

Cementation, process of converting (pure) wrought iron into steel by raising it to a white heat in contact with carbon, a slight percentage of which it absorbs, more particularly on the surface. The result of this operation is 'blister steel.' A more homogeneous metal is obtained by hammering or rolling together (when at welding heat) a number of bars of blister steel so as to form one bar, which is then termed 'shear steel;' a repetition produces 'double-shear steel.'

Cement Stones are a group of rocks belonging to the lowest Carboniferous of Scotland. They pass down into the Upper Old Red Sandstone by means of the Ballagan Beds, and above them lie the Burdiehouse limestone and the oil shales group of the Calciferous Sandstone. Their representatives in England are the lower limestone shales. (See CARBONIFEROUS.) They were partly deposited in lagoons and estuaries, and are a transition between the fresh-water deposits of the Old Red and the truly marine Carboniferous limestone. The town of Edinburgh is built on rocks which belong mostly to this group, and Arthur's Seat is an ancient volcano of this epoch.

Cemetery, a ground set apart for the burial of the dead, the word being originally applied to the Roman underground burial-places or catacombs. Among the Greeks cemeteries were always placed without the cities, and among the Romans the tombs were generally placed by the sides of the public roads. In the early ages the Christians held their assemblies in the cemeteries, as we learn from Eusebius and Tertullian. The practice of consecrating cemeteries is of some antiquity. The cemeteries of London include Highgate cemetery, Abney Park, Kensal Green, Norwood, and Nunhead

cemeteries, and those of Ilford and Leytonstone in Essex. Père la Chaise is the principal cemetery in Paris; others are Mons Parnasse and Montmartre. The cemeteries in Germany at Munich and Frankfort are called Leichenhäuser ('houses of the dead'), and are so constructed that premature burial is almost an impossibility. The most famous Campo Santo in Italy is that at Pisa; but the most beautiful burying-grounds in the world are those of the Turks, which are generally surrounded by groves of cypress. See CHURCHYARD.

Cenchrea, or CENCHREE, the ancient name of Kenkris, a port of Corinth, about 9 m. E.S.E. of Corinth on the E. side of the isthmus. Here St. Paul (or Aquila) shaved his head in performance of a vow (Acts 18:18), and in the church of which Phoebe was a deaconess (Rom. 16:1). It is now a small village, whose only importance comes from its site at the entrance to the Corinth canal. See Conybeare and Howson's *St. Paul*, small ed. (1862).

Cenci, BEATRICE (1577-99), a Roman lady of patrician birth. Her father, an old man, after conceiving an incestuous passion for his daughter, was put to death by an assassin employed by his wife, his son Giacomo, and Beatrice, who were ordered to be executed by Pope Clement VIII., who at the same time confiscated the property of the Cenci. She is the subject of a powerful tragedy by Shelley. For the true story, see Bertolotti, *Francesco Cenci e la sua Famiglia* (1879).

Ceneda, Italy. See VITTORIO.

Cenis, MONT. This pass (6,893 ft.) connects Lanslebourg, in the French valley of the Arc (or the Maurienne), with the Italian valley of the Dora Riparia, gained at Susa, above Turin. In the middle ages and later it became the chief means of communication

between Italy and W. Europe. The hospice near the summit was founded in the 9th century, and the road across the pass was constructed by Napoleon (1802-10). From 1868-71 the pass was crossed by the 'Fell Railway.' This line was (as required by contract) destroyed when the Mont Cenis Tunnel (really 17 m. w. of the pass, and beneath the Col de Fréjus) was opened in 1871. This great undertaking, begun in 1857, cost £3,000,000. In the middle it reaches an altitude of 4,246 ft. The pass is now little frequented. The Italians have constructed considerable fortifications on the great plateau. The Little Mont Cenis Pass (7,166 ft.) leads from the hospice to Bramans, 16 m. farther down the Arc valley than Lanslebourg. It is traversed by a rough mule path.

Cenobites. See CÆNOBITES.

Cenomanni, or CENOMANI, a Celtic people of the Aulerici nation of Gaul, who inhabited the existing department of Sarthe. Their capital was Vindinum or Suindinum (Le Mans). A branch of the Cenomanni invaded Italy in the 6th century B.C., and occupied the l. bk. of the Po, between the Adda and the Adige, with Verona as their capital. See Voisin's *Les Cénomans, Anciens et Modernes* (1862).

Cenotaph, usually the tomb or monument of one deceased but not interred there; also applied to a sepulchral monument erected for a person in his own lifetime.

Censor, the title of the magistracy in ancient Rome which was highest in dignity, if not in power. There were two such magistrates. Their duty was primarily to take the census of the whole people, which was part of the solemn ceremony of purification performed every five years. This duty was originally executed by the king, and afterwards by the consuls; but when, in 444 B.C., the military

tribunate, open to plebeians, replaced the consulship, the senate instituted the censorship for the next year, and confined it to patricians. It was held exclusively by patricians until 351 B.C., when C. Martius Rutilus was the first plebeian censor. In 339 the Publilian laws provided that at least one censor should be a plebeian; in 131, for the first time, both were plebeians. Their power depended on the fact that with them lay absolutely the classification of the citizens in their centuries and tribes, so that the enfranchisement both of individuals and of classes rested with them, the making up of the roll of senators and knights (they could degrade from or promote to these orders at their choice, until the legislation of Sulla in 81 B.C.), the general supervision of morals, and the administration of the finances of the state. In connection with their supervision of morals, they had the right of affixing a stigma (*nota censoria*) to the name of any man enrolled in their lists—a much-dreaded disgrace; and also they endeavoured to regulate the expenses and luxury of private life by many sumptuary laws. Their financial powers depended primarily on their making a census of property; they also supervised the administration of other branches of revenue, though they did not collect or expend the state income. A law (265 B.C.) enacted that no one should be elected censor a second time. After the establishment of the principate, Augustus exercised censorial powers only in his capacity of consul, which he assumed temporarily in 8 B.C. and 14 A.D. for the purpose. Claudius revived the office in 47-48 A.D.; so did Vespasian in 73 and Domitian in 85 A.D., who retained the office for life. Trajan began the practice of using censorial powers without assumption of the office, which

meant that such powers were, in his view, inherent in the principate. Later emperors followed his lead.

Censor, MILITARY. Owing to the ruthless energy of the modern war correspondent, the position of military censor has grown greatly in importance during recent years. His duty is to see that no information that could be of use to a hostile army leaves the theatre of operations either by post or by telegraph; and he exercises his authority equally over the dispatches of accredited war correspondents and private letters and telegrams. During 1870 the Germans acquired much valuable information of the hostile movements from French newspapers. In the 1904-5 campaign in Manchuria the Japanese made such rigorous use of censorship that it was almost impossible for correspondents to forward any particulars of what was taking place at the front. Similar precautions will almost certainly be taken in future wars.

Censorship of the Drama. Before the Reformation in England ecclesiastical ordinances regulated the stage, but in the reign of Elizabeth the state assumed control, and several acts were passed to prohibit plays objectionable to the government. In 1545 the duties of dramatic censor were allotted to the master of the revels, with whom others were sometimes associated, and the duties afterwards devolved (c. 1624) on the lord chamberlain. All political allusions were forbidden, but in other directions the greatest licence was allowed. The gathering forces of Puritanism consequently regarded the stage as an unclean thing, and when the civil war began (1642) the theatres were immediately closed. With the Restoration came the inevitable reaction. Fielding's plays, *Pasquin* (1736) and the *Historical*

Register (1737), in which he freely travestied the political transactions of the day, led to an act (1737) which gave legal sanction to the customary censorship of the lord chamberlain. In addition, the act rigorously restricted the number of legitimate playhouses; but the theatrical monopoly thus established was inconvenient, extra licences had to be granted, especially in the provinces, and some legislative steps taken to widen the law. Finally, in 1843, the Theatres Act was passed, and free trade in theatres inaugurated, which has resulted in an enormous growth of theatres. In 1866 a select committee of the House of Commons reported that the discretion reposed in the lord chamberlain had been on the whole wisely exercised—an opinion shared by theatrical managers of the present day, who would rather submit to this censorship than to that of any local authority. This view is not shared by some theatrical critics, who hold that unconventional but stimulating ideas are banned by the censorship. The post of examiner of plays in the lord chamberlain's department is now held by Mr. G. A. Redford. Objection to plays would seem to be taken on several grounds. Religious themes are rarely allowed, ideas subversive of the moral order are forbidden, political allusions must not be offensive, and decency of language must be observed. Among plays recently forbidden by the censor were *Ghosts*, by Ibsen; *Salomé*, by Wilde; *Monna Vanna*, by Maeterlinck; *Mrs. Warren's Profession*, *Press Cuttings*, and *Blanco Posnet*, by G. B. Shaw (all three permitted later, with certain alterations); Mr. Granville Barker's *Waste*; Mr. W. L. Courtney's version of *Ædipus*. A musical comedy concerned with Morocco was modified because it contained

allusions offensive to the Sultan of Turkey. A great deal of discontent and resentment was provoked in dramatic circles by these decisions, and in 1909 a select committee of both Houses of Parliament sat to consider the question. Evidence of most of the leading English dramatic authors and managers was taken, and the committee eventually recommended that licensing should be optional, and that the lord chamberlain should remain the licenser while forming a consultant committee. It should be optional to submit a play for licence, and legal to perform an unlicensed play. The licence was to be refused for indecency and various other specified grounds; and if the director of public prosecutions or the attorney-general found an unlicensed play open to objection on any of the said grounds, they should indict the manager and author, on whom the court should be empowered to make various orders.

Censorship of Press.

See PRESS, FREEDOM OF THE.

Census may be defined as an enumeration of the people in a country or district, grouping them according to the principal political or administrative divisions, as well as according to personal, social, and other status—as age, sex, occupation, colour, etc. It is a very ancient institution, and was originally perhaps an instrument of despotism or authority; sometimes, too, it was resented as irreligious, as in the famous case of the Israelites, or as despotic, as in the case of the Roman censuses of the provinces. The old attitude survives among some Russian sects, of whom the Dukhobors, now settled in the Canadian West, may be taken as an example. But modern censuses are taken for statistical purposes, although the results may be used to direct political action.

To Sweden is generally awarded the honour of the first modern census on something like a scientific basis, in 1749; but in the French colony of Canada periodical enumerations of the people had been made during a century previous, and were continued after Canada passed into British hands. (See *Canadian Census*, 1871, vol. v.) A proposal to establish, in 1753, a census in England was rejected; but in 1801 the first English census was taken. The first United States census was taken in 1790, and the first satisfactory French enumeration in 1801. Regular censuses, generally decennial, are taken in most European countries, in the United States, and in the British colonies, which are occasionally supplemented by quinquennial censuses for restricted areas—*e.g.* Massachusetts and Manitoba.

There are certain questions to be decided at the outset. (1.) Should the census be entrusted entirely to the staff of enumerators, who shall call at each house and fill up the schedules with the answers received; or should the census paper be committed to each householder to fill up, the duty of the enumerator being simply to leave and collect the papers? The latter is the method adopted in the United Kingdom; the former is adopted in the United States. The objection to the English method is that the information obtained must be confined to certain distinctly intelligible questions. The objection to the United States method is that it entails a greater expense, does not represent a *section*, so to speak, of the nation at a given time, and that its greater fullness is obtained at the expense of accuracy. (2.) Should the enumeration be *de facto* or *de jure*—*i.e.* should it include all who ought to be included, or all who actually are present to be in-

cluded? The *de jure* is abstractly the ideal way, but is attended in practice by so many difficulties that the *de facto* is preferred by most statisticians.

Very important is the decision what shall or shall not be included within the census. As a rule, the more that is asked the less accurate is the information received; and the present tendency is towards simplification. The English census is probably too restricted in its range. The United States census, on the other hand, includes much that does not belong to a periodical enumeration, and which, while more or less valuable, could be better collected in other ways. The chief fault of all censuses lies in the tendency to exaggerate the importance and the accuracy of the results; and many census statisticians seem to be of opinion that to give a guess in the form of a figure is to ensure its absolute accuracy.

In addition to decennial enumerations, a special census is sometimes taken to elicit particular information. The Census of Production Act, 1906, provided for a periodical census of production of the trade and business of the United Kingdom, beginning in 1908. The Board of Trade can compel returns to be made, but must not publish individual returns. In connection with the recent census a Bill was passed empowering the taking of a census for Great Britain on Sunday, April 2, 1911. The particulars required to be given were the name, sex, age, profession or occupation, condition as to marriage, relation to head of family, birth-place, language, and nationality of every living person who abode in every house on the night of the census day; whether there are any blind, deaf, dumb, imbecile, or lunatic. In the case of any person married, the duration of marriage, and the number of

children born of the marriage, and the number of rooms inhabited. The Government resisted a proposal to include a religious column in the 1911 census. See VITAL STATISTICS.

Cent., a contraction of the Lat. *centum*, 'a hundred,' and also of the Lat. *centesimus*, 'a hundredth part.'

Cent = the hundredth part of a dollar in the United States; in Holland it stands for the hundredth part of the Dutch guilder; and in Mauritius and the Far East—Hong-kong, etc.—for the hundredth part of a dollar.

Cent. also stands frequently in the respective localities for the following coins:—*Centavo* = $\frac{1}{100}$ th of Chilean peso, also $\frac{1}{100}$ th of Mexican peso or dollar. *Centena* = $\frac{1}{100}$ th of Bolivian dollar. *Centesimo* = $\frac{1}{100}$ th of Italian lira. *Centime* = $\frac{1}{100}$ th part of a franc (France, Belgium, Switzerland, etc.). *Centimo* = $\frac{1}{100}$ th part of the Spanish real, the old unit of value in Spain.

Cental, a weight of 100 lbs. avoirdupois; originally, and still chiefly, applied to corn. The term was invented by a barrister named Danson, in order to meet the need for a uniform measure in the Liverpool corn trade. It was first introduced in February 1859, and legalized by an order in council twenty years later (Feb. 4, 1879).

The quotations of prices on the corn exchanges of Britain and the United States are given in centals. 'Dollar wheat' means wheat at \$1 per cental—a high price on the Chicago exchange. Gamblers in corn options use the terms 'one wheat,' 'one maize,' etc., to cover 5,000 centals (or about 1,000 quarters). By means of this understanding a rise or fall of $\frac{1}{2}$ d. means a gain or loss of about £10 to a buyer of one 'future' in corn.

Centaurea, a genus of composite plants of wide distribution in temperate countries; included

the corn-flower, knapweed, and sweet sultan. The central florets are tubular and five-cleft, and form a convex head; the outer florets being larger and irregular, and devoid of stamens and pistils. Among native British species are the familiar blue-bottle or corn-flower of the wheat fields, *C. cyanus*; the black knapweed, or hardhead, *C. nigra*, whose purple flowers and black involucre are common in the fields in summer; and *C. scabiosa*, the greater knapweed, a bright relative of the hardhead.

Centauri, in Greek legend, a race of monsters, half man, half beast. The half-beast part that painters and sculptors preferred to represent was of the horse; and it is probable that their bestiality was attributed to them—the aborigines—by the conquerors who seized their land, and drove them back into mountain fastnesses. That they were not all bad is shown by the popularity of Chiron as a wise trainer of heroes; their representation in the fight with the Lapithæ at Pirithous's wedding feast has left an unnecessarily evil impression of them in the popular mind. See for full discussion J. E. Harrison's *Prolegomena to Greek Religion* (1908), and J. C. Lawson's *Modern Greek Folklore and Ancient Greek Religion* (1910).

Centaurus, a southern constellation mentioned by Aratus, and representative, probably, of the Centaur Chiron. It is situated between Argo and Scorpio, and is traversed by the Milky Way. The chief star, α Centauri, is a splendid binary, revolving in 79 years, at a mean distance twenty-four times that of the earth from the sun. The primary, which is fully twice as bright as Aldebaran, is stated by Sir David Gill to be a twin of our sun. It gives an identical spectrum, is of equal mass, and

presumably of equal luminosity. Its companion is no less massive, but is much less bright. There are irregularities pointing to the presence of a third but invisible member in the system. The pair are our nearest stellar neighbours, the intervening space being crossed by light in $4\frac{1}{2}$ years. Their measurement in 1833 yielded to Henderson the first authentic result for the parallax of a star. Alpha and β Centauri, a white star of the first magnitude, are designated the 'Southern Pointers,' because they guide the eye to the Cross. γ Centauri is binary, the period of revolution being about 200 years. Nova Centauri rose abruptly to seventh magnitude in July 1895, and was noted by Mrs. Fleming on the Arequipa plates when the object itself was already far advanced towards extinction. In Centaurus, too, is to be found Sir John Herschel's 'blue planetary' (N.G.C. 3918), a nebula resembling Uranus magnified.

Centenary, a period of a hundred years, generally applied to the commemoration of a famous person or event.

Centering. See CARPENTRY—Centres.

Centerville, co. tn. of Appanoose co., Iowa, U.S.A., 75 m. S.E. of Des Moines; has important pork-packing industry. Pop. 6,000.

Centetes, the tenrec or tailless hedgehog of Madagascar, an insectivorous mammal which reaches a length of sixteen inches—unusually large for a member of this order. Its nearest allies, outside of Madagascar, appear to be the solenodons of Haiti and Cuba, forms from which it is now very widely separated in space.

Centigrade. See THERMOMETER.

Centimetre is a unit of length, being the one-hundredth part of the metre, and equal to 0.3937

of an inch. The centimetre is one of the fundamental units of the C.G.S. or centimetre, gram, second system of absolute units, much used for scientific purposes. The units of the system are called the C.G.S. units.

Centipedes (Chilopoda), a division of the myriapods, air-breathing arthropods, which in many points resemble insects, but have no wings, and have numerous legs. The myriapods include the millipedes as well as the centipedes; but neither of these terms gives an accurate description of the number of legs. Centipedes may have more or many less than a hundred legs. They are carnivorous, poisonous, with flat bodies, many-jointed feelers, toothed cutting mandibles, and two pairs of maxillæ. The poisonous action is due to the two poison claws, which are placed in the head region, and, in the case of tropical centipedes, are capable of inflicting a severe and perhaps fatal bite. Common British centipedes are *Lithobius* and *Scolopendra*, the latter genus also including some of the large tropical forms.

Centlivre, SUSANNAH (1667-1723), English actress and dramatist, was the daughter of a Lincolnshire gentleman named Freeman. Her first drama, *The Perjured Husband*, was produced at Bath in 1700. She wrote eighteen other plays, of which the best known are *Love at a Venture*, *The Gamester*, *The Busybody*, *The Wonder*, and *A Bold Stroke for a Wife*. Her plays were collected in 1761; some of them still hold the stage, being interesting in plot and lively in dialogue.

Centner, a German standard weight = 100 German pounds (*pfund*) or 50 kilograms. It is equal to 110.2 English pounds, and may be rendered with sufficient accuracy into English cwt. Twenty centners are equal to a

French ton of 1,000 kilograms, or 2,204 lbs., as compared with the English and American (long) ton of 2,240 lbs. Two centners equal one quintal (French). Centner, from Lat. *centenarius*, is also = a drachm weight divided into 100 equal parts.

Cento (Lat. 'a patchwork garment'), a composition, generally poetical, composed of lines and phrases extracted from other works, and combined so as to convey a different meaning from the original—such, for example, as the *Cento Nuptialis* of Ausonius and the *Cento Virgilianus* of Proba Falconia, both constructed from Virgil. Thomas Watson's *Hecatompathia* (1582) contains a sonnet (No. 89) composed of 'sentences' from classical writers literally translated.

Cento, tn. and episc. see, prov. Ferrara, Italy, 20 m. w.s.w. of Ferrara, the birthplace (1591) of the painter Il Guercino, who founded here an academy of painting. Pop. (comm.) 20,000.

Central Africa Protectorate. See NYASALAND PROTECTORATE.

Central America. As a geographical division, Central America extends from the isthmus of Tehuantepec to that of Panama or perhaps to the Atrato valley in Colombia; for until the Tertiary period this area was divided into an archipelago by straits. Mountain chains traverse Central America from end to end. The Sierra Madre of Chiapas extends across Guatemala, and attains a height of nearly 10,000 ft. The mountains extend s. into Nicaragua. Volcanic rocks are widely distributed, especially in Nicaragua, N. Costa Rica, and near the Pacific coast, where they form a cordillera, and rise to considerable heights, such as Acate-nango in Guatemala (12,800 ft.) and Irazu (11,200 ft.), in the centre of Costa Rica. South of the Re-ventazon and the Rio Grande the

Talamanca range culminates in the Chiriqui Grande, at a height of more than 12,400 ft. Yucatan and Tabasco and the coastal zones are of Tertiary origin.

As the line of greatest elevation lies much nearer the Pacific coast than the Atlantic, the rivers on the former slope are short. On the E. side are the Belize R. (270 m.), the Motagua (260 m.), the Uluá and Patuca, in Honduras; the Rio Grande and San Juan, in Nicaragua, and its tributary, the San Carlos; and the Sarapiquí, in Costa Rica—some of which are navigable by steamers. Largest of all is the Usumacinta, which is more than 600 m. long from its mouth to the Rio de la Pasión. The Wanks, or Segovia, separates Honduras from Nicaragua.

In the *tierra caliente*, the low coast lands, the mean yearly temperature is from 80° to 73° F.; in the *tierra templada*, between 2,000 and 5,000 ft. above sea-level, from 73° to 63°; and above the latter frosts occur. The rainfall is particularly heavy on the Atlantic slope. In British Honduras over 71 in. falls in the year, and in Alta Verapaz, Guatemala, about 180 in., while San Salvador has only 54 in. Still more striking is the contrast between Greytown (244 in.) and Rivas (69 in.).

The flora is that of tropical America. The woods contain mahogany and cedar, logwood, Brazil wood, and other dyeing materials; bombax, cocoa palms, and mangroves; fibres, winter's bark, sarsaparilla, vanilla, india-rubber; orchids and other beautiful flowers.

The fauna is as varied as the flora, and includes the puma, jaguar, tapir, manatee, monkeys, vultures, alligators, venomous snakes in great variety, and birds of gorgeous plumage. Of the birds, there are two hundred and sixty species, many of which are peculiar to Central America. In-

sects are numerous and troublesome.

