; Guipuzcoa, 135,838. With the exception of the province of Madrid, Guipuzcoa is

the most densely peopled of the Spanish provinces, the census quoted giving it 216 to the square mile, while for the province of Madrid it gave 224. The surface, which is of a similar character in all the three provinces, consists of numerous ranges of mountains sent off from the main sierra and intersected by valleys, which are drained by numerous small streams. In Biscay and Guipuzcoa the rivers all flow north into the bay of Biscay: the largest of them are (proceeding from west to east) the Nervion, or Nerva, the Cadagua, the Mundaca, the Lequeitio, the Ondarroa, which separates these two provinces; the Deba, the Urola, the Oria, the Urumea, the Oyarzun, and the Bidassoa which separates Guipuzcoa from France. The rivers of Alava flow into the Ebro. The most important of these is the Zadorra. The mountains are generally calcareous, but in some places they consist of sandstone and slate. They abound in excellent pastures; their high slopes are crowned with forests of oak, and in many places of chestnut, the fruit of which is used as food in the country, and also exported. The valleys consist of a rich clayey soil. The people are very industrious. Most of them are engaged in agriculture, which is better understood than in most parts of Spain. Oxen are used in ploughing, but spade husbandry is the system chiefly adopted. The peasantry live generally in *caserios*, or hamlets of six or eight houses. Each farmer is the proprietor of the land he tills. The chief crops raised are wheat, barley, oats, maize, fruits, hemp, flax, and pulse. Some poor wine called *chacoli* is made; but the common beverage is cider, apples being very abundant. The chief iron mines and smelting furnaces of Spain are in these provinces. The ores are very rich; those of Somorrostro yield 33 per cent, those of Mondragon 40 per cent of metal. Copper, tin, marble of different colours, and jasper, are also found. The preparation of charcoal, and the important fishery on their long extent of seaboard afford employment to those not engaged in tillage of the soil, or in the iron works. The number of corn-mills for grinding flour, which is one of the principal exports, is very great. The climate of the Basque Provinces is healthy; cold in the high lands and temperate in the valleys. The principal roads are—one from Bayonne to Madrid through Miranda and Burgos, and another from Miranda through Orduña to Bilbao.

The chief towns along the sea-coast of Guipuzcoa are—Fuente-Rabia, at the mouth of the Bidassoa: Passages, celebrated for the security of its harbour: San Sebastian, formerly the capital of the province [SEBASTIAN, SAN]: Guetaria: Deva: and Motrico. In the interior are—Irun, on the high road from Bayonne to Madrid population; 4000: Hernani; population 2500: Tolosa, on the Oria, in the centre of the province of which it is the capital; population about 5000: Aspeizia, a walled town; population 4500: Vergara, or Bergara, on the Deva; population 4000: and Mondragon; population 2500. In Viscaya, the chief towns are—Lequeitio, Berméo, busy fishing towns, the latter with 4000 inhabitants: BILBAO, the capital: Somorrostro, celebrated for its iron-mines and iron works, in which about 6000 tons of iron are annually made: Portugalete, at the mouth of the Nervion: Orduña, a fortified town in a beautiful plain near the Nervion; population 3400: and Durango; population 3000. In Alava the chief towns, besides the capital VITORIA, are Salvatierra, on the Zadorra; population 1500: Trevino; population 1800: Lequiano: and Gamboa.

The Basque nation is certainly the first that settled in the Spanish peninsula, as far as historical evidence goes, but its origin is unknown. Humboldt considers the modern Basque nation as the representative and the descendants of the great nation of the Iberi, who were spread over the whole peninsula, and spoke one language, modified into different dialects.

In the time of the Romans, the people now called Basques were called Vascones; and in the fifth century of our æra they were known by the name of Varduli (*Diccionario de la Academia*, art. *Alava*). The territory which they occupied in ancient times extended on both sides of the Pyrenees, and comprised the three Basque Provinces, and both Spanish and French Navarre, (Strabo, iii.; Pliny, iii. 20.) They were the only Spaniards who preserved their independence, not having been subdued by any of the nations who invaded the peninsula. A body of Vascones is mentioned (Tacit. '*Hist.*' iv. 33) as serving against Civilis and the Batavi. No less obstinate was their resistance against the Goths, their final conquest being only effected A.D. 580. The Arabs were never able to penetrate into their fastnesses, and the Christians found in those mountains a shelter against the Mohammedans. In the year 1200, Alonso VIII. of Castile, in his wars against the king of Navarra, invaded Alava and Guipuzcoa, and those provinces were united to Castile, the king taking the customary oath to maintain their privileges.

The government of the Basque Provinces differs entirely from that of the rest of the peninsula. Every province has its own constitution, and a separate government, not differing much in spirit and form from each other. The people of Alava, at a very remote epoch, which some historians suppose to have been prior to the invasion of the Arabs, appointed their civil and military governors at a general assembly. In the year 1467, at an assembly held at Rivabellosa by order of Enrique IV. of Castile, a collection of the laws and privileges of Alava was formed and approved; and by that code they are governed at present. According to this code, a Junta-General is held at Vitoria every year, at which two comisarios are elected, one of whom must be a citizen inhabiting one of the towns, and another from the small villages. There is also a Diputado-General, who presides at the assemblies, but has no voice in them: he commands the forces of the province and communicates with the government of Madrid. The province is divided into fifty-three Hermandades, administered by seventy-five Alcaldes, elected at the Junta-General. These Alcaldes are subject to the Diputado-General, and every year give to the Junta-General an account of their administration.

The Guipuzcoans, according to their present constitution, hold a Junta-General, or general assembly, every year in the month of July, at one of the eighteen towns of the province. At this Junta they elect four Diputados-generales, who must be domiciliated at San Sebastian, Tolosa, Azpeitia, or Azcoitia. These diputados, who are elected for one year, form the Diputacion, which is the government of the provinces; the Diputados-generales reside, in rotation, three years in each of the four towns just mentioned. There is also a Diputacion Extraordinaria. There are besides Alcaldes de Hermandad, to administer justice in the different districts. These Alcaldes are eight, and are elected by the Junta. Besides these Alcaldes, whose office is to prosecute robbers and other malefactors, there are seventy-seven Alcaldes Ordinarios to administer justice in their respective districts. There is also an Alcalde de Sacas, whose office is to prevent the introduction of prohibited articles of commerce into the province. He is also elected by the General Assembly: all these offices are annual.

The Vizcayans hold a Junta-General every two years. It is summoned by the Corregidor of Bilbao, and every town, village, or hamlet has one vote, and sends one deputy to it. The first meeting is always held under an oak near the town of Guernica. The assembly then goes to a hermitage near the tree, where it holds the rest of the sittings, which are always public. There is another junta, called Junta de Merindad, which is held at Bilbao, and in which only the towns have a vote, each sending one member. The Junta de Merindad appoints every year, by lot, the diputacion, which is composed of two diputados, six regidores, two syndics, and two secretaries. The Junta de Merindad is very often more powerful than the Junta-General; and the laws enacted in it have the same force as those made in the latter assembly. The people pay only one direct tax, which consists in a moderate rate for every house, and is equally divided, so that rich and poor contribute to the state the same sum. The revenues of the church are so scanty, that the richest abadia or rectory is not worth more than 160*l.* per annum.

The chief privileges of the Vizcayans consist in paying no taxes except those levied by their juntas, which consist of the house tax above mentioned, and a moderate duty upon iron; in every Vizcayan being by birth an hidalgo, or gentleman, and acknowledged as such in every part of Spain; in not being subject to any tribunal, or to any other laws, either in their own province or in any other part of the peninsula, than their own; and in having a judge resident at Valladolid for the administration of those laws in cases occurring out of the province; in being exempt from military service, except in the defence of their own country; in the enjoyment of commercial liberty, so that no article of commerce is prohibited or taxed, except those which are so by the tribunal of commerce of Bilbao; and, finally, in not having any officers appointed by the government of Madrid, except the masters of the post-office. The possession of these privileges, however, has occasioned much trouble in Spain, where it has been often endeavoured, hitherto without complete success, to reduce them within the general system of the country. The Basques of all the three provinces also contribute to the royal exchequer a certain sum, which they call 'donativo voluntario,' or voluntary donation.

The Vizcayans and Guipuzcoans are the best sailors in the peninsula, and skilful in commercial transactions. They are very active and industrious: their chief occupations are agriculture, commerce, and the manufacturing of iron. The women assist the men in the cultivation of the ground, and are remarkable for their cleanliness. The dress of the men and women is similar to that of the mountaineers of Castile: both wear abarcas, a species of shoe which is made of a hard and untanned piece of hog-skin, or that of any other animal, which they soften by soaking it in water, and then cut it into pieces of the size of the foot, which they fasten on with strings.

(Macgregor's *Statistics;* Murray's *Hand-book for Spain;* Henao, *Antigüedades de Cantabria;* Landazuru y Romarate, *Historia de Alava.*)

BASQUES, LE PAYS DES ('the Country of the Basques'), the name formerly given, from the name of its inhabitants, to a district in the south-western corner of France. It consisted of the two viscounties (vicomtés) of Labour and La Soule, and the territory of Basse-Navarre, the capitals of which respectively were Bayonne, Mauléon, and St. Jean Pied de Port. Labour now forms the greater part of the arrondissement of Bayonne. La Soule is included in the arrondissement of Mauléon. Basse-Navarre is divided between the arrondissements of Bayonne and Mauléon. Le Pays des Basques is at present comprised in the department of Basse Pyrenées. [PYRENE'ES, BASSES.]—(*Dictionnaire de la France,* Paris, 1845.)

BASRA, BASSORA, or BUSSORA, the chief town of the Turkish liva of Basra, which is included in the eyalet of Bagdad. Basra is situated on the west bank of the Shat-el-Arab, in 30° 25′ N. lat., 47° 35′ E. long. The wall is about 7 miles in circumference, but much of the included area is occupied by gardens and plantations of date-trees, and is intersected by canals, on which are numerous boats. The Shat-el-Arab, which falls into the Persian Gulf about 70 miles below Basra, has a bar at the mouth, which has only 12 feet of water, but the channel within is deep, so that ships of 500 tons burthen, provided they cross the bar at the spring-tides, can ascend the river to Basra. The population is about 60,000, consisting of Arabs, Turks, Armenians, Banians, Jews, and others. Basra is the chief inlet by which the products of Hindustan and the eastern countries are introduced into the Turkish empire. Its commerce is therefore considerable, and is similar to that of Abushire, from which it is distant about 200 miles N.W. [ABUSHIRE.] Six or eight British ships arrive annually, but the chief part of the commerce is carried on in Arabian vessels, which belong to the merchants of Muscat. The imports consist of indigo, sugar, spices, &c., from Hindustan, tin from Banca,

shawls from Persia, pearls from Bahrein, and cotton and woollen goods and cutlery from Europe; the exports, of bullion, copper, dates, raw silk, horses, and drugs. The export of dates has sometimes exceeded 10,000 tons in a year. The trade in the interior is chiefly carried on by caravans to Aleppo and Bagdad. (Kinneir's *Persian Empire*; Keppel's *Journey from India to England*; M'Culloch's *Commercial Dictionary*.)

BASS, an island, or rather great rock, in the Frith of Forth, about a mile and a half from the shore of Haddingtonshire, in 56° 5′ N. lat., 2° 36′ W. long. It is a mass of augite-green-stone. It is nearly of a round shape, about a mile in circumference, and rises more than 400 feet above the sea. The surface is about seven acres. Towards the south, that is, opposite the main land, it declines with shelving rocks to the water, and there affords the only landing-place, which however is not without difficulty, even in calm weather. Towards the north, and also on the east and west, it rises perpendicularly out of the sea, and in some places the precipices hang over. A caverned passage runs through the rock, which may be sailed through when the sea is calm. There is a spring on the summit of the rock, which in former times supplied water to the garrison of a small castle. It affords pasture for about thirty sheep; but the island is chiefly remarkable for being frequented by flocks of aquatic birds, which continue there during the summer. Of the birds which frequent the rock, the solan geese (the *Pelicanus bassanus* of Linnæus) are the most abundant and interesting. They arrive in March, and leave in September. There are remains of a fortress and of a small chapel on the rock. In 1406 Robert III. placed his son, afterwards James I. of Scotland, on the Bass, till a vessel could be procured to convey him to France. Thence he embarked, and was captured by direction of Henry IV., and retained nineteen years a prisoner in England. The Bass was purchased by the English government in 1671, from Sir Andrew Ramsay of Abbotshall, the proprietor, and was used as a prison for the Covenanters under Charles II. and James II. It was the last place in Great Britain that held out against William III. In 1701 he directed the fortifications to be destroyed, and in 1706 it was granted by the crown to President Sir Hew Dalrymple, with a reservation of the power of renewing the fortifications, if at any time the English government should deem it proper to do so. (*New Statistical Account of Scotland.*)

BASS'S STRAIT, between New South Wales and Van Diemen's Land, or Tasmania, was first discovered by a man named Bass, while on a sealing expedition from Port Jackson in an open boat in 1798. The nearest approach of Australia and Tasmania is between Wilson's Promontory to the north, and Circular Head to the south, the distance between which is 105 miles. The greatest depth of water between these two points is about 270 feet, with a bottom composed of stones, sand, shells, and coral, but no deposit of mud. The prevailing winds are from the west. The tide rises from eight to twelve feet. The strait is so thickly studded with islands and shoals as to render the navigation difficult. The islands abound in seals, sea-elephants, and other marine animals.

BASSA, also called BAFFA or BUFFA, is the best port on that part of the coast of Guinea which is called the Grain Coast, and is situated in about 6° N. lat., and 10° W. long. It was formerly much resorted to by trading vessels for a coarse pepper which grows on this coast in great abundance, and also for the purchase of slaves. The country about Bassa abounds in oranges, lemons, bananas, and other fruits; and also in cattle, sheep and goats, which furnish vessels with ample supplies. (Lamarthe, *Voyage à la Côte de Guinea.*)

BASSA'NO, a town in the Delegation of Vicenza, in Austrian Italy. It is situated on the left bank of the Brenta, 15 miles N. of Vicenza, in a district famous for its natural beauty and fertility: population 10,000. The town is joined to a suburb on the right bank of the Brenta by one of the handsomest bridges in Italy, built by the architect Ferracina. Several of the churches of Bassano are decorated with paintings by Giacomo da Ponte and his son Francesco. Bassano is a place of great trade: it has manufactures of woollen cloths, straw hats, and tanneries; and it exports a great quantity of silk, the produce of its own territory. There is a district college in the town, to which a boarding-school, a botanical garden, and a cabinet of mineralogy are attached. The country around is hilly, covered with vines and olive-trees, and interspersed with villages.

BASSA'NO. GIACOMO DA PONTE, commonly called *Bassano*, was born at Bassano in 1510. He was instructed in the elementary principles of his art by his father, and was afterwards sent to Venice. He applied himself with intense assiduity to the general study of the great artists of the Venetian school, and, in all that relates to mechanical practice, with extraordinary success; nor are evidences wanting that even in grandeur of style and conception he exhibited at that time a capacity which none who judge him by his later works would suppose him to have possessed. Bassano also painted portraits, and several of the most distinguished persons in Venice sat to him during his residence in that city, among them Sebastiano Venezio, the doge, Tasso, and Ariosto (see Bryan). On the death of his father he returned to Bassano and took possession of his paternal residence, situated on the picturesque banks of the Brenta. He resided here during the remainder of his life. 'Bassano,' Sir Joshua Reynolds observes, 'painted the boors of the district of Bassano, and called them patriarchs and prophets.' But, in spite of his defects, such is the spirit, clearness, and decision of his touch, the depth and richness of his tones, and the general picturesqueness of his effects, that his works not only commanded the respect of contemporary artists, but have been always valued by judges of painting for qualities so important in the art.

In a few instances during his latter practice Bassano showed that the feeling for grand design

which he had manifested in his youth was not quite extinguished. His altar-pieces of the entombing of Christ, in the church of Sta. Maria in Vanzo, at Padua, St. Roche interceding with the Virgin for the people infected with the plague, at Vicenza, and the picture of the seizure of Christ in the garden, are distinguished not only by a sublimity in the general effect, but, by a grandeur in the character of the figures, resembling the style of the Roman school. Bassano died in 1592.

BASSANO. Giacomo da Ponte had four sons who followed his profession. *Francesco da Ponte*, commonly called the *Younger Bassano*, was the eldest son. He was born in 1548, studied under his father, and practised in Venice, where he obtained considerable reputation. Francesco threw himself from a window in a fit of delirium, and died on the spot, in 1591.

Giovanni da Ponte, the second son of Giacomo, was born in 1553. He is chiefly known as a copyist of his father's works. He died in 1613.

Leandro da Ponte, the third son of Giacomo, was born in 1558. He distinguished himself chiefly as a portrait-painter, but painted historical and sacred subjects occasionally. Leandro died in 1623.

Girolamo da Ponte, the youngest son of Giacomo, was born in 1560. He was much employed by his father in copying, but contributed an original performance, an altar-piece of great merit, of St. Barbara and the Virgin, to the church of S. Giovanni at Bassano; he died in 1622. The same style predominates in the works of all the Bassanos, which exhibit, with the exception of a few pictures, much more of the manual than the mental capacity of the art.

