September 2 and 14 were omitted, and the beginning of the year moved from March 25 to January 1; and, lastly, in Ireland in 1782. The Dionysian calendar is still retained in the Balkan states and in Greece, while in Russia the New Style was adopted in 1902.

During the French revolution a new calendar was introduced. The first year, commencing on Sept. 22, 1792, was styled the first year of the republic. The year was divided into 12 months of 30 days each, and the five days over (Sept. 17 to 21) were celebrated as festivals dedicated to Virtue, Genius, Labour, Opinion, and Rewards respectively. These days were commonly known as Sansculottides. Every fourth year was a leap year, and the years 100, 200, and 300 were to have been common years; but the calendar, first used on Nov. 26, 1793, was discontinued on Dec. 31, 1805. See YEAR, MONTH, DAY, etc. See also Clavius's *Operum Mathematicorum Tomus Quintus* (1612); S. Butcher's *The Ecclesiastical Calendar* (1877); Blaikie's *Monthly Star Maps for the Year 1900, with Notes on the Lunar-Solar Calendar*, etc.; De Morgan's article in *Companion to the British Almanac* (1845).

G.N.	A.	B.	C.	D.	E.	F.	G.
I.	Apr. 16	— 17	— 18	— 19	— 20	— 21	— 15
II.	,, 9	— 10	— 4	— 5	— 6	— 7	— 8
III.	Mar. 26	— 27	— 28	— 29	— 30	— 24	— 25
IV.	Apr. 16	— 17	— 18	— 12	— 13	— 14	— 15
V.	,, 2	— 3	— 4	— 5	— 6	— 7	— 1
VI.	,, 23	— 24	— 25	— 19	— 20	— 21	— 22
VII.	,, 9	— 10	— 11	— 12	— 13	— 14	— 15
VIII.	,, 2	— 3	— 4	Mar. 29	— 30	— 31	Apr. 1
IX.	,, 23	— 17	— 18	— 19	— 20	— 21	— 22
X.	,, 9	— 10	— 11	— 12	— 6	— 7	— 8
XI.	Mar. 26	— 27	— 28	— 29	— 30	— 31	Apr. 1
XII.	Apr. 16	— 17	— 18	— 19	— 20	— 14	— 15
XIII.	,, 9	— 3	— 4	— 5	— 6	— 7	— 8
XIV.	Mar. 26	— 27	— 28	— 29	— 23	— 24	— 25
XV.	Apr. 16	— 17	— 11	— 12	— 13	— 14	— 15
XVI.	,, 2	— 3	— 4	— 5	— 6	Mar. 31	Apr. 1
XVII.	,, 23	— 24	— 18	— 19	— 20	— 21	— 22
XVIII.	,, 9	— 10	— 11	— 12	— 13	— 14	— 8
XIX.	,, 2	— 3	Mar. 28	— 29	— 30	— 31	Apr. 1

Calendering, the operation by which paper, cotton, and linen goods are exposed to great pressure to give the surface a glazed finish. The calender consists of two or more cylinders of steel, wood, or paper, revolving at different speeds; in this way the material is both pressed and rubbed, and the glazed surface produced.

Calends, the first day of the ancient Roman month, which at first was lunar, having 29 or 30 days. The IDES, or day of full moon, was held to fall on the 13th or 15th of the month; and the 8th day before the ides—*i.e.* the 5th or 7th—was termed the NONES. Each intervening day was distinguished as the .... 5th, 4th, 3rd, 2nd day *before* the *nones* or *ides* of the current month, or before the *calends* of the following month. In this enumeration both of the terminal days were counted, so that June 25 would be the 7th before the calends of July. A promise to pay *ad kalendas Græcas* was equivalent to a refusal to pay at all, because the Greeks did not use the calendar which reckoned according to calends, ides, and nones.

Calendula. The common pot marigold (*C. officinalis*) of cottage gardens is a hardy flowering

plant. The English name has reference to the colour of the flower, and the plant is known simply as gold, or goules in certain districts. Marigold petals were sometimes used to give butter a yellow colour. The marigold is easy to grow from seed; indeed, it is difficult to extirpate it where it has once thriven.

Calepino, or DA CALEPIO, AMBROGIO (1435–1511), Italian lexicographer, a native of Bergamo. He devoted his life to the compilation of a polyglot dictionary, first published at Reggio in 1502. The best edition is that of Facciolati, published at Padua in 1718.

Calgary, rapidly developing tn., Canada, prov. Alberta, on the main line of the C.P.R., 2,262 m. w. of Montreal. It is beautifully situated in a valley at the east foot of the Rocky Mountains, 3,380 ft. above the sea. Branch lines of railway run north to Edmonton and south to Macleod. Calgary has a station of Canadian mounted police, and a post of the Hudson Bay Co., and it is a trade centre for live stock and furs. There are railway workshops, lumber mills, tanneries. and breweries. Pop. (1901) 3,876; (1906) 11,947; and (1910) 53,500.

Calhoun, JOHN CALDWELL (1782–1850), American statesman, was born in Abbeville co., S. Carolina, of Scotch-Irish stock. He was elected to Congress in 1811, and it was owing to his energy and that of his colleague, Henry Clay, that the president (Madison) was forced to declare war against Britain on June 18, 1812. In 1817 he became secretary of war under President Monroe; and later (1825–9 and 1829–32) was twice vice-president of the United States. In 1829 he stood forward as one of the champions of state rights as opposed to federal rule, and expounded the theory at length in his *Address to the People of S. Carolina* (1831). In 1832 he was elected to the United States Senate. Leaving the Senate in 1843, he became (March 31, 1844) secretary of state under President Tyler, and signed the treaty for the annexation of Texas. Resuming his place in the Senate in 1845, he strongly opposed the war with Mexico in 1846–7. In 1848 he organized a series of meetings protesting against the exclusion of slavery from the new territories. He died at Washington. Calhoun was one of the most eminent political leaders which the South has produced. A brilliant and effective speaker, his personal character was above reproach. See R. S. Jenkins's *Life of Calhoun* (1851); his *Collected Works* (1853–4), with a Life by Crallé; his *Correspondence*, ed. by J. F. Jameson (1900); and Von Holst's *John C. Calhoun* (1882, new ed. 1891).

Cali, tn., Colombia, on the Cauca R., 65 m. S.E. of Buenaventura. Copper and coal are mined in the neighbourhood, and iron is extracted. Quinine is produced. Alt. 3,430 ft. Pop. about 16,000.

Calibo, pueblo, Panay I., Philippines, prov. of and 25 m. W. by N. of Capiz; weaves cotton and abaca fabrics. Pop. 15,000.

Calibration. This term, applied originally to gauging the calibre or bore of a tube, such as a thermometer tube, with a view to graduating it in degrees or in equal volumes, is now more usually applied to the construction of a direct reading scale for a measuring instrument, or even to a method of correcting the errors in such a scale. A simple instance is the construction of the scale for an ordinary spring balance; in this case equal displacements of the index are produced by equal known increments

of weight. In measuring instruments in general, however, this law of proportionality does not hold. In many commercial ammeters, for instance, the deflections of the index are not proportional to the currents producing them, but at one part of the scale a small change of current may produce a much greater change of deflection than at another part. Consequently, a direct reading scale, which may have its graduation marks open at one part and close at another, has to be constructed. This is done by comparing a series of readings of the instrument with those of some standard instrument. A table of corresponding readings is thus obtained, and each corresponding pair is plotted on squared paper as the abscissa and ordinate of a point. The points so obtained are joined up by a smooth curve ('calibration curve'), from which may be read directly the value of any deflection indicated by the instrument which is being calibrated. The direct reading scale may then be constructed from the curve and attached to the instrument. In the same way a correction curve for the errors of any instrument is obtained.

Calibre, the diameter of the bore of a gun. See GUNS.

Calice, HEINRICH, BARON (1831), Austrian diplomatist, born at Görz, in 1857 entered the diplomatic service. He served in Constantinople, Liverpool, China, and Japan, and was Austrian ambassador at Constantinople (1880–1907).

Caliche is the name given to the crude sodium nitrate which occurs in S. America in deposits a few feet below the surface, and contains from 20 to 50 per cent. of sodium nitrate. Caliche also contains a trace of sodium iodate, a product which promises to be the chief source of iodine.

Calico Printing. The Egyptians prepared printed fabrics, and the art has been long known in India, Persia, and China. In modern practice the same methods are used, except that the patterns are engraved on copper rollers, and several colours are printed at one time. The colouring matter of dyes is not fixed on the calico by merely printing it on, or dipping it in a dye, but it must be fixed by a substance known as a 'mordant.' Mordants appear to combine both with the fabric on the one hand and with the dye on the other, and produce insoluble coloured compounds called 'lakes,' which are not readily washed out by water, and are termed 'fast.'

The acetate and other salts of aluminium, acetate of iron, and chloride of tin are the principal mordants; but soap, tannin, albumin, and alkalis are also used with particular dyes. The various methods used in printing are known technically as styles. In the madder style, where alizarin is used, the mordant is printed by means of the copper roller on the fabric; and if more than one colour is required, several mordants are used. Acetate of aluminium and alizarin produce pink and red colours, acetate of iron and alizarin give purple and black, and the mixture of the two yields a chocolate colour. Tin salts produce an orange; and by mixing and varying the strength a great variety of colours is produced. After the cloth is printed with the mordant, it is 'aged' by steaming it in a hot chamber. Formerly this process was carried out by hanging the fabric in a moist atmosphere for some days. The next process is that of 'dunging,' which formerly consisted of passing the cloth through hot water mixed with cow-dung, but is now effected by the use of chemicals such as

sodium phosphate or arsenate. The object of these two processes is to decompose the acetate and precipitate the oxide of aluminium, iron, or tin on the fabrics. The cloth is then dipped in the alizarin, when the various shades of colour appear, after which it is washed in soap and water to remove the dye from the unmordanted parts.