The aborigines consisted of the Maya Indians in the N., and smaller tribes elsewhere. Many interesting remains are scattered over the country, notably the ruins of Palenque, in Tabasco; Uxmal, in Yucatan; Quirigua and Santa Lucia, in Guatemala; and Copan, in Honduras. At present pure Indians are most numerous in Guatemala and Yucatan. In the other states they are few in number, the bulk of the population consisting of *ladinos*, or half-breeds, except in Costa Rica, where the Spanish race predominates.

Politically, Central America is divided into the republics of Guatemala, Honduras, Salvador, Nicaragua, Costa Rica, and Panama, the crown colony of British Honduras, and the provinces of Chiapas, Tabasco, and Yucatan, which form part of the republic of Mexico. In 1906 trouble broke out between Guatemala and Salvador, which in 1907 involved all the republics and led to hostilities between Salvador, Honduras, and Nicaragua. In April 1907 a treaty of peace was signed, and a conference, promoted by the Presidents of the United States and Mexico, on the 14th December following, negotiated a treaty to insure permanent peace.

See articles on separate states, and Keane and Markham's *Central America and West Indies* (1901); Squier's *The States of Central America* (1868); Charnay's *The Ancient Cities of the New World* (1887); Sapper's *Das Nördliche Mittel-Amerika* (1897).

Central Argentine Railway was incorporated in March 1864, and constructed a line to connect the cities of Rosario and Cordoba. In 1902 it acquired the Buenos Ayres and Rosario Ry., which was incorporated in February 1873 as the Buenos Ayres and

Campana Ry., for the construction of a line between the places named. Share capital issued at end of 1910, £26,895,230, in addition to which £12,254,644 of loan capital has been issued. At the annual general meeting in March 1911, the issue of an additional £3,000,000 of capital was authorized. The length of line worked at the end of 1910 was 2,667 m., 5 ft. 6 in. gauge, and 500 m. were under construction. The gross receipts for the year ending June 30, 1910, were £4,748,176, and the working expenses £2,762,377.

Central Asia (RUSSIAN) includes the provinces of the Steppes, of Turkestan (so called), and of Transcaspia, but not the vassal states of Bokhara and Khiva. It comprises the following subdivisions:—

Province.	Area, in sq. m.	Population.
Akmolinsk	225,000	815,000
Semipalatinsk..	180,000	810,000
Turgai	170,000	560,000
Uralsk	138,000	800,000
Ferghana	35,000	1,900,000
Samarkand	27,000	1,150,000
Syr Daria	195,000	1,800,000
Semiryechensk	145,000	1,150,000
Transcaspia	215,000	415,000
	<hr/>	<hr/>
	1,330,000	9,400,000

If to these the areas of the Caspian Sea (170,000 sq. m.) and the Sea of Aral (26,000 sq. m.) be added, we get a total area of 1,526,000 sq. m., with a total estimated population of 9,400,000. The population is composed, linguistically, of various races of the Turki stock, of Persians and other Iranians, of Galcha mountaineers, and of Russian Slavs (immigrants of recent date). Among the 5,500,000 of Turki peoples, Uzbeqs of Bokhara, Khiva, and Kokand account for more than two-fifths, Kirghiz (of various denominations) for almost three-fifths; the remain-

ing half-million or more are Turcomans. The Persians, Sarts, and Tajiks of Iranian stock, chiefly inhabiting the towns, and forming the mercantile and settled classes, number somewhat over a million. The Galcha highlanders probably do not exceed 300,000. Russian colonists are a steadily increasing element.

The greater part of this area, more than seven times that of France, lies within the Aral-Caspian basin. Highlands, mainly in the E. and S., divide the country almost equally with lowlands in the W. and N.; the latter fall in the neighbourhood of the Caspian Sea below sea-level, but a large proportion of the former rise to over 5,000 feet. Thus, the depression which contains Lake Issik-kul lies more than 4,500 feet above the sea. Besides the Pamir plateau, itself a western outpost and knot of the Tibetan highland, Russian Central Asia includes the W. Tian-Shan and its outliers, the Alai and Trans-Alai, the Alexander Mts., the Tarbagatai Mts., the Zungarian and Trans-Ilian Ala-tau, the Mugoj ridge, forming a continuation of the Urals, and some lesser ranges; and of rivers it has the Oxus or Amu Daria, the Jaxartes or Syr Daria, Zerafshan, Murghab, and Chu Ili.

Peter the Great, after planting a line of Cossack stations along the Ural R., won a temporary acknowledgment of suzerainty (1714) from the khan of Khiva. About the same time Russian dominion was successfully extended up the middle Irtysh, especially by the foundation of Omsk and Semipalatinsk (1716-19). A few years later the Kirghiz of the Middle and Little Hordes offered their submission to the Empress Anne (1732). The foundation of Omsk (1716) marked a first stage in the Russian advance into Central Asia; the

foundation of Orenburg (1736-43) marked a second. In 1803 a third stage began, when the tribes of the Mangishlak Peninsula, on the E. side of the Caspian, became Russian vassals. Forty years later the khan of Khiva concluded a treaty of 'friendship and alliance' (1842) with the Russians. In 1853 Perovski pushed 280 m. up the Syr Daria, and stormed Ak Mechet, renamed Fort Perovski. The accession of Nicholas I. was followed by a resumption of the onward march in the N.E. In 1831, Sergiopol, to the N.N.E. of Lake Balkhash, was founded; in 1854, on the eve of the Crimean war, the ancient town of Almati, beyond the Ili, fell into the power of the new conquerors, and was renamed Vyernoe ('Faithful'). In 1864 a new stage began with the simultaneous advance on Aulie Ata (commanding the gap between the W. Kara-tau and the Alexander Mts.), and on Hazret-i-Turkestan and Chimkend (commanding, with Tashkend, the basin of the Middle Syr Daria). The occupation of Chimkend, however, almost necessarily involved the conquest of the closely neighbouring Tashkend, the greatest city north of the Syr Daria, and now the largest town of all Central Asia, which was stormed by Chernaiev, June 29, 1865. Bokhara now joined Kokand, and more than 40,000 Uzbeks advanced on Tashkend; but on May 20, 1866, 3,600 Russians utterly routed the enemy at Irjai, close to the south bend of the Syr Daria. This was the Plassey of modern Central Asia; it was quickly followed (June 6, 1866) by the capture of Khojend and the invasion of Bokhara. By the ukase of July 11 (23rd), 1867, Turkestan, including all the conquests in Semirychensk and the Syr Daria basin, was made a general-governorship,

with its capital at Tashkend, and placed under Kauffmann. On May 12, 1868, the united forces of Bokhara, Khiva, and Kokand, 40,000 strong, were broken in pieces by Kauffmann with 3,600 Russians, in the battle of the Zerafshan, 15 m. outside Samarkand. Timur's capital surrendered the next day (May 13), and the emir of Bokhara's submission followed.

The next stages of Russian conquest in Central Asia were marked by the conquest of Khiva and the completely defined vassalage of Bokhara (1873), the conquest of Kokand (1876), the conquest of the Turcoman country (1881-4), the occupation of the land between Merv and Penjdeh (1884-5), the delimitation of the Russo-Afghan and Russo-Persian frontiers from the Caspian Sea to the Chinese border (1885-95), and the occupation and delimitation of the Pamir (1890-5). Skobelev effected the conquest of the Turcomans by storming the forts of Geok Tepe (or rather Yangikala and Dangil Tepe), the chief Turcoman strongholds (Jan. 1-24, 1881), and the submission of Merv (Jan. 31, 1881) completed the victory. The occupation of Sarakhs, Pul-i-khatun, the Zulfiker pass, and Pul-i-khisti followed in rapid succession (down to February 1885); and on March 30, 1885, the Afghans were routed and driven out of the Penjdeh oasis. War with Britain almost resulted from this last action; but ultimately a frontier was peacefully agreed upon. On July 12, 1892, the Afghans were routed at Somatash; the Russian outpost of Fort Pamir (Pamirski Post) was established (1893) in the heart of the mountain region; and on March 11, 1895, the treaty was signed by which all the Pamir north of the branch of the Oxus flowing from Sari-kul or Lake Victoria, and a line drawn thence eastward to the

Chinese frontier, passed into the hands of Russia.

The Kuldja or Ili province of Chinese Turkestan was occupied by Russia from 1871 to 1881, but was evacuated under a treaty, the alleged breaches of which led to Russian preparations (March 1911) for its reseizure.

See Curzon (Lord), *Russia in Central Asia* (1889); Lansdell, *Russian Central Asia* (1885); E. Huntington, *The Pulse of Asia* (1907); Kostenko, *Turkestan* (3 vols. 1880-1; in Russian); Schuyler, *Turkistan* (2 vols. 1887); Ivanov, *The Russians in Turkestan* (in Russian; German trans. 1876); Veniukov, *Progress in Central Asia... through Russian Conquest* (Russian; cf. the *Révue de Géographie*, May 1885); Vambéry, 'Russie et l'Angleterre dans l'Asie Centrale,' in *Révue de Géographie*, November 1888; Maiev, *Russian Turkestan* (1872; in Russian)—Geography and Statistics by Maiev, Ethnography and Natural History by Trotski; Lansdell, *Russian Central Asia*, ii. 506, etc.; and the *Annales de Géographie*, vol. iii. pp. 346, etc. (E. Blanc on 'Colonisation Russe en Asie Centrale').

Central City, tn., Colorado, U.S.A., the co. seat of Gilpin co., 30 m. w. by n. of Denver. It is the centre of a gold-mining and silver-mining region in the Rocky Mts. Alt. 8,516 ft. Pop. 3,000.

Central Criminal Court, London, created in 1834 to bring under one jurisdiction for criminal purposes the populous area round the City of London which might fairly be regarded as one town. The court sits at the Old Bailey (now rebuilt), in the City of London, and usually holds twelve sittings every year. One and sometimes two judges of the High Court attend, and also the recorder

of the City of London, and the common serjeant, or the judge of the City of London Court. The lord mayor or some of the aldermen are always present on the bench. Besides the ordinary criminal business of a court of assize, the court has now the whole criminal jurisdiction of the Court of Admiralty. The King's Bench Division of the High Court has power to order any person subject to the Mutiny Act who is accused of murder or manslaughter to be tried at the Central Criminal Court, although out of the jurisdiction, and can also remove into that court by *certiorari* any indictment for a felony or misdemeanour committed out of the jurisdiction when it appears expedient in the interests of justice to do so. Three assizes in winter and three in spring may be held at the Central Criminal Court for a larger area than its own district, and including the whole of the counties of Kent, Surrey, Sussex, Berkshire, Hertfordshire, and Essex.

Central Falls, city of Providence co., Rhode I., U.S.A., 6 m. N. of Providence. It has cotton and woollen mills, and a variety of other manufactures. Pop. (1910) 22,754.

Central Forces. A force acting on a given body is said to be central when it always acts towards a fixed point or centre. The importance of this group of dynamical problems arises from the fact, established by Kepler and Newton, that the bodies constituting our solar system move under the influence of gravitational forces which pass very nearly through a definite point—the centre for the planets being approximately the centre of the sun, and the centre for each group of satellites being approximately the centre of the corresponding planet. It is found that calcula-

tions based on the assumption that the forces acting on the planets are towards one centre leads to results closely concordant with observation. Another simple example of an approximately central force is the case of a heavy body attached to one extremity of a string and set in rapid revolution round the other extremity, which is kept fixed. If we leave out of account for the moment the action of the body's own weight, we may regard it as acted upon by the tension of the string directed towards the fixed end. When a force acts upon a body, it causes acceleration, involving both change of speed and change of direction of motion; and in the case of a central force this acceleration must take place towards the centre. Hence there is no acceleration at right angles to the line joining the centre of force and the position occupied for the moment by the body. This condition leads, by simple dynamical considerations, to the statement of what is known as Kepler's law of equable description of areas. If we measure the area passed over by the line joining the centre of force and the body as the latter describes its path, we find that in all positions this area has the same value during the same interval of time. This law of planetary motion, established by Kepler after laborious calculations, led at once, according to Newton's principles of dynamics, to the conclusion that each planet was acted upon by a central force directed towards the sun's centre. The reason why the forces dominating the motions of the planets and satellites of our solar system may be treated as central forces is that the mass of the sun is very great compared with the combined mass of the planets, and that each planet is much more massive than its attendant moons.

Centralia, city, Marion co., Illinois, U.S.A., 60 m. E. by s. of St. Louis; has machine and repair shops of Illinois Central Ry., coal mines and iron mines. It is in the centre of a fruit-growing district, especially for apples and strawberries. Pop. 7,000.

Central India is the official name applied to a group of feudatory or native states occupying that part of India N. of the Central Provinces, W. of Bengal, and S. of Rajputana and the United Provinces. The district is divided into two sections—viz. Bundelkhand in the W. and Baghelkhand in the E. The greater part of Central India is covered with the well-known 'black cotton soil.' It is very fertile, and retains moisture well, so that irrigation is little needed. Opium and millet are grown upon it. In northern Bundelkhand the soil is the ordinary 'red soil,' and irrigation is necessary. Ethnologically the population are very varied; most of them are of the Hindu religion. The most important states are Bhopal, Gwalior, Indore, and Rewa. Area, 78,000 sq. m. Pop. about 9,000,000. See articles on separate states.

Centralization, a term used in practical politics, as well as in political science, to indicate that tendency towards concentration of administrative power in the hands of the state or central authority, a tendency which has steadily become more noteworthy as the conception of the function of the state has widened. So completely has the state taken over the functions of the local authorities that a considerable part of its activity during recent times has been taken up in devising schemes of decentralization, whereby certain functions of the state may be exercised by local authorities created for the purpose. The pressure

of militarism necessitates a large measure of centralization; and we can see the same thing, again, in the case of the United States, where the power of the executive is steadily increasing.

Central Provinces, lying in the centre of the peninsula of India, are encircled on three sides by states under native rule. Their N. and N.E. limits are bordered by the large feudatories under the Central Indian Political Agency, and the S.W. by Berar and the dominions of the Nizam. On the S.E., the N. districts of the Madras Presidency separate the Central Provinces from the Bay of Bengal. The Chota Nagpur division of Bengal touches the N.E. angle. Area, 86,600 sq. m. The principal rivers are the Narbada, which traverses the N. districts from E. to W.; and on the W. side the Tapti, the Wardha, and the Wainganga—the first running W., the two others taking a S. direction. The S. extremity of the country is covered with wild, impenetrable jungle. The forest area is over 19,000 sq. m. Coal is found in the Nagpur division, the annual output aggregating 150,000 tons. A prolific soil yields a rich harvest—cotton, tilseed, wheat, rice, grain, pulse, and linseed being the chief products. Cotton factories flourish in the Nagpur division. The Great Indian Peninsula Ry. skirts the N.E. and S.E. borders, and the Bengal-Nagpur line, running from W. to E., bisects the province. The province comprises four divisions—Narbada, Jabalpur, Nagpur, and Chhattisgarh. The district of Sambalpur was transferred in 1905 from the Central Provinces to the governor-generalship of Bengal. The native states, of which Bastar is the largest, contain an area of 29,500 sq. m. and a pop. of 2,000,000. The bulk of the population is Hindu; there is a large number of Gonds

(aborigines), and a fair percentage of Mohammedans. Successive seasons of drought and famine have greatly retarded the development of the country. Pop. 9,250,000.

Centre, CANAL DU, canal (constructed 1781-93), dep. Saône-et-Loire, France, joining the Saône and Loire. It begins at Chalon-sur-Saône, and extends to Digoin, on the Loire, a distance of 75 m.

Centreboard, shifting or drop keel used in small boats and racing craft, especially in American yachts and cat-boats. The centreboard passes through a slot in the bottom of the boat, and swings on a pivot, so that it can be hauled into its case or let down at will. Its object is to prevent a boat making leeway, by offering great lateral resistance to the water. Lee boards are a primitive device for adding keel depth to a boat, but they are only adapted for vessels with wall sides.

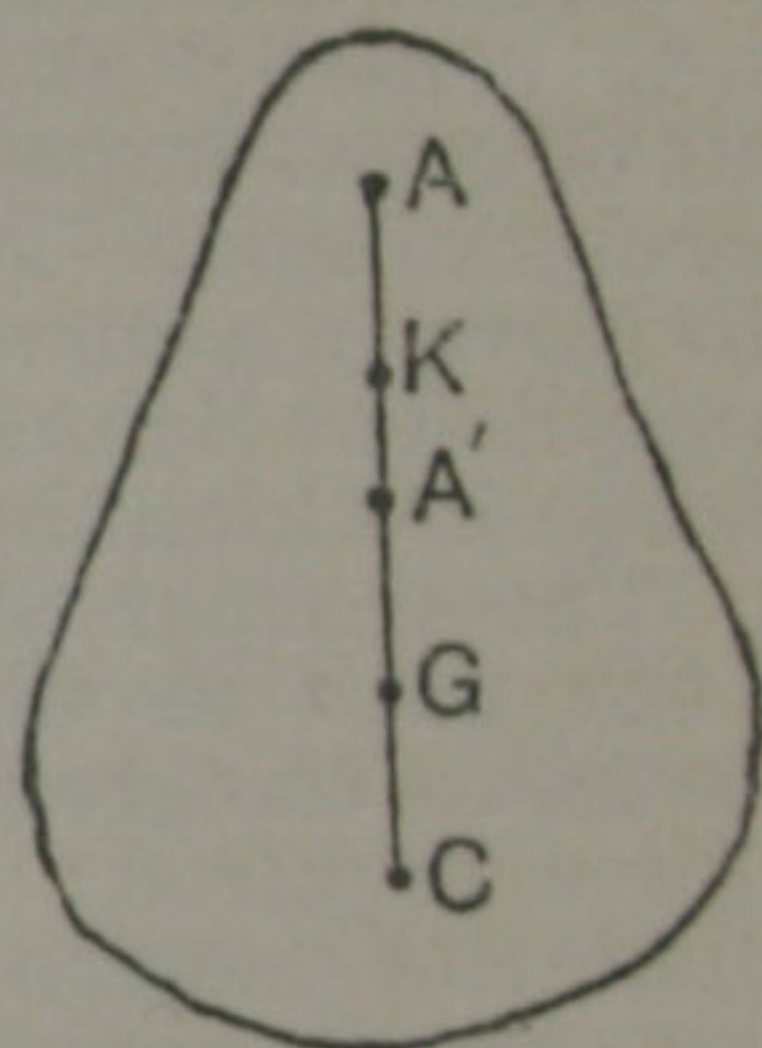
Centre of Gravity, also known as the centre of mass or centre of inertia, is that point in a body through which the weight of the body acts, and is such that if it is fixed the body will balance about it in any position. The conception is a simple one in the case of a body of invariable shape, but it may be extended by suitable definition to the case of any system of bodies under any conditions of mutual freedom or constraint. When the body is of a simple geometrical shape and of the same material throughout, there is no difficulty in calculating the position of the centre of gravity; and when it is of irregular shape, the position of the centre of gravity may be roughly estimated by suspending the body first by one point, and then by a second, and noting the position in the body of the vertical line through each point when it is the point of suspension: the meeting-point of these two lines is the centre of gravity. The centre of

gravity of a body or combination of bodies has certain important dynamical properties. If a body be struck by a blow in a direction through the centre of gravity, the body will move away without rotation; but if the direction of the blow is not through the centre of gravity, the body will move off with combined translation and rotation.

In the case of bodies of finite size near the earth's surface, the particles composing the body are acted on by parallel forces due to the earth's attraction; and the process of finding the centre of mass is identical with the process of finding the resultant of these parallel forces.

The centre of gravity of a body or system of bodies tends to come to the lowest possible position consistent with the conditions of constraint imposed upon it. For example, let several balls of various sizes and weights be placed in a bowl. After rolling about for a short time, they will come to rest in such a position that the centre of gravity of the whole will come to its lowest possible position. Any slight displacement of the system of balls will cause the centre of gravity to rise. Work must be done against the earth's attraction in effecting this displacement, and the work done is measured by the whole weight multiplied by the height through which the centre of gravity is raised. In other words, we increase the potential energy of the system. When the centre of gravity reaches its lowest possible position consistent with the conditions, the potential energy has its minimum value. This particular case is an example of a general principle, that a material system is in stable equilibrium when the potential energy has a minimum value—*i.e.* such a value that any displacement causes an increase.

Centre of Oscillation. Let a body with centre of mass G oscillate through small angles about a horizontal axis through any chosen point A . If A be taken very close to G , the rate of oscillation will be slow, because of the small leverage AG ; and if A be taken very far away, again the rate of oscillation will be slow. There will evidently be some particular position for A —say K —which will give the most rapid oscillation. For every position of A further removed from G than this



Centre of Oscillation.

critical position K there will be a second position A' , nearer to G , for which $GA' \cdot GA = GK^2$, and about which the body will oscillate in the same period. Not only so, but if we take C in AG produced such that $GC = GA'$, and set the body oscillating about an axis through C , exactly the same period of oscillation is obtained. This corresponding point C , situated in AG produced, is called the centre of oscillation relatively to A . If C is made the centre of suspension, A becomes the centre of oscillation. It can be shown that the body will oscillate in the same time as a simple pendulum of length AC .

Centre of Percussion. If a body be free to rotate about a given axis, and if it be struck in such a way that the blow does not produce pressure on the axis, then the direction of the blow

passes through a point in the plane containing the axis and the centre of mass, which is known as the centre of percussion. This explains the fact that if some object be struck by a stick held in the hand a jar will be felt, unless the blow be made at the centre of percussion of the stick with regard to the hand. The centre of percussion with respect to any axis is the same point as the centre of oscillation.

Centrifugal Force, a term in dynamics somewhat misleading in its etymological meaning (L. *centrum*, 'the centre;' *fugere*, 'to flee'), but of great importance in its proper significance. To compel a body to move in a curve a force must be applied at right angles to the direction in which the body is moving. The sharper the curvature of the path in which the body is to move, the greater must be the force required; and the more rapid the motion of the body, the greater must be the deflecting force to make the body move in a path of given curvature. A stone whirled round at the end of a string is pulled in constantly by the tension of the string. Now, according to Newton's third law of motion, which is simply a concise expression of experience, to every action there is an equal and opposite reaction. The taut string pulls upon the fixed end in the direction of the stone: in this case the reaction is particularly evident, and it is the recognition of the reaction which has suggested the idea of a centre-flying force. No doubt, before the foundations of dynamics were securely laid by Newton, the idea that a stone whirling round in a sling had an outward tendency was universally prevalent. As a matter of fact, the stone leaves the sling in the direction in which it was moving at the instant it got free. What we now understand by the term

centrifugal force is the reaction to the force which is required to make the moving body describe a curved path. This is sometimes called the centripetal force (L. *centrum*, 'the centre;' and *petere*, 'to seek'). Its measure is the same as that of the force required to cause this curvilinear motion—viz. the product of the square of the speed into the curvature of the path.