(Lanzi; Bryan's *Dictionary of Painters and Engravers.*)

BASSANTIN, or BASSINTOUN, JAMES, was educated at Glasgow, and afterwards travelled, but finally settled at Paris, where he taught mathematics and astronomy. Of his personal life we know nothing but that he was addicted to astrology, returned to Scotland in 1562, and died 1568. He wrote various works on mathematics, astronomy, and arithmetic, some of which are now only known by the titles which have been recorded. One of his works which was best known was a 'Discours Astronomique,' Lyon, 1557, which appears to have been translated into Latin by De Tournes (Tornesius), under the title of 'Astronomia J. Bassantini, Scoti,' Geneva, 1559, reprinted 1613. His planetary system is that of Ptolemy. (Delambre, *Histoire de l'Astronomie Moderne.*)

BASSEIN, a sea-port town in Hindustan, in the province of Aurungabad and presidency of Bombay. It is situated opposite the north end of the island of Salsette, in 19° 20′ N. lat., 72° 53′ E. long. It was once an important town and fortress belonging to the Portuguese, from whom it was conquered by the Mahrattas, and afterwards taken by the British. It is of considerable size, surrounded by a fortification of rampart and bastions, but without a glacis. It contains a small pagoda, seven churches built by the Portuguese, now in a ruinous state, and the remains of a great number of houses. It is entirely without inhabitants. A small guard is stationed at one of the gates, and the place is kept locked up. (Heber's *Journey to the Upper Provinces of India*, 1824-5.)

BASSETERRE. [CHRISTOPHER'S, ST.; GUADALOUPE; MARIE GALANTE.]

BASSET-HORN, a musical instrument, which, notwithstanding its name, is a clarinet, of enlarged dimensions and extended scale. It was invented in Germany in 1770. The basset-horn is longer than the clarinet, and the bell end is wider. On account of its length, the tube, which consists of five pieces, is bent inwards, forming a very obtuse angle. The scale of this instrument embraces nearly four octaves—from C, the second space in the base, to c in altissimo, including every semitone; but its real notes, in relation to its use in the orchestra, are from F below the base staff, to C, the second leger line above the treble.

The basset-horn takes an intermediate place between the clarinet and bassoon, and, on account of its great compass, may perform the functions of both. Its capabilities and beauty are strikingly displayed in Mozart's 'Requiem,' and in similar compositions. The Italian name for this instrument, and that by which it is generally designated in scores, is *corno bassetto.*

BA'SSIA, a genus of tropical plants, belonging to the natural order *Sapoteæ*, containing several interesting species. The species are found in the East Indies and in Africa, where they are of great economical importance on account of the abundance of a sweet buttery substance which is yielded by their seeds when boiled. We shall mention briefly all of which any thing useful is known.

Bassia butyracea, the Indian butter-tree, is found wild on the Almora Hills in India, where it grows to a considerable size, its trunk sometimes measuring 50 feet in height, and 5 or 6 feet in circumference. From the seeds is produced a fat-like substance, which is a kind of vegetable butter.

Bassia longifolia, the Indian oil-tree, is a large tree, a good deal like the last, but its leaves are narrower, and its flowers much more fleshy. It is a native of the peninsula of India, and is found in plantations along the southern coast of Coromandel. Its fruit is yellowish, and yields by pressure a valuable oil, which is used by the poorer natives of India for their lamps, for soap, and, instead of better oil, for cookery. The flowers also are roasted and eaten by the Indian peasants, or bruised and boiled to a jelly, and made into small balls, which are sold or exchanged for fish, rice, and various sorts of small grain. The wood is as hard and durable as teak, so that this is one of the most generally useful trees found on the continent of India.

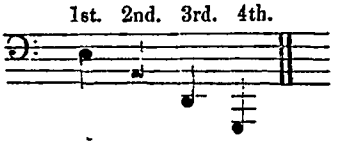
Bassia latifolia has oblong leaves, and the corolla has a very protuberant tube. It is a native of the mountainous parts of the Circars and of Bengal, where it forms a middling-sized tree. Its wood is hard and strong, and proper for the naves of wheels; its flowers yield by distillation a strong intoxicating spirit. From their seeds a considerable quantity of greenish yellow oil is obtained, which is found useful for the

supply of lamps; it is, however, inferior to that of the last species. It is curious that this oil stains linen or woollen cloth as animal oil does, while the fatty substance of the *B. butyracea* possesses no such property, but when rubbed on cloth leaves no trace behind.

A fourth species is believed to be the *Shea Tree*, or African butter-plant, which is so very important an article of African internal commerce, and which it would apparently be extremely desirable to introduce into the West Indies and Bengal, as a new source of internal wealth. This is the plant which is frequently spoken of by Park, in his 'Travels in Africa.'

BASSIGNY, a district in the former province of Champagne, in France, now forms the arrondissements of Chaumont and Langres in the department of Haute-Marne, the canton of Gondrecourt in the department of Méuse, and a small portion of the arrondissement of Bar-sur-Aube in the department of Aube. Its chief towns were Langres, Chaumont, and Bourbon-les-Bains. (*Dictionnaire de la France.*)

BASSO DI CA'MERA, a double-base, or *contrabasso*, reduced in size and power, but not in compass, and thus adapted to small or private rooms. It has four strings; two of gut, and two covered with silver wire, all proportionably thicker than those of the violoncello, and tuned in 5ths, to the same literal notes as the violin, but two octaves lower than the latter. Ex.:—



This instrument has a great advantage over the double base for chamber music, though neither powerful enough nor designed to supersede it in the full orchestra. The basso di camera, in its present perfect state, was first produced in London in 1844.

BASSO-RILIEVO. The Italian term basso-rilievo, or the French bas-relief, is commonly applied to any work of sculpture connected more or less with a plane surface or background, and in this general sense is opposed to insulated detached figures, or sculpture in the round. In its more particular meaning basso-rilievo, low or flat relief, is usually appropriated to figures which have a very slight projection from the ground. Alto-rilievo, on the other hand, is not only rounded to the full bulk, but has generally some portions of the figures quite detached; and mezzo-rilievo (a style between the two), although sometimes rounded to a considerable bulk, has no part entirely unconnected with the plane surface or ground.

In carefully keeping within the limits, however narrow, which defined the style of rilievo, the great artists of antiquity failed not to condense into that style the utmost perfection compatible with it, while the various applications of the works suggested abundant variety in their treatment and execution. The British Museum contains unquestionably the finest existing specimens of this branch of sculpture in the rilievi which decorated the Parthenon, or Temple of Minerva, at Athens.

(*Basso-Rilievo*, by C. L. Eastlake, R.A., in the *Penny Cyclopædia.*)

BASSOMPIERRE, FRANCOIS DE, Marshal of France, and Captain-General of the Swiss Guards, was born in Lorraine, on the 12th of February, 1579. His family was of the highest order of nobility: his father had commanded a regiment of cavalry, called *reiters* (riders), under the French king, Henry IV., and, like his master, had been wounded at the battle of Ivry. In 1598 Bassompierre was first introduced to the French king's notice in a ballet, which some young courtiers had got up to amuse Henry on his recovering from an illness, in which the illness, and still more the mode of cure, were held up to laughter. Bassompierre took a part in the ballet, and quickly caught the attention of Henry. The result was a warm friendship on both sides.

Bassompierre served in all the civil wars, mostly of a religious character, in which France was engaged in his time, and rose through successive steps to the highest military honours, having been appointed by Henry captain-general of the Swiss Guards, a high court appointment, and promoted to the rank of marshal in the next reign. He does not seem to have possessed much military talent, and was distinguished in the camp chiefly by his playful humour and courage. Under the reign of Louis XIII. he was sent ambassador extraordinary to Spain, and afterwards to the Swiss, in the years 1624 and 1625. In 1626 he was sent to England, at the instance of the Cardinal Richelieu, in order to enforce the observance of the treaty of marriage between Henrietta Maria and Charles I., so far as it applied to the toleration of the Roman Catholic worship.

Bassompierre attached himself warmly to the interests of the house of Guise, and to the queen-mother Mary de Medicis, who was the great obstacle to Richelieu's attaining absolute power, and he paid the penalty of his adhesion. On the 23rd of February, 1631, Bassompierre was arrested, by Richelieu's orders, and sent to the Bastille, where he was confined for twelve years; that is, till the death of the cardinal. Bassompierre died of apoplexy on the 12th of April, 1646, three years after his liberation from prison. It is alleged that he was offered the guardianship of the young monarch Louis XIV., but age, or, as Mr. Croker conjectures, the 'wholesome discipline of the Bastille,' had cured him of all ambition as a courtier, and he declined the perilous honour.

(*Mémoires du Mareschal de Bassompierre*, 4 tomes, Amsterdam, 1723; Bassompierre's *Embassy to England*, translated, with notes, London, 1819.)

BASSOON, a musical instrument of the pneumatic kind, blown through a reed. It consists of four pieces, or tubes of wood, bound together and pierced for ventages, of a brass craned neck, in which the reed is inserted, and of several keys.

The whole length of the tubes is 6½ feet, but by doubling up this is reduced to four. It may be considered as a base oboe, and its compass is from B flat, below the base staff, to B flat, in the treble staff.

This instrument is used in every kind of music; for the richness of its tone and extent of its scale render it invaluable to the composer. The bassoon was invented as early as the year 1539. The word is derived from the Italian *bassone*, which is now rarely used. The common Italian term is *fagotto*, a fagot, or bundle of sticks, because the tubes of which the instrument is composed are bound together. The word *fagotto* is always employed in musical scores.

BASSOON, DOUBLE, a bassoon of increased dimensions, the scale of which is an octave below that of the ordinary bassoon. The double-bassoon was introduced at the commemoration of Handel in 1784, but not found to answer the intended purpose, and has fallen into disuse; the Serpent (and more recently the Ophicleide) well supplying the place which it was meant to fill.

BASSORA. [BASRA.]

BASSUS, in Entomology, a genus of the order *Hymenoptera*, and family *Braconidæ*. These are four-winged flies, with long and narrow bodies. They frequent the flowers of umbelliferous plants.

BAST, FREDERICK JAMES, was born in the state of Hesse-Darmstadt, about the year 1772. He received his earliest instruction from his father at Bouxviller, but afterwards studied in the University of Jena, under Professors Griesbach and Schütz.

His first literary essay was a commentary upon Plato's 'Symposion,' which was followed in 1796 by a specimen of an intended new edition of the Letters of Aristænetus. He lived at this time at Vienna, where he was in the suite of M. de Jan, the resident from Hesse-Darmstadt. He subsequently removed to Paris as secretary of legation to the Baron de Pappenheim, the minister of Hesse-Darmstadt at Paris.

Bast's literary labours were devoted to verbal criticism. His 'Lettre Critique à M. J. F. Boissonade sur Antoninus Liberalis, Parthenius, et Aristénete,' 8vo., Paris, 1805, is an example of the style of his studies, and of his erudition.

Bast died at Paris, Nov. 15, 1811. His Notes upon Aristænetus were published in a variorum edition of that author by his friend M. Jo. Fr. Boissonade, 8vo., Paris, 1822.

(*Biographie Universelle, Supplément.*)

BASTAN. [BAZTAN.]

BASTARD. The origin of this word is unknown. Among old English writers it is applied to a child not born in lawful wedlock; and as such he is technically distinguished from a *mulier* (*filius mulieratus*), who is the legitimate offspring of a *mulier*, or married woman. The term *natural* is also applied to all children born out of wedlock. But in the Roman law the term natural children is sometimes applied to the issue of a man and woman who are married, and in this sense it is opposed to *adopted* children: it is also applied to children who were begotten in that tolerated union which the Romans called concubinage (*concubinatus*).

By the English law, a child born during the marriage of his parents is legitimate, even if the child is begotten out of matrimony. It was also very early established, that the fact of birth after marriage was conclusive of legitimacy. Hence it was a maxim that nothing but physical or natural impossibility, such as the continued absence of the husband beyond seas, &c., could justify an inquiry into the real paternity. At present, the fact of birth during marriage, or within a certain time after the husband's death, is only a strong presumption of legitimacy, which is capable of being repelled by satisfactory evidence.

It is said in our old text writers, that if a widow marries again so soon after her husband's decease that a child born afterwards may reasonably be supposed to be the child of either husband, the child, upon attaining to years of discretion, shall be at liberty to choose which of the two shall be accounted his father. When a man dies, and his wife alleges that she is with child, those who may be entitled to the property in case there is no child born, or in case the child who is born is not the child of the husband, may have a writ De Ventre Inspiciendo, the object of which is to ascertain if the woman is pregnant. [VENTRE INSPICIENDO, WRIT DE.]

An illegitimate child is regarded, for most purposes, as the son of nobody, and is therefore heir-at-law to none of his reputed ancestors. He is entitled to no distributive share of the personal property of his parents, if they die intestate; and under a will he cannot take under the general description of 'son,' 'daughter,' or 'child,' by which legitimate children alone are presumed to be designated. But he can take under a will made even before he is born, if he is particularly described. He may acquire property himself, and thus become the founder of a fresh inheritance, though none of his lineal descendants can claim through him the property of his reputed kin. If he dies without wife, issue, or will, his lands and goods escheat to the crown, or lord of the fee. In the former event, it is usual for the crown to resign its claim to the greater part of the property on the petition of some of his nearest *quasi* kindred. There is a clause (§ 11) in the new Savings Banks Act (7 & 8 Vict. c. 83) which allows the sum invested by a depositor, being illegitimate and dying intestate, to be paid to such person or persons as would be entitled to the same provided the depositor had been legitimate.

A bastard has no surname until he has acquired one by reputation, and in the meantime he is properly called by that of his mother, and she is entitled to the custody of the child.

The first English statute which provides for the maintenance of illegitimate children is the 18th of Elizabeth, cap. 3, which conferred on justices of the peace the power of requiring from one or both of the parents a weekly or other payment for their support, and in default thereof, of committing them to gaol until they found surety to make such payment, or else to appear at the

next quarter sessions to abide the order of the justices. The law on the subject of bastard children has undergone many changes, which shows that no settled principle has regulated our legislation on this subject.

Under the act of Elizabeth and later acts of parliament, down to the passing of the Poor Law Amendment Act in 1834, the usual practice was for the mother to apply for relief to the parish officers, by whom she was carried before the magistrates to be interrogated respecting the paternity of the child. An order of filiation was then made, and the reputed father was ordered to contribute a weekly payment, or was bound to indemnify the parish against the future expenses of maintenance. By the 7 & 8 Vict. c. 101, the officers of all parishes and unions are deprived of the power (which they had before the passing of this act) of applying for orders of affiliation with regard to illegitimate children born before or after the passing of the act, and the mother alone is entitled to apply for such order; but, in case of the death or incapacity of the mother, the guardians (or, if there are no guardians, the overseers) may enforce an order, although they cannot apply for one, and payments are to be made to some person appointed by the justices to have the custody of the child, and not to the parish officers; and such person is to receive the child on the condition that it is not to be chargeable. Parish officers are guilty of misdemeanour if they endeavour to promote the marriage of the mother of a bastard by threats or promises respecting any application to be made for maintenance. The mother of a bastard may summon the putative father before the petty sessions within twelve months after the birth of the child, or at any time on proof of money having been paid to her in respect of such child. The justices may then make an order on the putative father for maintenance of the child and other costs, and enforce the same by distress and commitment; but not more than thirteen weeks' arrears can be claimed. The sum paid for maintenance is to be paid to the mother, and if she neglect or desert her offspring she may be punished under the Vagrant Act (5 Geo. IV. c. 83). The liability of the mother, while unmarried or a widow, continues until the child is sixteen. Any person having the care of a bastard child under an order of maintenance, who maltreats it or misapplies monies paid by the putative father for its support, is liable to a penalty of 10*l.* on conviction before two justices. The putative father may appeal to the quarter-sessions, as under the old law. All orders for the maintenance of a bastard cease after it has attained the age of thirteen, or on the marriage of the mother. Existing orders are to continue, but those made before August 14, 1834, are to cease on the 1st of January, 1849. The 8 Vict. c. 10, declares that 'divers questions have been raised as to the validity of certain orders' in bastardy made by justices under 7 & 8 Vict. c. 101;' and, with the view of preventing the recurrence of such questions, the 8 Vict. c. 10 was passed, which is chiefly explanatory of the previous act.

The late Mr. Rickman was the first who attempted to ascertain the number of illegitimate births in England. During the progress of the census of 1831, he obtained from the ministers of churches and chapels the number of bastards born in their parishes or chapelries in 1830. The number returned was 20,039. Under the Registration Act (6 & 7 Will. IV. c. 86) no specific reference is made to illegitimate children, but the penalty for making a false statement, combined with the local knowledge of the registrars, in most cases prevent such children being registered as born in wedlock. Still there is no doubt that the registrar's returns will give something less than the real number of illegitimate children born; and as a great many persons in large towns, particularly London, live as man and wife without being married, it is probable that many illegitimate children are registered as legitimate. Still-born children are not registered in England, and here again the proportion is higher for illegitimate births than for births in wedlock. In Saxony the proportion of still-born children to 10,000 illegitimate births is 616, in 10,000 other births 464. Whatever may be the number of illegitimate births as they appear on the face of the register, it may safely be assumed that they are below the actual number. In the Registrar-General's Fifth Report (p. 10), it was stated that in 1841, out of 248,554 registered births in England, 15,839, or 1 in 16, were illegitimate. The Sixth Annual Report issued in February, 1845, gives the total number of illegitimate births registered in England and Wales in 1841 and 1842. In 1841 the number was 35,294, and 34,796 in 1842, or 1 in 15 out of 517,739 births, whereas the returns on which reliance was formerly placed gave 1 in 20. In 1842 the number of illegitimate-born boys was 17,810, and of females 16,986, or 21 boys to 20 girls: the proportion of other births is 20 boys to 19 girls. The number of females in England and Wales, between the ages of 15 and 45, was about 3,811,654 in 1841. Of these it is estimated by the Registrar-General, that 1,733,576 were married and gave birth in the above year to 489,894 children, and 2,078,078 were unmarried, and gave birth to 35,294. The children born in wedlock were as 28.3 to 100 of the married women, and the illegitimate children were as 1.7 to 100 of the unmarried women.