In the 'padding style' the whole cloth is mordanted, and afterwards other mordants are printed on, to produce varied colours on a coloured ground; or the mordant is removed or discharged in parts, and thus a white pattern on a coloured ground is produced. See W. Crookes's *Handbook of Dyeing and Calico Printing* (1874).

Calicut, seapt. of Malabar, Madras presidency, India, 84 m. W.N.W. of Coimbatore, was the first place in India visited by Europeans. Covilhão, the Portuguese adventurer, landed here about 1486, and Vasco da Gama in 1498. In 1792 it came into the possession of the British. The cotton cloth called calico, introduced into Europe by the Portuguese, is still largely manufactured here. Pop. 77,000.

Calif and **Califate.** The title *calif*, *caliph*, or *kalif*, a Western form of the Arabic *khalifa*, 'a successor,' was assumed and borne by the consecutive rulers of Islam, as 'successors' of their great prophet; and hence the term 'califate' or 'caliphate' became applied to this supreme office, and, in a wider sense, to the whole empire of the califs.

After the death of Mohammed, in A.D. 632, his place as ruler and spiritual guide of Islam was at once filled by the father of his wife Ayesha, Abu-Bekr, who, by general consent and by the prophet's own choice, was recognized as better qualified than any other to be the first 'successor.'

Abu-Bekr's short reign (632–634) was marked by the extension of the bounds of Islam. Khalid, surnamed the 'Sword of Allah,' Abu-Bekr's greatest general, carried the Moslem warriors to victory again and again, in their battles with the Persians in the east, and against the Romans (636) under Heraclius in Syria. By the year 642 the conquest of Persia was complete; and as early as 638 Omar, Abu-Bekr's successor, had founded the two cities of Basra (Bussorah) and Kufa, in the Euphrates valley. Damascus, Antioch, and Jerusalem had all been surrendered by the Romans in 636, and Syria had become wholly Moslem two years later. The conquest of Egypt, begun in 640, was achieved in the following year. Thus, when Omar perished by the hand of an assassin, in 644, the Arab dominion had extended to the Nile and the Levant on the west, and to the farthest limits of Persia on the east. Moreover, the faith had been widely promulgated, and fourteen hundred mosques founded. Nor had Omar been neglectful of internal administration, one notable act of statesmanship having been his establishment of a 'diwan' or exchequer, by which it was arranged that the past and future spoils of the victorious Moslems should be systematically divided among the conquering race. He is further remembered as the first of the califs who bore the title of 'Commander of the Faithful;' and it was he who instituted the chronological system which begins with the Hejira. The next calif, Othman, reigned from 644 to 656; and he was succeeded in turn by Ali (656–661), who made the new city of Kufa, on the Euphrates, his capital.

The accession of Moâwiya I. to the califate in 661 marks

the beginning of the hereditary period, and led directly to the great schism in the Mohammedan world which persists to the present day—viz. the Sunnites, who recognize and obey the line of the califs as history determined them, and the Shiites, or those (*e.g.* the Persians) who consider that the califate belonged legitimately to the family of Ali. Hitherto the califs, although autocrats, had been the nominees of an oligarchy. But in the person of Moâwiya began the dynasty of the Ommayads, or Ommiades, who reigned as follows: Moâwiya I. (661–680), Yazîd I. (680–683), Moâwiya II. (683), Merwan I. (683–685), Abdul-Melik (685–705), Walîd I. (705–715), Soliman (715–717), Omar II. (717–720), Yazîd II. (720–724), Hisham (724–743), Walîd II. (743–744), Yazîd III. (744), Ibrahim (744), Merwan II. (744–750).

During this period the Moslem empire was extended north-eastward across the Oxus, Afghanistan and Baluchistan being also included within its borders. Not only did the whole of the north African coast provinces, from the Nile to the Atlantic, fall under the sway of the califate, but a further advance northward into Europe was made. In the reign of Walîd I. Spain fell wholly under Arab dominion; and pushing still farther north, they overran Southern and Central France, and had every appearance of becoming the dominant power in Western Europe, when the splendid victory won by Charles Martel near Tours, in 732, turned the tide of Islamism, and forced the Moslems to retreat across the Pyrenees. The Ommayads, establishing themselves at Cordova in 755, in the person of Abdur-Rahman I., prolonged their rule in Spain until the year 1009, quite independent of the califate of the East. Thereafter the kings of Taifas, the Almoravides, the Almohades, and, lastly, the kings of Granada, successively upheld Islamism in Spain, though yielding ground with every century, until at length the conquest of Granada by the Spaniards, in 1492, drove the Moslems finally across the Strait of Gibraltar into Morocco.

Meanwhile Islam had been distracted by a long and violent struggle between the Ommayads and the rival house of the Abbasides, who were descended from Abbas, Mohammed's uncle. Under the leadership of Abu-'l-Abbas, this family vehemently asserted their superior claims to the califate; and the question was finally fought out (750) in a decisive battle from which the Abbasides emerged victorious. This was followed by a massacre of the whole clan of the Ommayads, with the exception of Abdur-Rahman, who escaped westward and founded the independent califate of Cordova. The Abbaside califs included the following rulers: Abu-'l-Abbas (750–754), Al-Mansur (754–775), Al-Mahdi (775–785), Al-Hadi (785–786), Haroun-al-Raschid (786–809), Al-Emin (809–813), Al-Mamun (813–833), Motasim (833–841), Vathek (841–847), Motawakkil (847–861), Montasir (861–862), Al-Mostain (862–866), Al-Motadi (866–870), Al-Motamid (870–893), Al-Motadid (893–902), Al-Moktafi (903–908), Al-Moktadir (908–932), Kahir (932–934), Radi (934–940). Radi was succeeded by other nominal 'successors' of the prophet, yet such power as they had once exercised passed to other dynasties, and even in the regions where their authority was still recognized the real power was in the hands of powerful subjects. At length their empire was finally extinguished by the Mongol conquest of Bagdad in

1258. See Stanley Lane Poole's *The Mohammedan Dynasties* (1894), Sir W. Muir's *The Caliphate* (3rd ed. 1899), Gertrude Bell's *Amurath to Amurath* (1910), and Von Kremer's *Kulturgeschichte des Orients unter den Chalifen* (2 vols. 1875–7); also compare MOHAMMEDANISM.

California (recognized abbreviation, Cal.), one of the westernmost states of the U.S.A., borders on the Pacific from lat. 42° N. to the S. boundary of the country. It is known popularly as the Golden State, or more simply as the Coast. It has an area of 158,360 sq. m., including a water area of 2,188 sq. m. It became a territory of the United States in 1846, and was admitted to statehood in 1850. The surface and climate vary widely in different parts. Traversing most of the state from N. to S., and parallel with the Pacific coast, is the high range of the Sierra Nevada, which rises abruptly from the deserts in the E., and descends W. in a long slope deeply cut by cañons. In this range occurs the well-known gorge, the Yosemite valley. West of the range is a broad, fertile valley, also parallel to the coast, drained by the Sacramento and its main branch the San Joaquin; and a succession of ranges, the Coast Ranges, separate this valley from the coast. East of these ranges and the Sierra Nevada (10,000–15,000 ft.) the country is a desert, with scarcely any streams. The climate of the coast is controlled by the prevailing westerly winds which blow from the Pacific. These make the winter a wet and the summer a dry season. In the Sacramento valley these effects are much less marked than on the coast, and in the desert E. of the Sierra Nevada they are not apparent.

About 15 per cent. of the area of the state is under cultivation, and most of the farms are owned by their occupants. A large portion of the cultivated area owes its fertility to irrigation, which is being vigorously extended, especially for fruit-growing. Wheat is raised mainly in the Sacramento valley, and the exports are shipped from Port Costa, near San Francisco. Fruits are cultivated in the valleys of the Coast Ranges and in the S. part of the state. Wine is extensively produced; some sugar is grown, and it and Hawaiian sugar are refined. The grazing industry is still large, but is not increasing. Salmon fishing and canning is an important industry. The mineral products consist mainly of the precious metals, mercury, and petroleum; but in the production of gold and silver California no longer holds its former commanding position. Since the discovery of gold in 1848 the state has yielded an output to the total value of £300,000,000, the yield in 1908 being valued at £3,865,950. In the Coast Ranges are the only working deposits of cinnabar in the country. Its petroleum fields are of great importance, the output in 1908 being close on 45 millions of barrels. Copper and quicksilver are also worked. Nearly all the borax produced in the United States comes from California (25,000 tons in 1908).

Heavy forests of valuable timber clothe the N. part of the Coast Ranges and the Sierra Nevada. Near the coast is the redwood forest; and in other parts of the same mountains are found yellow and sugar pines and firs of various species. Groves of the famous *Sequoia gigantea*, the largest tree in the world, still exist in the S. part of the Coast Ranges. There are about 10,000 m. of railway in the state, including 2,500 m. of electric lines.

The state university (3,300 students in 1908) is at Berkeley,

across the bay from San Francisco. The Leland Stanford Junior University at Palo Alto (1,750 students in 1908) is richly endowed by private means. It was founded in 1885, and opened in 1891, but was almost completely wrecked by the earthquake of 1906. Besides these, there are the university of Southern California at Los Angeles, and the university of the Pacific at San José. In this state is also situated the Lick Observatory, at Mount Hamilton.

The population in 1850 was 92,600; in 1900, 1,485,053; and in 1910, 2,377,549. The foreign-born element in the population is about 25 per cent., the Chinese 3 per cent.; the negroes are very few. Agriculture, fishing, and mining occupy 30 per cent. of the inhabitants; domestic and personal service, 25 per cent.; manufactures, 21 per cent.; trade and transportation, 19 per cent.; professions, 5 per cent. Sacramento is the state capital. See Hittell's *History of California* (1885–95), Royce's *California* (1886), and Bancroft's *History of the Pacific States* (1884–90).