The principle of centrifugal force is used in many forms of mechanism, such as governors on steam-engines, rotary drying machines, cream separators, and centrifugal machines of various kinds. In drying machines, the wet material is placed in a rotating cylinder with perforated sides, through which the liquid escapes in virtue of centrifugal force. The action of the cream separator depends upon the fact that the cream is lighter, bulk for bulk, than the milk. Hence, for a given rate of rotation in a closed cylinder, the centrifugal tendency of the cream will be less. It will tend to accumulate in the centre, while the denser skim milk will be driven out to the sides.

Centripetal Force. See CENTRIFUGAL FORCE.

Centroid, of a system of points, a point such that its distance from any one of the three co-ordinate planes is equal to the average distance of all the points from that plane. Similarly the centroid of an area is a point such that if the whole area be considered to be concentrated there, its moment about two axes is equal to the moment of the elements of area in their actual positions. It coincides with the centre of mass of a thin uniform lamina corresponding to the area.

Centumviri, in ancient Rome a court of plebeian judges whose numbers varied from 100 to 180. They sat sometimes in sections (*consilia*), and sometimes as a

body under the presidency of the praetor. Their jurisdiction originally extended to questions of status, quiritian ownership and succession, but latterly was confined largely to questions of succession. A spear, the special symbol of quiritian ownership, was erected in front of their court. See Greenidge's *Legal Procedure in Cicero's Time* (1901).

Centurion, a Roman officer of foot. The three principal divisions of the legion, the *principes*, *velites*, and *triarii*, each elected twenty centurions, of whom two were appointed to each of the thirty companies of foot into which the legion was divided. The first centurion chosen was a member of the council of war.

Centuripe, also until recently **CENTORBI**, tn., Sicily, prov. Catania, stands on the steep ridge (2,305 ft.) which parts the Simeto from the Salso, 28 m. by rail N.W. of Catania. It was an important town of the Siculi, and was one of the most prosperous of Sicilian towns under the Romans, but was destroyed by the Emperor Frederick II. in 1233. It has sulphur mines. Pop. 11,000.

Century Magazine, **THE**, an American monthly magazine, has existed under its present name only since 1881. Ten years previously it had been founded by Dr. J. G. Holland, Roswell Smith, and Charles Scribner, under the title of *Scribner's Monthly Magazine*. On the death of Dr. Holland in 1881, Richard Watson Gilder succeeded to the editorship. The special feature of the magazine has been its cosmopolitan character. Among its more memorable contributions have been George Kennan's *Siberia and the Exile System*, an exposure of the Russian prison system; a series of articles by the Confederate and Federal leaders in the American civil war, entitled *The Century War Papers*; and *The Life of*

Lincoln, by his private secretaries, Nicolay and Hay. The *Century* has been a leader in the art of wood engraving and colour reproductions, and its illustrations have always been remarkable for their character and quality.

Ceorl. Originally the word meant a freeman who was not a thegn or of noble birth. The ceorl occupied an intermediate position between the thegn and the serf, and tended to be absorbed into one or other of these classes, generally into the lower. By the time of the Norman conquest the progress of Anglo-Saxon economy towards feudalism had practically, except in the eastern and Danish counties, caused the ceorl's disappearance, and the villein, whose position was also ambiguous, takes his place in the records. See Sir Walter Scott's *Ivanhoe*, and C. Kingsley's *Hereward the Wake*.

Ceos, now **ZEA** or **TZIA**, an island in the Ægean Sea, one of the Cyclades, noted for its fertility and excellent climate. Length 13 m., breadth 8 m., area about 40 sq. m. Produces silk, cotton, and fruits. It was the birthplace of the poets Simonides and Bacchylides. Pop. 5,000.

Cephalaspis, one of the most remarkable of the many extraordinary fishes of the Old Red Sandstone. In Scotland several species have long been known from the sandstones of Arbroath. It has been recently found also near Oban and in Caithness. It occurs in Wales, Spitzbergen, and the Lower Devonian rocks of Gaspé, Canada. Its appearance must have been most uncouth, as it had a large, somewhat flattened head covered by a bony shield semicircular in outline, with the outer corners prolonged backwards into spinous prominences. The eyes were almost in the centre of this shield, placed close together, and quite small.

The body was comparatively slender, and covered with elongated narrow scales in three rows on each side. The tail was of the heterocercal type, and just in front of it there was a small dorsal fin. The internal skeleton appears to have been cartilaginous, and has not been preserved. Its systematic position is still a matter of controversy. A model of this fish may now be seen in the Nat. Hist. Museum, London. See Dean's *Fishes, Living and Fossil* (1895); Ray Lankester's *Monograph on the Fishes of the Old Red Sandstone of Britain* (1868).

Cephalhæmatoma, a swelling caused by the effusion of blood under the pericranium of a newborn infant, due to pressure during birth. The cephalhæmatoma is felt as an elastic, fluctuating, non-pulsating swelling, with a sharp edge of bone circumscribing it. Usually it becomes absorbed, and therefore should not be interfered with unless suppuration occurs. In the rare cases where cephalhæmatoma occurs under the bone there is danger owing to pressure on the brain.

Cephalic Index. See ANTHROPOLOGY—*Craniometry*.

Cephalochorda, a name applied to a class of vertebrates which includes only *Amphioxus*, the lancelet, and its near allies. See AMPHIOXUS.

Cephalodiscus, a generic name given to a remarkable 'colonial' animal dredged by the *Challenger* expedition in the Magellan Strait. It was at first believed to be allied to the Polyzoa, but has since been compared to the curious worm *Balanoglossus*. The members of the colony are minute, and, as in *Balanoglossus*, have the body divided into three regions. Each possesses two gill-slits and a pair of diverticula from the gut, which have been compared to notochords. For many

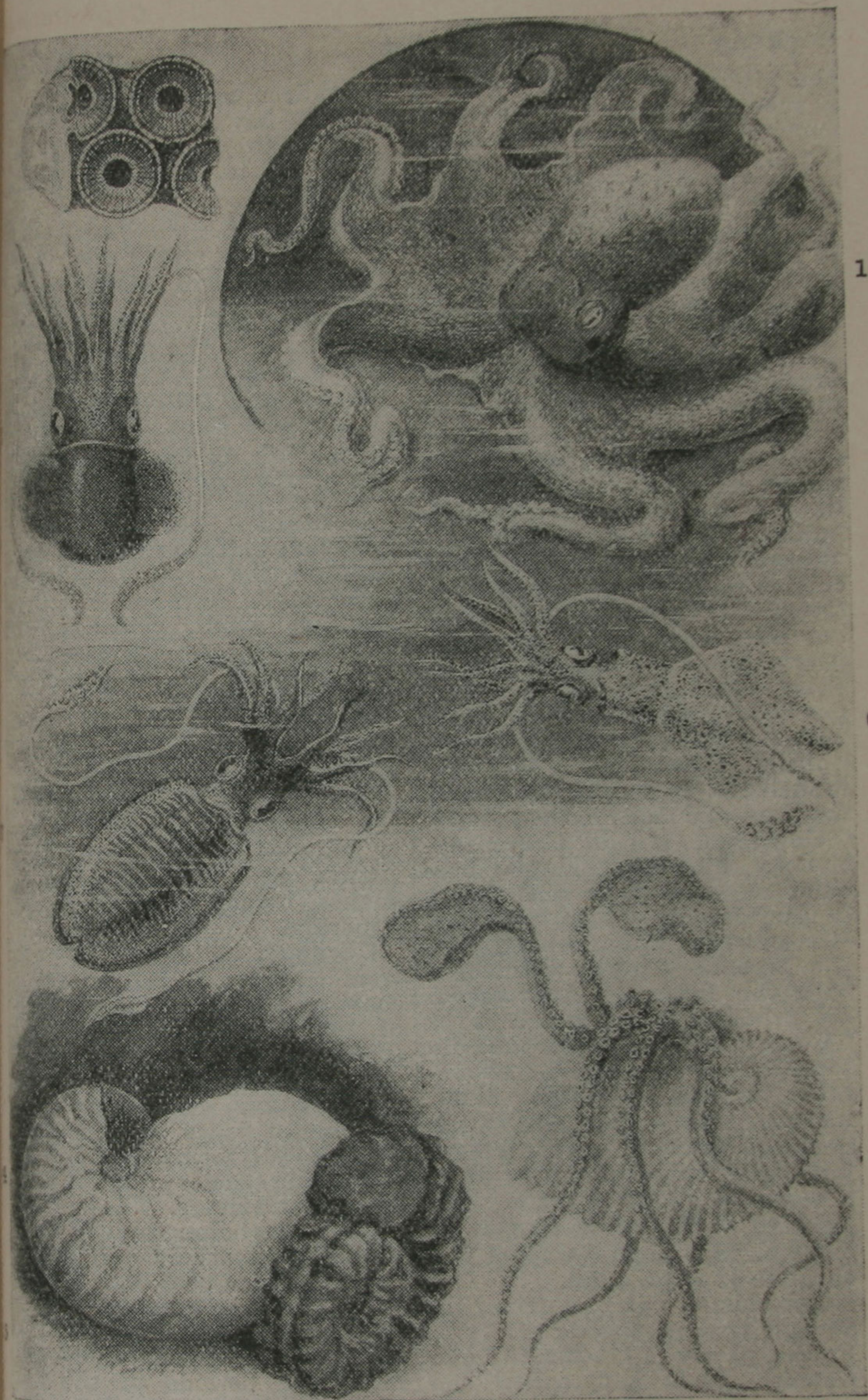
years the *Challenger* specimen was the only one known. The animal has, however, within recent years been found at the Cape of Good Hope and in other parts of the world.

Cephalodynia, a term applied to pains in the head, and in particular to those of a rheumatic nature.

Cephaloedium, Sicily. See CEFALU.

Cephalonia, KEPHALONIA, or KEPHALLENIA, the Samos (*Samē*) of the *Odyssey*, is the largest of the seven Ionian Isles lying to the w. of the mainland of Greece, opposite the entrance to the Gulf of Lepanto. Length 32 m., breadth from 5 m. to 12 m., area 300 sq. m. Its coast-line is deeply indented, and its surface is mountainous, the culminating point being Ainos (5,315 ft.), once crowned by a temple of Jupiter. The vine and currant are cultivated largely, and wine, wheat, olive oil, and fruit are exported. Pop. 80,000. Chief tn. Argostoli.

Cephalopoda, or CUTTLES, a class of Mollusca, including those forms in which the foot has grown up around the head and is split up into arms. Except in the pearly nautilus and the female argonaut, the living forms are without shells, but many retain in the 'cuttle-bone' what is believed to be the last remnant of the shell. In the extinct Ammonites the shell was large, and, as in the living nautilus, divided into chambers by septa. Its reduction in living cuttles is probably associated with increased rapidity of locomotion, the living forms being actively predaceous, swift-swimming animals entirely confined to the sea. Many cuttles creep about on the sea-bottom by means of their sucker-bearing arms, but all are capable of jerking themselves swiftly backwards by means of



Cephalopods or Cuttles.

1. *Octopus vulgaris*: A, suckers. 2. *Rossia macrosoma*. 3. *Sepia officinalis*. 4. *Nautilus pompilius*. 5. *Ammonites obtusus*. 6. *Loligo vulgaris*. 7. *Argonauta Argo*.

the siphon or funnel. This is a tube (incomplete in Nautilus) communicating with the mantle-cavity, by means of which water can be forcibly expelled from the cavity, the result being to drive the animal backwards. Except in Nautilus, there is an ink-bag, the contents of which the animals discharge into the surrounding water when alarmed, thus producing a cloud, under cover of which they may escape. Within the mantle-cavity lie the gills, two in number in all, save the nautilus, which has four. The mouth contains a strong, parrot-like beak, as well as a tooth-ribbon (radula). The nervous system is unusually well developed. Living cuttles may be classified as follows:—(1.) Dibranchiata, including all living forms, save the pearly nautilus; divided into (a) those with eight arms, like Octopus (Octopoda), and (b) those with ten arms, like Sepia, Loligo, Spirula (Decapoda). (2.) Tetrabranchiata, including the pearly nautilus, and many extinct forms.

Cepheus. (1.) In Greek mythology, king of Ethiopia, husband of Cassiopeia, and father of Andromeda. (2.) An ancient Greek constellation, belonging to the legendary group connected with the fable of Andromeda. Its principal star, which is of 2.6 magnitude, will mark the pole some 5,600 years hence. It contains several variable stars. μ Cephei, the reddest star in the northern heavens, varies irregularly from magnitude 4 to $5\frac{1}{2}$ in a period of about $1\frac{1}{4}$ years. The light of δ Cephei fluctuates in 5 d. 8 h. 48 m., and ν Cephei is a variable of Algol type.

Cephissus. (1.) A river in ancient Greece, flowing partly in Phocis, partly in Bœotia, to Lake Copais. It is now called the Mavronero. (2.) The largest river (modern name, Sarantaporos) in Attica, rising on the w. of Mt.

Pentelicon, and entering the sea near the bay of Phaleron.

Ceprano, comm., Rome prov., Italy, 16 m. N.W. of Cassino. Pop. 6,000.

Ceram, or SIRANG, an isl. of the Dutch E. Indies, one of the Moluccas; lies between New Guinea and Celebes. It is mountainous in the w. (8,000 ft.), with low plains in the s., and is connected by a very narrow isthmus with a smaller peninsula on the w. It produces sago, cloves, coconuts, rice, cacao, and timber. Area, about 7,000 sq. m. Pop. estimated at 70,000 to 100,000.

Ceramics. See POTTERY.

Cerargyrite, a species of silver chloride, the Greek form of the older name 'horn silver.' Crystals are small, cube-like, and soft ($H=2\frac{1}{2}$), and are easily cut. It is mined in Mexico, Chile, and New South Wales.

Cerastes, the genus to which the horned viper (*C. cornutus*) belongs. It occurs in N.E. Africa, extending into Palestine and Arabia. Another species (*C. vipera*) is believed to have been Cleopatra's 'asp.' Both are poisonous snakes, belonging to the family Viperidæ.

Cerasus, a colony founded from Sinope; it lay on the N. coast of Pontus, on the S. shore of the Black Sea. From this place the cherry, as well as its name, was introduced into Europe.

Ceratodus, a name applied to a genus of fishes which includes many fossil forms, and one (or two) living species (mud-fish) from Queensland rivers. The members of the genus belong to the Dipnoi, or double-breathers, and the living Ceratodus uses both its gills and its lung, or swim-bladder, as breathing organs. The latter is apparently functional chiefly during those periods of the year when the water becomes foul owing to decaying vegetable matter, or is laden with sand. The

body in *Ceratodus* is elongated and compressed, with a continuous vertical fin, and the paired fins are paddle-shaped. There are no external gills. The animal may reach a length of six feet.

Ceraunii, the Ceraunian Mountains. See ACROCERAUNIAN.

Cerberus, the hound that guarded the entrance to Hades, was (according to Hesiod) the offspring of Typhoeus and Echidna. He is usually represented with three heads, but sometimes with fifty or even a hundred. The story of how Hercules mastered him and brought him up to earth is told by Homer, Hesiod, and Virgil.

Cercamon, Provençal troubadour, born at the beginning of the 12th century, a native of Gascony. Three of his love songs remain, and one *tenso*, the *pastorelas* mentioned in the biography being lost.

Cercaria, a stage in the life-history of the liver-fluke (*Distomum*). The cercaria is really the young fluke. It is furnished with a tail, by means of which it wriggles out of the body of its host, the water-snail, swims through the water, and becomes encysted on a blade of grass, losing the tail in the process. If eaten by a sheep, it becomes an adult liver-fluke. See LIVER-FLUKE.

Cercopithecidae, a family of monkeys, including the Old World forms which have a narrow internarial septum. The teeth are the same in number as those of the anthropoid apes and man, the tail is never prehensile, cheek pouches are often present, and there are ischial callosities. See MONKEY.

Cercopithecus, a genus of African monkeys characterized by their slender build, long tails, and short muzzles. Examples are the green monkey (*C. callitrichus*), the Pluto monkey (*C. Pluto*), the Diana monkey (*C. Diana*).

Cercyon, son of Poseidon, or Hephæstos, and king of Eleusis;

a cruel tyrant, who murdered all strangers by wrestling with them, until Theseus defeated and slew him.

Cerda, JUAN LUIS DE (1560-1643), Spanish man of letters and theologian, born and educated at Toledo, where he spent most of his life, entering the Jesuit order, and becoming professor of theology and belles-lettres. He is best known by his graceful commentaries on the *Bucolics* and *Georgics* of Virgil (1608), and on the *Aeneid* (1612). He also edited the works of Tertullian (1624).

Cerdic (d. 534?), king of the West Saxons, the ancestor of all our kings except Canute, Hardicanute, the two Harolds, and William the Conqueror. He founded one of the greater Teutonic kingdoms in Britain, is said to have been ninth in descent from Woden, and to have landed probably in Hampshire (495). After allying himself with Aese and Aella (Ella) he inflicted severe defeats on the Britons, and in 519, with Cymric, he established the kingdom of the West Saxons. He conquered the Isle of Wight in 530. See *Anglo-Saxon Chronicle*, and Green's *The Making of England* (new ed. 1900).

Cereals include wheat, barley, oats, and rye, to which rice might be added. As generally used, the term is a synonym for white-straw crops, and is derived from the name of the Greek goddess Ceres, mother of Persephone. All the cereals are true grasses, which have been under cultivation from prehistoric times. Wheat and barley have no wild prototypes, and their origin cannot be traced beyond their cultivated forms. The same is true of the other cereals, although scarcely so of oats, as Buckman succeeded in raising a cultivated variety from the wild oat (*Avena fatua*). Wheat, barley, and rye appear to have been introduced into

Europe from Asia, and may have been brought by Aryan invaders at a very early period. Oats are not mentioned among the grain crops of India, and appear to be of Occidental origin; neither are they alluded to in the Bible. The most important cereal is undoubtedly wheat, on account of its peculiar value as a food, in which it is rivalled only by milk. Wheat contains gluten, which supplies the albuminoid or flesh-forming element; carbohydrates (starch and fat), which furnish the respiratory, heat, and force-giving elements; and phosphates and other earthy materials required in the formation of bone. The ratio of albuminoids to amyloids is 1:5.6, which is the best possible for the maintenance of the human body in perfect health. Barley, oats, and rye are all highly nutritious foods; but in the higher standard of living which now prevails, wheaten bread ranks first, while oatmeal is subsidiary. Barley is most widely known in the condition of malt.

Cerebellum. See BRAIN.

Cerebral Hæmorrhage is caused by rupture of a blood-vessel in the substance of the brain. See BRAIN; PARALYSIS.

Cerebral Softening, a disease of the brain characterized by mental, motor, and sensory symptoms which vary according to the seat of the lesion. It may be acute or chronic. The former is usually the result of disease of the blood-vessels; occasionally it is the sequel of inflammation. The term chronic softening is applied to a group of symptoms of wide range indicative of failure of mental power. It is characterized by the slow onset of mental dullness, defective perception, drowsiness, loss of memory for recent events, often slight wandering; emotional manifestations are easily excited. The clinical picture may simulate that of

general paralysis. Physical power deteriorates. The most common causes are thrombosis from vascular disease, recurrent spasm of diseased blood-vessels, miliary aneurism in the involved areas, and as a sequel of embolism in chronic valvular disease of the heart. The predisposing causes are chronic alcoholism, syphilis, and chronic Bright's disease. Pathologically, the condition may take the form of so-called red softening, when there is a considerable degree of extravasation of blood, chiefly in the vascular cortex of the brain; or white softening, which chiefly occurs in the less vascular white substance of the cerebral hemispheres. If the condition be a localized one, and the patient survive, a cyst develops, and may persist for years, giving rise to comparatively few symptoms, more especially if it occurs in what are spoken of as the silent areas of the brain (areas with no well defined function so far as is known). Treatment must depend to a great extent on the cause. Thus, if dependant on embolism, special attention must be directed to the treatment of the cardiac condition. More commonly it depends on a chronic degeneration of the cerebral vessels, and treatment must be directed to this. Treatment must be conducted on the following lines. The patient should have a complete rest from physical and mental work of all kinds for about three months at least. The bowels must be very carefully regulated; if need be a morning saline should be given daily. If the blood pressure is increased, this should be controlled by extra free purgation, the administration of baths, which must be carefully regulated, and giving internally large doses of iodide of potassium. The diet should be light and nutritious;

stimulating articles of food, such as rich meats, wines, liquors, condiments, etc., should be withheld. Much can be done to arrest the progress of the disease by treatment along these lines. If recognized and appropriately treated in its early stages, the condition, which is by no means common, gives rise to a sad picture of mental enfeeblement. An unfortunate feature of some of these cases is that the rest of the organs and tissues are comparatively healthy, the weakness being very largely confined to the blood-vessels of the brain. Such cases gravitate to an asylum and may live long.

Cerebro-spinal Fluid, lymph lying between the coverings of the brain and spinal cord—the dura mater being the outer, the pia mater the inner covering. Between the two lies a third membrane, the arachnoid, a delicate, web-like tissue. The cerebro-spinal fluid lies between the arachnoid and the pia mater. Some serous fluid, less in quantity than the cerebro-spinal, lies between the dura mater and the arachnoid. The cerebro-spinal fluid has free passage all over the brain and spinal cord, between the membranes, and probably acts as a buffer or water-bed, to guard the brain and cord from the effects of concussion. It consists mostly of water, is slightly saline, varies in quantity, is most abundant in old people, and is rapidly restored if drained off. It is over-abundant in the morbid condition known as spina bifida, where it forms a tumour. See SPINAL PUNCTURE.

Cerebro-spinal Meningitis. See MENINGITIS.

Cerebrum. See BRAIN.

Cereopsis ('wax-face'), the genus of birds to which belongs the Cape Barren or New Holland goose of Australia and Tasmania. It is a grayish-brown bird, with a

large yellow cere and black toes and beak.