Before any certain inference can be drawn as to the state of manners in any particular district, the relative number of married and unmarried women should be ascertained; but there are no means of arriving at this fact. The average number of illegitimate and other births for the whole of England is 6.7 per cent; but in Cumberland it is 11.4 per cent, and in some districts it ranges from 12 to 18.1 in 100, which latter is the proportion that exists at Wigan, in Lancashire. Nearly all the English towns are below the average of England. In France, Sweden, and most parts of the continent, the towns are above the average of the country.

If the mortality of illegitimate children were the same as that of children born in wedlock, the number of illegitimate persons living would exceed one million for England and Wales. The condi-

tion of an illegitimate child is very frequently a hard one from the moment of its birth. Out of sixty-five persons murdered in England in 1841, five were illegitimate infants or children under one year. We have no means of distinguishing the number of illegitimate children who die in England, but in Saxony 34 per cent die under the age of one year; in Sweden, 27 per cent; and in Stockholm, 40 per cent; while the deaths of children of the same age born in wedlock average 26 per cent. in Saxony, 26 in Stockholm, and 16 in Sweden. The number of illegitimate children chargeable on the poor's rate in England was 65,475, in 1835; in 1839, 39,371; in 1843, 29,699.

The following table of the number and proportion of illegitimate births in one year in several of the principal countries and cities of Europe is derived from the best and most recent sources, and is given with details in the Sixth Report of the Registrar-General:—

States.	No. of Illegitimate births.	Proportion of 100 children born.	
		Legitimate.	Illegitimate.
Sardinia . .	30,474	97.9	2.0
Sweden . .	31,289	93.4	6.5
Norway . .	12,111	93.3	6.6
England . .	34,796	93.2	6.7
Belgium . .	9,354	93.2	6.7
France . . .	69,928	92.8	7.1
Prussia . . .	42,129	92.8	7.1
Denmark . .	6,020	90.6	7.1
Hanover . .	5,487	90.1	9.3
Austria . . .	101,821	88.6	9.8
Würtemburg .	8,859	88.2	11.3
Saxony . .	10,512	85.0	11.7
Bavaria . . .	30,729	79.4	20.5
Cities.			
London . . .	1,925	96.8	3.2
Genoa . . .	2,665	91.9	8.0
Berlin . . .	4,472	85.0	14.9
Frankfort . .	652	82.7	17.2
St. Petersburgh	1,809	81.2	18.8
Turin . . .	6,867	81.0	18.9
Paris . . .	11,527	71.1	28.8
Stockholm . .	5,409	59.3	40.7
Vienna . . .	21,763	53.8	46.1

In *Scotland* the law of bastardy differs considerably from the English, chiefly in consequence of its having adopted much of the Roman and pontifical doctrines of marriage and legitimacy.

The Scottish law has adapted two species of legitimation, which, in the language of the civil law, they call legitimation *per subsequens matrimonium*, and legitimation *per rescriptum principis*.

The former of these was introduced by the Emperor Constantine the Great, for a temporary purpose, but it afterwards became a regular form of legitimation for children born in concubinage. The doctrine of legitimation was certainly no part of the ancient common law of Scotland any more than of England; but it is now settled law there, and its rise and establishment are accounted for, when we consider the former paramount influence of the canon and civil laws in that country. The principle on which the doctrine rests is the fiction that the parents were married at their child's birth. If, therefore, the parents could not have then legally married, or if a mid impediment has intervened between the birth and the intermarriage, the fiction is excluded, and previous issue will not be legitimated by marriage. Further, it is held that if the child was born, or if the intermarriage took place, in a country which does not acknowledge the doctrine of legitimation by subsequent marriage, the child will remain a bastard. A child legitimated *per subsequens matrimonium* is entitled to all the rights of lawful issue, and will, as respects inheritance and the like, take precedence of subsequent issue born in actual wedlock: yet in England the judges have held that a child born in Scotland before marriage, and legitimated in Scotland by subsequent marriage, the parents also being domiciled there, though in point of fact the first-born son, and in status and condition, by comity, legitimate in England, cannot succeed as heir to land in England. (Doe dem. Birtwhistle *v.* Vardill, 5 Barn. and Cress. 438. The opinion of the judges was confirmed by the House of Lords, July 1840.)

Legitimation *per rescriptum principis* was established by Justinian ('Nov.' 74, c. 2; 89, c. 9). The form of these letters seems to have been borrowed by the Scots immediately out of the old French jurisprudence: their clauses are usually very ample, capacitating the grantee for all honours and offices whatsoever, and to do all acts in judgment or outwith, and, in short, imparting to him all the public rights of lawful children and natural-born subjects, together with a cession of the crown's rights by reason of bastardy; but, as the crown cannot affect the rights of third persons without their consent, letters of legitimation do not carry a right of inheritance to the prejudice of lawful issue.

By 6 Wm. IV. c. 22, the only remaining incapacity in Scotland—the want of power to make a testament in the particular case of the bastard having no lawful issue—was done away with. Letters of legitimation were formerly necessary in all cases; but it was held that, as the crown's right of succession was excluded by the existence of issue, a bastard who had lawful issue might dispose of his goods by testament in any way he thought fit. Since the passing of 6 Wm. IV. c. 22, there is now no distinction between a bastard and another man, as to the power of disposing of his property; and he may succeed to any estate, real or personal, by special destination. To his lawful children, also, he may appoint testamentary guardians; and his widow has her provisions like other relicts. But as a bastard is *nullius filius*, and of kin to nobody, he cannot be heir-at-law to any one, neither can he have such heirs save his own lawful issue. If a bastard dies leaving no heir, the crown takes his property, which, if it be land holden in capite, is at once consolidated with the superiority; but if it be holden of a subject, the crown appoints a donatary, who, to complete his title, must obtain decree of declarator of bastardy, a process in the nature of the English *writ of*

escheat, and thereupon he is presented by the king to the superior as his vassal.

But the law takes notice of the natural relationship of bastards for several purposes, and particularly to enforce the natural duties of their parents. These duties are comprised under the term *aliment*, which comprehends both maintenance and education; including under this latter term, as Lord Stair says (b. i. tit. 5, sec. 6), 'the breeding of them for some calling and employment according to their capacity and condition.' These were, at least, the principles on which the courts proceeded in awarding aliment to children. In determining who is the father of a bastard, the Scots courts again proceed on the principles of the civil law. In Scotland there must first be semiplenary evidence of the paternity, and then, when such circumstantial or other proof of that fact is adduced as will amount to such evidence, the mother is admitted to her oath in supplement. The whole aliment is not due from one parent but from both parents. This is the principle; and therefore, in determining what shall be payable by the father, the ability of the mother to contribute is also considered. The absolute amount of aliment, however, is in the discretion of the court, as is likewise its duration. Where the parties are paupers, the bastard's settlement is not the father's, but the mother's parish, and, if that is unknown, the parish of its birth. The mother of a bastard is entitled to its custody during its infancy.

Paternity, or the power of the father, in the Roman law, could only be obtained on the condition of begetting a child in lawful marriage. The rule was that, if a child was not born before the 182nd day after marriage, the presumption was in favour of legitimacy ('Dig.' 38, 16, 3, s. 12), and the rule was the same if a child was born not later than in the tenth month after the marriage was dissolved by death or divorce. If this condition was not fulfilled, the male had no claim on the child who might be born from his connexion with the mother; nor had the child or the mother any claim upon him in respect of maintenance. The Emperor Justinian first gave illegitimate children a claim on the putative father for maintenance. ('Nov.' 89, c. 12, 13.) The illegitimate child was viewed as having no father, but he had a mother.

The rules of law as to bastardy at the present day have been solely framed with reference to the poor laws for the purpose of saving the public, that is, the parish, from the charge of maintaining a bastard child. It is with this object that rules of law have been framed for ascertaining who has begotten the child and must contribute to its support; and, for the purpose of settling the disputes between parishes as to the liability to maintain the child, it has been determined that for the purpose of settlement a bastard shall be considered his mother's child. But the old rules of law as to the incapacities of bastards still subsist, and according to these rules a bastard has neither father, mother, sister, or brother, or other remoter kin. His only kin are the children whom he begets in lawful wedlock. An English bastard is therefore the founder of a new stock, the creator of a family whose pedigree can never be traced beyond him; a distinction which other people cannot have.

The English maxim that a bastard is nullius filius is not so good as that of the Roman law, which considers him to be the son of his mother, as indeed the English law does for some purposes, and yet not for others. In a case in Lord Raymond's 'Reports,' p. 65, there are some remarks on the maxim of a bastard being nullius filius, and they form a good example of the absurdity of the maxim. The English law also, though it calls a bastard nullius filius, admits him to be the son of his putative father and also of his natural mother, for some purposes, and not for others.

The Roman law required children to be begotten in matrimony in order to be lawful children. The English law does not concern itself as to the conception, but only as to the birth, which must be in wedlock. The old Roman law required that, when a man obtained possession of a woman's person, he must do it with a matrimonial mind: the English law cares not with what mind he obtains possession of the woman; it is altogether indifferent about the origin of the connexion. The old system combines, with a clear practical rule for determining the father, the condition of a marriage, an elevated notion of the dignity of the marriage connexion. The English system lays down a clear rule for determining paternity, subject to which it is regardless as to the freedom of ante-nuptial sexual connexion. The later Roman law gave a man the power of legitimating his illegitimate child, which the English law does not.

BASTENNES, a village in the French department of Landes. There are two mineral springs near it, one of which is ferruginous and cold, the other sulphureous and warm. It is however mainly noted for a rich asphalte mine, which is said to yield more bitumen than the mines at Seyssel. [ASPHALTE.] The bitumen of Bastennes is very much used as cement for stone or wood; and when mixed with pebbles it forms an excellent pavement. Its adhesiveness is so great, that stones cemented with it cannot be separated by a less force than is sufficient to break them. (*Dictionnaire de la France.*)

BASTI'A, the most populous and most commercial town in the island of Corsica, is situated on the eastern coast of the island: population 14,568. Its port is formed by a little creek, which is defended by a mole 164 yards long, running N. and S. The entrance to the harbour is only 76 yards wide between the extremity of the mole and a singular rock which has very much the appearance of a lion in repose, and is called 'Il Leone.' At the end of the mole and on the right of the mouth of the harbour, there is a fixed light 52½ feet high, which can be seen at a distance of 10 miles. It stands in 42° 42′ N. lat., 9° 27′ E. long. The town is fortified with walls and bastions, and it has large suburbs outside the fortifications. The view from Bastia over the Tuscan Sea is very fine. It embraces the islands of Elba, Capraja, and Monte Cristo, and the distant coast of Tuscany. The streets are narrow, and the houses lofty, and built after the Italian fashion. The Cour Royale for the

whole island sits at Bastia. The town has also a college, tribunals of first instance and of commerce, and a public library. The principal churches are the cathedral, and the churches of St. John the Baptist, St. Roch, and of the Conception. Shoe and glove leather, soap, wax candles, and liquors, are the principal manufactures. The exports consist of wine, oil, hides, timber, and cattle. Fishing gives employment to a large part of the population. Bastia is 95 miles E. by S. from Toulon, and 56 from Piombino on the coast of Tuscany. Steamers ply regularly every week between Bastia and Marseille. (*Dictionnaire de la France.*)

BASTIDE-DE-CLAIRANCE. [PYRENE'ES, BASSES.]

BASTIDE-DE-SERON. [ARIE'GE.]

BASTILE, or BASTILLE, the name used in France to denote a fortress or state-prison. There have been three of that name at Paris, the Bastile du Temple, the Bastile of St. Denis, and that of the Rue St. Antoine. It is the last which has obtained historical celebrity, and is usually denominated The Bastile. This fortress stood at the east end of Paris, on the north side of the Seine. It was originally intended for the protection of the city, but afterwards was used as a state-prison. Hugues d'Aubriot, Prevost des Marchands in the reign of Charles V., laid the first stone on the 22nd of April, 1369, by the order of that king. The Bastile consisted at first of two round towers, with an entrance between them: afterwards, to render it stronger, two additional towers, parallel to the two first, were built, and the whole connected by walls. The building, however, was not completed till 1383, in the reign of Charles VI., when four more towers were added, of the same dimensions, and at equal distances from the first four, and the whole eight were united by masonry of great thickness, in which were constructed a great number of apartments and offices. The entrance to the city by the original gate was closed, and the road carried without the building. In 1634 a fosse, 120 feet wide and 25 feet deep, was dug all round; and beyond that a stone wall, 36 feet high, was built all round. Thus the Bastile became, from a fortified gate, one of the strongest fortresses of the kind in Europe. The towers contained several octagonal rooms, one above the other, secured with double doors, and without fire-places, each having one window pierced in the walls, which were rather more than 6 feet thick, unglazed, and with iron gratings. The only article of furniture, if it may be so called, was an iron grating, raised about 6 inches from the floor, to receive the prisoner's mattress, and prevent its decay from the damp of the stone floor. To each tower there was a way by a narrow winding staircase. The apartments constructed in the walls which connected the towers were larger and more commodious than the others, and were provided with fire-places and chimneys, but with similar precautions for preventing the escape of prisoners. The rest of the Bastile consisted of two open courts; the larger, 108 feet by 77 feet, called the Great Court; the smaller, 77 feet by 45 feet, called the Court of the Well, was separated from the first by a range of buildings and offices, having a passage through them. The height of the building within was 78 feet, but greater on the outside next the fosse.

This prison was used for the confinement of persons considered dangerous by the government, who exercised their power in the most despotic manner. In general the treatment seems to have been very severe. The only prisoners who ever effected their escape from the Bastile were two persons of the name of Latude and D'Aligre, the narrative of which, published by Latude, is extremely interesting. Of all the prisoners in the Bastile none have excited curiosity so strongly as the person usually called the Man with the Iron Mask, and whose history has never been satisfactorily developed.

The Bastile was besieged and taken three times: in 1418, by the Bourgignons; in 1594, by Henry IV.; and on the 14th of July, 1789, by the Parisians, from which day the French Revolution may be dated. Its demolition was decreed by the Permanent Committee of Paris on the 16th, and carried into immediate effect. The materials were employed in the construction of a new bridge, called the Bridge of Louis XVI., and there is not now remaining the smallest vestige of this edifice.

(Dulaure, *Histoire de Paris;* Michelet, *Histoire de la Revolution Française,* I. chap. 5.)

BASTINA'DO is derived from the Italian, *bastone,* a stick, *bastonare,* to beat with a stick, &c.

The bastinado is the chief governing instrument of a great part of the world, from Corea and China to Turkey, Persia, and Russia. It is administered in different ways, and by different instruments, as the bamboo in China, the knout in Russia, &c.

According to our modern acceptation, the term bastinado does not include all these methods of beating, but is confined to the Turkish and Persian method, which is to beat the soles of the feet with sticks. This excessively painful punishment is thus inflicted. Two men support between them a strong pole, which is kept in a horizontal position; about the middle of the pole are some cords with two running knots or nooses; through these the naked feet of the sufferer are forced, and then made tight in such a manner that the soles are fairly exposed; the sufferer is then thrown on his back, or left to rest on his neck and shoulders with his feet inverted, which are forthwith beaten by a third man with a heavy tough stick. When the presiding officer or magistrate gives the word, the heavy blows cease, the maimed feet are cast loose from the cords and pole, and the victim is left to crawl away and cure himself as best he can.

According to the letter of the penal code of the Ottoman Empire, this punishment can only be inflicted on the *men* of the fourth and last class of society, which comprises the slaves and the rayahs or tributary subjects of the empire, as Jews, Armenians, Greeks, &c. The other three classes, viz. the Emirs, or issue of the race of the prophet Mohammed, and the Oulemas, or men of the law; public functionaries, civil and military; and

free citizens, and private individuals, who live on their rents or the proceeds of their industry, were all exempted by law from this cruel and degrading punishment. By the original code, the number of blows to be given was from three to thirty-nine; but a later clause permitted them, in certain cases, to be carried to seventy-five; but in practice this is often exceeded, nor are the privileges always respected.

(D'Ohsson, *Tableau Général de l'Empire Othoman.*)

BA'STION. This term is applied to a species of tower which constitutes the principal member of the fortifications immediately surrounding a town, or position to be defended. The rampart by which it is formed is disposed on four sides of a pentagon, two of which, called the *faces*, meet in an angle whose vertex projects towards the country; the other two, denominated the *flanks*, connect the opposite extremities of the faces with the *curtain*, or that part of the rampart which coincides in direction with the sides of a polygon supposed to inclose the town: the fifth side of the pentagon is generally unoccupied by a rampart, and is called the *gorge* of the bastion.

From the infancy of the art of war the defenders of a fortress felt the necessity of having the walls disposed so as to afford means of observing the enemy when very near their foot, and therefore projecting towers were constructed at intervals on the exterior of the walls. When such towers did not exist, the enemy was enabled to plant his scaling-ladders against the wall, or even to make a breach in the wall itself, with almost perfect security.