California, GULF OF, called also PURPLE SEA (*Mar Bermejo*), as well as SEA OF CORTES, an arm of the Pacific, 700 m. long and 60 to 150 m. broad, which separates the peninsula of Lower California, on the W., from Mexico, on the E. Its waters are studded with numerous islands. Its chief ports are La Paz, Loreto, and Santa Rosalia. Pearls, coral, and sponges are its principal commercial products.

California, LOWER, terr. of Mexico, occupying the peninsula of that name, which runs S.E. from California, U.S.A. Its length is about 750 m., and its breadth 75 m. Area, 58,328 sq. m. A granitic range extends along the eastern shore, culminating in the peak Santa Genoveva (7,800 ft.). Copper is extracted from the volcanic rocks, and is exported. Silver and gold are associated with the granitic rocks. The climate is dry and healthy. The flora consists chiefly of cactuses, yuccas, mimosas, and other forms characteristic of dry regions. Grain, legumes, and tropical fruits are cultivated. The population is composed principally of half-breeds, and numbers 48,000. The capital is La Paz.

Californian Poppy. See ESCHSCHOLTZIA.

Caligraphy. See WRITING.

Caligula (12–41 A.D.), the Roman emperor, was the son of Germanicus and Agrippina. He was born at Antium, but was brought up in his father's camp in Germany. His real name was Gaius Cæsar; 'Caligula' was a nickname given him by the soldiers, from his wearing as a child small *caligæ*, or soldiers' boots. On his father's death he ingratiated himself with Tiberius by abject servility. On the death of the latter in 37 A.D. (which he is believed to have hastened), he was declared heir to the throne. For the first few months he behaved with justice and moderation, but after a severe illness he appeared as the most sanguinary tyrant known to history. It is beyond all doubt that he was insane. He made his horse a consul; and leading his legions to the coast of Gaul, as if for an invasion of Britain, he bade them pick up the shells as trophies from the ocean, and led them away. He insisted on divine honours being paid to him. At last, in January 41 A.D., Cassius Chærea, tribune of a prætorian cohort, formed a conspiracy, and murdered him.

Calipers, a kind of compass with curved legs, used in machine shops for measurements, such as the determination of diameters of

shafts and bores, and for centering. Vernier and micrometer calipers are used for minute measurements. See VERNIER and MICROMETER.

Caliph. See CALIF.

Calippus, or CALLIPUS (*c.* 330 B.C.), Greek astronomer, who invented the Calippic lunar cycle. See CALENDAR.

Calisthenics. See GYMNASTICS.

Calitri, tn., Italy, in Campania, prov. of and 43 m. E. of Avellino; has trade in live stock. Pop. 7,600.

Calixtus or CALLIXTUS I. (d. 222), bishop of Rome and saint, elected 219, and martyred Oct. 14, 223. He is known as the constructor of the celebrated catacombs on the Appian Way at Rome. —CALIXTUS or CALLIXTUS II. (d. 1124), Pope, was elected 1119, previous to which he was archbishop of Vienne, in France. He was a relative of the Emperor Henry V. When he became Pope, he made an arrangement, the Concordat of Worms (1122), with Henry, by which the latter abandoned the papal privilege of spiritual investiture by ring and crosier, but retained that by sceptre, as representing the temporal power.—CALIXTUS or CALLIXTUS III. There were two Popes of this name and number. The first was one of the anti-Popes elected in 1168, under the influence of Frederick Barbarossa, in opposition to Alexander III. The second was Alfonso de Borga, a Spaniard, elected in 1455. He annulled the sentence against Joan of Arc, and appealed to Christendom against the Turkish invasion in 1456. He died in 1458.

Calixtus (originally CALLISEN), GEORGIUS (1586–1656), a Protestant divine, was born at Medelbye, in Schleswig. He became professor of theology at Helmstedt, and attacked the Roman Catholic Church; but, later, the Lutherans believed that he was too tolerant of Roman Catholic tenets, and found him guilty of heresy. For his Calvinistic leanings, shown at the conference of Thorn in 1645, he was subjected to a further charge of apostasy. His dispute with the Lutherans, known as the Syncretistic controversy, lasted for many years. His chief work is *Epitome Theologiæ Moralis* (1634). He was styled by Bossuet 'the most able Lutheran of our time.' See Henke's *G. Calixtus und seine Zeit* (1853–60); W. C. Dowding's *Life of Calixtus* (1864).

Call. (1.) OF THE HOUSE, parliamentary proceeding, last invoked in 1838, whereby a full attendance of members of Parliament is secured on some particular occasion. Notice is given a few days in advance, and all members must answer the roll-call on pain of incurring the displeasure of the House.

(2.) TO THE BAR. See BARRISTER.

(3.) IN FINANCE. 'Call money' means money deposited with a bank, or lent by a bank, and returnable when called for. A call with reference to stocks or shares has several meanings:—(1.) An instalment of capital to be paid by subscribers to a new company, or to a new issue of shares. (2.) A demand for contribution made upon the shareholders by the liquidator of a company which is being wound up. (3.) An option to buy certain stocks or shares at a certain price on a certain date.

Calla. *Calla palustris*, the only species of the genus, is a marsh plant with trailing stems and heart-shaped leaves. The inflorescence has a white elliptical spathe, and is attractive and interesting. The bog arum, as the Calla is sometimes called, is easily grown in a pond or piece of boggy ground.

Callander, par. and mrkt. tn., Perthshire, Scotland, on Teith R.,

16 m. N.W. of Stirling, on C.R. Owing to its proximity to the Trossachs it is a favourite tourist centre. The Falls of Bracklinn (1½ m. N.E.), the Pass of Leny (leading to the chapel of St. Bride), and Braes of Balquhidder (Rob Roy country) are also within easy access. Near Callander is Ben Ledi (2,875 ft.). Pop. 1,500.

Callao, chief port of Peru, coincident with prov. of same name, 7 m. W. of the capital, extending for about 2 m. along a bay behind San Lorenzo I. (4½ m. long by 1 m. broad; alt. 1,220 ft.), which protects it from the violent south and south-west winds prevalent along this coast. The ground on which Callao is built is swampy and unhealthy. Hides, copper, silver, and other produce are exported. Many lives were lost by a severe earthquake in 1746. Callao is the starting-point of the great Oroya railway. Pop. est. at 20,000.

Callaway, HENRY (1817–90), Anglican missionary bishop, born at Lymington, Somerset; graduated in medicine in 1842; was consecrated missionary bishop of St. John's, Kaffraria (1873). He wrote *The Religious System of the Amazulu*, 4 parts (1868–70). See Miss Benham's *Henry Callaway* (1896).

Callcott, SIR AUGUSTUS WALL (1779–1844), English painter, called the English Claude, became a portraitist, but finally devoted himself to landscape painting. His best pictures, painted between 1812 and 1824, are bright, pleasant, and finished in execution. Later he was successful in large figure subjects. In 1837 he exhibited *Raffaelle and the Fornarina*, and was knighted; and in 1844 he was appointed conservator of the queen's pictures. His best work is in private collections, but there are several fair examples at the National Gallery and South Kensington.

Callcott, JOHN WALL (1766–1821), an English musical composer and organist, brother of Sir Augustus Wall Callcott. In 1806 he succeeded Dr. Crotch as lecturer at the Royal Institution, London. He wrote a large number of glees, catches, and canons, and his *Musical Grammar* (1806) was long a popular work.

Callena, a name applied in Spain to a dry fog which gives to about a fourth of the sky, from the horizon up, a reddish-brown tint. The higher atmospheric strata are yellowish, and occasionally the whole sky presents a filmy, leaden appearance.

Callernish, dist. and vil., par. of Uig, Lewis, Scotland, 16 m. W. of Stornoway; noted for its four Druidical stone circles, arranged to form a cross. In 1858, when the peat moss was cleared away, two altar chambers were discovered.

Callias, a name borne by various members of a noble Athenian family famous for their wealth. The best known was an ambassador from Athens to Artaxerxes, king of Persia, who is said to have concluded (*c.* 445 B.C.) the so-called peace of Callias, which assured the liberty of the Greek towns of Asia Minor and closed the Ægean to the Persians. The best authorities do not recognize the existence of any such treaty.

Callichthys, a genus of cat-fish or siluroids, including about a dozen species found in the rivers of tropical America. The body is enclosed in four rows of bony plates, and the head is also armoured. Like their allies in the same region, these cat-fish are capable of migrating overland from one river to another, and construct nests of leaves for their ova.

Calligonum, a genus of hardy, mostly evergreen shrubs which thrive in any light, well-drained soil. They are easily propagated by cuttings.

Callimachus (*c.* 310–240 B.C.), scholar and poet, was born at

Cyrene, and lived at Alexandria, where he was in charge of the famous library from about 260 to 240 B.C. Among his pupils were Eratosthenes, Aristophanes of Byzantium, and Apollonius Rhodius. He wrote about eight hundred works, of which only half a dozen hymns and some sixty epigrams are extant. They are characterized by extreme artificiality and great learning, and are full of recondite allusions. They were, however, highly estimated by the Romans, and had much influence on such poets as Catullus (who translated his *Coma Berenicæ*), Propertius, Ovid, and Virgil. His greatest work, unfortunately lost, was a comprehensive history of Greek literature. In antiquity, *Ætia*, a volume of elegies, and *Hecale*, an epic which had Theseus for its hero, were especially celebrated. His extant works were translated into English verse by Tytler (1793), and into English prose by Banks (1856). Editions: Blomfield (1815); Sch eider (1870–3).

Calling-crab (*Gelasimus arcuatus*), an African and Japanese crab in which the male has one great claw (cheliped), much larger than the other, and has the habit of holding up this large claw as though beckoning with it. The American species of the genus are called fiddler-crabs. All live in burrows on sandy or muddy shores, and run about actively at low tide.