Ceres. See DEMETER.

Ceres, the first-known asteroid, was named after the tutelary goddess of Sicily by Giuseppe Piazzi, who discovered it on Jan. 1, 1801. The largest but not the brightest member of the group, its diameter measures 477 m. (Barnard), while its albedo of 0.18 implies a surface reflective of no more than 18 per cent. of the rays striking it. Its orbit has a mean radius of 257 million miles, and is traversed in a period of 4.6 years. It is nearly five times more eccentric than that of the earth, and is inclined $10\frac{1}{2}^{\circ}$ to the ecliptic.

Ceres, par. and vil., Fifeshire, Scotland, 3 m. S.E. of Cupar. Pop. 1,500.

Ceres, dist. and tn., Cape of Good Hope, near the Hex R. valley, 75 m. N.E. of Cape Town; a health resort, well supplied with water. Pop. of dist. 7,000; of tn. 1,300.

Cereus is a genus of Cacti, including some of the largest members of the order; several of the species grow, indeed, to a great height. The best worth cultivating are the pink-flowered *C. fimbriatus*, about twenty feet in height; *C. flagelliformis*, with creeping stems and pink flowers; and the scarlet *C. speciosissimus*, which grows to about six feet high. This is the so-called torch thistle. Of the night-blooming varieties, the most notable are the climbing *C. grandiflorus*, which produces its lovely white, brown, and yellow flowers through the summer months. These, which reach about eight inches in diameter, begin to open at about eight o'clock in the evening, and begin to close about two or three o'clock in the morning. During the time that they are expanded the flowers give out a pleasant fragrance of great penetration. There are also the larger-

flowered but less powerfully-scented *C. nycticalus*, and the red, orange, and white *C. Macdonaldia*. The *Cereuses* are not difficult to grow in a warm greenhouse, if only they receive plenty of air and light. In summer plenty of water should be given them, but in winter it should be given only in small quantities.

Cerignola, tn. and episc. see, prov. Foggia, Italy, 22 m. S.E. of Foggia. Near by the French, under the Duc de Nemours, were defeated by the Spaniards, commanded by Gonsalvo da Cordova, in 1503. Pop. (comm.) 34,000.

Cerigo (anc. *Cythera*), isl., Greece, is the most southerly of the Ionian Is. It is very mountainous and little wooded. The principal crops are wheat, vines, olives, and cotton, and the pasturage is exceedingly good. Large numbers of sheep and goats are exported to Greece. The chief town is Capsali, at the s. end. The island was colonized by the Phœnicians, and was celebrated for the worship of Venus (*Aphrodite*), who was said to have risen out of the sea near this island. Area, 116 sq. m. Pop. 15,000.

Cerithium, a genus of gastropod molluscs. The shell is turreted and many-whorled, with a small aperture, and anterior and posterior canals, the latter being the less distinct of the two. The numerous species are widely distributed, but the most typical are tropical.

Cerium (Ce, 140.25) is an element found in a few rare minerals—*e.g.* cerite and orthite—along with similar elements, and silica. It is prepared by the electrolysis of its chloride as a steel-gray lustrous metal, but has its chief application in its oxide, which is an important ingredient of incandescent gas mantles. As its oxalate, cerium is used to some extent medicinally.

Cernusco sul Naviglio, comm., Italy, 6 m. N.E. of Milan. Pop. 6,500.

Cerography, the art of painting in wax. See ENCAUSTIC.

Cerreto, tn. and episc. see, Italy, in Campania, prov. of and 16 m. N.W. of Benevento; has a fine cathedral, and produces wine and cloth. Pop. 5,600.

Cerro de Pasco, mining tn., cap. dep. Yunin, in the highlands of Peru, 120 m. N.E. of Callao. It has remarkably rich mines of silver and copper, and there are large smelting works. Salt is obtained, and coal at a distance of a few miles. There is railway connection with Lima by Oroya. Alt. 14,270 ft. Pop. about 10,000.

Cerro Gordo, mountain pass in Mexico, on the road leading from Vera Cruz to Mexico City, and about 60 m. N.W. of the former. Here, in 1847, the Mexicans under Santa Anna were defeated by the Americans under General Scott.

Cerro Largo, dep. in N.E. of Uruguay, bounded on the N.W. by the Rio Negro, and on the E. by Brazil, covered with well-watered grassy downs, on which large herds of cattle are grazed. Its area is 5,753 sq. m., and pop. 45,000. The capital is Cerro Largo or Melo; pop. 8,000.

Certaldo, vil., Italy, in Tuscany, prov. of and 20 m. S.W. of Florence; is the place where Boccaccio (1313-75) lived and died. Pop. (comm.) 9,000.

Certhiidae, the family of birds to which the creepers belong.

Certification, in Scots law means the express or implied penalty to be inflicted upon a defender if he neither complies with a summons nor shows a reason why he is not bound in law to do so.

Certification of Births. See INFANTILE MORTALITY.

Certiorari, in England, a writ out of the High Court directed to some other tribunal, such as a

court of assize or a county court, requiring it to send certain proceedings to the High Court, to be dealt with either there or in any other court which may be selected. In criminal cases it may be claimed by the crown on the application of the attorney-general as a matter of right; and it may be claimed in a divisional court by private persons who can show that they are not likely to obtain a fair trial in the place where the case would otherwise be tried, or that legal questions of exceptional difficulty are involved. In civil cases it may be obtained on application to a judge in chambers 'whenever it is desirable.' But several statutes specially enact that proceedings under them shall not be removed to the High Court by writ of *certiorari*.

Certosa di Pavia, a Carthusian monastery of Italy, 5 m. N. of Pavia, was begun in 1396 by Giovanni Galeazzo Visconti, Duke of Milan. The church has a profusely-decorated façade (1473 onwards), one of the richest examples of Renaissance work in Italy, and inside is adorned with numerous fine pieces of sculpture, including the tombs of the founder, of Lodovico Moro and of his wife, Beatrice d'Este, as well as paintings by Borgognone, Solari, Luini, and others. A liqueur is manufactured in the monastery. The monastery was dissolved in 1866, and in 1891 was proclaimed a national monument of Italy. Close by, Francis I. of France was defeated and taken prisoner by the imperialists in 1525. See Beltrami's *La Certosa di Pavia* (1891).

Cerumen (Lat. *cera*, 'wax'), the yellow waxy substance secreted by certain glands in the outer ear, in the passage leading to the drum or tympanum. Its function is to catch solid foreign particles, and thus to guard the tympanum; but in cases of inflammation of the passage it is secreted in excess,

and may then cause deafness by obstruction. It can be removed by dropping a little warm oil into the ear for two or three nights, to soften the wax, and by then syringing the ear with warm water.

Cervantes-Saavedra, MIGUEL DE (1547-1616), Spanish novelist, poet, and dramatist, born at Alcalá de Henares. He was educated under the famous humanist, Juan Lopez de Hoyos; but on the coming of Cardinal Giulio Acquaviva to Madrid (1568) to condole with Philip II. on the loss of his son Don Carlos, Cervantes was appointed to an office in the nuncio's household, and accompanied his master to Rome. Leaving this service (1570), for the next five years he lived the life of a soldier. In the naval battle of Lepanto (1571), he had his left hand permanently injured, gaining thus his glorious nickname of *el manco de Lepanto*. He still continued fighting against the Turks until 1575, when he sailed from Naples to Spain; but he was captured at sea by pirates, and carried, with his brother Rodrigo, as a slave to Algiers. He remained in captivity for five years. His one solace in his slavery had been verse, and on his return to Madrid (1582) from the campaign for the conquest of Portugal, in which he served under the Duke of Alva, he settled down to a career of letters. A little later he obtained a humble position as naval storekeeper, and lived for a considerable time in Seville, busy provisioning the ships destined for the Invincible Armada. In 1594 he was employed on the commission to enforce payment of overdue taxes in the province of Granada. A bill drawn by him in 1595 on account of his office was protested in Seville, and after a long and costly lawsuit he was cast into prison for the debt (1597). Released on bail, he remained in Seville as

a commission agent until 1603, when the lawsuit being transferred to Valladolid, Cervantes had to go thither. Here a further misfortune befell him. His house in the Calle del Rastro was near the place where a noble, Gaspar de Ezpeleta, was mortally wounded by some unknown person on the night of June 27, 1605. Cervantes, attracted by the cries for aid, was found supporting the dying man when the watch arrived. He and his family were thrown into prison on suspicion, but after some delay they were declared innocent and released. The court being transferred to Madrid (1606), Cervantes again changed his residence, to end the lawsuit that had embittered his life. Here he lived for the next ten years in a dire struggle with poverty, until death released him in 1616. He was buried in the church of the Trinitarian nuns in Calle Cantaranas, afterwards the Calle de Lope de Vega.

Several of Cervantes's lyrical poems survive, among which are some sonnets, and a versified letter to the secretary of state, Vasquez, written during the poet's slavery in Algiers. His best-known and his own favourite poetical work is the *Galatea*, a pastoral narrative tale, first published in 1585. Although the prose of Cervantes has overshadowed his poetry, of which he was so proud, there are verses of great beauty in the *Galatea*, and in *El Viage al Parnaso*. There is also a pretty romance from his pen called *Los Celos*, and a fine satirical sonnet on the catafalque of Philip II. at Seville. As a dramatist Cervantes worked hard, but not successfully, though he himself thought highly of his plays. In the *Adjunto al Parnaso* he enumerates those of his dramas which he considers the best—*El Trato de Argel*, *La Numancia*, *La Gran Turquesca*, *La Batalla*

Naval, *La Gerusalemme*, *La Amaranta*, *El Bosque Amoroso*, *La Unica*, *La Bizarra Arsinda*, and *La Confusa*, of which the last named is perhaps the finest.

It is, however, as a novelist that Cervantes has become immortal. Successive writers have endeavoured to discover in *Don Quixote* a great political satire; but the truth of Cervantes's own assurance is now generally admitted, that his sole desire was to write an amusing book to give the *coup de grâce* to the absurd books of chivalry imitating Amadis, that had done so much to pervert Spanish character. The book must have been begun later than 1591, but the suggestion that he wrote it in a jail in Argamasilla de Alba rests alone upon tradition and a conjectural interpretation of a remark made by Cervantes in the prologue. In any case, it was famous in manuscript for some time before a licence was granted (Sept. 26, 1604) to print the first part. The book seems to have been first sold at the beginning of the year 1605. Lope de Vega wrote slightly of it shortly before; but the public cast themselves upon it with avidity, five (or six if there really was a Barcelona edition of 1605) editions appearing before the end of 1605. In 1614 a spurious second part was published, the work of an unknown author assuming the name of Alonso Fernandez de Avellaneda—an amusing book, but inferior to the work of Cervantes. The latter, stung to the quick by this piracy, hurried the conclusion of his own second part, in which he bitterly attacks Avellaneda. The genuine second part, with the exception of some of the concluding chapters, is, if anything, superior to the first.

In 1613 Cervantes issued his twelve *Novelas Exemplares* (Eng. trans. by MacColl, 1902, etc.)—short stories written at consider-

able intervals. They abound in wit and vivacity, rivalling even *Don Quixote* itself, and have maintained their popularity to the present day. Cervantes's last work was *Los Trabajos de Persiles y Sigismunda*, written in 1616, the dedication to the Count de Lemos being signed four days before the author's death (Apr. 23). In May 1905 the tercentenary of the publication of *Don Quixote* was celebrated at Madrid.

The best bibliographical references in English to *Don Quixote* will be found in the introduction, by Mr. J. Fitzmaurice Kelly, to Mr. Ormsby's translation of the work (1901). A good Spanish bibliography of the whole of Cervantes's writings is that by Leopoldo Rius y Llosellas (1895). The best Spanish biography of Cervantes is that by Fernandez de Navarrete (1819). The most scholarly edition of *Don Quixote* in Spanish has recently been published in London by Mr. J. Fitzmaurice Kelly (1892); the biography (1892) by the same English scholar is also excellent, as are Mr. H. E. Watt's *Life of Cervantes* (1894), and A. F. Calvert's *Life* (1905).

Cervera y Topete, PASCUAL (1833-1909), Spanish admiral-in-chief during the Spanish-American war of 1898, was born at Jerez, prov. of Cadiz. On the outbreak of the war he sailed with secret orders to defend Spanish interests in Cuba. Reaching Santiago on May 19, he was there blockaded by the American admiral Sampson. The Americans failed to block the harbour by sinking the *Merrimac*; and on July 3, the Spanish fleet, compelled by public opinion in Spain, though against Cervera's better judgment, attempted an escape; but the weightier armament of the Americans effected the destruction or capture of every Spanish ship, the death of one-third of their men, and the surren-

der of Cervera as prisoner of war. At the close of the war he returned to Spain, and was honourably acquitted by a formal court-martial.

Cervetri, or CERVETERE, vil., prov. Rome, Italy, 20 m. W.N.W. of Rome, occupies a corner inside the walls of the ancient Etruscan city of Cære, and is famous for its Etruscan graves, many of them hewn in the solid rock. The ancient city carried on an extensive commerce, and flourished down to the 13th century.

Cervidæ, the deer family; one of the families included in the Pecora, or true ruminants. The family characteristics are that antlers are frequently, though not invariably, present in the male; that the upper canines, absent in sheep and ox, are here present, and may be large in the male; that at least the first molar tooth in each jaw retains the primitive short-crowned (brachydont) condition; and that the lateral toes, the second and the fourth, are almost always present on both feet. In other respects deer resemble sheep and oxen, save in some minor points. The family Cervidæ is divided into two sub-families, the one including only the aberrant musk-deer (*Moschus*), the other the true deer, widely distributed over the globe, but absent from Africa and Australia.

Cervia, comm., Emilia, Italy, prov. of and 15 m. S.S.E. of Ravenna, on the Adriatic; has a fine cathedral. Pop. 8,000.

Cervin, MONT. See MATTERHORN.

Cervole, ARNAUD DE (d. 1366), also called ARCHPRIEST (Fr. *Archiprêtre*), French leader of mercenary troops, born in Périgord. In 1352 he entered the service of King John and fought against the English, distinguishing himself at Poitiers (1356). In the following year (1357) he invaded Pro-

vence, plundered it, and forced Pope Innocent VI. of Avignon to pay him a large sum. In 1359 he was employed by the king of France, Charles V., to disperse other bands, the *Tard-Venus*. Later he invaded Burgundy and Lorraine; and in 1365 he concentrated his men on the Alsatian frontier, intending to lead them against the Turks. But they committed so many excesses that the emperor of Germany, Charles IV., would not allow them to pass through his territories. Next year, when preparing a fresh expedition against the Turks, Cervole was killed by one of his lieutenants. See Chérest's *L'Archiprêtre* (1879).

Cesalpini. See CÆSALPINUS, ANDREAS.

Cesarewitch. See TSAR; also RACE MEETINGS.

Cesari, GIUSEPPE (1568-1640), called IL CAVALIERE D'ARPINO, enjoyed a great reputation as a painter at Rome; he was the rival of Carracci and Caravaggio. His paintings, though pleasing, lack accuracy and perspective. His best works are the death of Cicero, and a Roman battle scene.

Cesarini, GIULIANO (1389-1444), Italian diplomatist, known also as CARDINAL GIULIANO. He taught law at Padua, and won the esteem of Pope Martin V., who made him a cardinal in 1426. He was sent as papal legate to Germany in 1430, to prepare the crusade against the Hussites, and took part in the battle at Taus (1431). In 1431 he presided at the Council of Basel, but retired in 1438, as his proposals were not accepted by the council. Sent as papal legate to Ladislaus III., king of Poland and Hungary, he induced the king, who had already vanquished the Turks and concluded with them the treaty of Szegedin (July 1444), to break his word and renew hostilities. The result was the dis-

astrous defeat at Varna (1444), where both the king and Cesarini lost their lives.

Cesarotti, MELCHIORE (1730-1808), Italian writer, born at Padua, where he was appointed professor of Greek and Hebrew (1768), a position he held for the remainder of his life. Of his original works the most important is the *Saggio sulla Filosofia delle Lingue* (1785), in which he advocates a free development of language, in opposition to the tenets of the Della Cruscan Academy at Florence. He also wrote on the *Filosofia del Gusto*. As a translator, he attempted a prose version of the *Iliad*, followed by a long verse paraphrase, in 10 vols.; *La Morte d'Ettore*; and also rendered some of Voltaire's plays and Gray's *Elegy* (1772). But his great achievement is the translation, in *versi sciolti*, of Macpherson's *Ossian* (1763; completer ed. 1772), which aroused extraordinary interest in Italy, and exercised a great influence both there and in other countries, his introductory dissertation being translated into English and edited with notes by J. M'Arthur in 1806. See Lives by Barbieri (in the *Opere*, in 40 vols. 1800-13), by Maggi (Introd. to the *Opere Scelte*, 1820). See, too, Mazzoni's preface to the *Prose edite ed inedite* (1882).

Cesena (anc. *Casena*), tn. and episc. see, prov. Forli, Italy, 17 m. W. by N. of Rimini; has a cathedral, a citadel, and the valuable Malatesta library. The Popes Pius VI. (1717) and Pius VII. (1742) were born here. The place is famous for its wine and its hemp, and the people spin silk and mine sulphur. Here the French defeated the Austrians in 1815. Its history is alluded to by Dante (*Inferno*, xxvii. 52). Pop. 42,000.

Cesenatico, comm. and seapt., Emilia, Italy, on the Adriatic, in Forli prov., 14 m.

W. of Rimini. Bombarded by British fleet in 1800. Pop. 500.

Cesnola, LUIGI PALMA DI, COUNT (1832-1904), the explorer of Cyprus, was born at Rivarolo, near Turin. He served in the war with Austria (1848), in the Crimean war, and during the civil war in America held a command in the northern army. He was nominated American consul for Cyprus (1865), and began his series of interesting excavations at Curium, Larnaca, and Dali. Most of his collections were purchased for the Museum of Art in New York, of which he was appointed director (1878). He published in 1878 *Cyprus, its Ancient Cities, Tombs, and Temples*, and in 1882 a *Description of the Metropolitan Museum of Art*. Subsequently he issued (1885) his *Atlas of the Cesnola Collection*.

Cespedes, PABLO DE (1536-1608), Spanish painter, architect, and poet, born at Cordova; in early life was distinguished as a scientist and linguist. Later on he devoted himself to sculpture and painting under Michael Angelo. His principal picture is the *Last Supper*, in Cordova Cathedral, of which he was appointed a prebendary (1577). See Tubino's *P. de Cespedes* (1868).

Cessio Bonorum, in Scots law, a process whereby debtors who made a full disclosure and surrender of all their property obtained liberation from imprisonment and protection against it in respect of all existing debts, which, however, were not thereby discharged. Since the practical abolition of imprisonment for debt by the Debtors Act, 1880, the process of *cessio bonorum* takes the place of sequestration in small bankruptcies, in order to reduce expense and lessen delays.

Cession (Lat. *cessio*, 'surrender'), the formal transfer of

territory from one state to another by the act of the state making the cession. Some deference is usually paid to the wishes of the inhabitants of the ceded territory, but it is not a recognized rule of international law that the transfer must be with the consent of the people. Cessions are made by way of sale, exchange, or gift, or are exacted by a conqueror as a condition of peace. The civil and political rights of the inhabitants of the ceded territory are usually determined by the treaty of cession. In the absence of express stipulations, the inhabitants change their allegiance and acquire a share in all the rights of their new state. At the same time they carry with them all their local obligations, local rights, and property. The new state is liable for the local debts of the ceded territory and those secured upon special revenues. There are instances where the new state has charged itself with a part of the general debt. Most treaties of cession contain a clause dealing with the question of debts. See CONQUEST; also Hall's and Wheaton's *International Law*.

Cestoda. See TAPEWORMS.

Cestracion, a genus of sharks of a somewhat primitive type. The four living species are confined to the Pacific Ocean; none exceed five feet in length.

Cestui que Trust. See TRUST.

Cestum Veneris, or VENUS'S GIRDLE, a beautiful marine organism belonging to the Ctenophora, remarkable for its elongated, ribbon-like form.

Cestus. (1.) Thongs of leather worn by Greek and Roman boxers on their hands; not, like modern boxing-gloves, to soften their blows, but to make them more severe. They were often weighted with lead and iron. (2.) The magic girdle of Aphrodite (Venus), which

caused its wearer to inspire love in all beholders. See *Iliad*, bk. xiv.

Cetacea, an order of mammals, which, in whales, dolphins, porpoises, and their allies, includes animals often described in popular language as fish. From fish they differ in their warm blood, four-chambered heart, air-breathing habit, and many other characteristics; but there is at least this justification for the common error, that like fish they are very perfectly adapted for life in water. The body is spindle-shaped, the head is always large, and the tapering tail is furnished with powerful 'flukes,' which are the main agents of propulsion of the body. Hind limbs are entirely absent, and the fore limbs are converted into elongated paddles, without external traces of nails or fingers. Hairs are present only in the young, or are few in number and confined to the mouth region; the hairy coat is functionally replaced by the thick layer of blubber beneath the skin, which serves to retain the heat of the body. The nostrils open near the summit of the head in a single and double blowhole, the eye is small, there is no external ear, and the auditory aperture is minute. Of the many peculiarities of the skeleton, we can only mention that the bones are spongy and filled with oil, the neck short and stiff, the posterior portion of the vertebral column very freely movable, the skull greatly modified in association with the shifting backwards and upwards of the nostrils, while clavicles are absent, and the fore limbs curiously modified. Teeth may be present or absent, and in the latter case are functionally replaced by the horny plates or baleen of the whalebone whales. Though the stomach is complex, the animals are all carnivorous, the majority feeding on fish,

cuttle-fish, crustaceans, or small marine organisms of various kinds. The cetaceans are very widely distributed—the majority in the sea, a few in the rivers of Asia and S. America. Their whole life is passed in the water and they are absolutely helpless on land. In the sea the young are brought forth and reared, special structural adaptations making the process of lactation possible under water. In spite of this aquatic habit, whales are as purely air-breathers as the horse or the cow, and must of necessity rise periodically to the surface to breathe, an operation which is facilitated by the horizontally-placed tail-flukes. The majority are gregarious, swimming in herds or schools; and the females exhibit great devotion to their young, of which only one is usually produced at a birth.