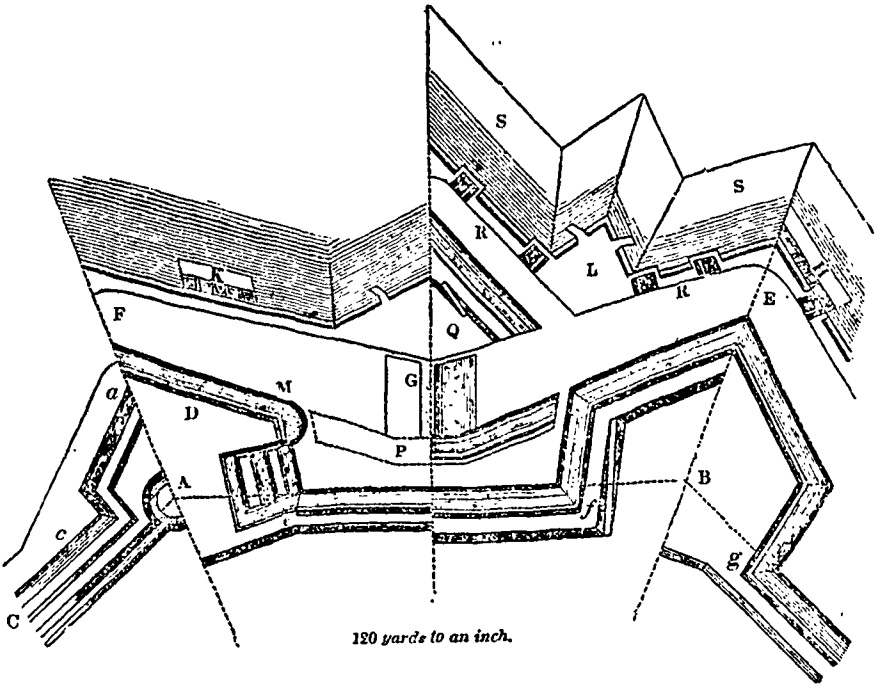
From the accounts given by ancient writers of their fortified places, and particularly from the precepts of Vitruvius ('Architectura,' lib. i. cap. 5), we learn that the projecting towers, which were always small, were sometimes square or polygonal, but generally circular, and that their distance from each other along the walls was regulated by the range of the weapons employed in the defence. In the fortifications of cities this distance seems to have varied from 80 to 100 paces, according to local circumstances, and the power of annoying the enemy by the arrows and javelins discharged from the towers; but, from the greater distance at which modern arms take effect, the bastions, measuring from the vertices of their projecting angles, are now generally, and agreeably to the rules of Vauban, placed at about 380 yards from each other. The invention of artillery rendered it necessary to enlarge the towers for the purpose of receiving the guns; and to increase the thickness of the rampart, that it might be able as well to resist the concussion produced by the discharge of the ordnance upon it as the shock of the enemy's artillery when fired against it. The ramparts were therefore constructed of earth; a revetment of brick or stone, of a height which was supposed to be great enough to render it impossible for the enemy to mount it by scaling ladders, being built against it on the exterior.

It is to Italy that we must look for the invention of the modern bastion: the wars which raged in that country from the commencement of the 12th century, and which were more systematically conducted there than in any other part of Europe, gave rise to this, as well as to many other inventions for military purposes. The precise date of its first formation is quite unknown; but if we omit the improbable story related by Folard, that the Turkish commander, Achmet Pasha, caused bastions to be constructed about Otranto, when he took that place in 1480, we may observe that it is spoken of under the name of *Balvardo*, as an improvement of great importance in the military art, by Tartaglia, in his 'Quesiti ed Inventi Diversi,' which was published in 1546; and in the same work is given a plan of the fortifications of Turin, which exhibits a bastion at each of the four angles of the rampart. Both Vasari, in his 'Lives of the Architects,' and Maffei, in his 'Verona Illustrata,' ascribe the invention to San Michæli of Verona: one of the bastions of this city has on it the date 1527, and its construction is still ascribed to that engineer, who, in fact, was about that time employed in the erection or repair of several of the fortresses in Italy. From the word Balvardo, denoting a stronghold, the earliest French engineers gave to this work the appellation of *Boulevard;* and such is its designation in the treatise of Errard, which was published in 1594. The term *Bastion* appears to have been taken from the Italian writers, for Maggi, in his treatise 'Della Fortificatione delle Citta,' applies the term *Bastioni* to redoubts constructed of earth; and, according to Pere Daniel, the French subsequently gave to such works the name of *Bastilles*, or *Bastides*. Froissart also uses these terms in speaking of the forts executed during the siege of Ventadour by the Duc de Berri, under Charles VI. It should be remarked, however, that Errard applies the name of *Bastion* indifferently to works in the situation of those now so called, and to those to which the name of *Ravelin* is generally given; and doubtless it denoted originally any work of earth constructed on the exterior of one more ancient.

It appears that it had been the practice from the earliest times to form a rampart, or bank of earth, in front of the walls of fortresses, in order to secure the latter from the destructive effects of the battering-ram; and it is easy to conceive that, by forming such a bank in front of the old towers of a place, so as to connect those previously existing in front of the adjacent curtains, the work would assume a figure like that of a modern bastion; and indeed would very much resemble one of the detached bastions in what is called the second system of Vauban; the original tower of the fortress occupying the place of the interior bastion of that system, and constituting a sort of *retrenchment* to the new work. The construction was proposed in 1584 by Castriotto, seemingly as if it had been his own idea; but probably he meant only to recommend the adoption of a kind of work which must have been then a novelty.

In the cut, the line A B represents one side of the polygon supposed to inclose the town for-

tified. The semicircular work at A is half a round tower, and A C is part of the curtain, or connecting wall between two such towers, according to the ancient manner of fortifying places; *a c* represents a sort of *fausse braye*, or elevation of earth protecting the ancient walls of a place. D represents half a bastion constructed at the angle, A, of the polygon, according to the method of the first Italian and French engineers.



The pentagonal figure *f* E *g* represents a bastion as it is now usually constructed; the ramparts immediately above *f* and *g* are the flanks; those which unite below E are the faces, and an imaginary line from *f* to *g* is the gorge. The rampart *e f* is the curtain joining the right flank of one bastion to the left flank of the next. The bastion *f* E *g* is divided into two parts by the line E B for the purpose of showing two methods of forming the interior: the left half has the space within the rampart of the face and flank on a level with the natural ground, and the right half has the interior about 10 feet higher than the ground. The second method is that which is generally preferred, because it affords some facilities for the formation and defence of interior parapets or retrenchments.

In order to obtain a powerful fire for the defence of the main ditch, engineers were induced, at one time, to form the bastion with a double, and even a triple flank on each side, the flanks receding from each other, from below upwards, in the manner of terraces, towards the interior of the bastion, as at *e;* and, to prevent the enemy from dismounting the guns in the lower flanks by batteries raised in the prolongations of those flanks, it became necessary to mask them by extending the rampart of the face beyond them, and giving it a return towards the curtain; this return was frequently rectilinear, but generally in the form of an arc of a circle, like a portion of a round tower, as at M, and the projection received the name of *orecchione* or *orillon*. Besides masking the lower flanks from the effect of any enfilading, or lateral fire, it concealed one or more guns on the upper flank from the fire of an enemy's battery directly opposed to that flank, while it permitted those guns to defend the main ditch and the breach made by the enemy in face of the collateral bastion. Eventually, however, lower flanks ceased to be constructed because they contracted too much the interior of the bastion to which they belonged; and because the enemy's fire, soon destroying the parapets of those above, masses of brickwork fell among the defenders below, and obliged them to quit their guns at the very time that their service was most required. The *orillons*, moreover, are now considered useless, as they contract the length of the flank; and the guns which they protect from a fire in their front are liable to be dismounted by a fire from their rear.

In what are called the second and third systems of Vauban, the principal bastions are detached from the *enceinte* by a ditch in their rear, and consequently the capture of those works would not immediately compel the surrender of the fortress. In these systems, a small bastion of brickwork, closed by a parapet wall at its gorge, is constructed at each of the angles formed

by the polygonal wall surrounding the place. The fire from the parapets of these tower bastions, as they are called, would have a powerful effect in preventing the enemy, after he has breached and stormed the great bastions, from erecting batteries in them to destroy the interior walls; and, in order to preserve the artillery of their flanks uninjured till the end of the siege, engineers placed it in casemates [CASEMATE], from whence it might pour a destructive fire upon the assailants when crossing the ditch of the enceinte.

In the above cut, the space F G E is the main ditch; and H and K are the positions of batteries which might be constructed by the enemy to silence the fire from the triple flank at *e*. The outworks P, G, Q, R, L, S, [TENAILLE, CAPONNIÈRE, RAVELIN, COVERED-WAY, RE-ENTERING PLACE OF ARMS, and GLACIS], are described under those words.

(Vitruvius, *De Architecturâ;* Maggi, *Della Fortificatione delle Citta*, Venetia, 1584; Errard, *La Fortification réduite en Art*, Par. 1600; De Ville, *L'Ingénieur Parfait*, Par. 1672; Vauban, *Œuvres Militaires*, par Foissac, Par. 1795; Bousmard, *Essai Général de Fortification*, Par. 1814; St. Paul, *Traité Complet de Fortification*, Par. 1806; Maj.-Gen. Pasley, *Course of Elementary Fortification*, Lond. 1822; Major Straith, *A Treatise on Fortification*, Lond. 1836.)

BAT. [CHEIROPTERA.]

BATA'RA, D'Azara's name for the *Bush Shrikes*, forming the genus *Thamnophilus* of Vieillot. A very good account of these birds, which appear to have been found between the northern and southern points of Canada and Paraguay, will be found in the 'Memoirs' of Dr. Such and Mr. Swainson, published in the 'Zoological Journal.' The latter zoologist considers the typical group to consist of the species with long

Thamnophilus Vigorsii.

tails; and of this division, *Thamnophilus, Vigorsii*, Such (*Vanga striata*, Quoy and Gaimard), may be taken as an illustration.

Dr. Such states this to be the largest species yet known, and gives thirteen inches as the length of the body. The bill is black and very much compressed. In the male (which is the sex here figured) the back, wings, and tail are black, broadly banded with fulvous, and the under part of the body is a dirty whitish brown. On the head is a rufous crest which is blackish at the apex. In the female the bands are whitish and the crest blackish, and the under part of the body ash colour.

Thamnophilus nævius, the *Spotted Shrike* of Latham, is an example of the round and comparatively short-tailed division.

Thamnophilus nævius.

Leach thus describes it from a specimen in the British Museum: Black; back and belly ash coloured; the former anteriorly spotted with white; quills of the wings externally, and the tips of those of the tail, white; under part of the body ash colour, of which colour the back partakes in a considerable degree.

BATA'TAS, the Malayan name of a convolvulaceous plant. The root was much eaten in the south of Europe before the cultivation of the potato, which both became a substitute for it and appropriated its name. The only species of any general interest is the *Batatas edulis*, the *Convolvulus Batatas* of authors. This plant, originally found wild in the woods of the Malayan archipelago, has been gradually dispersed over all the warmer parts of the world, where it is still an object of culture for the sake of its roots, which, when roasted or boiled, are mealy, sweet, and wholesome, but slightly laxative.

BA'TAVI, or BATA'VI (the forms Badai and Betavi also occur in inscriptions), the name of the ancient inhabitants of South Holland, and some adjacent parts. The Batavi were a Germanic tribe who, some time before the age of Cæsar, settled on the banks of the Vahalis, the present Waal, a branch of the Lower Rhine. They occupied the district between the Vahalis and the Mosa above their junction, and also the island

formed by the northern arm of the Rhine (or Rhine of Leiden), the Vahalis and Mosa after their junction, and the ocean; which island now constitutes part of the province of South Holland. Cæsar ('De Bell. Gall.' iv. 10), who mentions their country by the name of Insula Batavorum, or Island of the Batavi, appears to consider it as belonging to Germany, and not to Gaul; the limits of Belgic Gaul on that side being placed at the southern branch of the Rhine, or Waal, after its junction with the Mosa, or Maas. Cæsar did not carry the war into the country of the Batavi. Under Augustus the Batavi became allies of the Romans. Drusus, the brother of Tiberius, dug a canal, Fossa Drusiana, which connected the Rhine with the modern Yssel. Besides the Batavi, there was another people on the same island, called by the Roman historians Canninefates, who were of the same origin as the Batavi. (Tacitus, 'Hist.' iv. 15.) Under the reigns of Trajan and Hadrian, the Romans had completely established their dominion over the Batavi; for we find in the Antonine Itinerary and the Peutinger Table two Roman roads across the country, one from Lugdunum (Leiden) eastward to Trajectum (Utrecht), and following the course of the northern Rhine to its separation from the Vahalis, and another from Lugdunum southward across the island to the Mosa, and then eastward along the bank of that river and the Vahalis to Noviomagus (Nymegen). The Batavi were employed by Agricola in his wars in Britain. (Tacit. 'Agric.' 36.) In some inscriptions they are called 'friends and brothers of the Roman people,' or of the 'Roman emperors.' The date of one of these inscriptions is determined by the name of the Emperor Aurelius. (Gruter. lxxi.) Although the name Batavi has fallen into disuse, it has always been employed by modern authors writing in Latin to signify the Dutch or Hollanders generally. The name of the Batavi can be traced even now in that of Betuwe, which is a district of the ancient Batavorum Insula, between the Rhine, the Waal, and the Lek. [BETUWE.]

BATA'VIA, a district in the northern part of the island of Java. The dimensions of the district are about 24 leagues from E. to W., and about 7 leagues from N. to S.

The district of Batavia is divided into four departments, one of which consists of the city of Batavia and its suburbs. Near to the sea-shore the country is flat, but rises with a gentle acclivity towards the south to the mountain-range, which intersects the island from the western to the eastern extremity. This district is well watered. The river Jaccatra, which joins the sea at the town of Batavia, dividing it into two nearly equal parts, has a bar at its mouth which prevents the entrance of any but the smallest boats. The chief products of the district are rice, sugar, cotton, fruits, pepper, and coffee.

(Stavorinus's *Voyages;* Count Hogendorp's *Coup d'Œil sur l'Ile de Java, &c.*, 1830.)

BATA'VIA is a city on the north coast of Java, situated at the bottom of an extensive bay, about 60 miles E.S.E. of the Straits of Sunda, in 6° 9′ S. lat., 106° 52′ E. long. It was formerly a native village called Jaccatra. The English and Dutch had factories here, that of the former was established in 1618, that of the latter in 1612; but the Dutch, having conquered the country, founded the town of Batavia, to which they removed the government from Bantam in 1619. It finally became the capital of their East Indian empire, and the residence of the governor general. It remained uninterruptedly in the hands of the Dutch till 1811, when, Holland having become a province of the French empire, Batavia fell into the hands of the French, from whom it was taken by the English. By the treaty of 1815 it was restored to the Dutch, who returned to the government in the following year.

Batavia is an important place, from its excellent bay and its advantageous position for European commerce. It stands at the mouth of the river Jaccatra, in the midst of swamps and marshes, surrounded by trees and jungle, which prevent the exhalations from being carried off by a free circulation of the air, and render the town peculiarly obnoxious to marsh miasmata. Besides this, all the principal streets are traversed by canals, planted on each side with rows of trees, over which there are bridges at the end of almost every street. They have also booms, which are drawn across at sunset to prevent the passage of boats in and out. These canals are the common receptacles for all the filth of the town. In the dry season the stagnant and diminished waters emit a most intolerable stench, while in the wet season they overflow their banks, and leave a quantity of offensive slime. From these united causes it is not surprising that Batavia has been considered the most unhealthy spot in the world, and has been designated the storehouse of disease. From 1730 to 1752 an account of the deaths was kept, which gave a total exceeding 1,100,000. During the French occupation, the walls of the town were removed by General Daëndels with the view of admitting a freer circulation of air, and with the materials the cantonment of Weltevreden was built, a short distance from the town inland. Since 1815 the example of the French general has been extensively followed, and a new city with wide streets, commodious houses, and large squares, has been built further inland. The government offices, the warehouses, and stores of the merchants which are occupied only during the day, are kept up in the old town, which is now permanently inhabited chiefly by the Chinese, the Malays, and the descendants of the old Portuguese settlers. In the old town the most remarkable buildings are the custom-house, the bonding warehouses, the *lombongs* or coffee stores, the exchange, the bank of Java, the factory of the commercial company, the Chinese and Portuguese hospitals. In the new city the large military barracks, the stadthaus, the military hospital, the catholic church, the prison, the military clubhouse, and the theatre, are built round the square of Weltevreden. In Königs Plein (King's Square) there is a beautiful Protestant church, and between it and Weltevreden a new citadel

is being erected. Along the Ryswijk canal are the governor's house, Harmony house, where fêtes are given, and the hotel of the literary society. Among the literary and scientific establishments may be mentioned the society of arts and sciences, to which belongs a museum of natural history, and the primary school which is under the superintendence of the government.

The population of Batavia, according to the census of 1824, was 53,861, of whom 23,108 were Javanese or Malays, 12,419 slaves, 3,025 Europeans, 601 Arabians, and 14,708 Chinese. The Chinese farm the revenues, are the principal artisans, and manufacture the sugar and arrack. They suffer greatly from disease, and the mortality among them is very great, owing to the closeness of their apartments and their gross manner of living. Many junks arrive annually from China, bringing about 1000 settlers. In 1742, in consequence of a supposed organised plan of insurrection on the part of the Chinese, the Dutch government perpetrated a most cold-blooded massacre, in which more than one-half of the Chinese were murdered.

The country around Batavia is very beautiful and fertile, though flat in the vicinity of the town. Markets are regularly held, which are remarkably well supplied with fruit: the principal sorts are, pine-apples, oranges, shaddocks, lemons, limes, mangoes, bananas, grapes, melons, pomegranates, custard-apples, papaws, mangosteens, and rombusteens, with many others mostly unknown in Europe. Fowls, ducks, and geese, are plentiful and cheap; turkeys, pigeons, and wild-fowl, are in general very scarce, and butcher's meat inferior and dear: of fish there is an abundant supply. The chief imports are opium and piece goods; the exports, sugar, coffee, and spices: salt also forms an important article of colonial commerce. Near Batavia there are some very extensive works for making salt from sea-water.

The anchorage of Batavia is a bay about 11 miles long and 6 wide, capable of containing any number of vessels of the largest size; it is studded with several small islands, averaging half a mile in diameter, all of which are now unoccupied, except Onrust, in which is the naval arsenal.

These islands protect the bay from any heavy swell; and, as the bottom is very tenacious, it becomes a perfectly safe anchorage. But when the sea-breeze blows strong it causes a cockling sea, which renders the communication with the town unpleasant, and sometimes dangerous. The rise of tide is about six feet.

(Raffles's *History of Java;* Staunton's *Embassy to China;* Cook's *Voyages;* Crawfurd's *History of the Indian Archipelago;* Horsburgh's *East India Directory;* Hogendorp's *Coup d'Œil,* &c.)