Callinus, the earliest extant writer of elegiac poetry in Greece; indeed, the invention of that metre is usually attributed either to him or to Archilochus. He was a native of Ephesus, and lived probably about 700 B.C. Only a few fragments of his poems survive.

Calliope, mother of Orpheus, the first of the nine muses. She presided over epic poetry, and is generally represented with a wax tablet and a pencil.

Callirrhoë, a famous ancient fountain in Athens, one of the chief sources of the water supply of the city. In Greek mythology a daughter of the river god Achelöus.

Callisthenes, a Greek philosopher. His mother was a cousin of Aristotle, whose pupil he was. He accompanied Alexander the Great on his Asiatic expedition, was implicated in the conspiracy of Hermolaus to assassinate the king, and was put to death in 328 B.C.

Callisto, an Arcadian nymph and companion of Artemis. She was loved by Zeus, who changed her into a she-bear; then Artemis slew her in the chase. She was placed in the sky as the constellation of the Bear. Her son Arcas was the progenitor of the Arcadians. Callisto is merely a type of Artemis Calliste, 'the most beautiful.'

Callistratus, a prominent Athenian politician and orator between 380 and 360 B.C., whose policy was usually friendly to Sparta. In 366 he advised a temporary surrender of Oropus to Thebes. As the Thebans refused to restore the town, he was condemned to death for his evil counsel, but fled into exile. In 356 he returned, without having obtained pardon, and was at once executed. His oratory was greatly admired by Demosthenes.

Callorhynchus, a fish genus nearly allied to Chimæra. The single species inhabits the seas of the south temperate zone, and has the long tail bent upwards at the extremity.

Callosities are bare patches of skin in which the epidermis is hardened and thickened, and are of frequent occurrence in mammals. They occur especially on surfaces subjected to pressure, and are thus found on the under surface of the feet of most mammals, over the ischial tuberosities

of many monkeys, as well as in other situations. They are an especially conspicuous feature in the camel; and in the horse and its allies the callosities on the inner side of the limbs are of considerable systematic importance.

Callot, JACQUES (1592–1635), French draughtsman and etcher, was born at Nancy, in the then duchy of Lorraine. At the age of twelve he ran away from home, and joined a band of gypsies, whose features he has immortalized in a series of engravings, generally known as *Les Bohémiens*, displaying all his characteristic humour, verve, and an extraordinary wealth of detail. Leaving the gypsies at Florence (where, and at Rome and elsewhere, he rapidly acquired great skill as an etcher), he became famous in Tuscany, Lorraine, the Spanish Netherlands, and France. Of the many engravings he has left to us, the greater part depict, with intense reality and not without a touch of satire, the pomp and social life of his time. His *Misères de la Guerre* (25 plates) and *The Nobles* (12 plates) may be specially mentioned. See Green's *Catalogue and Description of Callot's Works* (1804); and *Lives*, in French, by Vachon (1886) and Bouchot (1888).

Calluna, a genus of the order Ericaceæ, of which one species, *C. vulgaris* (ling or common heather), occurs wild in Britain. The genus is marked off from its allies by its rosy calyx, the four sepals of which are much longer than the bell-shaped corolla within. Outside the calyx are four green bracts. The tiny downy leaves imbricate in four rows. The flowers appear in July, and remain attached to the plant for months. There are many varieties—*C. vulgaris alba*, *C. vulgaris flore-pleno*, *C. vulgaris tomentosa*, and others. The ling thrives in most situations, but particularly in peat, sand, and sunshine. See HEATHER.

Callus (Lat. 'hardness'), the material thrown out around the fractured ends of a bone, forming the new bone which unites them. In botany the word has an analogous sense. When a cutting is taken from a plant, or when a branch is pruned or otherwise wounded, a succulent tissue develops from the cambium or other active part and covers the cut surface. In the case of cuttings this callus produces the roots of the young plants, and in the other case it produces a protective covering for the stump.

Calmar. See KALMAR.

Calmet, AUGUSTIN (1672–1757), French theologian and historian, born near Commercy. Entering the Benedictine order, he was successively professor of theology in the abbey of Moyenmoutier (1696), prior of several monasteries, and in 1728 became abbot of Senones in Lorraine, where he remained to the end of his life. He supervised the publication in Paris of the famous *Commentaire Littéral sur tous les Livres de l'Ancient et du Nouveau Testament* (23 vols. 1707–16). Among his own works are *Dictionnaire Historique et Critique de la Bible* (1722; Eng. new ed. by Buckley, 1856), and *Histoire Ecclésiastique et Civile de Lorraine* (4 vols. 1728), his principal book. See *Life* by Dom E. Fangé (1763).

Calmucks. See KALMUKS.

Calne, par. and munic. bor. (area of par. 8,079 ac.) and mrkt. tn. of Wilts, England, 6 m. E.S.E. of Chippenham. There are bacon-curing establishments, flour and flax mills, etc. Pop. 3,500.

Calochortus, or MARIPOSA LILY, a genus of beautiful N. American bulbous plants allied to the tulip and fritillary. Most of the species are hardy in the

warmer parts of Britain, if the soil is not too heavy. They are easily grown in frames and greenhouses, care being taken to protect them from excessive moisture. They should be provided with free drainage. The bulbs should be planted three inches deep, in August, in deeply-dug soil, preferably composed of two parts sandy loam to one part leaf-mould. Among the thirty species best worth growing are the yellowish-flowered *C. apiculatus*, *C. Benthami*, *C. pulchellus*, and *C. Howelli;* the blue *C. Greeni* and *C. cæruleus;* the lilac *C. lilacinus*, *C. Gunnisoni*, and *C. Plummeræ;* and the white *C. nitidus* and *C. albus*.

Calomarde, DON FRANCESCO TADEO (1775–1842), Spanish statesman, born at Villel, Aragon; after studying law attracted the notice of Ferdinand by his abilities. A zealous absolutist, Calomarde acted as minister of justice (1824–33), framing new penal codes, recalling the Jesuits, closing the universities, and persecuting the Liberals by tyrannical statutes. In favour of Don Carlos, he carried the abolition of the laws regulating the Spanish succession to the exclusion of Isabella; but in 1833, on the assumption of the regency by the queen-mother (Christina), Calomarde fled to France, where he resided until his death.

Calomel, mercurous chloride, or subchloride of mercury, is found native as 'horn quicksilver,' but is generally manufactured by triturating a mixture of mercuric sulphate, common salt, and metallic mercury, subliming, and washing with boiling water. It is a white, heavy, odourless, and tasteless powder that is almost insoluble in water. It is blackened by ammonia, and sublimes when heated, forming a gas with a density that corresponds to the formula HgCl, which condenses on a cool surface unaltered. There is a strong opinion, however, that this vapour is a mixture of mercuric chloride and mercury formed by the decomposition $Hg_2Cl_2 = HgCl_2 + Hg$, and that calomel has thus really the formula Hg_2Cl_2. Calomel is used in medicine for very various purposes, and is administered by inunction, as a lotion, or internally in the form of pills. It has the antiseptic qualities characteristic of mercurial preparations. In small internal doses, from one-tenth of a grain to one grain, it is of the highest use in congestive conditions, especially those due to over-eating, over-indulgence in alcohol, want of exercise, etc., by its effect in producing more rapid changes in all tissues of the body. For this purpose it may be taken in small continued doses, in which form also it has been found to check vomiting in children. In doses of from four to eight grains for an adult it acts as a purgative, by stimulation of intestinal glands and irritation of the mucous membrane. In larger doses it is a gastric and intestinal irritant, producing severe vomiting and diarrhœa. Calomel is much used as a specific for syphilis, being administered internally or by inunction over prolonged periods; but if taken immoderately excessive salivation sets in, a blue line may be seen along the gums, and in extreme cases the teeth may be loosened and fall out.

Calonne, CHARLES ALEXANDRE DE (1734–1802), French statesman, became advocate-general of the chief council of Artois, then *procureur-général* to the Parlement de Douai, intendant of Metz, and afterwards of Lille, in which capacity he displayed so much ability that Louis XVI. appointed him (1783) minister of finance. To meet the increasing expenditure of the state, Calonne proposed (1787) to abolish the pecuniary

immunities from taxation of the nobles, the magistrates, and the clergy—a measure which met with such violent opposition that he was forced to resign.

Calophyllum, a genus of beautiful evergreen, leathery-leaved tropical trees, sometimes cultivated under glass in Britain. The flowers, which are borne in loose racemes, are usually white and fragrant. *C. Calaba* yields a green fruit, and *C. inophyllum* a red one. The seeds of the latter yield an oil (dilo) which is used in the Fiji and Hawaiian Islands as a remedy against rheumatism. The timber also is valuable for building purposes. Other species, too, give excellent timber, and some of the species yield the resin known as tacamahaca.

Calopogon pulchellus, a beautiful N. American tuberous-rooted orchid, bearing in July or August curious purple flowers, with a straw-coloured beard. It is really a bog plant, but does well in any moist ground if moderately shaded from the direct sun-rays. It enjoys the presence of leaf-mould and peat in the soil.

Caloric Engine, or HOT-AIR ENGINE. See AIR ENGINES.

Calorie is a unit of quantity of heat. It is usually stated as the amount of heat required to raise 1 gram of water 1° C.; but as this varies slightly with the initial temperature, it is necessary to specify that the rise is from some given point, such as from 15·5° to 16·5° C., or that it is $\frac{1}{100}$ of the quantity of heat required to raise 1 gram of water from 0° to 100° C. In dealing with larger quantities of heat, the large calorie, or heat required to raise 1 kilogram of water 1° C., is employed; and this is equal to 3·97 B.TH.U. (British thermal units), or quantity of heat that will raise 1 lb. of water 1° F. Owing to the uncertainty in the definition of the degree of temperature, and the variation in the specific heat of water, it is better to express quantity of heat in terms of units of work, heat and work being mutually convertible; according to which the small calorie is equal to 426·5 kilogram metres, or 1,400 ft. lbs. in gravitational units, or 4·184 $\times 10^7$ ergs in absolute units.