Living Cetacea are divided into two sharply-contrasted sets—the toothed whales, or Odontoceti, and the whalebone whales, or Mysticoceti; but the presence or absence of teeth, the characteristic upon which the division is based, is only one of a number of differences between the two, differences especially marked in the structure of the skeleton. For toothed whales see articles CACHALOT, DOLPHIN, PORPOISE, BOTTLENOSE, NARWHAL; for whalebone whales see under that heading, also RIGHT WHALE, RORQUAL.

Ceteosaurus is the name given by Professor Owen to an extinct reptile of gigantic size, the remains of which have been found in the Oolitic strata of Oxford. The head and neck were missing, but from the dimensions of the body it is inferred that the animal was not less than thirty-six feet in length and ten in height. The shoulder-blades are nearly five feet long. It belongs to the Dinosaurs, and is a member of

family of Atlantosaurs, which includes some of the largest animals known to have inhabited the globe. The shape of their teeth indicates that they lived on vegetable food. See Hutchinson's *Extinct Monsters* (1892), and Sir Richard Owen's *British Fossil Reptiles* (1849).

Cethegus, the name of a patrician family at Rome, of the Cornelian clan. (1.) MARCUS CORNELIUS CETHEGUS, censor in 209 B.C., and consul in 204; famed for his eloquence and correct Latin; died in 196 B.C. (2.) CAIUS CORNELIUS CETHEGUS, one of the associates of Catiline in his conspiracy, 63 B.C. He remained in Rome, charged to effect the murder of the leading senators; but Cicero's prompt measures caused his arrest and subsequent execution. He is described as of a profligate and violent character.

Cetinje. See CETTINJE.

Cetotolites, the tympanic and petrosal parts of the ear-bones of whales, are among the hardest and most durable of all organic structures, and are especially adapted for preservation in the fossil condition. They are not infrequent in the Pliocene beds of Great Britain, and much of our knowledge of extinct species of Cetacea is founded on them. To some extent they have been used as a source of superphosphates and artificial manures.

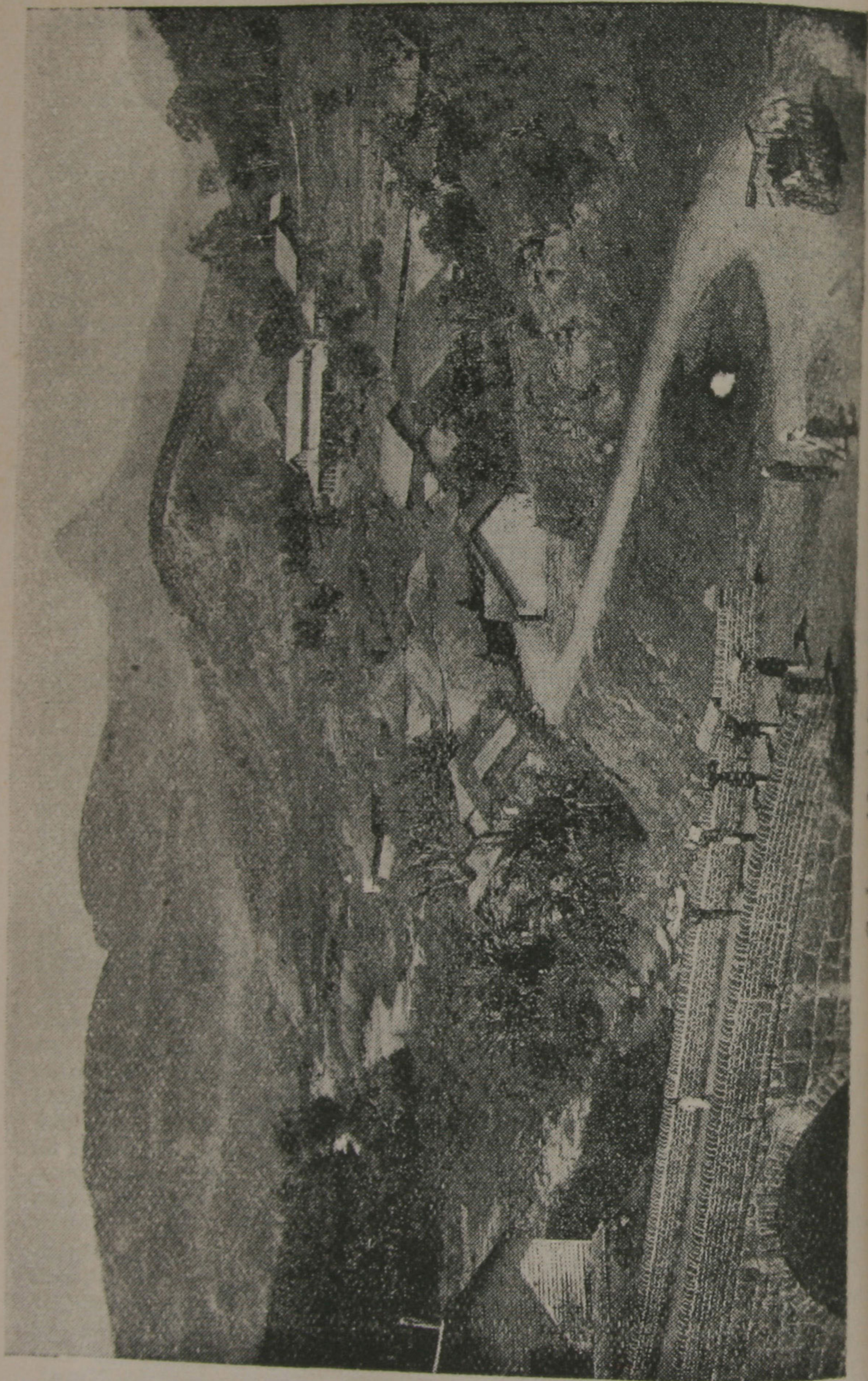
Cette (anc. *Setion*), seapt., dep. Hérault, France, 17 m. S.W. of Montpellier, on a peninsula at the entrance to the Thau lagoon, a few miles E. of the meeting-point of the Canal du Midi with the Mediterranean. The town has a good harbour. The chief article of trade is wine. Cette is of Greek foundation, but it dates its rise only from the 17th century. Its sea-bathing and mineral springs attract visitors. There is a considerable fishing industry, and the town manu-

factures liqueurs, beer, brandy, wine, etc. Pop. 34,000.

Cettinje (pron. *Settinya*), cap. of Montenegro, 12 m. E.S.E. of Cattaro in Dalmatia; the see of the metropolitan and the residence of the king. It lies in a narrow plain surrounded by limestone mountains; the surrounding land is bare and stony, relieved by occasional rich patches of soil among the rocks. There is little trade. Its nearest port is the Austrian seaport Cattaro. Cettinje was burnt thrice by the Turks, in 1683, 1714, and 1785. Pop. about 4,500.

Cetus, an ancient constellation to the south of Aries. Although covering an expanse of sky 50° by 20° , it includes no star as bright as the second magnitude. Mira, in the neck of the Whale, is the first known periodical star. In one of its bright phases, on Aug. 13, 1596, it attracted the attention of David Fabricius, and was found to fluctuate in about 331 days from 1.7 to 9.5 magnitude. The spectrum is remarkable, containing bright hydrogen lines and vanadium absorption bands, and changing in character as the star fluctuates in brightness. τ Ceti varies irregularly from 5.1-7.0 magnitude in about sixty-five days. δ Ceti is binary, revolving in twenty-four years, and other slowly moving pairs are ϵ , ζ , η , θ , ι , κ , λ , μ , ν , ξ , \omicron , π , ρ , σ , τ , υ , ϕ , χ , ψ , ω , δ is a spectroscopic binary. The constellation is crowded with 'white' nebulae, the most conspicuous among them being an elliptical formation discovered by Caroline Herschel in 1783, and resolved into a spiral in a photograph taken by Dr. Roberts, Dec. 25, 1899.

Cetywayo, or, more phonetically, KETSHWYO (c. 1836-84), son of the Zulu king Panda, whom he deposed in 1856. After defeating his brother Umbulazie, his succession was recognized by Natal,



Ceylon: Adam's Peak from Maskell's Pt.

U. S. S. S.

ditionally on his disbanding his formidable army and ceasing his sanguinary methods of government. The annexation of the Transvaal (1877) imposed upon Britain the necessity of enforcing these conditions; and the Isandhlwana disaster (1879), partially relieved at Rorke's Drift, preceded the victory of Ulundi (1879). Cetuyayo was captured by Major Charter (1879) and imprisoned at Cape Town. In 1882 he was brought to Britain, where mistaken public sympathy procured his restoration to a part of his country (1883). Soon after he was attacked and defeated by Usibepu, one of his ancient enemies, and was compelled to seek shelter in the native reserve.

Ceuta, fort. seapt. belonging to Spain, but situated at the E. extremity of the Moroccan peninsula which juts out N. towards Gibraltar. It corresponds with the ancient Abyla, one of the mythical Pillars of Hercules. Ceuta consists of an old town on the tongue of the peninsula, and a new town climbing up the hills behind. It is a bishop's see, and has a 15th century cathedral. The fortifications were greatly strengthened at the end of the 19th century, and it is proposed to convert Ceuta into a first-class fortress, although it is to some extent dominated by the surrounding heights. Under both Roman and Arab rule Ceuta was a busy centre of trade and industry. It was conquered by King João I. of Portugal in 1415, and passed to Spain in 1580. Pop. 13,000.

Cévennes, a range of mountains in the S.E. of France, forming the southern and eastern borders of the central plateau. The Cévennes stretch in a general direction from N. to S.W. over a length of 330 m. The principal peak of the system is Mézenc (5,753 ft.). To the E. of the Cévennes proper lie the plateaus

of the Causses. The Cévennes form the watershed between the rivers that flow into the Mediterranean and those that flow into the Atlantic. They are rich in coal, which is extracted in the basin of the Loire and around Alais and St. Etienne, in iron ore, zinc, and manganese. There are also rich quarries of granite, marble, and slate, and mineral waters abound, as at Vals, Bagnols, and Silvanez. In the S. part there are big forests, especially the chestnut groves of Ardèche, and extensive grazing grounds. In the N. part cattle-raising is the principal occupation, and on the lower slopes vines are grown. See E. A. Martel's *Les Cévennes et la Région des Causses* (1889); R. L. Stevenson's *Travels with a Donkey in the Cévennes* (1879); S. Baring-Gould's *A Book of the Cévennes* (1907); and Porcher's *Le Pays de Camisards* (1894).

Ceylon, an island and British crown colony at the S. extremity of India, with which it is closely connected by a chain of sandbanks and reefs, Adam's Bridge, so called from the legend, still believed by Mohammedans, that Ceylon was the place provided for Adam and Eve on their expulsion from Paradise. See ADAM'S BRIDGE.

The length of the island is 270 m., and its width is 140 m., with an area of 25,332 sq. m., excluding the dependent islands of the Maldives, Cocos, etc., which bring up the area to about four-fifths the size of Ireland. One-sixth of its area is contained in the mountainous centre of the S., the seaboard is generally level, while the N. end is a narrow peninsula surrounded by small islands. The highest mountain is Pedrotallagalla (8,296 ft.), the second highest being Adam's Peak (7,353 ft.), which bears on the summit a mark in the rock, revered by Buddhist and Mohammedan pilgrims as the mark

of Adam's foot. The Mahavili-ganga (the 'Ganges' of Ptolemy's maps) is the longest river, nearly 150 m., reaching the sea near Trincomalee, on the E. coast. Ceylon was well known in ancient times, and has by some been supposed to be the Ophir of Scripture. The Romans called the island Taprobane, and brought spices and gems from its shores.

The Sinhalese, who had their

of Great Britain. The interior of the island, however, was still ruled by a descendant of the Kandyan kings. In 1815, at the desire of the Kandyans themselves, the entire country came under British dominion.

The island is divided into nine provinces. Colombo is the capital, and the other important towns are Galle, Jaffna, Kandy, Trincomali, and Perideniya:—

Provinces.	Area in sq. m.	Pop. (1901).	
		Total.	Inhabitants per sq. m.
Western	1,432	925,342	646
Central.	2,300	623,011	271
Northern	3,363	341,985	102
Southern	2,146	566,925	264
Eastern	4,036	174,288	43
North-Western.	2,997	353,845	118
North Central	4,002	79,110	20
Uva	3,155	192,072	61
Sabaragamuwa	1,901	321,755	169
Total	25,332	3,578,333	141

own kings from 543 to 1815, attained an unusual degree of civilization at an early date. The sculpture and inscriptions of Anuradhapura and other ancient cities are still in a remarkable state of preservation. In Anuradhapura, also, is the sacred bo tree, the object of veneration to thousands of Buddhist pilgrims, who believe that it is a branch of the tree under which Gautama, their great teacher, sat the day he became a Buddha. In 1506 the Portuguese appeared in Ceylon, and remained until 1656, when the Dutch drove them out. The Dutch constructed canals and waterways, portions of which are still to be seen, and gave attention to education. By forced labour they made the Sinhalese plant waste land with cocoanut palms, and began the cultivation of coffee, indigo, and tea. In 1802 Ceylon was made a crown colony

The majority of the people are Sinhalese in the south and Tamils in the north; the rest are Eurasians, Moormen (Mohammedans, chiefly Arab descendants), Javanese, Parsees, and Malays, besides over 9,000 Europeans. The Veddahs, an aboriginal race, numbering about 4,000, dwell in the interior, and have been very slightly affected by civilization. At the end of 1909 the pop. was estimated at over 4,000,000.

The principal religions are estimated as follows: Buddhists, 2,141,000; Hindus, 900,000; Christians (Roman Catholics, 280,000; Protestants, 80,000), 360,000; Mohammedans, 248,000. Education is unsectarian and free in the vernacular schools. According to the census of 1901, nearly two millions, out of a population of three and a half millions, are still unable to read or write. Among the indig-

Ceylon

ous animals are the elephant, panther, several species of monkey, and peacock. The flora is similar to that of the southern coast of India. The climate of Ceylon varies in different districts—the temperature of Colombo averaging 82° while in Nuwara Eliya it occasionally falls to freezing-point. The coastal districts are not healthy. The heavy rains of the seasons and the mildness of the atmosphere make Ceylon one of the most fruitful countries in the world. Coffee was early introduced, and from 1824 to 1870 was the chief product of the country. In 1870, however, a blight, called *Hemileia vastatrix*, attacked the plants, and the cultivation of coffee had to be abandoned, and cinchona, cocoa, Liberian coffee, and rubber were grown in its stead. Tea is now the staple product. Ceylon cocoa—not to be confounded with Ceylon cocoa—commands a high price. The trade in cardamoms and cinchona is active, and the produce of the coconut palm rises yearly in importance. Rubies, sapphires, and other precious stones are found. An endeavour is being made to introduce the cultivation of cotton into the N. Central Province. The principal articles of export in 1909 were as follows: Plumbago, £665,306; cocoanuts and products, £2,159,907; cacao, £184,513; areca-nuts, £158,560; tea, £5,400,813. The total exports amounted to £9,793,266, and the total imports to £8,362,733. Of the exports, forty-nine per cent. went to the United Kingdom (tea accounting for £3,373,893), and of the imports twenty-six per cent. came from the United Kingdom. Rubber was exported to the amount of 681 tons. The pearl fisheries till 1905, when they were leased to a private company, were in the hands of the government. After

an interval of twelve unproductive years, the fishing was resumed in 1903, when the gross revenue was £54,430; in 1904 it was £71,050, while in 1905 it exceeded £167,000. It again became unproductive, and in 1909 there was no pearl fishing.

See Skinner's *Fifty Years in Ceylon* (1902); Haeckel's *A Visit to Ceylon* (1883); E. Schmidt's *Ceylon* (1897); J. C. Willis's *Ceylon* (1908); H. W. Cave's *The Book of Ceylon* (1908); H. Parker's *Ancient Ceylon* (1909).

Cezimbra, coast tn., Portugal, 20 m. s. of Lisbon; has considerable fisheries. Pop. 9,000.

C.F.I. A contract for the sale of goods is often said to be on C.F.I. terms. This means that the price paid by the purchaser is to cover the cost of the goods; the freight—i.e. the cost of the carriage of the goods from the seller to the purchaser; and the insurance—i.e. the cost of insuring the goods during transit.

C.G.S. The abbreviation for the centimetre-gramme-second system of physical units in use since 1874. The first is taken as the unit of length, the second of mass, and the third of time. See UNITS and WEIGHTS AND MEASURES.

Chabas, FRANÇOIS JOSEPH (1817-82), French Egyptologist, born near Briançon. In 1873 he was offered, but declined, the chair of Egyptian language and archæology at the Collège de France. He wrote *Histoire de la XIX. Dynastie* (1873), *Etudes sur l'Antiquité Historique d'après les Sources Egyptiennes* (1874; 2nd ed. 1875). He was editor of the archæological journal *L'Égyptologie* from 1873-7. His *Œuvres Diverses* were edited, with *Biographie*, by Maspero, in *Bibliothèque Égyptologique* (1899).

Chablis, tn., dep. Yonne, France, 10 m. E. of Auxerre; renowned for its white wine (chablis). Pop. 2,250.

Chabot, CHARLES (1815-82), English caligraphic expert and lithographer, born at Battersea, London. He gave evidence in the Roupell and Tichborne trials (1871-4), and his skill was much in demand in the law courts. By the caligraphic test he identified Sir Philip Francis with the writer of the *Letters of Junius*. He died at Clapham, London.

Chabot, PHILIPPE DE (1480-1543), Count of Charny and Buzançois (known as L'Amiral de Brion), French soldier. He saved Marseilles from the imperialists (1524); was taken prisoner at Pavia (1525); appointed governor of Burgundy and admiral of France (1526); thereafter conquered nearly the whole of Piedmont (1535), but through court intrigues fell into disgrace. He was imprisoned for two years (1539).

Chabrias, one of the leading military commanders at Athens in the 4th century B.C. His chief exploits were a victory in Ægina over a Spartan force in 388; his great victory at Naxos in 376 over the Spartan fleet, which re-established the empire of Athens; his successful expedition with Iphicrates to Corcyra in 373; his repulse of a Theban attack on Corinth in 368; and, finally, his gallant attack on the occasion of the siege of Chios in 357 B.C., which cost him his life. Cornelius Nepos wrote his life, and Demosthenes made him the subject of a eulogy.

Chabrier, ALEXIS EMMANUEL (1841-94), French musical composer, born at Ambert, dep. Puy-de-Dôme. He wrote *L'Etoile* (1877), *L'Education Manquée* (1879), *Dix Pièces Pittoresques*, for piano (1883), and *España*, played at concerts at Château d'Eau, where he was chorus-master (1884-5). Here he helped Lamoureux to produce two acts of *Tristan et Isolde*, and produced

La Sulamite (1885), also selections from his opera *Guendoline*, the whole of which was played afterwards in Brussels (1886). *Le Roi malgré lui* was played three times at the Opéra Comique in Paris (1887). He left an opera, *Briseis*, unfinished when he died.

Chachapoyas, or SAN JUAN DE LA FRONTÉRA, tn., Peru, cap. of Amazonas dep., 80 m. N.E. of Cajamarca; has thermal springs. Pop. 6,000.

Chacma (*Cynocephalus porcarius*, 'dog-headed, piglike monkey), a S. African baboon, and a near ally of the mandrill. It lives among rocks (being, like other members of its genus, a true quadruped), and is indiscriminate in its diet, consuming largely insects, scorpions, reptiles, and so on, as well as vegetable substances.

Chaco, territory of the Argentine Republic, consisting of part of the Gran Chaco, lying s. of the Bermejo R. Agriculture and cattle-grazing are pursued to some extent, but timber-felling is the most widely spread industry. The administrative centre is Resistencia. Area, 52,741 sq. m. Pop. 24,000. Cap. Resistencia, about 400 m. N. of Buenos Ayres. See also GRAN CHACO.

Chaconne (Fr.), a dance of probably Italian origin, formerly popular, but now entirely forgotten. It had slow and stately movements. The music for it was usually a series of variations on a ground bass of eight bars. The Italian *maestro* Porpora (1686-1766) wrote some pieces for it, as also did Bach and Handel.

Chad, a name given by Cornish and Devon fishermen to the young of *Pagellus centrodontus*, the common sea-bream.

Chad, TCHAD, or TSAD, LAKE, two large shallow lakes surrounded by swamps, W. Africa, between Bornu on the w., Kanem on the N.E., and Bagirmi and

Chadai on the S.E. and E. The extreme length from N. to S. is said to be 120 to 150 m., while from E. to W. it has been variously estimated at from 130 to 60 m. The depth is only from 8 to 15 ft., and the lake is studded with islands on the E. and S.E. side. In the dry season the area is about 10,000 sq. miles, but in the wet season it increases to 20,000. Lake Chad receives the waters of the Yobe and Shari, but its chief feeder is the Sobat; but, according to the latest accounts, they no longer reach the Bodele depression to the N.E. The lake abounds with fish, and is frequented by wild animals, hippopotami, and alligators. The convention of 1898 gave France the right to its E. shore. On the islands live the piratical Haduma and Kuri tribes. See Boyd Alexander's *From the Niger to the Nile* (1907), and Nachtigal's *Saharâ und Sûdan* (1879-89).

Chad, St., or CEADDA (d. 672), a native of Northumbria, was a disciple of St. Aidan, and became successively bishop of the East Saxons (664), of York (666), and of Mercia (669). His holiness and austerities were long proverbial in the north of England. See R. H. Warner's *Life of St. Chad* (1871).

Chadderton, par., S.E. Lancashire, England, within the par. bor. of Oldham. It has cotton and chemical manufactures, etc. Pop. 28,000.

Chads, SIR HENRY DUCIE (1788-1868), British naval commander, born near London. He was first lieutenant of the *Java* when she was captured by the United States frigate *Constitution* (1812), and was in the landing party that seized Ile de la Passe, off the coast of Mauritius. He commanded the *Arachne* and the *Alligator* in the first Burmese war (1826). From 1845 to 1854 he

was captain of the gunnery ship *Excellent*. In the following year he served in the Baltic at the fall of Bomarsund. He became admiral (1863). One of his sons, Sir Henry Chads (1819-1906), also became an admiral.

Chadwell St. Mary, par., Essex, England, on the Thames, 3 m. N. of Tilbury Fort. The E. and W. India deep-water docks are in the par. Pop. 5,200.