BATAVIAN REPUBLIC. [NETHERLANDS.]

BATH, a place for the purpose of washing the body, either with hot, warm, or cold water: the word is derived from the Saxon *bad.* The Greek name is balaneion (βαλανεῖον), of which the Roman balineum, or *balneum,* is only a slight variation: the elements *bal* and *bad* in the Greek and English words are evidently related. The public baths of the Romans were generally called *thermæ,* which literally means 'warm waters.'

The bath was in common use among the Greeks, though we are not well acquainted with the construction and economy of their bathing-places. At Athens there were both private and public baths: the public baths appear to have been the property of individuals, who kept them for their own profit or let them to others. (Isæus, 'On the Inheritance of Dicæogenes,' cap. vi., and 'of Philoctemon,' cap. vi.) Lucian, in his 'Hippias' (vol. iii. ed. Hemsterh.), has given a description of a magnificent bath. Though he does not tell us whether it was built in the Roman or the Greek style, we may conclude that he is speaking of a bath in a Greek city. His description is not precise enough to render it certain that this bath in its details agrees with those of Rome and Pompeii; but the general design and arrangement appear to be nearly the same.

Seneca says that the Roman baths were very simple, even mean and dark, in the time of Scipio Africanus; and it was not until the age of Agrippa, and the emperors after Augustus, that they were built and finished in a style of luxury almost incredible. Seneca ('Epist.' lxxxvi.), who inveighs against this luxury, observes that 'a person was held to be poor and sordid whose baths did not shine with a profusion of the most precious materials,—the marbles of Egypt inlaid with those of Numidia; unless the walls were laboously stuccoed in imitation of painting; unless the chambers were covered with glass, the basins with the rare Thasian stone, and the water conveyed through silver pipes.' These it appears were the luxuries of plebeian baths. Those of freedmen had 'a profusion of statues, a number of columns supporting nothing, placed as an ornament merely on account of the expense: the water murmuring down steps, and the floor of precious stones.' (Seneca, 'Epist.' lxxxvi.) These baths of which Seneca speaks were private baths.

Ammianus Marcellinus reckons sixteen public baths in Rome. The chief were those of Agrippa, Nero, Titus, Domitian, Antoninus Caracalla, and Diocletian. These edifices were all constructed on a common plan. They stood in extensive gardens with walks, and were often surrounded by a portico. The main building contained large halls for swimming and bathing, some for conversation, others for various athletic and manly exercises, and some for the declamation of poets and the lectures of philosophers; in a word, for every species of polite and manly amusement. These noble rooms were lined and paved with marble, adorned with the most valuable columns, paintings, and statues, and furnished with collections of books for the studious who resorted to them. ('Pompeii,' published by the Society for the Diffusion of Useful Knowledge, vol. i.) These baths, which were called *thermæ,* are now all in ruins. The best preserved are those of Titus, Diocletian, and Antoninus Caracalla. The baths of Caracalla were finished, according to Eusebius, in the fourth year of that emperor's reign.

The most complete baths had generally the following apartments:—an apodytérium, or

room for undressing; an unctuárium, for the ointments; a sphæristérium, or large room for exercises; a cálida lavátio, or warm bath; a lacónicum, or hot room for sweating; a tepidárium, or warm room with a tepid bath; and a frigidárium, which contained the cold bath: to these may be added rooms for feasting and conversation. (Cameron 'On Roman Baths.')

Flaminius Vacca informs us that in 1471 there was to be seen in the baths of Caracalla an island formed of marble, full of the remains of figures which had been carved on it. Near the island was a ship, with many figures in it, much broken. There was also a bathing vessel of granite. Two labra (baths) of granite, found in the same place, are now employed as fountains in the great square before the Farnese Palace at Rome. In these baths were also found the Farnese Hercules and the great group of statues known by the name of the Farnese Bull. Besides the great granite column now in the palace of S. Lorenzo at Florence, Piranesi says that he saw, in the peristyle, two fountains enriched with the remains of bas-reliefs.

The provincial towns had also their baths, both public and private. The public baths of Pompeii, which were discovered in 1824, in a very perfect state, throw much light on what the Roman writers, and especially Vitruvius, have written on the subject. There is a description of these baths in the second volume of the 'Pompeii,' published by the Society for the Diffusion of Useful Knowledge. These baths occupy a space of about 100 feet square, and are divided into three separate and distinct parts. One of them was appropriated to the fire-places and to the servants of the establishment; each of the other two was occupied by a set of baths contiguous to each other, similar, and adapted to the same purposes, and supplied with heat and water from the same furnace, and from the same reservoir. The apartments and passages are paved with white marble in mosaic. It is conjectured that the more spacious of the two sets of baths was for the use of the men, and the smaller for the women. Vitruvius (v. c. 10) says that the caldarium for the women should be contiguous to that for the men, and be exposed to the same aspect; for thus the same hypocaustum, or stove, may suffice for both.

Vitruvius recommends a situation for baths which is defended from the north and north-west winds, and he says that the windows should be opposite the south, or, if the nature of the ground will not permit this, at least towards the south, because, the hours of bathing among the Romans being from after mid-day till evening, those who bathed could by these windows have the advantage of the rays and the heat of the declining sun. Accordingly the baths just described have the greater part of their windows turned to the south, and are constructed in a low part of the city, where the adjoining buildings served as a protection from the north-west winds.

The baths at Rome were on a much larger scale. The public baths of Caracalla were 1500 feet in length, and 1250 in breadth; 'at each end were two temples, one to Apollo, and another to Æsculapius, as the tutelary deities of the place (*genii tutelares*), sacred to the improvement of the mind, and the care of the body; the two other temples were dedicated to the two protecting divinities of the Antonine family, Hercules and Bacchus. In the principal building were, in the first place, a grand circular vestibule, with four halls on each side, for cold, tepid, warm, and steam baths; in the centre was an immense square for exercise, when the weather was unfavourable to it in the open air; beyond it a great hall, where 1600 marble seats were placed for the convenience of the bathers; at each end of this hall were libraries. This building terminated on both sides in a court surrounded with porticoes, with an odeum for music, and in the middle a spacious basin for swimming. Round this edifice were walks shaded by rows of trees, particularly the plane; and in its front extended a gymnasium for running, wrestling, &c. in fine weather. The whole was bounded by a vast portico, opening into exhedræ or spacious halls, where the poets declaimed, and philosophers gave lectures to their auditors. This immense fabric was adorned, within and without, with pillars, stucco-work, paintings, and statues. The stucco and paintings are yet in many places perceptible. Pillars have been dug up, and some still remain amidst the ruin; while the Farnesian bull and the famous Hercules, found in one of these halls, announce the multiplicity and beauty of the statues which once adorned the Thermæ of Caracalla.' (Eustace's 'Classical Tour,' vol. i. p. 226.) The same author gives an account of the baths of Titus and Diocletian. On entering these baths the bathers first proceeded to undress. They next went to the elæothesium (the oil-chamber), as it was called in Greek, or unctuarium, where they anointed themselves all over with a coarse cheap oil before they began their exercise. (Plin. xv. c. 4 & 7.) Here the finer odoriferous ointments which were used on coming out of the bath were also kept (Plin. l. ii. 'Epist.' 41), and the room was so situated as to receive a considerable degree of heat. This chamber of perfumes was full of pots, like an apothecary's shop; and those who wished to anoint and perfume the body received perfumes and unguents. In the representation of a Roman bath, copied from a painting on a wall forming part of the baths of Titus, the unctuarium, called also elæothesium, appears filled with a vast number of vases. When anointed, the bathers passed into the sphæristerium, a very light and extensive apartment, in which were performed the various kinds of exercises to which this part of the baths were appropriated. (Plin. lib. i. 'Epist.' 101.) When its situation permitted, this apartment was exposed to the afternoon sun, otherwise it was supplied with heat from the furnace. (Plin. l. 11, 'Epist.' 41.) After the exercise, they went to the adjoining warm bath, wherein they sat and washed themselves. The seat was below the surface of the water, and upon it they scraped themselves with instruments called strígiles, which were usually made of bronze, but sometimes of iron or brass. (Martial, lib. xiv. 'Epig.' 51.) This operation was performed by an attendant slave. The use of

the strigil is represented on a vase, found some time since on the estate of Lucien Bonaparte at Canino. The vase is large and shallow, and painted within and without. ('Pompeii.' vol. i. p. 183.) From the drawings on it, we learn that the bathers sometimes used the strigils themselves, after which they rubbed themselves with their hands, and then were washed from head to foot, by pails or vases of water being poured over them. They were then carefully dried with cotton and linen cloths, and covered with a light shaggy mantle, called gausape. Effeminate persons had the hairs of their bodies pulled out with tweezers. When they were thoroughly dried, and their nails cut, slaves came out of the elæothesium, carrying with them little vases of alabaster, bronze, and terra-cotta, full of perfumed oils, with which they had their bodies anointed, by causing the oil to be slightly rubbed over every part, even to the soles of their feet. After this they resumed their clothes. On quitting the warm bath they went into the tepidarium, and either passed very slowly through or stayed some time in it, that they might not too suddenly expose their bodies to the atmosphere in the frigidarium; for these last rooms appear to have been used chiefly to soften the transition from the intense heat of the caldarium to the open air.

'It is probable that the Romans resorted to the baths at the same time of the day that others were accustomed to make use of their private baths. This was generally from two o'clock in the afternoon till the dusk of the evening, at which time the baths were shut till two the next day. This practice however varied at different times. Notice was given when the baths were ready, by the ringing of a bell; the people then left the sphæristerium, and hastened to the caldarium, lest the water should cool. (Martial, lib. xiv. 'Epig.' 163.) But when bathing became more universal among the Romans this part of the day was insufficient, and they gradually exceeded the hours that had been allotted for that purpose. Between two and three in the afternoon was, however, the most eligible time for the exercises of the palæstra. Hadrian forbade any but those who were sick to enter the public baths before two o'clock. The thermæ were by few emperors allowed to be continued open so late as five in the evening. Martial says, that after four o'clock they demanded a hundred quadrantes of those who bathed. This, though a hundred times the usual price, only amounted to nineteen pence. We learn from the same author, that the baths were opened sometimes earlier than two o'clock. He says that Nero's baths were exceeding hot at twelve o'clock, and the steam of the water immoderate. (Mart. lib. x. 'Epig.' 48.) Alexander Severus, to gratify the people in their passion for bathing, not only suffered the thermæ to be opened before break of day, which had never been permitted before, but also furnished the lamps with oil, for the convenience of the people.' (Cameron 'On Roman Baths,' p. 40.)

The thermæ were constructed at a vast expense, and principally for the use of the poorer classes, though all ranks frequented them for the sake of the various conveniences which they contained.

'Nothing relating to the thermæ has more exercised the attention of the learned than the manner of supplying the great number of bathing vessels made use of in them with warm water. For, supposing each cell of Diocletian's baths large enough to contain six people, yet, even at that moderate computation, 18,000 persons might be bathing at the same time; and as no vestiges remain of any vessels in the thermæ, to give the least foundation for conjecturing in what manner this was performed, it has been generally referred to the same process described by Vitruvius on a similar subject.' (Cameron.)

By the assistance of two sections of the castella of Antonius, drawn by Piranesi, Cameron endeavours to show the method adopted by the Romans to heat the large bodies of water which their extensive thermæ must have required.

Few Roman citizens in easy circumstances were without the luxury of a private bath, which varied in their construction according to the taste or prodigality of their owner. 'Amongst many articles of luxury for which Pliny censures the ladies of his times, he takes notice of their bathing-rooms being paved with silver. Even the metal flues of the hypocaustum were gilt.' (Cameron 'On Roman Baths.' For an account of the private baths, see 'Pompeii,' vol. i. p. 199.)

Ancient Roman baths have been found in several of the Roman villas in England; that at Northleigh in Oxfordshire, near Blenheim, is the most perfect. (See the account of the villa at Northleigh, Oxfordshire, by Mr. Hakewill.) Baths have been discovered also at Wroxeter, in Shropshire, and near Arundel in Sussex. In the former, the suspended pavement was very perfect: in the centre of a chamber in that near Arundel is an octagon bath sunk in the floor, the pulvinus of which is quite perfect. There are also some curious Roman baths at Vallogne in Normandy.

The accounts of baths have here been confined to those of the Romans, because no people ever constructed them on such a scale of magnitude, or adapted them so extensively to general use. In the matter of drainage, supply of water, and public baths, the great cities of modern Europe are immensely inferior to imperial Rome. London alone is now constructing a drainage which is worthy of a great city, but the supply of water is yet insufficient, and the quality is often bad. As to baths, they are seldom found in private houses in London; and public baths are still few in number. A beginning, however, has been made with public baths; and there are now places in London where either a hot or a cold bath may be had for a few pence, and with every convenience.

(Montfaucon, *Antiq.* t. iii. pl. 2; Cameron's *Roman Baths;* Gell's *Pompeii; Museo Borbonico; Pompeii,* by the Society for the Diffusion of Useful Knowledge; Eustace's *Classical Tour.*)

BATH, KNIGHTS OF THE, so called from the ancient custom of bathing previous to their installation. Camden and Selden agree that the first mention of an order of knights, distinctly called Knights of the Bath, is at the coronation

of Henry IV. in 1399, and there can be little doubt that this order was then instituted.

It became subsequently the practice of the English kings to create Knights of the Bath previous to their coronation, at the inauguration of a Prince of Wales, at the celebration of their own nuptials or those of any of the royal family, and occasionally upon other great occasions or solemnities. Sixty-eight Knights of the Bath were made at the coronation of King Charles II. (Guillim's 'Heraldry,' fol. Lond. 1679, p. 107); but from that time the order was discontinued, till it was revived by King George I. under writ of Privy Seal, during the administration of Sir Robert Walpole. The statutes and ordinances of the order bear date May 23, 1725. By these it was directed that the order should consist of a grand-master and thirty-six companions, a succession of whom was to be regularly continued. The officers appropriated to the order, besides the grand-master, were a dean, a registrar, king at arms, genealogist, secretary, usher, and messenger.

The badge of the order was directed to be a rose, thistle, and shamrock, issuing from a sceptre between three imperial crowns, surrounded by the motto 'Tria juncta in Uno.' The material, construction, and manner of wearing the badge, collar, star, and installation dress, were all distinctly laid down.

In 1815, the Prince Regent, on the termination of the long war in which the kingdom had been engaged, ordained that thenceforward the order should be composed of three classes, differing in their ranks and degrees of dignity.

The first class to consist of knights grand crosses, which designation was to be substituted for that of knights companions previously used. The knights grand crosses, with the exception of princes of the blood-royal holding high commissions in the army and navy, not to exceed seventy-two in number; whereof a number not exceeding twelve might be nominated in consideration of services rendered in civil or diplomatic employments.

The second class was to be composed of knights commanders, who were to have precedence of all knights bachelors of the United Kingdom; the number, in the first instance, not to exceed one hundred and eighty, exclusive of foreign officers holding British commissions, of whom a number not exceeding ten may be admitted into the second class as honorary knights commanders; but in the event of actions of signal distinction, or of future wars, the number of knights commanders may be increased. No person is eligible to the class of K.C.B. unless he has attained the rank of major-general in the army or rear-admiral in the navy.

The third class to be composed of officers holding commissions in his majesty's service by sea or land, who shall be styled companions of the said order; not to be entitled to the appellation, style, or precedence of knights bachelors, but to take precedence and place of all esquires of the United Kingdom. No officer to be nominated a companion of the order unless he shall previously have received a medal or other badge of honour, or shall have been specially mentioned by name in despatches published in the 'London Gazette' as having distinguished himself.

The bulletin announcing the re-modelling of the Order of the Bath was dated Whitehall, January 2, 1815.

By another bulletin, dated Whitehall, January 6, 1815, the Prince Regent ordained that fifteen of the most distinguished officers in the service of the East India Company, holding commissions from his majesty not below that of lieutenant-colonel, might be raised to the dignity of knights commanders of the Bath, exclusive of the number of knights commanders belonging to his majesty's forces by sea and land who had been nominated by the ordinance of January 2. In the event of future wars, and of actions of signal distinction, the said number of fifteen to be increased. His royal highness further ordained that certain other officers of the same service, holding his majesty's commission, might be appointed companions of the order of the Bath, in consideration of eminent services rendered in action with the enemy; and that the said officers should enjoy all the rights, privileges, and immunities secured to the third class of the said order.

(*Observations introductory to an Historical Essay upon the Knighthood of the Bath*, by John Anstis, Esq., 4to., London, 1725; *Statutes of the Order of the Bath*, 4to., Lond. 1725, repr. with additions in 1812.)

BATH, the chief city of Somersetshire, celebrated for its natural hot springs, is 110 miles from London by the coach road, and 106½ by the railroad, in 51° 22′ N. lat., and 2° 31′ W. long. The town lies in a valley on the north bank of the river Avon.

This city was a Roman station, mentioned by Ptolemy under the name of *Aquæ Calidæ*, in the country of the Belgæ. It is also mentioned in the 'Itinerarium' of Antoninus, under the name of *Aquæ Solis*. It was intersected by the ancient Roman road leading from London into Wales, and by the road called the Fosse, which ran from Lincolnshire to the south coast of England. These two roads joined about 2 miles from Bath, continued in one course through a great portion of the parish of Walcot, and separated near Walcot church. Close to the spot where these roads separated, and towards the river, numerous coins, vases, and sepulchral remains have from time to time been found. The Roman remains discovered in Bath and in its neighbourhood have been considerable. In the city of Bath itself, the foundations of extensive buildings have often been traced. On the eastern side of the Fosse, near the north end of Stall-street, portions of a large temple were discovered, and are still preserved in the Bath Institution. Towards the east of this building stood the principal baths, the remains of which were discovered in 1755. In other parts of the city, altars with inscriptions, tessellated pavements, ornamented bricks, urns, vases, lachrymatories, fibulæ, coins, &c., have been turned up, but none of the inscriptions throw any light upon the history of the place. The new town is many feet above its ancient level; in some places more than twenty. The walls, as they existed until a late period, are presumed to have been built, to a great extent, upon the base of the Roman walls.