Calorimeter is the name given to the apparatus used to determine the specific heat of substances, or the amounts of heat evolved or absorbed in various physical and chemical changes. Calorimeters take very diverse forms, according to the particular kind of determination to be carried out in them, varying from quite simple vessels, if the specific heat of a metal is to be determined by adding it to water at a different temperature, to highly complex apparatus, if the specific heat of gases is to be measured, or the method of fusion or evaporation is to be the basis of the operation. In all such experiments the great difficulty is to prevent loss of heat during the process, and many precautions, such as silvering and polishing, enclosing in non-conducting air and vacuum jackets, etc., have to be taken, and corrections made to obviate errors that might arise in this way. See SPECIFIC HEAT, LATENT HEAT, and THERMOCHEMISTRY.

Calotte, a cap or coif commonly worn over the tonsure by ecclesiastics in France in the 15th and 16th centuries. The name was also applied to the padded cap which knights wore under their helmet, and, during the period of the reformation, to a close-fitting woman's headdress. The word, when used in architecture, designates a flattened dome.

Calottists, a satirical society founded in 1702 by Aymon and Torsac, of Louis XIV.'s body-guard, and deriving its name

from the *calotte*, a small cap worn by priests to conceal their tonsure. Transformed about the middle of the 18th century into a military institution, it was finally suppressed at the Revolution. See *Mémoires pour servir à l'Histoire de la Calotte* (1725).

Calovius, or KALAU, ABRAHAM (1612–86), leader of the strict Lutheran party in Prussia, born at Mohrungen, E. Prussia, and after filling a theological chair (1637) at Königsberg, was appointed (1650) to a similar position at Wittenberg, along with the post of chief superintendent. In 1665 he launched his polemical *Consensus Repetitus Fidei Veræ Lutheranæ* against Calixtus, and followed it up with attacks on Socinians, Arminians, and Calvinists. His chief works were *Systema Locorum Theologicorum* (12 vols. 1655–77); *Biblia Illustrata* (1672); *Historia Syncretistica* (1682).

Caloyers, Greek monks of the order of St. Basil. Their rules are severe: flesh foods are forbidden, and their bread must be earned by manual labour. Their most famous monastery is on Mt. Athos. Female caloyers, observing rules similarly strict, form a separate community.

Calpe, the mountainous headland in the S. of Spain, now known as Gibraltar.

Calpurnia. (1.) The last wife of Julius Cæsar, who married her in 59 B.C. Her anxiety for Cæsar when the conspiracy was formed against him, and the dream which made her beg Cæsar not to leave his house on the ides of March, have been made famous by Shakespeare. (2.) Second wife of Pliny the Younger.

Calpurnius Siculus, a Roman poet of the 1st century A.D. Little or nothing is known of his life. His works consist of seven eclogues (four others being erroneously attributed to him), or poems of rustic life, closely imitating those of Virgil. His style is elegant, but he is lacking in simplicity and naturalness. Editions: Text, in Baehren's *Poetæ Latini Minores*, vol. iii. (1879–83); Schenkl (1885); with notes, Keene (1887); Eng. verse trans., Scott (1890).

Calstock, par. and mining tn., Cornwall, England, on R. Tamar, 6 m. S.W. of Tavistock. Copper and tin are mined. Pop. 6,000.

Caltabellota, tn., Girgenti prov., Sicily, 9 m. N.E. of Sciacca, near the site of the ancient *Tricala*. An old Saracen stronghold. Pop. 6,500.

Caltagirone, tn. and episc. see, prov. Catania, Sicily, 42 m. by rail S.W. of Catania; is a well-built town, crowns a couple of hills (2,015 ft.) linked by a bridge, and is a favourite place of residence for the rural nobility of the island. It is famous for its schools, as also for its pottery and its statuettes. Pop. 45,000.

Caltanissetta. (1.) Province of Italy, in the middle of Sicily. In the N. it rises to an altitude of over 3,000 ft., and is drained by the Salso and other streams. Sulphur, wheat, wine, salt, olives, and other fruits are the principal products. Area, 1,263 sq. m. Pop. 35,000. (2.) Capital and episc. see of above province, 43 m. by rail N.E. of Girgenti; stands nearly in the middle of the island, on a lofty plateau (1,930 ft.), and has a cathedral, a technical and a mining school, large fairs, sulphur mines, mineral springs, and potteries. Close by is a monastery in the Norman style, built (1153) by King Roger I. Pop. 43,000.

Caltavuturo, tn., Sicily, prov. of and 35 m. S.E. of Palermo; has Saracenic remains. Pop. 5,800.

Caltha, a genus of plants belonging to the order Ranunculaceæ, of which the marsh marigold (*C. palustris*) may be taken as

representative. *C. palustris flore-pleno* is a double variety of the common yellow species; *C. lepto-sepala* bears white flowers; and *C. purpurascens* has purple stems and rich yellow flowers. All are easily grown, and rapidly increase in wet ground, especially if the soil tends to be heavy rather than light.

Caltrop (A.S. *calcatrippe*), a small iron ball with projecting spikes; was much used in mediæval warfare, the ground over which an enemy was expected to charge being thickly strewn with them, with the effect that the advancing horses were at once disabled by the sharp spikes piercing their hoofs. The effect was equally disastrous in the case of bare-footed infantry. Caltrops were also used by the New England colonists, who placed them in the grass around their villages, as a precaution against Indian attacks. The word is, moreover, applied to plants that catch or entangle the feet; and 'water caltrops' is a name given to the Potamogeton water-plant, because it entangles swimmers.

Caluire et Cuire, tn., dep. Rhône, France, on river Saône, 3 m. N.N.E. of Lyons. It has potteries, nurseries, and essence distilleries. Pop. 10,200.

Calumba. *Calumbæ radix* of the British pharmacopœia is the dried root of *Jateorrhiza palmata*, a lofty herbaceous climbing plant, native of E. Africa. The roots or tubers are brown without and yellow within, and have a bitter taste, due to a substance known as calumbin, and in a lesser degree to berberin, an alkaloid which also occurs in the barberry. Calumba root is used as a stomachic and tonic, the maximum official dose being half a drachm. It is chiefly taken as an infusion, to make which one ounce of finely-cut root is placed in a pint of cold water for an hour, and the infusion strained. This is not kept for more than a day or two. The maximum dose is two ounces.

Calumet, tn., Michigan, U.S.A. See LAURIUM.

Calumet, the tobacco pipe specially known among the Algonquin Indians as 'the pipe of peace,' owing to its distinctive use at a council of warriors assembled for the purpose of concluding peace between their opposing tribes; though it was, in fact, used on all solemn occasions. Custom prescribed that the calumet should be solemnly whiffed by each warrior in turn, and so handed round. Its long stem, formed of wood or reed, was fringed with eagles' quills, the bowl being made of stone.

Calumpit, tn., prov. Bulacan, Luzon, Philippines, 27 m. N.W. of Manila. It was burned in the war of 1899. Pop. 14,000.

Caluso, comm., Piedmont, Italy, prov. of and 20 m. N.N.E. of Turin; has brickfields, and is a centre of grape culture. Pop. 7,000.

Calvados, dep. of Normandy, France, between the estuary of the Seine on the E. and the Cotentin peninsula on the W. Area, 2,197 sq. m. The department is drained to the English Channel. The plain of Caen, which is fertile, produces good corn, butter (Isigny), cheese (Livarot, Pont-l'Evêque), and cider, and raises cattle and horses on its famous pastures. The fisheries, both river and sea, are very productive, but there is no game. Seaside resorts dot the whole coast, and railway communication is good. Textiles (laces at Bayeux, tulles at Caen, flannels and swan skins at Lisieux, canvas in the Bocage) are manufactured, iron ore is mined, and the quarries yield good road metal. Cap. Caen. Pop. 403,000.

Calvaert, or CALUWAERT, DENIS, also designated DIONISIO

FIAMMINGO (1540–1619), Flemish painter of the Bologna school, born at Antwerp, and studied at Rome under Fontana and Sabatini. At Bologna he founded a school which numbered among its students Guido Reni, Albani, and Domenichino. Among the larger pictures by Calvaert the best are *The Martyrdom of St. Agnes*, in the church of St. Agnes at Mantua; *Paradise*, at Bologna; *The Transfiguration*, at Parma.

Calvary, the scene of the crucifixion of Jesus Christ, is situated close to Jerusalem. The Hebrew name was Golgotha ('skull'), derived either from its having been the place of execution, where bones, etc., were constantly lying about, or from its resemblance to a skull. There is no indication in Scripture that it was a hill at all, and the name Mount Calvary does not go back beyond the 5th century. It is, however, spoken of as a conspicuous place (Mark 15:40; Luke 23:49). Golgotha is traditionally placed to the northwest of the (ancient) city, the spot having, as it was supposed, been discovered by Constantine; and here was erected a church, on the site of which stands the present Church of the Holy Sepulchre. Many Roman Catholic churches have a representation of the crucifixion (Calvary) approached by a Via Dolorosa.

Calvé, EMMA (1864), French operatic singer, whose real name is EMMA DE ROQUER, was born at Madrid; made her début as Marguerite in Gounod's *Faust* (1882). She appeared in London in 1892, at Covent Garden, in *Cavalleria Rusticana*, and in *L'Amico Fritz* as Suzel, a part she had created at Rome. She first appeared at New York in 1893. Not only is she a remarkably fine singer, with a voice of extraordinary range, but she is also a very capable actress. Among her most noteworthy impersonations are the leading parts in *Carmen*, in Joncière's *Chevalier Jean*, Massenet's *Sapho* and *Navarraise*, De Lara's *Messalina*, and Samara's *Flora Mirabilis*. Other rôles assumed by her are the Countess in *The Marriage of Figaro*, Ophelia in Thomas's *Hamlet*, Leila in *The Pearl Fishers*, and Pamina in *The Magic Flute*.