Chadwick, SIR EDWIN (1800-90), English social reformer, pamphleteer, and disciple of Jeremy Bentham, born at Longsight, near Manchester. While reading as a law student Chadwick began to write for the press, and it was then that the 'sanitary idea,' which was to become dominant in his life, germinated. Thereafter the eradication of disease and the promotion of social health and well-being became his business. The history of the commissions he served upon, and the reforms he brought about, is that of public sanitation during the latter portion of the 19th century. He was appointed secretary of the Poor-law Board (1834-46) and of the Board of Health (1848-54), and he was instrumental in forming (1878) the Social Science Association. Benjamin Ward Richardson wrote his *Life* and edited his works (1889).

Chærea, CAIUS CASSIUS, a tribune of the prætorian guards at Rome under Caligula, who formed the conspiracy which ended that emperor's life (Jan. 24, 41 A.D.).

Chæronea, now KAPRENA, an ancient Greek town in Bœotia, famous for the victory gained by Philip of Macedon in 338 B.C. over the Bœotian and Athenian forces. It was also the birthplace of Plutarch. The ruins of a temple, an aqueduct, and the fragments of the marble lion (removed to Athens in 1880) which marked the tomb of the Bœotians of the

Sacred Band in the great battle, still remain.

Chætoderma ('bristle-skinned'), a genus of molluscs, including curious primitive forms, allied to Chiton.

Chætodon ('bristle teeth'), a genus of bony fishes, comprising some seventy species from the tropical parts of the Atlantic and Indo-Pacific, where they are especially abundant in the vicinity of coral reefs. The fish are remarkable for the beauty and variety of their colouring, and are carnivorous, feeding on the small invertebrates of the reefs. The dorsal and anal fins are so thickly covered with scales that the boundary between body and fins is obliterated, a peculiarity which gives its name of Squamipennes to the family to which the Chætodons belong.

Chætognatha ('bristle jaws'), the name given to the class which includes the small transparent marine arrow-worms.

Chætopoda ('bristle-footed'), the name given to that class of annelids, or segmented worms, the members of which have typically the feet or parapodia furnished with bristles (*chætæ*), placed in skin-sacs. In earthworms, where the parapodia are absent, the bristles are inserted directly in the body-wall. The segments are usually distinct externally, and are marked internally by the arrangement of the organs, and by the septa or partitions which divide the body-cavity into chambers. Chætopods are divided into the marine Polychætetes, with parapodia, numerous bristles, gills, and numerous tactile processes; and Oligochætetes ('few bristles'), with no parapodia, few *chætæ*, rarely gills, and no tactile processes, which are terrestrial (earthworms) or fresh-water forms.

Chætopterus ('winged bristle-worm'), a much-modified annelid, remarkable for its peculiar green

colour and lateral fans or wings. It inhabits a parchment-like tube, and occurs in fairly deep water in various parts of the British area.

Chafer, the popular name of beetles belonging to the genus *Scarabæidæ*, particularly of such beetles as feed on leaves in the adult state. The larvæ of the chafer are generally soft-skinned grubs with distended abdomens and very strong mandibles. They pupate in the autumn.

Chaffarinas. See ZAFFARINES.

Chaffinch (*Fringilla cælebs*, or 'bachelor finch'), a very common little finch, remarkable for the bright colouring of the male, and widely distributed throughout Europe. Active and pugnacious birds, they are constantly seen throughout the warmer months, but many migrate before the winter. During migration the cocks and hens fly separately, and the specific name refers to this separation of the sexes.

Chagai, one of the six administrative districts of British Baluchistan.

Chagny, tn., dep. Saône-et-Loire, France, 45 m. N. of Mâcon; has some trade in wine, railway workshops, and quarries. Pop. 4,500.

Chagos Archipelago, a group of low coral islands in the Indian Ocean, s. of the Maldivé Is. The largest is Diego Garcia, or Grand Chagos, used as a coaling station on routes between the Red Sea and W. Australia, and between Mauritius and Ceylon. It exports a large quantity of cocoanut oil. The group belongs to Britain, and forms a dependency of Mauritius. Area, about 150 sq. m. Pop. 1,000.

Chagres, seapt. on the Atlantic coast of the Isthmus of Panama, republic of Panama, at the mouth of the Chagres R. It was formerly of some importance, but has been superseded by Colon. Pop. 1,000.

Chagres River, Panama, rises about 30 m. N.E. of Panama, flows then N., and enters the Caribbean Sea a few miles W. of Colon. Length, 100 m. The control of its waters has been a difficulty in the construction of the Panama Canal.

Chaillé-Long, CHARLES (1842), explorer, born in Maryland, U.S.A., and in 1869 served as lieutenant-colonel in the Egyptian army, becoming chief of the staff to General Gordon in 1873. He assisted in the suppression of the slave trade on the White Nile and subsequently visited the king of Uganda, who acknowledged the suzerainty of the Khedive. - In 1887 he was appointed United States consul-general in Korea. He has published *Central Africa* (1876), *Three Prophets: Chinese Gordon, the Mahdi, and Arabi Pacha* (1884).

Chaillu. See DU CHAILLU.

Chain, a connected series of links of metal passing through each other so as to move more or less freely, and thus form a strong but flexible string. Each link in an ordinary chain is made by the welding of bar-metal into an oval or circular loop. In a short-link chain the links are open, and are welded at one end. In a long or stud-link chain they are stayed across the middle by a stud, or stay-pin, and are welded on one side. This latter form is usually adopted when the metal has a diameter of over one inch.

Chain-making is a special industry. The welding of the links is almost entirely done by hand, and only trained workmen can make reliable chains, though chains of small size and inferior quality are turned out by women and boy workers. Recently, however, the manufacture of weldless steel chains up to a size of one-inch diameter metal has been begun. This is accomplished by passing a red-hot steel bar of cruci-

form section through a stamping-machine, the dies of which impress on the metal, by a series of strokes, the outer form of a short-link chain. A second operation cuts away the web from inside the links, and a third breaks them apart and polishes their surface. A different type of chain, used for agricultural machines, is stamped out of a steel strip, and delivered from the machine with the links engaging one another.

The larger sizes of chains pass, before use, certain standard tests under Lloyd's register, which impose a strain sufficient to detect bad material or workmanship, yet not so severe as to injure the metal. The breaking-strain of any chain may be calculated from its cross-section, to the area of which it bears a fixed proportion.

Chains for suspension bridges differ from all other chains, the links being formed of flat plates of iron joined together by transverse pins. Surveying chains have also a construction peculiar to themselves, being made up of long single-bar links, looped at each end, but not welded, and connected together by small circular links. In England, a surveying chain is 66 ft. in length, in America and India 100 ft.; but each is composed of a hundred long links, including a handle at either end. Every tenth connecting link is marked by a distinctive badge of brass, for convenience in reading the measurement.

The manufacture of cycle chains has assumed in recent years considerable importance. The latest developed types are known as the 'short pitch' and 'twin roller.' These are made up of outside links, shouldered pivots, and an inner and outer bush, both of which are free to revolve one on the other and both on the pivot.

Cable chains for anchoring ships, coupling chains for connecting railway and other wagons,

and others for an innumerable variety of uses, are modifications of the normal form. Chains used as cables on British ships must pass a statutory test, and be properly stamped. Test requirements of the British Admiralty and the United States Testing Board are given in Kent's *Mechanical Engineer's Pocket Book* (1901).

Chained Books. In the libraries which were founded in great numbers in different parts of Europe in the 15th and 16th centuries, the books were arranged on long reading-desks, along the top of which ran an iron rod to which each book was fastened by a chain and ring, thus keeping it in the place where it was to be read. A library thus arranged was founded at Zutphen in 1561, and is still intact. As books multiplied, standing bookshelves were erected in new libraries, with sloping desks in front of them, the volumes being placed so as to show the fore-edges, on which their names were written, and chains attached to the binding of sufficient length to enable the books to be consulted at the desk. A library of this kind, founded as late as 1715, exists at All Saints' Church, Hereford, while the cathedral library of the same city, also intact, offers a much earlier example of the same system. After the early years of the 18th century chaining was discontinued, and the chains mostly removed. In the reigns of Henry VIII. and Edward VI. the Bible and the Paraphrases of Erasmus were ordered to be placed in parish churches; and these and other books, such as Foxe's *Book of Martyrs* and Jewell's works, still exist in a few churches, with the chains attached to them. A list of English churches and libraries possessing chained books is given in William Blades's *Books in Chains* (1892), and full descriptions and illustrations of different

methods of chaining in J. W. Clark's *The Care of Books* (1901).

Chain-plates, the parts which secure the shrouds to the side of a ship, being bolted to the ship's timbers, and passing upwards and outwards under the 'channels' or broad planks which project from the ship's side, a pair to each mast. To the 'dead-eyes' of the chain-plates the shrouds are attached.

Chairman, the president of a meeting, whether convened for the consideration of public affairs or for the dispatch of business connected with some association, company, or committee. In the case of public bodies and companies the chairman is elected for a definite period, according to statute or to the by-laws governing his appointment. In the case of a public meeting the chairman is usually selected by the promoters of the meeting. The call to the chair, however, may be challenged, and some member of the meeting requested to undertake the office pending the decision of the matter by vote. The essential duty of a chairman is the maintenance of order. In the case of rude or violent interruption he may direct the expulsion of the wilful offender without unnecessary violence. In extreme cases he may adjourn the meeting. Speakers must address the chair, and they are entitled to the chairman's protection against interruption, except on a question of order. The chairman regulates the order of business; he calls upon the speakers previously selected, or, if the meeting is an open one, decides which of two or more members rising to speak shall be heard. His cardinal virtues in this and other respects are impartiality and neutrality. Deference must be paid to his authority, and all must remain sitting when he

to speak. He must permit discussion unless on a motion amendment duly proposed and seconded, and such motions and amendments should be in writing. He should call to order speakers who indulge in purposeless talk, or do not confine themselves to the matter under debate. He is the judge as to whether a motion or amendment is in order, and he decides questions of adjournment or any other incidental matter needing immediate decision. He has no option but to put to the meeting all duly proposed and seconded amendments in proper order, and he must take a vote, which may be by voices, or, if demand is made, by show of hands. In the case of equality of votes he is entitled to a casting vote. See Palgrave's *The Chairman's Handbook* (1903); also SPEAKER.

Chairman of Committees is a member of parliament chosen at the beginning of each parliament to preside over all committees of the whole house. His salary is £2,500 a year. In the absence of the Speaker he takes his place, and in that capacity he is known as Deputy-Speaker. Since 1902 a deputy chairman has been appointed. See COMMITTEE.

Chaise (Fr.), a light, hooded two or four wheeled vehicle. The 'post-chaise' of the 18th and 19th centuries was a closed four-wheeled carriage with two or four horses, and driver as postilion.

Chaka. See ZULUS.

Chalcedon (more correctly CALCHEDON), now KADIKÖI, a Greek city on the shores of the Propontis or Sea of Marmora, at the entrance of the Bosphorus, nearly opposite Byzantium; was a colony from Megara, founded in 685 B.C. When Nicomedia was founded in 140 B.C., most of its inhabitants were transferred

thither. With the formation of the province of Bithynia it became (74 B.C.) part of the Roman Empire. It was captured by Gothic invaders in 256 A.D., and by Chosroes of Persia in 616 A.D. In 451 the great Council of Chalcedon determined the ecclesiastical jurisdiction of the sees of Rome and Byzantium. Kadiköi has a pop. of about 30,000.

Chalcedony, a mineral consisting of silica, and occurring in fibrous or minutely crystalline forms, never in well-developed crystals. It is found usually in crevices and cavities in rocks, where it has been deposited from solution in water. It is comparatively hard, as steel will not scratch it; and few minerals assume so many varieties of form and colour, many of them very beautiful, and much prized as ornamental stones—*e.g.*, agate, carnelian, cacholong, bloodstone, jasper, plasma, onyx, and heliotrope. The name 'chalcedony' is reserved for specimens which are white, gray, or bluish-gray in colour and translucent. It occurs in the basalts of Ireland, Iceland, and the Faroe Is. See *Precious Stones* by Church (new ed. 1908), or Streeter (1898).

Chalchicomala, tn., Puebla state, Mexico, 30 m. N.W. of Orizaba. Pop. 7,000.

Chalchihuitl, a jadeite much prized by the ancient Mexicans. Some, however, consider it to be a kind of turquoise. It is a green-coloured, fine-grained stone, and was obtained near Santa Fé. It was carved into rude figures and skilfully polished. These are found in tombs, and the elaborate brooch fastening Montezuma's robe was of the same material.

Chalcidice, peninsula in Macedonia, between the Thermaic (Salonica) and Strymonic (Rendina) Gulfs, which runs out into the sea in three projecting promontories. It contained several Greek

colonies, as Chalcis, Olynthus, and Potidæa.

Chalcis, or EGRIPPO, chief tn. of the island of Eubœa, Egripos, or Negropont, Greece, on the Strait of Euripus, here only 120 ft. wide. In the 7th and 6th centuries B.C. it enjoyed much prosperity, as is proved by the number of colonies sent out from it—as, for example, Cumæ in Campania, Naxos in Sicily, and the towns in Chalcidice. About the end of the 7th century B.C. Chalcis was engaged in a prolonged war with its neighbouring city Eretria, which weakened its power. During the 5th and 4th centuries B.C., with the rest of Eubœa, it was subject to Athens. The Turks subdued it in 1470 A.D. Pop. 16,000.

Chalcondylas, or CHALCONDYLAS, DEMETRIUS (1428-1511), Hellenic grammarian. He was born at Athens, but took refuge in Italy in 1447, and became teacher of Greek at Perugia, Florence (1479-92), and Milan. Grocyn, Linacre, Latimer, and Lorenzo de' Medici's sons were among his students. He published his *Erotemata* in 1493, and produced the first editions of Homer (1488), Isocrates (1493), and Suidas (1499). See Symonds's *Renaissance in Italy* (7 vols. 1875-86).

Chalcondylas, LAONICUS or NICHOLAS (d. 1464), was the son of an Athenian noble, who fled from Athens in 1435 and entered the service of the Palæologi. The son Laonicus was ambassador of John VII. (Palæologus) to Sultan Murad II. during the siege of Constantinople (1446), and author of *De Origine et Rebus Gestis Turcorum*, a history of considerable authority of the Byzantine empire, 1298-1463 (French trans. 1577).

Chaldæa, a province of Babylon, bounded by the lower course of the Euphrates, the head of the

Persian Gulf, and the Arabian desert. In a wider sense the term is applied to the empire of Babylon generally. The Chaldæans were the ruling class at Babylon. They were either from N.E. Arabia or from the Kurdish uplands. Their priests were famous for astronomy and mathematics. See BABYLONIA.

Chaldee, or ARAMAIC. See ARAM.

Chalder, a Scots measure employed in former times in weighing grain. It contained 16 boals, or 96 bushels, and is still used in fixing the stipends of ministers of the Church of Scotland.

Chaldir-gol, the second largest lake in Transcaucasia, 35 m. N. of Kars, 12 m. long, with a maximum breadth of 10 m., and an area of 33 sq. m. Its bottom nowhere sinks to more than 140 ft. below the surface, which lies at an altitude of 6,522 ft. The water swarms with fish, chiefly trout and carp, and it is a favourite haunt of water-fowl.

Chaldron (Old Fr. *chauldron*), a measure of coals equal to 36 coal bushels, or 25½ cwt., confined exclusively to coal and coke.

Chaleurs, BAY OF, a well-sheltered inlet of the Gulf of St. Lawrence, Canada, running east and west for 90 m. between New Brunswick and Quebec. It has good mackerel fishing.

Chalfont St. Giles, par. and vil., Buckinghamshire, England, 16 m. S.E. of Aylesbury. Milton, to escape the great plague (1665), retired to this village, where he finished his *Paradise Lost* and wrote part of *Paradise Regained*. Penn was buried here. Pop. 1,400.

Chalford, par. and vil., Gloucestershire, England, 4 m. S.E. of Stroud; has dyeworks, and manufactures broadcloth. Pop. 3,000.

Chalgrove, par. and vil., Oxfordshire, England, 10 m. S.E. of Oxford. Here, on June 18, 1643, in

a battle between the Royalists and the Parliamentary forces, John Hampden was mortally wounded.

Chalice, a cup, but the name is almost exclusively used for the wine-cup employed in celebrating mass. Although anciently made of glass and other materials, it must now be of gold or silver, or at least silver-gilt, and be consecrated by a bishop according to a prescribed form, and may not be touched except by a person in holy orders. The use of the mixed chalice in the Roman Catholic and Oriental Churches—*i.e.* wine mingled with water—dates from the earliest Christian times. See Justin Martyr, *Apologia*, I. c. 65-67.

Chalina, a genus of sponges to which belongs the mermaid's glove (*C. oculata*), a sponge common round British shores.

Chalk, a fine-grained, very pure, granular limestone, consisting of perfect and broken tests of small Foraminifera, among the commonest being *Globigerina*, *Textularia*, and *Rotalia*. The minute organisms known as *coccoliths* and *rhabdoliths* are also abundant, as well as fragments of molluscan shells, such as *Inoceramus*. The chalk is an exceedingly pure limestone, in some cases containing 98 to 99 per cent. of carbonate of lime. Silica is always present in small amount, being furnished by the siliceous spicules of sponges and shells of *Radiolaria*. These, however, have often been dissolved, and their place filled with carbonate of lime. Enclosed in the white chalk numerous fossils are to be found, often in very perfect preservation, the commonest being *echinoderms*, sponges, corals, molluscs, and teeth of sharks. In many respects the *Globigerina* ooze of the Atlantic presents a close similarity to the chalk.

The chalk forms the Lincoln-

shire and Yorkshire Wolds, the N. and S. Downs, the Chiltern Hills, and Salisbury Plain. At Flamborough Head, Beachy Head, and Shakespeare's Cliff at Dover it fronts the sea in noble headlands, which, from their white colour, gave England the old name of Albion. Much of the water used in London is drawn from areas of chalk, and is in consequence very hard, for chalk is soluble in water containing carbon dioxide. This solubility occasions also the numerous sinks and 'swallow holes' which may be observed in chalk countries. The soil produced by the weathering of the chalk is fine and thin, often filled with flints left after the removal of the limestone in solution. It is, as a rule, best suited for sheep pasture. Pure white chalk occurs also at Maestricht, Fanö in Denmark, in the north of France, and elsewhere in W. Europe.

Chalk has many uses. It serves as a writing material. When burned, it furnishes quicklime, or, when mixed with clay, Roman cement. Whiting is prepared from chalk by grinding and levigating. From whiting a form of putty is made by mixing it with oil. Only the harder beds of impure chalk find employment as a building stone. 'French chalk' is really steatite; 'red chalk' is a soft, red, ochreous clay.

In geology, the Chalk is the most familiar member of the Upper Cretaceous formation. It rests upon the Upper Greensand, and geologists have divided it into three groups—the Lower, Middle, and Upper Chalk. Within the last few years very accurate zonal divisions have been established in the Chalk. For details see several papers by Rowe in *Proc. Geol. Ass.*, 1900-8.

Chalking the Door, in Scottish law a method of giving notice of removal to tenants, usually of

the poorer classes. It is made, on the proprietor's verbal order, by a burgh officer in presence of witnesses, and is placed on 'the most patent door' forty days before the term of removal. Having done so, and made out a declaration of 'chalking,' subscribed by himself and one witness, he may demand that the tenant shall be ejected six days after the expiry of the forty days.

Challemel-Lacour, PAUL AMAND (1827-96), French statesman and writer, was born at Avranches; became professor of philosophy at Pau and Limoges successively. After the *coup d'état* (1851) his republican opinions drove him to Belgium, and then to Zürich. Returning after the amnesty (1859), he, with Brisson and Gambetta, established the *Revue Politique* (1868). On the fall of Napoleon III. (1870) he became prefect of the Rhône, but resigned in 1871. With Gambetta he established the *République Française*, becoming editor-in-chief. Then he became ambassador at Bern (1879) and London (1880), and later minister of foreign affairs (1883), and a member of the French Academy (1893). He published a translation of Ritter's *Geschichte der Philosophie* (1861), *La Philosophie individualiste* (1864), and an edition of the works of Madame d'Epinau (1869). His *Œuvres Ora-toires* were published in 1897.

Challenge. See JURY.

Challenger Expedition, THE (1872-6), was sent out by the British Admiralty to investigate the conditions of life in the deep sea in the Atlantic, Pacific, and Antarctic Oceans. It followed the cruises, taken nearer home, by Dr. Carpenter and Sir C. Wyville Thomson in the *Lightning*, in 1868, and, together with Mr. Gwyn Jeffreys, in the *Porcupine*, in 1869 and 1870. The *Challenger* was under the command of Captain Nares, with Sir C. Wy-

ville Thomson as director of the civilian staff. She left Portsmouth, Dec. 21, 1872, and arrived at Santa Cruz, Feb. 7, 1873. The real work of the expedition began when she sailed thence on February 14, and cruised in the Atlantic until she cast anchor at the Cape, October 28. Thence she sailed to Australia, New Zealand, Yokohama, Valparaiso, Falkland Is., and Ascension I., and returned to England May 24, 1876. Sir C. Wyville Thomson wrote a preliminary account of the voyage in the Atlantic, but he died in 1881 when only three volumes of the full reports were published, and the work of editing the remainder was entrusted to John Murray, one of the members of the civilian staff (now Sir John Murray, K.C.B.). In addition to the official *Reports* (50 vols. 1880-95) of the expedition, see Spry's *Cruise of H.M.S. 'Challenger'* (1876); Moseley's *Notes by a Naturalist* . . . (1879); and numerous papers by Sir John Murray.

Challis, JAMES (1803-82), English astronomer, born at Braintree, Essex. He graduated as senior wrangler and first Smith prizeman at Trinity College, Cambridge (1826), where he was appointed professor of astronomy (1836) and director of the observatory. In 1846 he twice unknowingly 'noted' the planet Neptune before its discovery at Berlin on September 23 of that year. He published *Lectures on Practical Astronomy and Astronomical Instruments* (1879); *Astronomical Observations made at the Observatory of Cambridge* (1832-64); *Mathematical Principles of Physics* (1873), etc.