The modern city of Bath is of great beauty. Its streets are very regular, clean, and well-lighted. Its best buildings, such as the Upper Rooms, the north-side of Queen-square, the Crescent, and Circus, were built by John Wood, who began his architectural improvements about 1726, and carried them on for about twenty years. The buildings are all of the Bath stone, which is abundant and easily wrought.

The city was formerly governed by a corporation under charters granted by Queen Elizabeth, Sept. 4, 1590, and by George III., 1794, consisting of a mayor, aldermen, and common council, recorder, town-clerk, and two serjeants-at-mace. By the Municipal Corporations Reform Bill (5 & 6 Wm. IV., c. 76), the city is divided into seven wards, and is now governed by a mayor, 14 aldermen, and 42 councillors. The title of the corporate body is the mayor, aldermen, and citizens of the city of Bath. It has a separate commission of the peace. The property of the body is very extensive, including lands and houses in the best part of the city; all the hot springs but one; nearly all the cold springs which supply the town with water; and the tolls of the market.

The population of the city of Bath in 1841 was 38,304, of whom 15,851 were males, and 22,453 were females.

Bath is a parliamentary borough, and returns two members to the House of Commons. The population within the limits of the parliamentary borough in 1841 was 52,346, of whom 21,899 were males, and 30,447 were females.

There was a monastery at Bath, which had existed from the earliest ages of Christianity, and which was surrendered to the crown in 1539. The Abbey Church belonged to this monastery, and the present building was begun in the reign of Henry VII., but was not completed till about 1609. This edifice is of the shape of a cross, with a very handsome tower rising from the centre. Its length from east to west is 210 feet, and from north to south 126. The height of the tower is 152 feet. The west front is decorated with numerous figures now much impaired by time, intended to represent Jacob's dream. The east window is remarkable for being square, and it had formerly two square towers on each side, which have since been converted into octagonal pinnacles. The building itself is in the pointed style of the latest period in which it prevailed, and was completed with great simplicity and taste. In 1834 its whole design and character were materially changed, and some of its most peculiar features destroyed. The interior is disfigured by the multitude of monuments with which it is covered.

The bishop of Bath and Wells has an annual income of 5000*l*. The cathedral is at Wells, where the bishop has a palace. The corporation consists of a dean, who is also a canon residentiary, four other canons residentiary, 44 canons non-resident, a chancellor, &c.

Bath is included in the parishes of St. James, St. Michael, St. Peter and St. Paul, and part of Walcot, each of which has its parish church, the Abbey Church being that of St. Peter and St. Paul. There are about twelve chapels belonging to the Established Church. There are numerous charitable institutions, among which may be mentioned the Hospital of St. John, the General Hospital, and the United General Hospital, which is a hospital for casualty cases and a dispensary. There is a Literary and Scientific Institution founded in 1826, and a Mechanics' Institute. The Independents, Quakers, Moravians, Methodists, Unitarians, Roman Catholics, Jews, and Baptists, have all places of worship in the city, the majority of which are large and handsome buildings.

The chief institution for instruction is the free grammar-school, founded by Edward VI., and endowed with part of the lands of the dissolved priory of Bath. It was designed for the gratuitous instruction of the children of the inhabitants of the town without distinction. The school-house is a large and handsome building with spacious premises. There are several other schools which afford the elements of education, such as reading, writing, and arithmetic, supported chiefly by voluntary contributions.

The Assembly Rooms are a handsome suite, the ball-room being nearly 106 by nearly 43 feet, and 42 feet 6 inches high, and the tea-room 70 by 27 feet: they were erected by Wood. The theatre is probably one of the best of its size in England.

There is no manufacture of importance in this city. The paper-mills in the neighbourhood are of some note. The city is well supplied with coal from extensive beds lying a few miles distant. The river Avon was made navigable to Bristol under an act of the 10th Anne, and there is a water communication with London by the Kennet and Avon Canal, which joins the Thames at Reading. The Great Western Railway passes through Bath.

The remarkable peculiarity of Bath is its natural hot springs. They are four in number, and rise near the centre of the city; and, with the exception of a spring belonging to Lord Manvers, are vested in the corporation. The temperature of three of the springs is as follows:—Hot Bath 117°, King's Bath 114°, and Cross Bath 109° of Fahrenheit, yielding respectively 128, 20, and 12 gallons a minute. The specific gravity of the water is 1·002. As it flows from the earth it is transparent, but in a short time yields a slight precipitate and loses its transparency. When fresh drawn, it has a slight chalybeate taste. There are private baths attached to the Hot Bath and the King's Bath admirably arranged and constructed, and capable of having their temperature regulated. According to an analysis by Mr. R. Phillips, a quart of water taken from the hot springs contains—

Carbonic acid gas	2·4 inches.
Sulphate of lime	18·0 grains.
Muriate of soda	6·6 „
Sulphate of soda	3·0 „
Carbonate of lime	1·6 „
Silica	·4 „
Oxide of iron	·00394
Loss	·39606
	30

A considerable quantity of carbonic acid gas escapes through the water.

Taken internally, the water acts as a stimulant. Its use is most successful in cases of palsy, rheumatism, gout, leprosy, cutaneous disease, and especially in cases of scrofula affecting the joints, such as the knee, elbow, hip. It cannot be used without danger in cases accompanied with fever, cough, or pain in the chest, open sores or ulcers, or in cases where there is reason to suspect internal suppuration, hæmorrhage, rupture, mania, or plethora. From its improper internal use, mischievous results have been frequently produced.

(Collinson's *History of Somersetshire*, vol. i.; Warner's *History of Bath*; Lysons' *Reliquiæ Romanæ*; Wood's *Essay towards a Description of Bath*, 1742, 1749, 1760; *MS. Communication from Bath.*)

BATH, a post-town and harbour in the State of Maine, in the United States of North America, situated 37 miles S. from Augusta, in 43° 54′ N. lat., and 69° 47′ W. long. This town is built on the west side of the river Kennebec, at the head of the ship-navigation on that river, and 12 miles from the sea. It is one of the principal commercial towns in Maine. Ship-building is an extensive business at Bath. The tonnage of the port in 1840 was 64,035 tons. The population, according to the census of 1830, was 3773; in 1840 it was 5141. Steam-boats ply regularly during three-fourths of the year between Bath and Portland and Boston.

BATHGATE. [Linlithgow.]

BATHING means the temporary surrounding of the body, or a part of it, with a medium different from that in which it is usually placed. The means employed for this purpose are generally water, watery vapour, or air of a temperature different from that of the common atmosphere. The objects for which these are employed are usually the prevention of disease, the cure of disease, or the pleasure derived from the operation.

The relative power and quickness of abstracting heat, with which different external media are endowed, depend upon different properties, such as their density, conducting power, capacity for heat, &c., and display themselves through the diversity of sensations which, at the same absolute temperature, they occasion. Thus, air at the temperature of 65° Fahrenheit feels pleasant, while water at the same degree feels somewhat cold. The organs of the body also differ in their power of sustaining the same temperature; hence, in the employment of vapour-baths, it is of importance to know whether the watery vapour is to be breathed or not, since, where it is to be breathed, the temperature must be much lower.

The ultimate action of cold, when extreme, is a sedative to the nervous system, and alters the circulation from external to internal. Moderate cold continued causes the same consequences as severe cold of short duration. (See Beaupré "On Cold," Edinb. 1826.) Heat, on the other hand, is a stimulant to the nervous system, and alters the distribution of the blood from internal to external. Taking these principles as our guide, we proceed now to consider the different kinds of baths, and their action on the system in different states both of health and disease.

Water-Baths.—The common division is into cold and warm; but various subdivisions are formed, marked by a certain range of temperature, which are designated

1. The cold bath, from	40°	to	65°
2. The cool	„	65	„	75
3. The temperate	„	75	„	85
4. The tepid	„	85	„	92
5. The warm bath	„	92	„	98
6. The hot bath	„	98	„	112

A healthy person upon entering a cold bath experiences a sensation of cold, followed by slight shuddering, and if the immersion has been sudden, a peculiar impression on the nervous system, called a shock. The skin becomes cooler and paler, the respiration hurried and irregular, the action of the kidneys increases, and the bladder contracts. In a few moments the colour and warmth return to the skin, and a glow is felt, especially if assisted by rubbing the surface. If the person remains more than five or ten minutes in the bath, the glow disappears, and paleness returns, which again gives place, though less quickly and perfectly, to a renewed glow. Should the stay in the water be greatly prolonged, no reaction ensues, but a general feeling of chilliness prevails, with quick feeble pulse, convulsive breathing, cramps of the limbs, or fainting. Very young or feeble individuals are either incapable of bearing the shock, or the reaction is so slight, that they cannot endure to stay in the bath beyond a very short time.

The phenomena just described generally accompany cold bathing; and it is clear that we can recognise in them a series of three or even four distinct actions: 1st, the shock; 2nd, the cooling effect; 3rd, the contraction or astringent effect; and, 4th, the reaction. Cold bathing may be employed, therefore, in such a way as to ensure the predominance of one action over any of the rest, according to circumstances, where all are not desired. They vary with the degree of cold and the suddenness of the application, as well as from the body being plunged into the water, or the water dashed against the body. Where the shock, as a stimulus to the nervous system, is desired, the water should be very cold, and where practicable should be dashed against the body, or, if the contrary, the stay in the bath should be momentary. Its stimulating effect is sometimes best procured by a local application, in the form of a stream of water falling on the head from a considerable height. The simplest example of this is the common practice of sprinkling the face with cold water in case of a tendency to faint; and in many diseases of the most dangerous character it is a remedy superior to any other. It is called the *cold dash*, or *douche*. In the melancholy and mania which overtake habitual drunkards it is of great efficacy, and also in cases of loss of nervous power from excessive mental exertion.

The cases of disease for which cold bathing is a valuable remedy are, morbidly increased irritability and sensibility, accompanied with general debility. If the sensibility be extremely high, it

is best to begin with the tepid or cool bath, and pass gradually to the cold. Where there is a tendency to colds and rheumatism, the cold bath is an excellent preventive; for this purpose it should be used continually throughout the year, and the chest should be sponged with cold water, or vinegar and water may be substituted in winter, when there are not facilities for using the complete bath. Before beginning this practice, careful investigation of the state of the mucous membranes of the chest and intestinal canal should be made, as it will certainly prove hurtful where chronic inflammation of these organs exists. Where the increased irritability shows itself in the mental functions or in the muscular system, as in hypochondriasis or hysteria, cold bathing is very useful; and especially in the hypochondriasis of literary persons, accompanied with a disposition to indigestion, and a dry harsh skin.

The cases in which the tepid bath is to be preferred to that of a different temperature are those of a febrile character joined to an irritability of the skin, which is generally dry and harsh; some cutaneous diseases, where, by friction, the scales are removed and a new surface presented; and, lastly, as preparatory to the cold bath in delicate persons, or for those whose peculiarities of system render them unable to bear a warm bath of a high temperature.

The primary effect of the application to the surface of the body of water of a temperature varying from 92° to 98° is, in consequence of the communication of warmth, the same as that of dry heat, viz. a stimulating, enlivening, and expanding effect.

The secondary or ultimate effect is somewhat different. The increased action of the arteries gradually subsides, the pulse becomes fuller and slower, and the greatest quantity of the blood lodges in the veins, particularly in the great venous centres, such as the *vena porta* and the *liver*, which it stimulates to increased secretion of bile. Corresponding changes occur in all the other organs; and, if the application of the warmth be continued for a longer time, the increased energy and elasticity of the muscles disappear, and a sense of fatigue, with atony, and a tendency to sleep, succeeds.

The final result of the action and reaction is an augmented secretion from the skin, and a corresponding diminution of urine, and of the secretion from the mucous surfaces.

The warm bath may be employed to effect two opposite ends, to stimulate, or calm and soothe. It accomplishes the first when its temperature is high (98°), and its use is confined to five or ten minutes; the second when it is about 93°, and continued for three quarters of an hour, or an hour. As the warm bath has generally the effect of equalizing the circulation, and relieving internal congestion, it is much resorted to as a remedy in spasmodic and convulsive diseases; but here the utmost caution and discrimination are necessary. The convulsions of infants during teething are almost invariably attempted to be removed by the warm bath, but in many instances more harm than good is done.

During the existence of all active inflammation, at whatever age, the warm bath may be pronounced an unfit measure. In few chronic inflammatory diseases is it allowable, if we except some of those of the digestive organs, especially sub-acute inflammation of the mucous membrane of the stomach and intestines.

The other states to which warm bathing is unsuited are—great general torpor, but especially of the skin; also when there is a tendency to profuse secretion from the skin; when there is a great plethora or fulness of the vascular system, especially of the veins; in tendency to active hæmorrhage; in aneurism, or any disease of the heart; also in cases of a tendency to apoplexy: lastly, in extreme atony, or excessive irritability of the nervous system.

Water of a temperature from 99° to the highest which can be endured is termed the hot bath. When a person in health enters such a bath, it greatly excites the nervous system, and, through that, the heart and arteries; causes heat and constriction of the skin, with disturbance of the internal organs generally, but especially those of secretion. This state of uneasiness is lessened by the breaking out of perspiration, which is succeeded by great languor, torpor, and disposition to sleep. The hot bath is a powerful stimulant, and can never be used by persons in a state of health.

The vapour-bath is distinguished from all other means of introducing more heat into the body, chiefly by the circumstance, that as a portion of the vapour is converted into water, by coming in contact with the surface of the body, it communicates a quantity of sensible caloric to it. It is without doubt the most powerful means of supplying a great heat to the greatest portion of the surface of the body, internal as well as external; for, when breathed, the extensive surface forming the interior of the lungs is influenced by it in the same way as the skin. On the skin it exerts a peculiar influence. It does not cause that constriction of the skin which follows the application of dry air, nor does it exert that pressure upon the surface which, in the case of warm water, retards the breaking out of the perspiration. On the contrary, moisture of the skin, followed by profuse perspiration, occurs immediately upon entering the vapour-bath.

In Russia, where such baths are used on a large scale, their employment is not found to be productive of weakness. The subsequent exposure to cold restores the tone of the skin which had been lost, and the process leaves the person with a general sense of good health, strength, and power, both of the internal organs and of the skin. The use of the vapour-bath would be found to ward off many acute diseases resulting from exposure to cold, if had recourse to immediately after exposure to the exciting cause; as after travelling, or falling into the water, in winter.

The employment of heated air, as an application to the body, causes the primary action of heat to manifest itself more than the secondary. The hot air bath is therefore powerfully stimulant to the skin and nervous system, and is of

great service in all cases where the production of animal heat is less than natural, as in the cold stage of fevers, and exhaustion of the nervous power. It has been employed beneficially in congestive fever, and after great and continual mental exertion.

BATHURST, ALLEN, EARL BATHURST, eldest son of Sir Benjamin Bathurst, governor of the East India Company in the years 1688-9, was born at Westminster, in November, 1684. In 1699 Allen Bathurst was entered at Trinity College, Cambridge, and, six years after, commenced his political life as representative for the borough of Cirencester. As a member of the legislature he actively promoted the union with Scotland, and concurred in the opposition to the Duke of Marlborough and his adherents, of which Harley and St. John were the leaders. He was, in 1711, made a peer of Great Britain by the title of Lord Bathurst, Baron Bathurst of Battlesden, in the county of Bedford. In the House of Lords he exerted himself in the debates on many of the important questions that were there agitated, and generally as a steady opponent of Sir Robert Walpole's administration. He was appointed treasurer to George III., then Prince George of Wales, in 1757, and this office he held till the death of George II., in 1760, when he declined the acceptance of any further employment, on account of his age. He, however, received a pension of 2000*l.* per annum, and was advanced to an earldom in 1772. He died at his seat near Cirencester on the 16th September, 1775, aged 91. In his private character Lord Bathurst was generous and affable, and was intimate with Pope, Swift, Prior, Rowe, Congreve, Arbuthnot, Gay, and Addison.

The only surviving son of Lord Bathurst, Henry, the second earl, born in 1714, was made Chief Justice of the Common Pleas in 1754, and in 1771 was appointed Lord Chancellor with the title of Baron Apsley. He resigned the seals in 1778, and died in 1794.

BATHURST, an English settlement on the west coast of Africa, is situated on the south-eastern extremity of St. Mary's island, at the mouth of the Gambia, in 16° 6′ W. long., and 13° 28′ N. lat. The settlement has made rapid advances in improvement. Many fine and substantial government buildings have been erected; and the merchants residing there have erected substantial dwellings and warehouses, all of which are built with stone or brick, and roofed with slates or shingles. The market is well supplied with beef, mutton, poultry, fish, fruit, milk, butter, palm-wine, and vegetables, by the natives of the surrounding country, who consume a large proportion of the European articles imported into the colony. Gold, ivory, bees'-wax, and hides are brought to Bathurst in considerable quantities by the native traders, and by the inhabitants of Goree who have settled there. (Gray's *Travels in Western Africa in* 1818, 1819, 1820, and 1821.)

BATHURST. [WALES, NEW SOUTH.]

BATHURST ISLAND, the central of the Parry Isles, has Cornwallis Island on the E. and Melville Island on the W., and lies in 75° N. lat., 100° W. long. It was discovered by Capt. Parry in 1819, who traced the south coast for about 75 miles, and describes it as being barren and rugged, and the shores steep. He did not land upon the island. (Parry's *Voyage* in 1819-20.)