Calverley, CHARLES STUART (1831–84), English poet, born at Martley, Worcestershire, his surname originally being Blayds. In 1862 he published *Verses and Translations*. He wrote delightfully witty verses in parody of classical and modern poets, and excelled in spirited translation. His work was somewhat in the manner of Mr. Owen Seaman, the present editor of *Punch*. He published *Fly Leaves* (1872), and a memorial volume entitled *Literary Remains* (1885), to which was appended a biographical sketch by W. J. Sendall.

Calvert, CHARLES ALEXANDER (1828–79), English actor, born in London; first appeared at Weymouth Theatre (1852) under Sothern; three years later joined Shepherd and Creswick at the Surrey in London. He went to Manchester as stage manager and leading actor at the Theatre Royal (1859); in 1864 he became manager of the new Prince's Theatre, where he staged successful Shakespearean 'revivals,' *The Tempest* (1864), *Antony and Cleopatra* (1866), *The Merchant of Venice* (1871), and *Twelfth Night* (1873). In 1877 he returned to the Theatre Royal, where he produced *Henry VIII.*, *Sardanapalus*, and other dramas, with elaborate spectacular effects.

Calvert, FREDERICK CRACE (1819–73), English chemist, was born in London, and received his scientific education in France. His reputation rests upon his researches in industrial chemistry, tanning, calico-printing, and iron-

puddling. He was the first to manufacture pure carbolic acid, and established large works at Manchester for its production. Its use as a disinfectant is practically due to him. A list of Calvert's scientific papers is prefixed to his *Dyeing and Calico-Printing* (2nd ed. 1876). See *Soc. of Arts Jour.*, xxi. 919 (1873).

Calvi, fort. tn. and harbour, N.W. coast of Corsica, France, 45 m. N. of Ajaccio. The citadel, an ancient Genoese structure, was taken by the British in 1794, when Nelson lost an eye. The place is a fishing centre, and has some trade in wine, oil, and fruits. Pop. 2,000.

Calvi Risorta, vil., prov. Caserta, Italy, 8 m. N.W. of Capera, see of a bishop, with old cathedral. It is the ancient Cales, celebrated for its wines, praised by Horace. Pop. 3,300.

Calvin, JOHN (1509–64), the reformer, was born at Noyon in Picardy. Destined for the Roman Catholic Church, he entered the college of the Capettes, where he displayed extraordinary precocity. At the age of twelve he became chaplain to the chapel of the Gésine—not unusual at the time, when there were a cardinal of sixteen in France and one of twelve in Portugal. He next entered (1523) at the college of La Marche, under the regent Cordier (Corderius). It was to him that Calvin dedicated his *Commentary on the First Epistle to the Thessalonians*. Passing through the college of Montaigu, he became (1527) curé of Marteville, and subsequently curé of Pont-l'Evêque, his father's native town, in 1529. Obeying his father's instructions, he gave up the study of theology for that of law, at Orleans, and afterwards at Bourges. At Bourges he also learned Greek from Wolmar, read the Greek Testament, and became a Protestant. He went to Paris, and in support of the 'new religion' he wrote a commentary on Seneca's *De Clementia* (1532); but persecution became too strong, and he had to flee to Basel, where, in 1536, he produced the *Institutes of the Christian Religion*. Calvin is next found in Geneva in 1536. Here the courageous Farel entreated him to stay, and Calvin received a ministerial charge and the chair of divinity in the academy. Accused of Arianism by Caroly, he successfully defended himself before the Synod of Bern, and in less than a year's stay in Geneva he procured the formal renunciation of Popery by the public authorities; but over an unhappy schism as to the use of unleavened bread in the celebration of the eucharist, Calvin had to leave Geneva and take refuge in Strassburg, where he was at once appointed pastor of a church and professor of theology. Here he composed his *Treatise on the Lord's Supper*, and an eloquent reply to Cardinal Sadolet, who endeavoured to win back the Genevese to the Catholic Church. In 1540 he attended the Diet of Worms, and in 1541 that of Ratisbon, where he was introduced to Melanchthon, who ever after spoke of him as 'the theologian' of the day. In 1541 he returned to Geneva at the public request of the inhabitants, and his system of ecclesiastical discipline, called the Consistory, was established in the city in the same year. He wrote a *Catechism* in Latin and French, and in 1543 he composed a famous liturgy. Next we hear of him engaged in controversy with the decisions of the Council of Trent in a work called *The Antidote*, and in a long correspondence with Luther, Bucer, and other reformers. In 1554 he received a visit from John Knox, which resulted in an intimate friendship till Calvin's death. A

slur is cast on the later part of Calvin's life by his treatment of Servetus, a Spanish physician, who was passing (1553) through Geneva, and who is said, at the instigation of Calvin, to have been seized, imprisoned, and consigned by the council to a cruel death. In 1564 Calvin was visited by Beza, and on May 24 of the same year he died. Calvin's views may be summarized thus: (1) particular election; (2) particular redemption; (3) moral inability in a fallen state; (4) irresistible grace; (5) final perseverance. Calvin held the spiritual presence of Christ in the eucharist, and not the doctrine of consubstantiation. His tenets were directly opposed to those of Arminius. That his opinions on predestination and election have been pushed far beyond his own belief by his Calvinist followers may be illustrated by a passage from his will: 'The blood which my sovereign Redeemer has shed for the sins of the *human* race'—not, as they teach, for the elect only. As a theological writer, Calvin is remarkable for clearness, method, and scientific exactitude; as a reasoner, he is distinguished for logical acuteness. According to Scaliger, he stood alone among theologians. Calvinism, in the extreme form which it took in the 17th century, has long been losing ground in England, and the Scottish Free Church litigation proves that it has largely lost its hold on the Scottish people. Calvin's quatercentenary was celebrated in 1909 in Geneva, Edinburgh, etc. A complete edition of Calvin's *Works* was issued in 59 vols. by Braun, Reuss, and Cunitz in 1863–1900. See Paul Henry's *Life and Times of Calvin* (1835); Beza's *Histoire de la Vie et la Mort de Calvin* (1564); and other *Lives* by Bolsec (1616), Masson (1638), Fischer, Dumergue (1899), John Scott (1833), T. H. Dyer (1850), Bungener (1863), and Irwin (1909).

Calvinia, dist. and tn. in the N.W. of the Cape prov., South Africa stretching to the Orange R.; chiefly inhabited by nomad Boers. Area, 23,800 sq. m. Pop. of dist. 12,000 (whites 5,000).

Calvinistic Methodist Church. See METHODISM.

Calvo, BONIFACI, an Italian troubadour of Genoese extraction, who wrote in Provençal, and flourished probably about 1250–70. Living for a time in Spain, on the death of Thibaut of Navarre (1253) he wrote a poem urging his patron, Alfonso X. of Castile, to seize Navarre. Returning to Genoa, he wrote several poems warning his fellow-citizens that unless they ceased civil strife they would be defeated by the Venetians. Seventeen of Calvo's poems have been printed by Raynouard, *Choix de Poésies Originales des Troubadours* (6 vols. 1816–21), and Mahn, *Gedichte der Troubadours in Provenzalischer Sprache* (4 vols. 1856–73). See Diez's *Leben und Werke der Troubadours* (2nd ed. 1882), pp. 389–397.

Calvo, CARLOS (1824–1906), Argentine historian and jurist, born at Buenos Ayres. In 1860 he undertook a diplomatic mission to London and Paris, and in 1885 was appointed Argentine minister at Berlin, and from 1899 to 1905 held a similar post at Paris. His chief works include *Derecho Internacional Teorico y Practico de Europa y America* (2 vols. 1863; 6 vols. 1887); *Annales Historiques de la Révolution de l'Amérique Latine* (5 vols. 1864–75); *Dictionnaire du Droit International* (1885); *Le Droit International Théorique et Pratique* (6 vols., 4th ed. 1887–96).

Calycanthus, a genus of hardy deciduous shrubs which bear flowers of considerable beauty

and fragrance. They are mostly natives of N. America, but are easily grown in Britain if a damp, somewhat shady spot be afforded them. The flowers are large, the purplish-brown sepals being the prominent feature. *C. floridus* (the Carolina allspice) grows to a height of 6 ft., and is fragrant in all its parts. *C. occidentalis* (the sweet-scented shrub of California) is taller, and equally fragrant; it is sometimes known as *C. macrophyllus*. *C. præcox* (*Chimonanthus fragrans*), the winter sweet, which bears its fragrant brownish-yellow flowers in January, should be grown against a wall with a southern aspect. All the kinds may be increased by layers or suckers or by division.

Calycifloræ, the name given to all that group of plants in whose flowers the petals are free and are inserted on the calyx.

Calydon, a mythical city of Ætolia, the scene of the hunt of the Calydonian Boar, related by Ovid in bk. viii. of *Metamorphoses*. This legend covers also the magic or sacred boar of Gaelic (as of Cymric) legend, and the theory has been advanced (*Ossianic Soc. Trans.*, 1860, vol. v. p. 62) that it represents a porcine worship similar to that of Vishnu, in his avatar as a boar. The Teutonic tribes also held the boar as sacred, and Tacitus mentions that among the Æstyi it was the symbol of 'the mother of the gods' (*Ger.* 45). In modern Europe and in China a pig is still the emblem of luck.