Challoner, RICHARD (1691-1781), English Roman Catholic prelate, born at Lewes; was sent to the College at Douay (1704), where he taught poetry in 1712; remained as professor until 1730, when he was created bishop of

Debra, in Libya, and vicar apostolic of the London district (1758). During the Gordon riots he had to secrete himself in Highgate. He wrote *The Garden of the Soul* (1740), and a translation of *The Imitation of Christ* (1706). See *Life by Barnard* (1784).

Chalmers, ALEXANDER (1759-1834), Scottish biographer and miscellaneous writer, born at Aberdeen; edited Burns, Fielding, Gibbon, Shakespeare, and others, and issued *The British Essayists*, 45 vols. (1817). His more permanent achievement was the *General Biographical Dict.*, 32 vols. (1812-17).

Chalmers, GEORGE (1742-1825), Scottish antiquary, born at Fochabers, in Elginshire; practised law for a time in the American colonies, but settled in London in 1775, and devoted himself to literature. His chief work is *Caledonia, or An Account, Historical and Topographic, of N. Britain* (1807-24), reprinted with additions (1888-95).

Chalmers, GEORGE PAUL (1833-78), Scottish painter, born at Montrose. He studied at Edinburgh under Robert Scott Lauder. Among his fellow-pupils were Orchardson, Pettie, Graham, Cameron, etc. In 1867 he became A.R.S.A., and in 1871 R.S.A. He was an exponent of the Scottish feeling for romance and dreamy mysticism, which he expressed with Titian-like colouring. His rapidly-painted pictures exhibit striking freshness, power, and decision—e.g. *Running Water*; but his figure pieces cost him ceaseless labour, his handling of them being often nerveless and uncertain, though later he acquired firmness and finish. As a portrait-painter, however, he took endless pains, and his portraits have fine qualities of light and shade, colour and technique. His *Legend*, in the Edinburgh National Gallery, is a beautiful example

of his colouring and power of expressing emotion.

Chalmers, JAMES (1841-1901), Scottish missionary, born at Ardrishaig, Argyllshire. Appointed by the London Missionary Society (1866) to labour in the island of Raratonga, in the Pacific, he remained there for ten years, being thence transferred to New Guinea, where the remainder of his life was spent. In addition to his purely missionary labours, Chalmers rendered great service as an explorer in New Guinea, and gave valuable aid in the establishment of the protectorate. At the age of sixty he was brutally murdered by cannibals. See his *Autobiography and Letters* (1902).

Chalmers, SIR MACKENZIE DALZELL (1847). After serving in the Bengal civil service he held various legal offices in England, including that of counsel to the Board of Trade (1882). From 1896-9 he was legal member of the council of the governor-general of India; from 1899-1903 assistant parliamentary counsel and parliamentary counsel to the Treasury. In August 1903 he succeeded Sir Kenelm Digby as permanent under-secretary of state for the Home Department, an office which he held until 1908. He was knighted in 1906.

Chalmers, THOMAS (1780-1847), Scottish divine, was born at E. Anstruther, Fifeshire. He became assistant professor of mathematics at St. Andrews (1802-3), and in May 1803 was appointed parish minister of Kilmany, Fifeshire. In 1815 he was translated to the Tron Church, Glasgow. Here he worked for the neglected masses, and succeeded in planting new churches. He advocated a temperate evangelicalism. Invited in 1817 to preach the anniversary sermon of the London Missionary Society, he secured with this and other discourses a great triumph in the metropolis.

In 1823 Chalmers became professor of moral philosophy at St. Andrews, leaving in 1828 for the professorship of divinity in Edinburgh University. A speech on Catholic emancipation, delivered in Edinburgh in 1829, drew from Jeffrey the remark that no greater effort of oratory had ever been made by Demosthenes, Cicero, Burke, or Sheridan. In 1830 he was appointed a royal Scottish chaplain, and in 1832 he was moderator of the General Assembly of the church. He was instrumental in passing the Veto Act of 1833 in reference to parish presentees. In 1838 he pleaded for church extension before crowded audiences in London. Meanwhile the application of the Veto Act had produced irregularities, which led to collision with government officials on the question of church and state. Hence came the demand for spiritual independence, and the founding, under Chalmers's guidance, of the Free Church in 1843. Chalmers resigned his professorship, and became principal and divinity professor in the New College of the Free Church. He performed his new duties with characteristic vigour and success; and he further inaugurated a system of city missions in Edinburgh. In May 1847 he visited London in connection with Free Church matters. Chalmers died suddenly two days after his return to Edinburgh.

A great orator, and one of the most potent Scottish personalities in the 19th century, Chalmers was greater than his books, though he made important contributions to economics and theology. His publications include *Evidence and Authority of the Christian Revelation* (1814); *Astronomical Discourses* (1817), deservedly popular, and frequently reprinted; *Commercial Discourses* (1820); the Bridgewater treatise, *Adaptation of External Nature to the*

Moral and Intellectual Constitution of Man (2 vols. 1833; reprinted, 1 vol., 1853); *Defence of Church Establishments* (1838). The original works appeared in 25 vols. (1836-40), and the posthumous works in 9 vols. (1848). See Masterman's vol. of selections, *Chalmers on Charity* (1901).

Dr. Hanna's *Memoirs of the Life and Writings of Dr. Chalmers* (3rd ed. 1878) is among standard biographies. See also Buchanan's *Ten Years' Conflict* (1849); Taylor Innes's *Law of Creeds in Scotland* (1867); *Annals of the Disruption* (1876-7); 'Chalmers, Thomas,' in *Dict. of Nat. Biog.*; Mrs. Oliphant's *Thomas Chalmers: Preacher, Philosopher, and Statesman* (1893).

Chaloner, SIR THOMAS (1521-65), the elder, English diplomatist, born in London, educated at Oxford, and entered the service of Henry VIII. Sent by the king as ambassador to the Emperor Charles V., he went to Algiers with the latter in his expedition (1540) against the corsairs. He was recalled to England to take the position of chief clerk of the Privy Council. His Protestant sympathies, which stood him in good stead during the reign of Edward VI., drove him from office during that of Mary; but on the accession of Elizabeth he was appointed ambassador, first to the Emperor Ferdinand, and then to the court of Spain. His chief works are several volumes of *Miscellaneous Poems* (1559), *De Republica Anglorum Instauranda* (1544), translation of Erasmus's *Praise of Folly*, *Carmen Panegyricum* (in praise of Henry VIII., 1560), the *Office of Servants*, translated from Gilb. Cognatus (1543).

Chaloner, SIR THOMAS (1561-1615), the younger, English naturalist. In 1600 he opened up the first alum mine in England. In the later part of Elizabeth's reign

he went to Scotland, and became tutor to Prince Henry, returning afterwards to England with James (1603). He founded the grammar school at St. Bees (1608), where two Chaloner scholarships still exist; and he was the author of a book on *The Vertue of Nitre* (1584).

Châlons-sur-Marne, cap. of dep. Marne, France, 92 m. E. of Paris, on the r. bk. of the canalized Marne. It is the see of a bishop, and contains a fine library, museums, school of arts and trades, and a cathedral (St. Etienne) of the 13th-17th centuries. Manufactures chiefly champagne, but there are foundries and glass works. The battle of Châlons, where the Huns were defeated and the power of Attila broken, was fought more probably at Troyes, 45 m. S.S.W., than at Châlons. The vast military camp of Châlons (45 sq. m.) formed by Napoleon III., 12 m. to the N., is still used for army manœuvres. Pop. 28,000.

Châlon-sur-Saône, tn., France, dep. Saône-et-Loire, 35 m. N. of Mâcon, on the r. bk. of the Saône where the Canal du Centre joins that river. Its library, museum, bridge of 1415, and church of St. Vincent (1386) are of interest. Manufactures hats, gloves, iron goods, tiles, and glass, and has some trade in corn, iron, wood, and leather. It was the second city of the *Ædui* (*Cabillonum Eduorum*) in the time of Cæsar, and was destroyed successively by the Vandals, Huns, and Burgundians. Several church councils were held here. Pop. 30,000.

Chalybäus, HEINRICH MORITZ (1796-1862), German philosopher, born at Pfaffroda in Saxony. He was made (1839) professor of philosophy at Kiel University, but later lost this post on political grounds. Chief works: *System der speculativen Ethik* (1850), and *Historische Entwicke-*

lung der speculativen Philosophie (1837); Eng. trans. of latter by Tulk (1854) and by Edersheim (1860).

Chalybeate Waters are mineral or medicinal waters which naturally contain iron compounds in solution, either alone or along with other salts.

Chalybes, an Asiatic people who dwelt on the north coast of Asia Minor in Pontus; they were famous as ironworkers. Hence the word 'chalybeate.'

Cham, the pseudonym of AMÉDÉE DE NOÉ (1819-79), the French caricaturist. He was born in Paris, his father being the Comte de Noé, whence the nickname, 'Cham' being French for Ham, son of Noah. He excelled in humorous drawings of contemporary Paris life, and from the age of twenty-four until almost the close of life he was connected with the *Charivari* and the *Journal des Pèlerinages*. *Douze Années Comiques* (1880) and *Les Folies Parisiennes* (1883) are collections of his comic sketches. See Ribeyre's *Cham* (1883).

Chamæleon. See CHAMELEON.

Chamæleon, a small southern constellation between Hydrus and Argo, announced by Bayer in 1603.

Chamærops, a genus of small palms, suitable for room or cool greenhouse culture. The common species, *C. humilis*, has fern-shaped leaf-blades, the margins of the petioles being armed with prickles. The leaves are deeply divided into narrow divisions. The only other species is *C. macrocarpa*, which is of bolder habit than *C. humilis*. They are both easily grown in rich loamy soil containing one-fourth part of leaf-mould. Propagation is most easily effected by means of suckers. The fibre is valuable for weaving with camel's hair, and for making into paper, sailcloth, and coarse canvas; the leaves also make paper and supply

itly exonerated Mr. Chamberlain from any preknowledge of Dr. Jameson's intentions. The negotiations with President Kruger, which ensued in the hope of securing reforms in the internal government of the Transvaal, were continued until the Boers invaded Natal (October 1899) and war was declared. The awakening of a strong imperial spirit among the colonies, which culminated in the dispatch of thousands of volunteers from Canada, Australia, and New Zealand to fight in S. Africa, is largely to be attributed to his policy and inspiration. During his administration the Australasian colonies were federated under the Commonwealth Act, 1900, and the West Indian colonies were generously aided in their difficulties from imperial sources. Apart from his achievements at the Colonial Office, Mr. Chamberlain's principal legislative successes are the Bankruptcy Act, 1883, and the Workmen's Compensation Act, 1897. The Birmingham University owed its foundation (1900) largely to his efforts, and he became the first chancellor. For his later career see TARIFF REFORM. He is still M.P. for W. Birmingham, but during the last few years ill-health has prevented him from taking any active part in politics.

Chamberlain, RIGHT HON. JOSEPH AUSTEN (1863), English statesman, born at Birmingham, eldest son of the above; entered the House of Commons as Liberal Unionist member for E. Worcestershire, 1892; which constituency he still represents. In Lord Salisbury's third administration (1895-1900), Mr. A. Chamberlain was Civil Lord of the Admiralty, and was promoted to be financial secretary to the Treasury on the formation of his lordship's fourth government in 1900. In that capacity he also represented the Post-

master-general (Lord Londonderry) in the House of Commons. He was appointed Postmaster-general in Mr. Arthur Balfour's first government (July 1902), with a seat in the cabinet. On the reconstruction of Mr. Balfour's cabinet in Sept.-Oct. 1903, Mr. Austen Chamberlain was appointed Chancellor of the Exchequer, and held the post until December 1905.

Chamberlain, SIR NEVILLE BOWLES (1820-1902), a dashing leader of Indian irregular horse. He served in the Afghan campaign at Ghazni, Kandahar, and Kabul (1842), being wounded six times. He fought at Maharajpur (Gwalior campaign, 1843), and at Chilianwala and Gujarat (Sikh campaign, 1848). During the mutiny (1857) he was severely wounded at Delhi. He commanded against the Waziris, and, in 1863, against the Bunerwals. His career was fitly crowned by field-marshal's rank in 1900. See *Life* by G. W. Forrest (1909).

Chambers, rooms attached to English courts, in which matters of minor importance and interlocutory questions arising in the course of proceedings in the courts are disposed of by the judges or by officials called masters and registrars. Applications to chambers are made either by summons or *ex parte*. See *Rules of Supreme Court, Orders 54 and 55*.

Chambers, CHARLES HADDON (1860), dramatic author, born at Sydney, New South Wales, settled in England permanently in 1882, becoming journalist, and later a dramatist. His plays include *Captain Swift*, *The Idler*, *The Honourable Herbert*, *The Old Lady*, *John-a-Dreams*, *The Tyranny of Tears*, *The Awakening*, *The Golden Silence*.

Chambers, EPHRAIM (c. 1680-1740), encyclopædist, born at Kendal, Westmorland; apprenticed to Senex, the mapmaker,

London, and issued in 1728 a *Cyclopædia, or Universal Dictionary*, in two folio volumes, an improvement on the sole extant work of the kind, Harris's *Lexicon Technicum* (1704). Chambers's work has the credit of having inspired Diderot and D'Alembert's great *Encyclopédie*.

Chambers, ROBERT (1802-71), Scottish publisher and author, younger brother of William Chambers, was born at Peebles, joined his brother's publishing business in Edinburgh, and issued *Illustrations of the Author of Waverley* in 1822. Scott and others interested themselves in him, and finding congenial themes in Scottish archæology, history, and biography, he issued *Traditions of Edinburgh* (2 vols. 1825; new ed. 1868), *Edinburgh Fires* (1824), and his charming *Walks in Edinburgh* (1825). Then followed *Picture of Scotland* (2 vols. 1826), *The Land of Burns* (1840), and the valuable *Domestic Annals of Scotland* (3 vols. 1858-61). To *Constable's Miscellany* he contributed 'Histories of the Scottish Rebellions' (1828-9). His was the directing hand in the *Biographical Dictionary of Eminent Scotsmen* (1832-4); he wrote a *Life of Scott* (1835), and he collaborated with Dr. Carruthers on the *Cyclopædia of English Literature* (1844; new ed. 1902-3). The best of his *Poems* (1835) were concerned with Scottish traditions. A conscientious editor, he produced *Popular Rhymes of Scotland* (1826; new and enlarged, 1847); the carefully compiled and edited *Scottish Ballads and Songs* (1829); *Romantic Scotch Ballads*, with original airs (1844); and the minute and elaborate *Life and Works of Robert Burns* (4 vols. 1851), a work which, marking an epoch in Burns editing, was enlarged and reissued by Dr. W. Wallace in 1896. Chambers edited in 1862 a

scholarly little book on *The Songs of Scotland prior to Burns*. In 1840 his anonymous *Vestiges of the Natural History of Creation* (1844) anticipated the theories and methods of Darwin. In 1845 he replied to his critics in *Explanation: a Sequel*. The authorship of the work was revealed by Alexander Ireland when introducing the twelfth edition (1884). Chambers's further scientific works are his *Ancient Sea Margins* (1848); *Tracings of the North of Europe* (1851); *Tracings in Iceland and the Faroe Isles* (1856). A unique work, the fascinating *Book of Days* (1863-4), shows the writer at his best. William Chambers's *Memoirs of himself and Robert Chambers* (1872; 14th ed. 1884) is a valuable record. See also James Payn's *Literary Recollections* (1884), Henry Morley's *English Literature in the Reign of Victoria* (1841), and the article in *Dict. Nat. Biog.*—His grandson, CHARLES EDWARD STUART CHAMBERS (1859), is chairman of W. and R. Chambers, Limited, and editor of *Chambers's Journal*.

Chambers, ROBERT WILLIAM (1865), American painter and author, was born in Brooklyn, New York. He studied art in Paris, and exhibited at the Salon in 1889. Since 1893 he has devoted himself chiefly to literature, and has published *The King in Yellow* (1893), *The Red Republic* (1894), *Lorraine* (1896), *Ashes of Empire* (1897), *The Conspirators* (1900), *Cardigan* (1901), *The Maid-at-Arms* (1902), *Orchard Land* (1903), *In Search of the Unknown* (1905), *The Fighting Chance* (1906), *The Firing Line* (1908), *Some Ladies in Haste* (1908), *The Green Mouse* (1910), *Ailsa Paige* (1911); also a play, *The Witch of Ellangowan*, written for Miss Ada Rehan.

Chambers, SIR WILLIAM (1726-96), architect, born at

thatch. See Seemann's *Popular History of Palms* (1856).

Chamalhari, a peak in the Himalayas ($27^{\circ} 49' N.$), on the N.W. frontier of Bhutan, 140 m. E. of Mt. Everest. It rises just above the main route from India to Gyangtse. Alt. 23,944 ft.

Chaman, tn., British Baluchistan, 60 m. N.W. of Quetta, with which it is connected by rail.

Chamba, or CHUMBA, native state, Punjab, India, lies to the S. of Kashmir, and N. of Kangra district. It is enclosed by hills, and is traversed by the Ravi and Chandra (Chenab), whose banks are covered with forests which abound with game. Iron ore and slate are plentiful. Chamba contains the sanatorium of Dalhousie. Estimated area, 3,200 sq. m. Pop. 128,000.

Chambal, or CHUMBAL, riv., Central India, rises in the Vindhya Mts., and flows in a general N.E. direction to its junction with the Jumna, 90 m. S.E. of Agra. Length, 650 m.

Chamberlain, an officer appointed by a king or corporation to superintend the performance of domestic duties or those connected with ceremonies. In Britain the lord chamberlain of the King's household has the control of all persons of the household (except the ladies of the Queen's bedchamber) who are not under the direction of the lord steward, the groom of the stole, or the master of the horse. The King's chaplains, physicians, surgeons, etc., as well as the royal tradesmen, are appointed by him. He is also the licenser of theatres and plays.

The chamberlain of the corporation of the city of London is an officer elected by the freemen who are liverymen. The duties are judicial and administrative. He admits on oath all persons entitled to the freedom of the city. As treasurer of the cor-

poration, he has to receive all rents, profits, and revenues of markets, and other items of income. A large number of other corporations, such as Edinburgh, have a city chamberlain, performing similar duties.

Chamberlain, LORD GREAT, the sixth great officer of state, to whom belongs the government of the palace of Westminster and the supervision of its officials. He disposes of the sword of state carried before the King when he comes to Parliament, and walks on the right hand of the sword, next to the King's person. He has 'livery and lodging' in the King's court, receiving fees from bishops and archbishops when they perform homage to the King, and from peers at their creation. His duties, however, chiefly relate to coronations and other public solemnities. The dignity was for some time held jointly by the Marquis of Cholmondeley and by Lord Willoughby d'Eresby. It is now jointly possessed by the Marquis, and by the Earls of Ancaster and Carrington, in right of their predecessors, the sisters and co-heirs of the twentieth Lord Willoughby, descended from the first holder of the office. They maintained their joint claims against the Duke of Atholl in the House of Lords on May 6, 1902, and their right of selecting a deputy, 'not to be of inferior degree to a knight.' At the coronation of Edward VII. the duties were assigned to the Marquis of Cholmondeley, by arrangement among the joint holders of the office.

Chamberlain, BASIL HALL (1850), English Japanese scholar, was born at Southsea, Hampshire. He is emeritus professor of Japanese and philology at the University of Tokyo. His publications include *The Classical Poetry of the Japanese* (1880);

A Romanized Japanese Reader (1886); *The Language, Mythology, and Geographical Nomenclature of Japan* (1887); *Colloquial Japanese* (3rd ed. 1898); *Introduction to Japanese Writing* (1899); and *Things Japanese* (5th ed. 1905). Also Murray's *Japan*, 3rd and subsequent eds. (in collaboration with W. B. Mason, 1891-1907).

Chamberlain, HOUSTON STEWART (1855), Anglo-German writer, born at Portsmouth; is a lecturer on philosophy at the University of Vienna, and in 1899 published the first volume of a striking book, *Die Grundlagen des neunzehnten Jahrhunderts* (English trans. 1910), in which he studies contemporary thought and civilization. The author is an enthusiastic admirer of Wagner, whose biography he wrote in 1896; and he has also written *Das Drama R. Wagners* (1892), *Die ersten 20 Jahre der Bayreuther Bühnenfestspiele* (1896), *H. von Stein und seine Weltanschauung* (1903), and *Kant* (1905).

Chamberlain, RIGHT HON. JOSEPH (1836), English statesman, born in London, a conspicuous figure in public life during the last quarter of the 19th century, and has been, at different periods in his strenuous, masterful, and eventful career, the object of bitter attack by each of the great parties in the state.

Mr. Chamberlain had won a reputation in the municipal life of Birmingham, of which he was thrice mayor, before he entered the larger sphere of imperial politics in 1876. Birmingham then chose him as the parliamentary colleague of John Bright, and has elected him for its western division from 1885 onwards. In 1880 Mr. Gladstone made him President of the Board of Trade, and included him in the cabinet. As a member of the government, he was actively con-

cerned in the negotiations which led up to the historical Kilmainham 'treaty' (May 1882). Mr. Gladstone formed his first Home Rule administration in January 1886. The assurances asked for by Mr. Chamberlain as to the premier's Irish policy were given, and he joined the government as President of the Board of Trade. But on March 26, owing to the character of Mr. Gladstone's Home Rule Bill, he retired from the cabinet. On June 7, 1886, the bill was defeated by a majority of thirty, and the ministry resigned. At Mr. Chamberlain's suggestion a 'Round Table' conference was held in January 1887, with a view to a settlement of the differences between the Liberal Unionists and Mr. Gladstone. The negotiations were protracted but fruitless, and from that time until 1892 Mr. Chamberlain co-operated with the Conservative government under Lord Salisbury. Towards the end of 1887 he went to Washington as one of the British plenipotentiaries to discuss the question of the Canadian fisheries with the American government. When, in 1895, the Marquis of Salisbury was returned to power for the third time, Mr. Chamberlain chose the Colonial Office. 'He breathed a new spirit' into the administration of that department (Mr. Balfour, July 19, 1902), and invested it with an interest and importance second only to that of the Foreign Office itself. Almost his first duty was to disavow and denounce the Jameson raid (1896). In consequence of the insinuations that he and the Colonial Office were privy to this 'unfriendly act' against the Transvaal, he insisted upon the appointment of the South African Committee, of which he was made a member against his own wish (1897). The report of the committee explic-

Stockholm. Between 1757 and 1762 he erected for Augusta, Princess-dowager of Wales, several classical and Oriental buildings in what are now Kew Gardens. He was first treasurer of the Royal Academy (1768), and in 1775 designed Somerset House, London. Chambers was undoubtedly the most successful architect of the reign of George III. His *Treatise on Civil Architecture* (1759) was long a text-book. See T. Hardwick's *Memoir* (1825).