BATHURST ISLAND, on the north coast of Australia, lies between 11° 24′ and 11° 52′ S. lat., 129° 57′, and 130° 41′ E. long., and to the W. of Melville Island, from which it is separated by Apsley Strait. The island is of a triangular shape, each side measuring about 40 miles. The north-western side is generally low and lined with mangroves, and the whole island presents a mass of dark green foliage, except the western angle, which is sandy and of a barren aspect, being exposed to the north-west monsoon. The land along the strait is invariably low, intersected by swamps in the lowest parts, and the higher ground is one continued forest. The shore from one end of the strait to the other is bordered by a broad belt of impenetrable mangroves, and indented by numerous creeks, some of which stretch 7 or 8 miles inland. The natives, who resemble the natives of the Australian continent, live in tribes of thirty or forty, and lead the wandering life of hunters. Apsley Strait extends from St. Asaph Bay on the N. of the island to Clarence Strait, which separates the island from the Australian continent; it is about 46 miles long, and varies from 4 to 1½ in breadth. The navigation of the strait is safe, except at the south-eastern entrance, which is called Shoal Bay, and in which, as in St. Asaph Bay, there are numerous sand-banks. (*Journal of the Royal Geographical Society*, vol. iv.)

BA'THYCLES, a celebrated ancient statuary or sculptor, of Magnesia on the Mæander in Lydia. Though his time is uncertain, several scholars have attempted to establish it. Bathycles was the artist who made the throne of the Amyclæan Apollo at Amyclæ near Sparta. Pausanias says, in his notice of this work:—'I shall not mention the master of Bathycles, or in what reign the throne was made; but I saw the throne, and I will describe it as it is.' Quatremère de Quincy, in his 'Jupiter Olympien,' has given a view of the god and his throne, designed from the description of Pausanias.

BATMAN (pronounced *Bawman*) is a soldier who, on foreign service, has charge, generally, of the cooking utensils belonging to a company. The term is applied now to any soldier who acts as the servant of an officer; but particularly to one who has the care of a cavalry officer's horse.

BATMAN, a weight used in Turkey, which contains 6 okes, or 24 chequees, and is equivalent to 16 lbs. 15 oz. 14 drs. avoirdupois. (Macgregor's *Commercial Statistics.*)

BATOLI'TES, in Zoology, a genus of fossil shells established by Montfort, and placed by him among his *Coquilles Univalves Cloisonnées*. Cuvier, however, who quotes the observations of M. Deshayes and of M. Audouin, considers them as cylindrical and straight *Hippurites*, and places

them under his family of Ostracés or Ostraceans, among those fossil bivalves which are supposed to have had their valves connected by no ligament, but by mere muscular adhesion, and immediately before the oysters. Montfort states that these shells acquire a very great length, and that they constitute masses of rock in the High Alps.

BATO'NI, POMPE'O GIRO'LAMO, one of the most distinguished painters of the eighteenth century, was born at Lucca in 1708. His father was a goldsmith, and Pompeo had thus an early opportunity of displaying his ability for design. He established himself very early in Rome, where he studied Raphael and the antique, and kept himself at first by copying celebrated pictures, but in a few years he obtained the first name in Rome, and, with the exception of Mengs, lived there until his death, for forty years, without a rival; he died in 1787. Batoni was equally excellent in portrait and history. Several cities of Italy possess altar-pieces by him, and there are also many of his works in Germany and other foreign countries. Some of his best works are at Lisbon and at St. Petersburg. (Fiorillo, *Geschichte der Mahleey*, &c.; Lanzi, *Storia Pittorica*, &c.)

BATRACHIANS. [FROGS.]

BATRACHIDA, FOSSIL. The number of fossil Reptilia referable to this division is gradually enlarging, though still very small. To the anourous Batrachians we must, with Jäger and Professor Owen, refer the Labyrinthodonts of the new red sandstone series of Warwickshire and Würtemberg (including perhaps the Cheirotheria whose foot-prints ornament the red sandstones of England and Germany); while the tertiary fossil of Oëningen (which Scheuchzer imagined to be a human skeleton) is determined by Cuvier to be analogous to the newt of Europe, and the Menopoma of North America. Remains of frogs and salamanders occur in the tertiary brown coal-beds of the Rhine Valley.

BATRACHOMYOMA'CHIA (*Βατραχομυομαχία*), The Battle of the Frogs and Mice, is the title of a Greek poem, consisting of 294 hexameter verses, which is ascribed to Homer, but it is attributed by Plutarch and Suidas to Pigres, of Halicarnassus, in Asia Minor. It belongs undoubtedly to a late age. There is a translation of it into English verse by Parnell.

BA'TRACHUS, an architect and sculptor of Laconia, who lived in the time of Augustus. Pliny tells a story of Batrachus and his fellow-countryman Saurus. He says: Being very rich, they built at their own cost two temples to Jupiter and Juno at Rome, inclosed by the porticoes of Octavia, hoping for an inscription; but, this being refused them, they introduced their names in another manner, by carving a lizard (Saurus) and a frog (Batrachus) in the centre of the Ionic volutes of the columns, one in each volute. (Pliny, *Hist. Nat.* xxxvi. 4. 11.)

BATTA, an allowance made to military officers in the service of the East India Company, in addition to their pay. Its amount is different in different parts of India.

Batta was originally given with the intention of enabling officers to provide for field-equipment, and for those extra expenses which they must incur when marching, but since November 1828 a distinction has been made between the amount allowed when in actual service, and when in cantonments. At particular stations of the army, where an officer formerly got full batta, he only receives half batta, with an allowance for house-rent, which is inferior to what the other half of the batta would be. The half batta of a lieutenant-colonel is 304 rupees (about 30*l.*) per month; his allowance for house-rent is 100 rupees. A major's half batta is 228 rupees, and for house-rent 80 rupees per month; with similar allowances for captains, lieutenants, and ensigns. Colonels of regiments, not being general officers on the staff, nor holding offices specially provided for, are allowed the full batta of 750 rupees per month at any station, but they have not any allowance for house-rent. ('Report of Committee of the House of Commons on the Affairs of India,' 1832, part 5, 'Military.')

This regulation is now in force only for officers of infantry, and even for these while in the southern provinces of India. All cavalry officers, and those officers of infantry who are stationed in the northern provinces, have full batta.

BATTALION. This name is applied to a certain division of the infantry in an army, corresponding, nearly, to the *chiliarchia* in a Greek phalanx, and to the *cohort* in a Roman legion. The number of men composing a battalion is variable, but in the British service, according to the present establishment, it is, in general, about 750. One battalion in most cases constitutes a regiment, but some regiments, as those of the guards, consist of two battalions, and the regiment of artillery consists at present of several, besides the brigade of horse artillery. It seems, therefore, that originally the name of regiment was applied to the body of men organized for a particular district, or a particular branch of service; and that, when the numerical strength of the regiment exceeded what was considered convenient, it was divided into two or more battalions.

A battalion is now generally divided into ten companies; and, for convenience in performing the movements which may be required, each company is subdivided into two equal parts, and each of these into sections. The battalion is commanded by its own colonel; and several battalions or regiments are, on service, united under one general officer: these constitute a brigade, and may be considered as a small legion.

The company of grenadiers occupies the extreme right, and the light infantry company the extreme left of the battalion: these are called the flank companies, and the others take their places from right to left, according to the numbers by which they are designated. The captain, or officer commanding each company, is stationed in the front line on the right of his company; and immediately behind him, in the rear rank, is his covering sergeant. The lieutenants, ensigns, and the sergeants of the companies form a third, or what is called a supernumerary, rank in rear of the others, at the distance of three paces. The two regimental colours are placed in the front rank

between the two centre companies, and two non-commissioned officers are in the rear rank behind them; a sergeant is stationed in the front, between the colours, another stands opposite to him in the rear rank, and a third in a line with both, in the supernumerary rank. These last-mentioned sergeants serve to direct the march of the battalion when it moves parallel to its front; for which purpose, on that occasion, they form themselves in a line in that direction, and march before the battalion at the distance of six paces.

The commander of the battalion places himself in front when he has to superintend the ordinary exercises, otherwise his station is in the rear. The lieutenant-colonel is behind the colours in rear of the supernumerary rank; the majors are in rear of the second battalion companies on the right and left flanks respectively, and the adjutant in a line with them, opposite to the centre. The situations of the *Staff* of the battalion, the musicians, &c., together with the particulars above briefly stated, are fully described in the treatises on the field exercises and evolutions of the British army.

Originally the grenadiers performed the duty of throwing hand-grenades, or small iron shells charged with powder, among the enemy; and the firelocks of the fusileers and light infantry were different from those of the other troops; but except the riflemen, who use pieces with barrels *rifled*, or grooved, all the infantry of the line carry the same kind of musket.

The principal evolutions of a battalion consist in reversing the front of the line, taking a position at right angles to its actual front; forming a column by bringing the different companies or their subdivisions parallel to, and directly in rear of, each other, either at open or close intervals; forming a column *en échelon*, or with the divisions parallel to, but in positions receding from, each other towards the right or left, in the manner of steps; or, lastly, forming a hollow square. By changing the front, a retrograde movement in line may be made; by forming the line perpendicularly on either flank, an attempt of the enemy to turn it may be opposed. Columns are formed for the purpose of marching along roads or through defiles, or advancing in a body towards an enemy's position; a movement en échelon allows troops to gain ground obliquely towards the front or rear; and a hollow square is formed in order to resist an enemy in every direction, when the battalion is in danger of being surrounded.

BATTAS. [SUMATRA.]

BATTENS are pieces of timber 6 feet or more in length, 7 inches in width, and usually from 2½ to 2¾ inches in thickness. *Deals* differ from battens in being always above 7 inches wide, and *batten-ends* in being under 6 feet long. When cut up into two boards, or for slight work three boards, battens are used for flooring; and when sawn in the opposite direction into pieces about 2⅝ inches by 1¼ inches, they are set upright against walls, to carry the laths and plaster, in cases where the dampness of the wall, or other circumstances, render it desirable to make the wall hollow. The small bars used for this purpose are themselves called battens, and the term is applied in joinery to any piece of wood nailed across others to prevent their warping or separating.

BATTERIES, ELECTRICAL AND GALVANIC. An electrical battery is a number of cylindrical vessels of glass, each precisely similar to the usual Leyden jar, the open top being covered by a plate of wood, into which is screwed the foot of a brass pillar which terminates at the top with a ball of the same metal, and at bottom with a chain which descends to the lower part of the jar inside; and both the inside and outside of each jar are lined with tin-foil to within two or three inches of the top. These are contained within a wooden box, whose interior is lined with tin-foil; a piece of wire passes through the foil and the side of the box, and carries on the exterior of the latter a ring, to which should be affixed a chain descending to the table or ground.

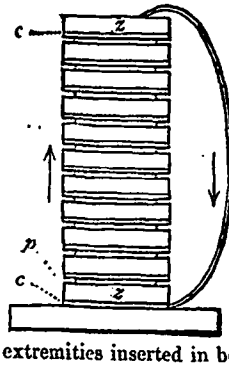
The ball, or knob, at the top of every jar is perforated in order that it may receive the brass rod or system of bars by which the tops of all the jars are to be connected together. The rods are terminated with brass balls, and one of these, or a ball at the upper extremity of a pillar forming part of the system, is presented to the conductor of the electrical machine when the battery is to be charged. The particles of vitreous or positive electricity which, by the machine, are excited in the conductor and, with that, on the interior surfaces of the jars, exert, through the glass, attractive powers upon the resinous or negative electricity which, by that attraction, are brought from the earth to the exterior surfaces of the jars: this accumulation within the jars continues till the repulsive powers of the particles are great enough to counteract the power of the machine to supply fluid through the conductor: the charge of the battery is then a maximum. The power of a battery is estimated by the quantity of metallic wire which it will ignite or melt.

The batteries in which electricity is excited by the chemical action of a fluid upon a metal, or of two metals upon one another, are called galvanic or voltaic, and are of various kinds. It is intended here to describe only those which are most frequently used.

The simplest combination which can be formed for the production of an electrical current by such means is that of a plate of zinc and a plate of copper placed, generally, in vertical positions and parallel to one another in a vessel containing a diluted acid, the upper edges of the metals being connected by a copper wire. In this state a current of positive electricity passes from the zinc, through the acid, to the copper, and from the copper, along the wire, to the zinc: at the same time a current of negative electricity passes from the zinc, along the wire, to the copper, and from thence, through the acid, to the zinc.

But, for the purpose of obtaining the electrical fluids in abundance, there are combined together a considerable number of small plates of zinc and copper, alternately, with the acid between them; and that which is called the voltaic pile is a battery of this kind. Under GALVANISM and

VOLTAISM are explanations of the electrical action, and we here merely describe the construction of the pile. A circular plate of zinc, *z*, usually about 1½ inch diameter and $\frac{1}{10}$ inch thick, is laid upon and generally soldered to a very thin plate of copper *c*, of equal diameter; and any convenient number



of these are placed above one another, with the copper side undermost in all: between every two compound plates is a circular piece of paper *p*, or cloth moistened with diluted sulphuric acid; and the whole column or pile is made to preserve a vertical position by being formed within three pillars of glass or baked wood, which are conected together by having their extremities inserted in boards, of which the lower one serves as a base for the column. The paper or cloth should be rather less in diameter than the plates of metal; and no moisture should be allowed to escape over the edges of the plates.

If a second pile be formed, the plates in it may be placed in a reverse order, the copper side above and the zinc side below: if a third pile be formed, the order may be the same as in the first pile; if a fourth, the same as in the second, and so on: then, in uniting them together, a metal wire passes from the copper at the bottom of the first pile to the zinc at the bottom of the second; another wire passes from the copper at the top of the second to the zinc at the top of the third, and so on.

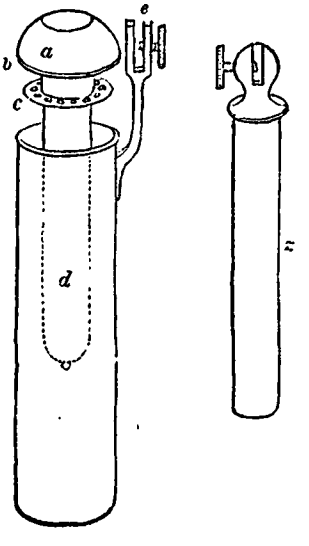
When a wire connects the opposite ends of one pile, or of a system of piles, the circuit is said to be complete: it is said to be broken if there are two separate wires, one proceeding from the copper at bottom, and the other from the zinc at the top. If an animal body were in connection with the farther extremities of the wires, it would complete the circuit, and experience shocks.

The opposite extremities of the pile, or of the wires which are in contact with them, are called the poles of the battery. The zinc end, at the top is called the positive pole; and the copper, at the lower extremity, the negative pole. These designations are reversed when a single pair of plates separated by an acid is mentioned.

The battery which, till lately, was most generally used is called the trough-battery, because the acid is contained in cells formed in a rectangular trough, usually of glazed earthenware, by nine or more parallel partitions of the same material which permit no communication between one cell and another. As many pairs of plates, zinc and copper, of equal superficies, as there are partitions, are provided; the two plates of each pair are soldered or fastened together at their upper extremities, so that they may be parallel to one another; and all are united together by a rod of wood, so that they may at once be placed into or removed from the cells. The bridges or connexions between the zinc and copper plates stand directly over the partitions, so that there is a copper and a zinc plate in each separate cell, except at one extremity of each trough, in which, till two troughs are connected together, the cell has only a zinc plate. When the battery is to be extended, a slip of copper soldered at the top of the last zinc plate is bent, and made to enter the first cell of another trough, this cell having previously only a zinc plate. In order to form the complete circuit, one extremity of a wire is made to enter the first cell of a trough where it is placed in connexion with the zinc plate; it is then brought to the opposite end of the trough, or series of troughs, where it is placed in connexion with the last copper plate or with a slip of copper soldered to a zinc plate, as before mentioned. The first cell constitutes the positive pole, and the last the negative pole of the battery; and the positive current flows along the wire from the positive pole to the negative.

That which has been just described is designated Mr. Children's battery, and Dr. Wollaston proposed, as an improvement upon it, to have in each cell a zinc plate between two of copper; for thus both surfaces of each zinc plate would become efficient in producing the electric current, and the power of the battery would be increased by one-half.

The battery invented by Professor Daniel consists of any number of cylindrical vessels of copper, open at the top, about 16 inches high and 3 inches in diameter, and containing a saturated solution of sulphate of copper, with a little vitriolic acid; the exterior surface of each may be painted, but the interior, which alone is efficient in producing electricity, is made bright.



On the top of the cylinder is placed a hemisphere *a* of wood, through which, in the direction of the axis of the cylinder, is a perforation above an inch in diameter; and to its base is attached a short tube *b* of copper, less in diameter than the cylinder, and carrying at its lower extremity an annular plate *c* of copper, in which are pierced several small holes. When the wooden cover is

placed on the cylinder, its base rests on the top of the latter; and the part of the cylinder between the short tube and the annular plate is filled with crystals or pieces of sulphate of copper, which, gradually dissolving, preserve the strength of the solution in the lower part of the cylinder.

To the interior of the short tube is affixed one end of a piece of ox gullet *d*, about the same length as the copper cylinder, and having its lower extremity tied so that the whole forms a membranous bag; this is to contain diluted sulphuric acid (eight parts water to one of acid). A rod of zinc *z*, about the same length as the cylinder, an inch in diameter, and terminating at the upper extremity with a brass ball, is passed through the perforation in the wood, down the interior of the membrane, so that its shoulder rests on the top of the wood, the surface of the zinc being previously covered with an amalgam of mercury. Instead of a membrane, a bag of paper or canvas, or a vessel of porous earthenware, may be used.

If now, a connexion, by means of a wire or metallic rod, were made between the ball at the top of the zinc rod and the top of a stem *e* which rises from one side of the copper cylinder, the zinc will be corroded by the sulphuric acid, and the electric fluid will pass to the copper through the acid, the membrane, and the solution in the cylinder. [VOLTAISM.] Such a battery has been used to a great extent, as many as fifty cylinders being employed in blowing up the cliffs at Dover, for the railway, in 1842-3.