Calymene, a genus of fossil trilobites which is very common in Silurian rocks of Europe and N. America. In Britain it is frequently found in the Wenlock limestone (*Calymene Blumenbachi*) in excellent preservation; this species being popularly termed the Dudley locust.

Calypso, a daughter of Atlas, who lived in the island of Ogygia. Homer tells that when Odysseus was wrecked on her island she wished to keep him with her, but after seven years the order of the gods and his longing for home prevailed on her to let him go. (See *Odyssey*.) Another version of the story, adopted in Fénélon's *Télémaque* (1669), substitutes for Odysseus his son Telemachus.

Calyptræa, a genus of gastropod molluscs which includes forms presenting some resemblance in habits and external appearance to the limpets, to which they are not nearly related. Externally the shell appears simple and cap-shaped, but beneath the apex there is a concealed inner whorl. One British species adheres tightly to rocks.

Calystegia, a genus of plants which is a subdivision of the order of the Convolvulaceæ, and is closely allied to the genus Convolvulus, in which its species are often included. Most of the species are quite hardy in Britain, and are easily grown in ordinary garden soil; but *C. Soldanella* will not thrive if the soil is at all heavy or retentive. They are easily increased by division. They are mostly perennials. Of the trailing species, the downy little *C. villosa* (which bears long campanulate flowers of a primrose colour), the reddish flowered *C. Soldanella*, or sea-bells, and *C. sepium*, the common bindweed, are the best known. Of the climbers may be named the very vigorous pink-flowered *C. pubescens* and its double-flowered variety, *C. occidentalis*, and the rose-flowered *C. Dahurica*.

Calyx, the outer of the four whorls which compose a typical flower, its parts or leaves being known as sepals. If the flower has calyx and no corolla, or corolla and no calyx, the plant is called monochlamydeous; if it has neither, it is achlamydeous. When the sepals are joined to-

gether, forming a cup, the calyx is gamosepalous; when the sepals are not united, it is called polysepalous. Usually the sepals are green, but occasionally they are of other colours; they are then called petaloid. When the calyx is adherent to the ovary, it is called superior; when not adherent, it is inferior. When the sepals are joined together, the terminal part of each that is unattached is called its limb, the united parts of all the sepals together forming the tube.

Calzadd-de-Calatrava, LA, tn., Spain, prov. of and 20 m. S. by E. of Ciudad Real; manufactures brandies, linens, and lace. Pop. 6,500.

Cam, a mechanical device by which the rotary movement of a shaft may be transformed into any required movement of other parts of the machine which engage with the cam. The simplest instance is the eccentric on a steam-engine shaft, which communicates a reciprocating harmonic motion to the slide-valve; but cams having peripheries of any required curve, or combination of curves, may transmit the most complex movements.

Cam, riv., Cambridgeshire, England, formerly called the Granta, flows in a N.W. and then N.E. direction. Its total length is 40 m., and it is navigable as far as Cambridge, 15 m. from its union with the Ouse, 3½ m. S. of Ely.

Cam, or CÃO, DIOGO, Portuguese navigator, sent by Alfonso V. of Portugal to continue the explorations of the African coast promoted by Prince Henry; in 1482 discovered the Congo. He also explored the W. African coast from the Congo to the 22nd parallel of S. lat.

Camacho, JUAN FRANCISCO (1824–96), Spanish statesman, born at Cadiz. Entering the Cortes as a conservative (1852), he was next year appointed secretary. From 1866–8 he served under Canovas as under-secretary of state finances; after the Restoration he became minister of finance in 1872, 1874, and 1881, in the liberal government of Sagasta, until his taxation policy and reforming zeal, making him unpopular, occasioned his resignation. He died at Madrid.

Camaguey, a former territorial div. of Cuba, comprising about four-fifths of the present prov. of Puerto Principe, which, as well as the town of same name, is still popularly named Camaguey.

Camajore (anc. *Campus Major*), tn., Tuscany, Italy, 12 m. N.W. of Lucca; has olive groves. Pop. 18,500.

Camaldolites, or CAMALDULENSIANS, an austere order of monks founded in 1012 by St. Romuald at Camaldoli, among the Etruscan Apennines, about 30 m. east of Florence. The monastery at Camaldoli is much visited as a summer resort. Pope Gregory XVI. (1765–1846) belonged to the order. Its habit is white, and the members are compelled to fast during two Lents in the year, and to abstain perpetually from flesh. They are also bound to observe strict silence in all public places.

Camalig, pueb., Luzon I., Philippines, prov. of and 6 m. W.N.W. of Albay, a centre of the hemp industry. Pop. 14,000.

Camalodunum, the modern Colchester, chief town of the Trinobantes in ancient Britain. It became the first Roman colony in Britain, when the island was added to the empire in the reign of Claudius (43 A.D.).

Camana, seapt., Peru, cap. of prov. of same name, 70 m. W.S.W. of Arsquipa. Coffee, olives, and sugar are exported. Pop. 6,000.

Camargo, tn., Tamaulipas State, Mexico, 100 m. E.N.E. of Monterey. The old Spanish mis-

sion of San Augustin Laredo was situated here. Pop. 7,000.

Camargue, LA, isl., France, in the Rhone delta. It has an area of 150 sq. m., of which one-third is marshy; but in the rest cereals and wine are grown, and cattle and sheep are grazed. It is protected by dikes against inundation, and the mistral, which blows here, makes it healthier than it otherwise would be. Sea-birds abound.

Camarilla, originally the small or audience chamber of a king, but the term has come to mean a royal clique, junto, or cabal of unofficial court intriguers, in contradistinction to the king's regular ministers and advisers.

Camarina, tn. on the S. coast of Sicily, founded as a colony from Syracuse in 599 B.C. It was successively destroyed by the Syracusans (552 B.C.), Carthaginians (405 B.C.), Romans (258 B.C.), and Saracens (853 A.D.). Twice it was recolonized by the people of Gela—in 492 B.C. and in 164 B.C.

Camarines, prov., S.E. Luzon, Philippines, area 3,200; mountainous and well forested. Gold, silver, iron, copper, and lead are found; and cacao, maize, rice, sugar, etc., are cultivated in the valleys. Pop. 240,000. Cap., Nueva Caceres.

Camassia, a genus of hardy N. American liliaceous plants closely related to the scillas. They like a somewhat rich, moist, peaty soil and partial shade, but are easy of cultivation. The bulbs of *C. esculenta* were commonly cooked for food by the Indians. This species is one of the most handsome, and yields tall, loosely-arranged spikes of flowers of every shade of blue and white. *C. Leichtlini*, which bears creamy white flowers, *C. Cusicki*, pale blue, and *C. Howellii*, lilac, are among the best of the remaining kinds. The camassias are easily increased by bulb offsets, and most of the species ripen seeds in Britain.

Cambacérès, JEAN JACQUES, DUC DE PARME (1753–1824), French statesman, was born at Montpellier. He represented the nobles in the Legislative Assembly (1792), was on the Committee of Public Safety in 1793, and was minister of justice under the Directory. In 1799 he was made second consul in France (with Bonaparte and Lebrun), and afterwards became arch-chancellor of the empire and president of the Senate. It was under his direction that the French *Code Civile* was prepared. He was created Duke of Parma in 1808, but on the overthrow of the empire he was exiled till 1818.

Cambay (*Khambhut*). (1.) Feudatory state in the prov. of Gujarat, Bombay, India, with an area of 350 sq. m., and a pop. of 75,000 (2.) Port and chief town of the above state; is situated on the N. bk. of the Mahi, 230 m. N. of Bombay. Once a wealthy town, its decline is due to the silting up of the Gulf of Cambay. Agate, cornelian, and onyx are found and cut here. Pop. 30,000. (3.) GULF OF, between the peninsula of Kathiawar and the mainland of Bombay. Much frequented by Arab traders in ancient times.

Camber, a slight upward curve given to a bridge, beam, or arch to allow for the sag or droop in the centre when it is settled in position. The name is also applied to the convex surface of roads.

Camberwell, met. and parl. bor. (4,450 ac.) in the S.E. of London. Pop. 286,000. A fair was formerly held on Camberwell Green in August, but the green is now one of the few suburban lungs in the south-eastern district.

Camberwell Beauty (*Vanessa antiopa*), a butterfly rare in Brit-

ain, though common on the Continent. It is large, the wings having a span of 2½ in., and is of a brown colour, shot with purple. All four wings have a grayish-white border, just within which lies a row of blue spots. In addition, the two fore wings have two small white spots. The British form shows slight but constant colour differences from the foreign.

Cambist, a person skilled in the foreign exchanges; hence a dealer in bills of exchange.

Cambium. See BARK.

Cambodia, or CAMBOJA, a kingdom and French protectorate, Indo-China, bounded on the S.W. by the Gulf of Siam. Its other boundaries are but vaguely defined. The land may be taken as extending generally from 13° 50′ to 10° 20′ N., and from 102° to 106° 20′ E. Cambodia comprises an area (as altered by treaty with Siam in 1907) of about 46,000 sq. m. The coast, about 150 m. long, forms two bays, Kompong-Som and Kampot, on which stands the haven of Kampot. A little off the coast there stretches a string of islands. The bulk of Cambodia consists of the alluvial plain formed by the lower course of the Mekong, which near Pnom-Penh splits into an eastern and a western arm, while a third arm diverges 70 m. N.W. to Tonle-sap or Great Lake. Beyond the great plain, Cambodia is traversed in the N. by some outlying ranges of hills from the Pnom-Dongrek. There are also detached hills, such as Pnom-Dek, rich in iron ore, etc., in the S. and E. The climate alternates between the dry season (from November to May) and the wet season (the rest of the year), and is healthier than that of Cochin-China. Storms are frequent in June, July, and August. The north-east monsoon begins in October. Owing to the periodical inundations, the soil of the plains is remarkably fertile. Sweet potatoes and tropical fruits, from the cocoanut and bread-tree to the guava and banana, flourish luxuriantly. Rice, cotton, sugar-cane, coffee, pepper, cinnamon, betel, tobacco (remarkably like that of Manila and Sumatra), indigo, sugar-palm, mulberry (on which silkworms may be reared all the year round), and other industrial plants, prosper. The forests—very extensive and little depleted—are rich in building, joinery, cabinet, and dye woods. Caoutchouc and cardamoms especially abound. Iron (the only metal worked) is found in the province of Kompong-Svai. Limestone is very common. Precious stones (emeralds and rubies) are found in the mountains of Pursat, and coal was discovered (1880) in the Elephant Mts. The rivers teem with fish.