Chambers, WILLIAM (1800-83), Scottish publisher, was born at Peebles; started a bookselling business at Edinburgh. In 1825-30 he published the *Book of Scotland* and the *Gazetteer of Scotland*, his brother Robert collaborating with him on the latter work. In 1821-2 he tried a venture with the *Kaleidoscope*, a fortnightly journal, and in 1832 started *Chambers's Edinburgh Journal*, Robert being editor almost from the first. Then began the firm of W. and R. Chambers. A pioneer of popular literature, *Chambers's Journal* had continuous prosperity, its circulation soon rising from 30,000 to 80,000. Other works conceived in the same spirit were immediately successful. *Chambers's Information for the People* appeared in 1833; the comprehensive *Educational Course* was begun in 1835; *Miscellany of Useful and Entertaining Tracts* ran to 20 vols., and *Papers for the People* completed 12 vols. The *Cyclopædia of English Literature* (2 vols.) appeared in 1844 (new ed. 1902-3), and the admirable *Chambers's Encyclopædia* was published in 10 vols. (1859-68), and greatly enlarged in the new issue (1888-92). William Chambers's contributions to literature include:—*Tour in Holland and the Rhine Countries* (1839); *Things as they are in America* (1854); *History of Peeblesshire* (1864); *France:*

its History and Revolutions (1871); *Ailie Gilroy: a Scottish Story* (1872); *Stories of Old Families and Remarkable Persons* (2 vols. 1878); and *Story of St. Giles's Cathedral, Edinburgh* (1879). In 1859 he endowed the Peebles Institution, which has a comprehensive library, museum, and gallery of art. He accepted the offer of a baronetcy, but died before the distinction was conferred. He was Lord Provost of Edinburgh, and restored St. Giles's Cathedral.

Chambersburg, bor., cap. of Franklin co., Pennsylvania, U.S.A., 47 m. s.w. of Harrisburg. It contains railway workshops, and has manufactures of woollen goods, shoes, paper, furniture, etc. In 1864 the Confederates burned part of the town. Wilson College, founded in 1870, is for the education of girls. Pop. 9,000.

Chambers of Commerce are associations of merchants and others interested in trade. They endeavour to further the interests of trade in their districts by making representations, by petition or deputation, to the government; by gathering information and collecting statistics; by assisting, informally, in the preparation of legislation dealing with mercantile questions; by discussions intended to influence or to create public opinion; by managing an employment bureau for men out of work; and, of late, by fostering commercial and technical education. By their activity, and through the weight which naturally attaches to their recommendations, chambers of commerce have acquired much influence.

A chamber of commerce is said to have existed, though not in a modern shape, at Marseilles as early as the end of the 14th century; and similar institutions appear in several French cities early in the 18th century, that

of Dunkirk being formed in 1700; and in the same year a council-general of commerce, to which delegates were sent from the chief commercial centres of France, was formed by the government. French chambers of commerce have a quasi-official character which has been copied in most continental countries. The members are indicated, if not selected, by the central government or its agents, and it is their function to supply the authorities with information regarding commercial conditions.

The chambers of commerce of the United Kingdom, the United States, and the British colonies are purely voluntary associations. One of the earliest, if not the first, is the chamber of commerce of Glasgow, which was founded in 1783. The Edinburgh chamber was formed in 1785, and granted a royal charter in the following year (the chamber of commerce of Edinburgh is in no way to be confounded with the Edinburgh Merchants Company founded in 1681). Other commercial centres were comparatively late in establishing similar associations. A chamber of commerce was not founded in Manchester till 1820, and was then, and for many years, the only institution of its kind in England. Hull followed in 1837, Liverpool, Leeds, and Bradford in 1850, and London not till 1881.

In 1860, as a result of a suggestion made at the meeting of the Social Science Association in 1859, the body now known as the Association of the Chambers of Commerce of the United Kingdom was formed. In 1900 a congress was held in London of the chambers of commerce in the empire. In the colonies many small towns have their chamber of commerce, or board of trade as it is usually called. In Canada these bodies are associated in general

provincial boards; and in 1902 the Dominion Board of Trade was reconstituted, and held a congress at Toronto.

Similar bodies are established in most of the chief cities of the United States. The New York chamber was founded in 1768, and was incorporated in 1770. It has a membership of nearly a thousand, and has established a board of arbitration for the settlement of differences among its members.

Chamber of Shipping of the United Kingdom, an association of thirty shipowners' associations of the United Kingdom for parliamentary work affecting British merchant shipping, and also for communicating with the chief government departments on shipping affairs. The offices are at 5 Whittington Avenue, Leadenhall Street, London, E.C.

Chambertin, a very choice red Burgundy from the Côte d'Or district of S. France. It is distinguished by its good body, mellowness of flavour, and excellent bouquet.

Chambéry, cap. dep. Savoie, France, between the upper valleys of the Rhone and Isère, 55 m. E. by S. of Lyons. It is an archiepiscopal see, with a cathedral of the 15th century (crypt 11th century) and the castle of the Duke of Savoy. Silk gauze, cloth, and gloves are manufactured. Pop. 23,000.

Chambon - Feugerolles, tn., dep. Loire, France, 4 m. S.W. of St. Etienne; has coal mines, and manufactures swords, bayonets, screws, and bolts. Pop. 12,000.

Chambord, chateau ('the Versailles of Touraine'), dep. Loiret-Cher, France, 8 m. E. of Blois. The chateau, built by Francis I. between 1526 and 1553, is a remarkable structure, illustrating renaissance principles grafted on the French mediæval type. The

walled park is 21 m. in circumference. A former residence of the French kings, it was conferred on Marshal Saxe by Louis xv., and from his widow it passed by purchase to the Comte de Chambord. At various times it sheltered Diane de Poitiers, Stanislaus of Poland, and Marshal Berthier. See Millot's *Les Châteaux historiques: Chambord* (1875); Miltoun's *Castles and Châteaux of Old Touraine* (1907).

Chambord, HENRI CHARLES DIEUDONNÉ, COMTE DE (1820-83), posthumous son of the Duc de Berri, and grandson of Charles X. of France, was born at Paris. It was in his favour that Charles X. abdicated in July 1830; but he fled with his grandfather to England, the people preferring Louis Philippe. Later he resided at Görz, where his tutor, the Duc de Damas, indoctrinated him with rigid clerical and absolutist ideas. In 1844 he gave up the name of Duc de Bordeaux for that of Chambord; and in 1848 he lost, through vacillation, his chance of becoming 'Henry v.' Again, in 1870, after the Franco-German war, the Legitimist claimant threw away his opportunity by his old promises and new retractions; and it was the same for a third time in 1873, after the fall of Thiers. He died at Frohsdorf in Lower Austria. As he left no heir, his claims descended to the Comte de Paris. See *Mémoires d'un Royaliste*, by the Comte de Falloux (2 vols. 1888).

Chambre Ardente (Fr. 'fiery chamber'), a court in France, instituted by Francis I. in 1535, for the punishment of Protestant heresy, its most frequent sentence being that of death by fire. It was suppressed temporarily in 1549, but revived in 1553. See Weiss's *La Chambre Ardente* (1889), and *Cambridge Modern History*, vol. ii. ch. 9 (1904).

Chamdo, or CHIAMDO, tn., Tibet, 400 m. E. by N. of Lhasa, on the Lan-tsang (Upper Mekong); has several Lamaist monasteries.

Chameleon, or CHAMÆLEON, a lizard which has long been known on account of the changes of colour which it is capable of undergoing, though these are in reality not more marked than in some other lizards. Structurally it has many peculiarities, and is strikingly different from other lizards. Thus, the tail is prehensile, and is constantly kept coiled round branches; the long, slender limbs have grasping fingers and toes, arranged on each foot in two bundles, containing two and three digits respectively; the tongue is very protrusible, and can be shot out to a length of about seven inches; the large eyes can be moved independently. Chameleons are purely arboreal animals, and feed entirely upon insects. The common chameleon (*Chamæleon vulgaris*) occurs in N. Africa, Syria, and Asia Minor; the dwarf chameleon (*C. pumilus*) in S. Africa; *C. calcaratus*, the Indian chameleon, in S. India and Ceylon.

Chamfer, a term in stonemasonry; equivalent to 'bevel' in joinery.

Chamfort, NICOLAS (1741-94), French author, born near Clermont in Auvergne. His writings gained him a footing in distinguished literary circles, and as a brilliant conversationist he was patronized by Louis XVI. and Marie Antoinette. He supported the popular party at the Revolution; but having exercised his cynical wit upon even his own side, he fell into disfavour. To escape arrest he committed suicide. His chief works were collections of maxims and of anecdotes, including a brilliant series of Parisian society portraits, and were edited by Auguis (5 vols. 1824-5). *The Cynic's Breviary*

(1902) is a selection of his maxims and anecdotes translated by Hutchison. See Pellisson's *Chamfort* (1895).

Chamier, FREDERIC (1796-1870), English naval officer and author, was the son of an Indian civil servant. He is chiefly known as the continuer and editor (1837) of James's *Naval History*, and as the author of sea tales and sketches, including *Ben Brace* (1836), *Tom Bowling* (1841), and *The Life of a Sailor* (1832).

Chamisso, ADALBERT VON (1781-1838), German author, whose real name was Louis Charles Adelaïde de Chamisso, was born at Boncourt, Champagne, his family being of Portuguese origin. In Paris he met A. von Humboldt and Wilhelm Schlegel, and the latter introduced him to Madame de Staël, whom he followed to Coppet. Here he began the study of botany, henceforth his main study. Appointed custodian of the Botanic Gardens at Berlin (1819), with G. Schwab he edited the *Deutscher Musenalmanach* (1832-8), and was elected member of the Berlin Academy (1835). He wrote a number of poems (first collected in 1831), songs delicate in feeling and graceful in form; also ballads whereof the subjects are mainly modern, and in which the influence of Heine and Wilhelm Müller is manifest. He is perhaps best known as the author of *Peter Schlemihls wundersame Geschichte* (1814). This fantastic tale of the man who sold his shadow to the devil was translated into English in 1824, and illustrated by Cruikshank. There is an edition of his works, with a good introduction by Walzel (1893), in Kürschner's *Deutsche National Literatur*. K. Lentzner's *Chamisso: a Sketch of his Life and Works, with Specimens of his Poetry* (1893), is based entirely on German authorities.

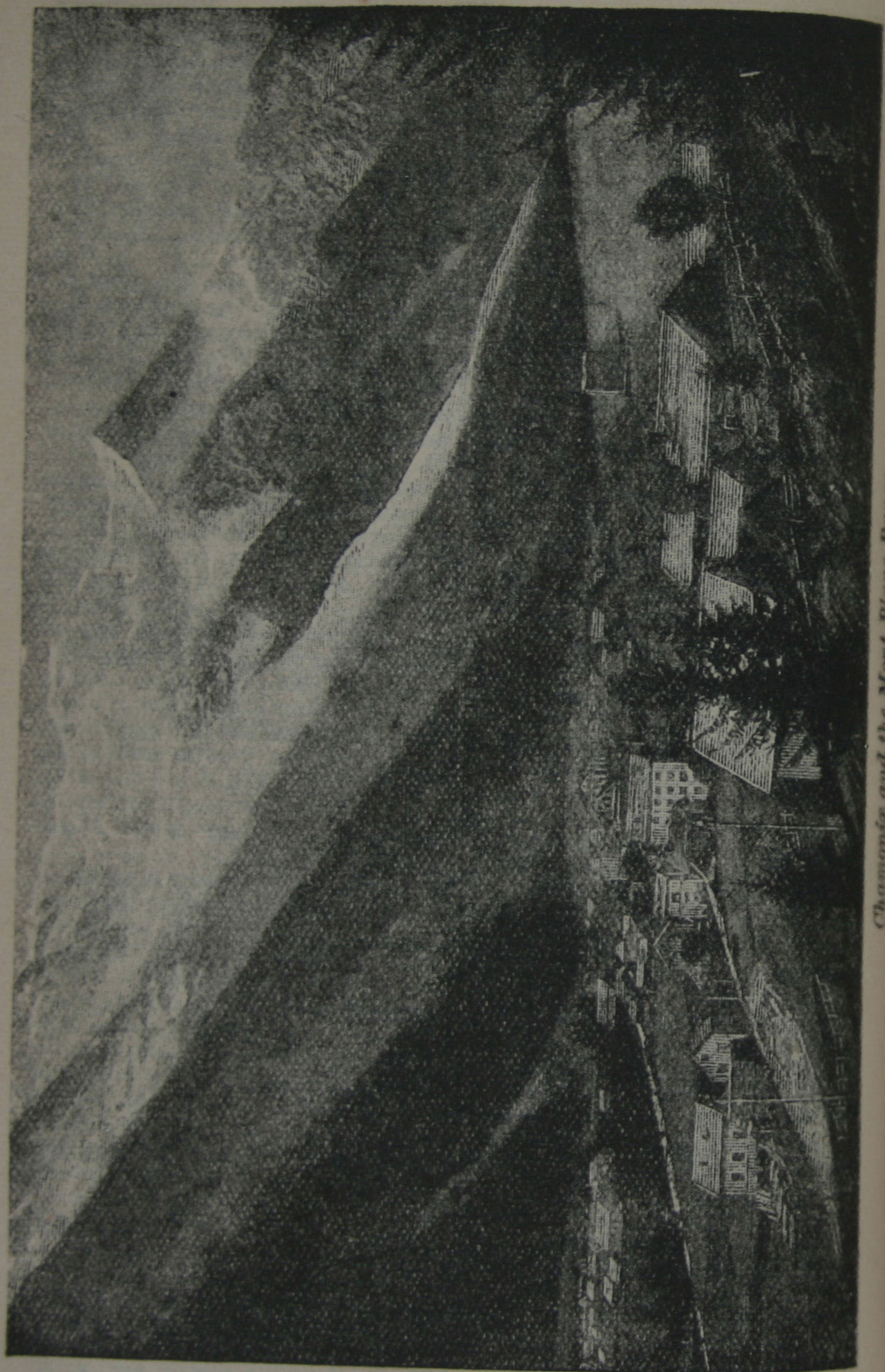
Chamois (*Rupicapra tragus*), a small European antelope, confined to the higher mountain ranges extending from the Pyrenees to the Caucasus. It has short cylindrical horns, and is of a grayish-brown colour, the brown being most marked in winter. For chamois leather see LEATHER.

Chamomile. See CAMOMILE.

Chamonix, CHAMOUNIX, or CHAMOUNI, picturesque vil., dep. Haute-Savoie, France, on the Arve, 40 m. S.E. by E. of Geneva, with which it is connected by railway (electric railway from St. Gervais, completed 1902). There is also a mountain funicular line (opened 1906) from Chamonix to Vernayaz in the Rhone valley. The village lies in a narrow valley, shut in on the S. by the Mt. Blanc range. Seven glaciers descend into the valley, one of them—Mer de Glace—being easily reached. Mt. Blanc is usually ascended from Chamonix. There is a statue in the village to De Saussure, who first ascended the peak (1786). Alt. 3,425 ft. Pop. 3,500. See Whymper's *Chamonix and the Range of Mont Blanc* (new ed. 1911).

Champagne, former prov. of France, now comprising the most of the departments of Aube, Marne, Haute-Marne, and Ardennes, and part of Aisne, Seine-et-Marne, and Yonne. Geographically it is a chalky level plateau, slightly inclined from E. to W., and watered by the rivers of the E. Seine basin. The region is famous for its wines. Originally governed by native princes, the province, on the marriage of Philippe le Bel with Jeanne de Navarre (1284), passed to the French crown.

Champagne is the name given to the wines produced from grapes grown on the eastern slopes of the western section of the above. Most of these wines are white



Chamonix and the Mont Blanc Range.

to pink in colour and sparkling, though a few are still. The first runnings from the press constitute the *vin de cuvée*, and produce the finest sparkling wine. The other pressings go to form inferior qualities both of wine and of brandy. The 'must' is sent to the great storehouses of Rheims, Avize, Ay, Epernay, Châlons, and Mareuil. Here fermentation takes place, and after settling the clear liquor is racked off. About December begins that very delicate operation known as blending, or 'making the *cuvée*.' The next process is that of bottling from the blending vats. In the bottles there occurs a secondary fermentation, and it is this which gives champagne its briskness. During this stage a deposit, consisting principally of tartar, is formed. The bottles are placed neck downward, and shaken up day by day. The deposit is removed by an operation known as *disgorgement*, and at the same time the wine, which should now be perfectly clear, is classed as extra dry, or *brut*. Such a wine is the most suitable for the English market, but for certain others it is usual to add a small quantity of a liqueur. The wine is stored for five or six years in cool cellars. About twenty-five million bottles are produced annually.

The best vintages since 1864 are—1865, 1874, 1880, 1884, 1889, 1892, 1893, 1895, 1898, and 1900, those of 1889, 1893, and 1895 being magnificent. The intervening years (except 1894, which was very bad) are only medium. The alcoholic strength of champagne is from 9 to 12 per cent.

Champaign, city of Champaign co., Illinois, U.S.A., about 130 m. s. by w. from Chicago. It has large railway works, and manufactures tiles and carriages. Pop. 10,000.

Champagne, PHILIPPE DE (1602-74), portrait painter, was

born at Brussels. After being 'queen's painter' and rector of the Paris Art Academy, he retired from the world to become the accredited painter to Port-Royal and the Jansenists. He executed in his time many works for palaces and churches, and for Cardinal Richelieu. His paintings sometimes recall Poussin, with whom he worked in painting the frescoes in the Luxembourg, Paris, but reveal his Flemish origin in their gravity and cold conscientiousness of manipulation. He was a distinguished portraitist. Most of his pictures are at the Louvre, including *The Dead Christ* and *Portrait of Cardinal Richelieu*. His *Triple Portrait of Cardinal Richelieu* is in the National Gallery; *Portrait of Fénelon* and three religious pictures in the Wallace Collection, London. See Gazier's *Philippe de Champaigne* (1893).

Champanan, or CHUMPARUN, dist., Patna div., Bengal, India, in the N.W. corner of Bihar. Area, 3,531 sq. m. Pop. 1,800,000.

Champ de Mars, a large parallelogram in Paris, between the Seine and the École Militaire, used principally for military purposes and drills. It has been the scene of many events of historic interest. On it stands the Eiffel Tower.

Champeaux, WILLIAM OF. See WILLIAM OF CHAMPEAUX.

Champel sur Arve, one of the s. suburbs of Geneva, Switzerland. It has a large hydropathic establishment.

Champerico, seapt. on the Pacific coast of Guatemala. Terminus of a railway, 60 m. long, to Quezaltenango. Exports coffee, rubber, hides. Pop. 1,500.

Champerty, or CHAMPARTY, an agreement by which a person having no interest in a litigation assists a party to such litigation, on the terms of receiving a share of the property recovered or re-

tained. Such an agreement is void, as tending to encourage speculative litigation; it is also punishable as a misdemeanour. Solicitors who agree to be paid with a share of the property recovered in the event of success are guilty of champerty. See BARRATRY, MAINTENANCE.

Champfleury, JULES HUSSON, also called FLEURY (1821-89), French writer, born at Laon. He came at an early age to Paris, and joined the circle of Baudelaire, Henry Murger, Banville, etc., whose Bohemian life he shared. He is one of the chiefs of the realistic school, and wrote a great number of novels, among the best being *Chien-Caillou* (1847), praised by Victor Hugo; *Confessions de Sylvius* (1849); *Aventures de Mariette* (1856); *Bourgeois de Molinchart* (1855), a satirical story of middle-class provincial life, which caused a great sensation; *Les Souffrances du Professeur Delteil* (1853; Eng. trans. under title *Naughty Boys, or the Sufferings of Mr. Delteil*, 1855); *Le Violon de Faïence* (1862), which is considered his masterpiece. Besides these he wrote excellent biographies, especially of *Honoré de Balzac* (1852), etc. Among other works are *Les Chats* (1868; Eng. trans. under the title, *The Cat, Past and Present*, 1885). In 1872 he was appointed director of the potteries at Sèvres, where he published his *Bibliographie Céramique* (1882). See *Life*, in French, by Troubat (1900).

Champigny, tn., dep. Seine, France, on the Marne, 6 m. E.S.E. of Paris, with an early Renaissance chapel, and manufactures of embroideries and piano keys. Two battles were fought here during the siege of Paris in 1870. Pop. 8,600.

Championnet, JEAN ANTOINE ETIENNE (1762-1800), French general, born at Valence (Drôme). On the outbreak of the Revolu-

tion, after suppressing the Girondist movement in the Jura without bloodshed, he in 1793 took part in the campaign of the Rhine, in which he contributed directly to the victory of Fleurus (June 1794). In 1798 he was appointed commander-in-chief of the French army in Italy, and defended Rome against the Neapolitans, cleared the Papal States of the enemy, and captured Naples (Jan. 23, 1799). There he proclaimed the Parthenopean republic. In the following June he was named commander-in-chief of the army of the Alps, but was defeated by the Austro-Russian troops at Gendla (Nov. 1799), and forced to retire towards Nice. He died at Antibes. Championnet was a brave and honest general, sincerely attached to the republic. See De Saint-Albin's *Championnet* (1860).

Champlain, lake in the N.E. of the United States, on the boundary between Vermont and New York; drained by the Richelieu R. northward to the St. Lawrence. It is long and narrow in shape, stretching N. and S. for 120 m., with a maximum breadth of 15 m.; area about 750 sq. m. Upon its E. shore is the city of Burlington, Vermont; and upon its W. shore is Plattsburg, New York. Alt. 100 ft. The lake was discovered by Samuel de Champlain in 1609, and in 1776 was the scene of a naval battle, in which a British flotilla defeated the Americans under Arnold. Another naval battle was fought in 1814, in which the British were defeated. The tercentenary celebrations of the discovery of the lake took place in 1909, when Indian pageants were conducted, representing scenes of 300 years ago.

Champlain, SAMUEL DE (1567-1635), first French governor of Canada, born in Brouage (Saintonge), and sailed for Canada in