The battery invented by Mr. Groves consists of several porous vessels containing strong nitric acid, and in each is a rod or plate of platinum. Each of these vessels is placed between two plates of zinc within a trough in which is diluted sulphuric or muriatic acid. The rod of platinum holds the place of the plate of copper in Children's battery, and constitutes the negative pole of each combination, the zinc plate being the positive pole.

A battery of even superior strength has been invented by Mr. Smee, in which the negative element is silver or platinum.

For producing explosions, either under ground or in water, a battery consisting of zinc and iron plates, disposed parallel to each other in alternate order, has been much used of late. The plates are about 10 inches long and 8 deep, and move up or down in grooves, which are formed in the sides of a trough made of baked wood, the lower sides of the plates being about half an inch above the bottom. The plates are connected together at their upper sides by bands of sheet copper which are riveted to them; a band extending, in the form of a semi-circle, from each zinc plate to an iron plate, and passing over two intermediate plates. One extremity of the conducting wire is placed in connexion with the first iron plate, or that which constitutes the negative end of the battery, and, when the circuit is to be completed, the opposite extremity is placed in connexion with the last zinc plate, or that which constitutes the positive end. The conducting wire is divided into two parts in the middle of its length, and the extremities thus formed are united by a piece of fine steel, or platinum wire, about an inch long; this is made to enter the charge of gunpowder, and becoming red hot by the galvanic current when the circle is completed, it causes the explosion to take place. The parts of the conducting wire, in their whole length, except within a short distance from the battery, are made to lie either in contiguity or on opposite sides of a rope, and they are enveloped in layers of tape coated with a waterproof composition. The solution employed is diluted sulphuric acid, consisting of one part acid to ten or twelve parts water.

The battery used at first by Professor Wheatstone for his electrical telegraph was formed nearly on the same principle as that of Mr. Daniel. A small outer vessel contained a solution of sulphate of copper, together with the plate of copper which formed the negative pole; within this a small porous cell contained diluted sulphuric acid, and at the bottom was an amalgam of zinc and mercury, which constituted the positive pole. An electro-magnetic apparatus is now employed for the telegraph.

BATTERING-RAM. [ARTILLERY.]

BATTERSEA. [SURREY.]

BATTERY. This name is given to any number of pieces of ordnance placed behind an elevation of earth, or without such cover, either to destroy the works or dismount the artillery of an enemy.

It may be said that the ancients made use of a species of ordnance in the operations of attack and defence; and the battering-rams, the balistæ, and the catapultæ, which, when placed on the natural ground, or in buildings of timber, or elevated on mounds of earth, served the besiegers to demolish the walls of a fortress, or to drive the defenders from them, may be considered as corresponding to the guns, mortars, &c., which constitute the armament of a modern battery.

While the same species of artillery continued to be used in warfare, it is evident that no material change could take place in the means used to cover it; but from the epoch of the invention of gunpowder, the wooden sheds or towers were superseded by masses of earth, whose thickness was necessarily made greater than the depth to which a cannon-shot can penetrate into them. In modern times the designation of a battery varies with the purposes to be accomplished, the nature of the ordnance employed, and the manner in which the firing may be made.

A *breaching battery* is one which may be placed at about 40 or 50 yards from any wall or rampart in order to demolish it; and the effect is produced by firing directly, or, as it is called, *point blanc* at the object: such a battery generally has its front parallel to the face of the wall to be breached.

An *enfilading battery* is one whose front is perpendicular to the produced line of the enemy's rampart, so that the shot from the guns may graze the interior side of that rampart, or its parapet, in the direction of its length. When

shot discharged from pieces of ordnance make successive rebounds along the ground, the firing is said to be *à ricochet* and the battery a ricochetting battery [RICOCHET]; and this mode of firing is employed when it is intended to dismount artillery by enfilading a rampart.

A *gun battery* is one in which guns only are employed, for either of the purposes above mentioned, or to defend any ground, by a fire of round or solid shot.

A *howitzer battery* is one in which howitzers are employed. This species of ordnance throws shells, or hollow shot, generally at a small elevation of the axis to the horizon; and it serves to produce, by the bursting of the shells, a breach in a rampart of earth; or, when fired *à ricochet*, to destroy the palisades or other obstacles which might impede the troops in assaulting an enemy's work.

A *mortar battery* is one in which shells are thrown from mortars at a great elevation of the axis of the piece; so that, by the momentum acquired in falling, they may crush the roofs, and by their explosion complete the destruction of magazines or other buildings.

When the battery is mounted on a natural or artificial eminence, in order to allow the guns to fire from above downward, or to make what is called a plunging fire against or into the works of the enemy, it constitutes a *cavalier battery*; and when the guns are elevated on a platform, or on tall carriages, so as to be enabled to fire over the superior surface of the parapet, or epaulement, the battery is said to be *en barbette*. This kind of battery is usually constructed at the most advanced points of a fortress, for the purpose of allowing considerable variation in the direction of the artillery towards the right or left.

In the formation of any of the field batteries above mentioned, while they are beyond the range of the enemy's musketry, the parapet may be constructed without cover for the working parties, like any simple breast-work, after the outline has been traced on the ground by the engineers; but, when the men employed in the work would be much exposed to annoyance from the enemy's fire, it becomes necessary that they should be protected by a mask of *gabions*. [GABION; SAP.] The parapet is about 7 feet high, and 18 or 20 feet thick, not including the breadths of the slopes given to the exterior and interior sides. The exterior slope is generally left with that inclination which earth, when thrown up, naturally assumes, that is at about 45° to the horizon; but the interior slope being necessarily more steep, in order to allow the guns to be brought close up to it, is retained by a revetment or covering of gabions, fascines, or bags of earth.

The guns rest on platforms, generally of timber, of a rectangular figure, from 15 to 20 feet long and 9 or 10 feet broad; each of these is constructed by embedding five sleepers in the ground, in the direction of its length, and covering them with planks, which are closely fitted to each other, and fastened down by screws.

For the formation of the embrazures, see EMBRAZURES.

Besides the epaulement in front of the battery, a wing is constructed of the same materials on each side, in order to protect the interior from any enfilading fire of the enemy. A magazine is always formed either within or near the rear of the battery, to contain the ammunition for its service; this is generally a rectangular pit sunk to about three feet below, with sides and a shell-proof covering of timber and earth, rising about as much above the natural ground. *Traverses*, or elevations of earth, secured at the sides generally by gabions, are formed at intervals in the interior of the battery, to afford protection for the men against such shot or shells of the enemy as may fall there.

Howitzer and mortar batteries are constructed nearly in the same manner as the others, but the former of these seldom, and the latter never, have embrazures; the level of their interior is also frequently sunk three feet below that of the natural ground.

BATTERY, in Law. [ASSAULT AND BATTERY.]

BATTICALO'A, an island situated near the entrance of an inlet of the sea, on the east coast of Ceylon, 7° 44′ N. lat., 81° 52′ E. long. It contains a small fort and garrison, and is the head station of the assistant government agent of the district of Batticaloa. Batticaloa is also the name of a district of Ceylon, which contains an area of 13,060 square miles, and a population of about 30,000.

BATTLE. [SUSSEX.]

BATTLE-AXE, a military weapon of offence used in different countries from the remotest times. The two Greek names for the battle-axe ἀξίνη (*axínē*), and πέλεκυς (*pélekus*), occur in Homer in the same verse, 'Il.' O. l. 711. It seems probable that the *axine* was similar to our hatchet, while the *pelekus*, which is usually translated in Latin by *bipennis*, had evidently two heads or edges. In the Roman armies we do not find the battle-axe in ordinary use. It seems to have been considered as the weapon more peculiarly used by uncivilized nations.

The introduction of the battle-axe into this country has been attributed to the Danes; but proofs of an earlier use of it in our islands are deducible. That it was used in England in the Saxon times appears from several MSS. of the ninth century; and the English are represented as using it, in the Bayeux tapestry. The pole-axe, with an edge on one side and a sharp point on the other, is believed to have come in with the Normans.

During the middle period of English history we read but little of this weapon, though it appears to have been constantly used. The Welsh infantry used it with great effect at the battle of Agincourt. Toward the close of the 16th century the battle-axe seems to have fallen into gradual disuse, although the occasional placing of a pistol in its handle indicates a wish on the part of the warriors of that period that it should be retained. It was early used in naval warfare, especially for cutting the ropes and rigging of vessels. Several specimens of different forms of battle-axe are given in Grose's 'Military

Antiquities,' and Sir Samuel Meyrick's 'Illustrations.'

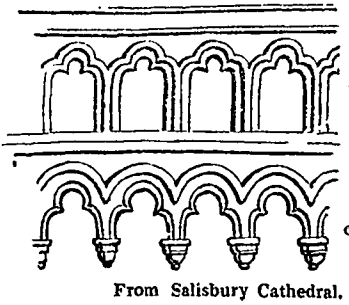
BATTLE, WAGER OF. [APPEAL.]

BATTLEMENT, a parapet wall, commonly employed in castellated and in ecclesiastical edifices of that kind which are distinguished by the general name of Gothic. [GOTHIC ARCHITECTURE.] The battlement is of very remote antiquity, as remains of them still exist in Greece and Italy. (Mazois' 'Pompeii' and Stuart's 'Athens.') The modern battlement however is better known as belonging to buildings from the eleventh to the end of the sixteenth century. It was originally designed for the protection of the besieged, but afterwards became merely an ornament to the edifice. Battlements were not in general use in ecclesiastical edifices until the middle of the twelfth century.

The battlement is generally indented, with a coping sloping both ways from about the centre; the lower part between the coping and the cornice of the building is often pierced and decorated. Mr. Rickman has described the characteristic features of the Norman, Early English, Decorated English, and Perpendicular English styles of battlements.

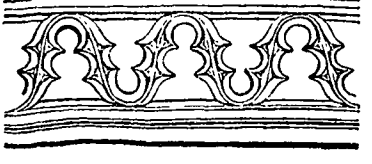
As to *Norman Battlements*, he says it is very difficult to ascertain what was their precise form. He considers them to have been only plain parapets, but remarks that there are instances in some castellated Norman buildings of a parapet with here and there a narrow interval cut in it.

Early English Battlements.—The parapet was seldom indented; and in many buildings it was plain, in others decorated. At Salisbury it is executed with a series of arches and pannels.



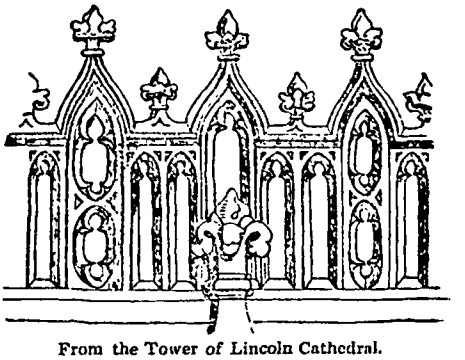
From Salisbury Cathedral.

Decorated English Battlement.—During this period the parapet wall without indentations continued frequently to be used; but it is often pierced through in various forms, generally consisting of quatrefoils, and quatrefoils in circles. Another form, however, which is not so common, may be considered more beautiful. This is a waved line, the spaces of which are trefoiled. In St. Mary Magdalen Church, at Oxford, there is a good example of this kind of battlement.



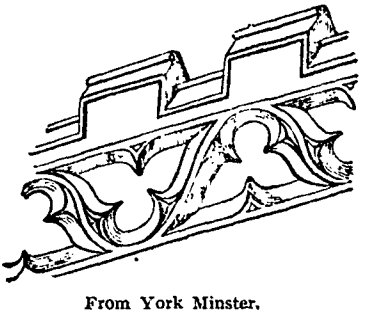
From Mary Magdalen Church, Oxford.

Perpendicular English Battlements.—In the battlements belonging to this period, parapets without indentures still continued to be used occasionally. The serpentine line with the trefoil was also still in use, but the line dividing the trefoil was more frequently made straight, and the divisions were consequently formed into triangular panels. But in the early and best works the trefoils are not divided by straight lines. There are many varieties of pierced battlements belonging to this period. A few edifices of a later period have pierced battlements ornamented with pointed compartments, as in the tower of Lincoln Cathedral.



From the Tower of Lincoln Cathedral.

Castellated battlements have the embrasures between the battlements sometimes nearly equal to the width of the battlements themselves; sometimes the embrasures are narrow, and the battlements wide, with the coping moulding placed horizontally and the sides cut plain. Another battlement consists of a moulding running round the battlement and the embrasure, while a capping is set upon the horizontal part of the embrasure and battlement, as at York Minster.



From York Minster.

(Britton's *Cathedrals;* Neale's *Views of Collegiate and Parochial Churches in Great Britain.*

BATTUS, the generic title proposed by Dalman to replace the name Agnostus, which Brongniart gave to some minute trilobate Crustacea which occur in the Silurian limestones of Norway, Wales, &c.

BATURIN. [CZERNIGOF.]

BATZ. [LOIRE INFE'RIEURE.]

BAUD. [MORBIHAN.]

BAUGE'. [MAINE-ET-LOIRE.]

BAUHIN, JEAN, was born at Basel, according to Sprengel, in 1541. His father placed him with Fuchsius, a botanist of eminence, and afterwards with Conrad Gesner, whom he accompanied in various excursions through Switzerland. He afterwards visited several other parts of Europe for the purpose of becoming acquainted with their vegetable productions, and with a view to collecting materials for his 'Historia Plantarum,' afterwards published. In 1566 he fixed himself at Basel, where he was elected professor of rhetoric. A few years subsequently he was appointed principal physician of the Duke of Würtemberg, in which situation he died at Montbelliard in 1613.

During his life he published little of importance, but he occupied himself with great industry in reducing the scattered knowledge of the botanists of his day into a single and connected history of the whole vegetable kingdom. This work was not printed till nearly forty years after his death, in 3 vols. folio, Yverdun, 1650–1, under the care of Chatré, his brother-in-law. This was a most important work for the time when it appeared.

BAUHIN, GASPARD, brother of Jean Bauhin, was born at Basel in 1560. After receiving the usual college education, he visited several parts of Europe, with a view to examine their vegetable productions, and to render himself conversant with the state of medical science. On his return to Basel, he appears to have gained great reputation as a learned man and a skilful naturalist. We find him described as holding the offices of professor of Greek, of anatomy and botany, and of the practice of medicine, dean of the faculty of medicine, chief physician to the town, and rector of the university. He died in 1624.

His works consist of several medical treatises, and especially of a set of anatomical plates, partly original and partly copied from Vesalius and Eustachius; but his reputation chiefly depends upon his botanical publications. His chief works were—'Phytopinax,' Basel, 4to., 1596, and 'Prodromus Theatri Botanici,' Frankfort, 1620; and partly of collections of the synonyms of the botanical writers who had preceded him. The latter appeared in his 'Pinax Theatri Botanici' in 1623, of which a second edition was published in 1671, and which is a complete key to the botanical knowledge of the day.

BAUHI'NIA, a genus of plants belonging to the natural order *Leguminosæ*. Linnæus applied the name to commemorate the merits of the two Bauhins. The genus is remarkable for its leaves being generally divided into two twin lobes.

The species are usually twining plants, found in the woods of hot countries, and often stretching from tree to tree like living cables. Some of them, however, are small trees, as for example *B. porrecta*, which is called in Jamaica mountain ebony, because its wood is sheathed with black. Their flowers are often very beautiful.

BAUMANNSHÖHLE, one of the bone-caverns in Franconia. (Buckland, *Bridgwater Tr.*)

BAUME-LES-DAMES. [DOUBS.]

BAUME-LES-MESSIEURS. [JURA.]

BAUMGARTEN, ALEXANDER GOTTLIEB, was born in 1714 at Berlin. He studied at Halle, and became a warm admirer of Wolf's philosophy. Baumgarten applied himself to logic and to belles lettres, on which he afterwards gave lectures at the Orphan Institution of Halle. Having examined what had been taught till then under the name of belles lettres, he endeavoured to reduce that branch of study to fixed principles. He invented the word *æsthetic*, which he applied to the theory of taste, or the science of the beautiful. Previous writers on this subject had mostly limited their investigations to the beautiful in works of art; Baumgarten extended his researches to the qualities that constitute the beautiful in general, and to our faculty of perceiving the same. He divided the science of æsthetic into theoretical and practical: he developed his ideas first in his treatise, 'Disputatio de Nonnullis ad Poema pertinentibus,' Halle, 1735, and afterwards in his 'Æsthetica,' Frankfurt on the Oder, 1750. Æsthetic has since become a distinct science, and is taught as such in the German universities. The other works of Baumgarten are 'Metaphysica;' 'Æthica Philosophica;' 'Initia Philosophiæ Practicæ.'

In 1740 Baumgarten was appointed professor of philosophy at Frankfurt on the Oder, where he died in 1762. He was a profound thinker, methodical in the arrangement of his thoughts, and precise in his expression.

BAUTZEN, or BUDISSIN (in the Wend language *Budishyn*), the capital of the circle of Lausitz in Saxony. It stands on a hill above the Spree, at about 30 miles from Dresden, in 51° 10′ N. lat., 14° 30′ E. long., and has a population of 12,000. It is the seat of a Catholic bishop, and contains the government offices of the circle, a consistory, and other public establishments. The town is well built, and contains amongst its public structures a cathedral, which is shared between Catholics and Protestants, their respective portions being separated by a screen of trellis-work. There are 5 other churches in the town, and an old castle, formerly the residence of the margraves of Meissen. The town also possesses a gymnasium, a training-school for schoolmasters, an orphan asylum, and 4 hospitals. It has considerable woollen, linen, and cotton manufactures; hosiery, gunpowder, paper, beer, &c., are also made.

END OF VOL. II.

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