The total population is estimated at 1,800,000, four-fifths of which are collected in the valley of the Mekong. The capital, Pnom-Penh, has about 50,000. About three-fourths of the population belong to the Camboja or Khmer race. Chinese and Annamites, each about 11 per cent., are steadily increasing through immigration. The Malays and Chams (Tsiams), along the valley and to the east of the Mekong, constitute about 2½ per cent. Of the Kûy, or 'primitive Khmers,' several groups survive in the north, making some 5 per cent. In religion the Cambodians are nominally Buddhists; but superposed on Brahmanism, their Buddhism has undergone peculiar transformations, and is little more than an appendage to animistic beliefs, which still constitute the staple of their religion. Their language is cognate with Siamese and Annamese; but books are principally written in Pali, the sacred language of the Southern Buddhists, and in the Pali script.

Sugar is manufactured from the

fan palm all over the country. There are factories at Khsach-Kandal, near Pnom-Penh for the shelling of cotton seeds, to which have been added oil-works for the treatment of the cotton grains. The principal industry, fishing, employs 30,000 hands from October to June. The exports include rice, fish and fish products, haricots, cardamoms, palm sugar, skins, tobacco, cotton, mattresses and mats, silks, cocoons, gamboge, ivory, tortoise-shell, pepper, bamboos, lime. The statistics are embraced in those of French Indo-China.

Cambodia is nominally ruled by its own king, but a French resident-superior directs the king's political actions. At the head of each province is a French resident, and under them the native governors. There is a tribunal of first instance at Pnom-Penh, to decide cases with Europeans, with a court of appeal at Saïgon.

The once powerful kingdom of Cambodia reaches back to a remote antiquity. The ruins of Angkor Wat to the north of the Great Lake witness to a highly civilized state. Buddhism was introduced about the 4th century. In the 17th century the Dutch erected factories at the mouth of the Mekong. The same century Annam, and in the next century Siam, wrested provinces from dismembered Cambodia. The first appearance of the French dates from 1858. In 1863 Cambodia was placed under a French protectorate, which was formally recognized by King Norodom in 1884. See *Le Cambodge*, by E. F. Aymonier (1900–4); *Indo-Chine Française*, by Bouïnais and Paulus (1887), by J. E. de Lanessan (1889 and 1895), by Pierre Nicolas (1900).

Cambodia River. See MEKONG.

Cambon, PIERRE PAUL (1843), French administrator and diplomatist, born in Paris; became resident at Tunis (1882), where, coming into opposition to General Boulanger, he was driven to resign. He has been successively ambassador at the courts of Madrid (1886), Constantinople (1890), and London (since 1898). He was made hon. D.C.L. of Oxford in 1904.

Camborne, par. and mrkt. tn., W. Cornwall, England, 3 m. S.W. of Redruth; has tin and copper mines. Pop. 15,000.

Cambrai (anc. *Camaracum;* in Flem. *Cambrijk*), tn. and fortress, dep. Nord, France, on the Scheldt, 32 m. S. of Lille, is the seat of an archbishop, and has a citadel with interesting ancient gateways. Its fine linen fabrics, known as cambrics, are famous. Other industries are copper-working, tanning, brewing, distilling, linen thread, wool, flax, and soap. Here the League of Cambrai against the Venetian republic was signed (1508), and the peace between Charles V. and Francis I. in 1529. Fénélon and Dubois were archbishops of Cambrai. Pop. 28,000. See Dinaux's *Bibliographie Cambrisienne* (1822).

Cambria, the Latin name of Wales, derived from the Celtic Cymru, and originally applied to both Wales and the Cymric kingdom of Strathclyde, but now restricted to the principality. See WALES.

Cambrian. The Cambrian is the earliest fossiliferous geological formation. Its thickness in Wales is estimated at 10,000 ft. It consists mainly of grits, shales, and slates; but in Scotland its most characteristic member is the fossiliferous Durness limestone, and in America it includes limestones, greensands, dolomites, and great masses of volcanic rocks. Owing to its im-

mense age it has usually suffered great alteration, induration, and metamorphism. It occurs in Wales around Tremadoc Bay and at St. Davids, and from Wales it has derived its name. It outcrops also in the Lake District of England, in scattered spots in the midland districts, and in the N.W. Highlands of Scotland. In Norway, Sweden, Finland, and Bohemia it occupies considerable areas. But it is in N. America that it attains its grandest development, and in the eastern part of that continent it has a wide extension, principally in New York, Vermont, Newfoundland, New Brunswick, the Alleghanies, the Mississippi region, and around the Great Lakes. In each of its areas local subdivisions have been established by geologists—as the Harlech and Longmynd beds, the Menevian, the Lingula flags, and Tremadoc slates, in Wales; in Scotland, the quartzite, the piped rock, the fucoid beds, and the Durness limestone; in America, the Potsdam sandstone, Ozark series, Keweenaw, and many others. But taking a classification founded on the life zones, it may be regarded as consisting of a lower, middle, and upper series, in each of which there is a characteristic genus of trilobites—viz. Olenellus, Paradoxides, and Olenus respectively. The fossils of the Cambrian include no vertebrates, not even fishes, no insects, and no plants save algæ. Trilobites are the commonest; but sponges, corals, crustaceans, foraminifera, graptolites, brachiopods, bivalve and univalve molluscs, pteropods, cephalopods, jelly-fishes, crinoids, and worms are all known. Geologists have concluded, from its variety and relatively high development, that this fauna is by no means primeval, and that although no traces of them have been found, many generations of animals must have lived and died in epochs preceding the beginning of the Cambrian.

Cambric. See LINEN.

Cambridge, the capital of the English county of the same name, stands on the river Cam, 55 m. N. by E. of London by rail. It is supposed by some to have been the Camboritum of the Romans, and it was the Grantbridge of the Saxons. Placed at the intersection of two great Roman ways, on almost the only route between East Anglia and the rest of England, at the head of the waterway from the port of Lynn, it was down to the 18th century the site of the most important market — Stourbridge Fair — in England. It is a parliamentary borough, returning one member to the House of Commons. Pop. 40,000. St. Sepulchre's is the oldest of the four round churches in England; the tower of St. Benet's is one of the best examples of pre-Norman architecture; Great St. Mary's, the university church, is an excellent specimen of Perpendicular work. There is a fine Roman Catholic church, with a tower and spire 220 ft. high.

CAMBRIDGE UNIVERSITY. We first hear of the university authentically in 1229. The university as a corporate body consists of the chancellor, the masters, and the scholars. The chancellor, usually a nobleman of high rank, is the chief executive officer. The governing body (called the senate) consists of the chancellor, vice-chancellor, doctors of divinity, law, medicine, science, letters, and music, bachelors of divinity, and masters of arts, law, surgery, and music. The university sends two representatives to Parliament, elects the chief officers and examiners, and sanctions all degrees. The resident members of the senate, called the 'elec-

toral roll,' annually elect one of the heads of colleges (masters) as vice-chancellor, through whom the chancellor generally acts. They also elect 'the council of the senate,' a most important body of sixteen persons, which initiates all legislation, nominates the syndicates and persons by whom university business is carried on, and has a veto on every degree.

The colleges are separate corporations independent of each other, and, in most things, of the university. The head of King's College is called the provost, the head of Queen's College the president, the head of every other college the master. Fellows are those who have been co-opted into the governing body of the college. By recent legislation certain fellowships—one or more in every college--have been appropriated to university professors, and the colleges are required to pay a proportion (now more than a tenth) of their net income into the common fund of the university. The university has very little income of its own. Its revenues are derived chiefly from fees for matriculation, examination, and degrees, and from the taxation of the colleges, which are as follows:—

Peterhouse, or *St. Peter's*, the oldest college, was founded in 1281 by Hugh de Balsham, bishop of Ely, and removed by him to its present site in 1284. In 1590 Dr. Perse bequeathed his books and money to build a library. Dr. Matthew Wren, in 1632, built the chapel. The Gisborne court was added in 1825.

Clare College, founded in 1326 by Dr. Richard Badew, under the name of University Hall, was burned to the ground; but it was refounded as Clare Hall in 1338 by Lady Elizabeth de Clare, sister and co-heir of Gilbert de Clare, Earl of Gloucester and Hertford. It consists of a single court, and is perhaps the most elegant building in Cambridge. The name was changed to Clare College in 1856.

Pembroke College was founded in 1346 by Marie de St. Paul, widow of Aymer de Valence, Earl of Pembroke. The entrance gate, the chapel (the earliest built for any college), and two sides of the original quadrangle still remain. The hall, combination room, and master's lodge were destroyed, and were rebuilt in 1874 by Waterhouse. The second court was built 1633-59; its chapel was built (1663–4) by Bishop Wren, after a design by his nephew, Sir Christopher Wren; and the new building east of the master's lodge was built (1883) by the younger Scott.

Gonville and Caius (pr. *Keys*) *College*, founded in 1348 by Edmund Gonville, rector of Terrington, Norfolk, was removed to its present site (1351), and refounded (1557) by Dr. John Kaye, or Caius, who built the second or Caius court to the south of Gonville's court, which contained, besides chambers, the hall, library, master's lodge, and chapel. Till 1868, when the first or tree court was rebuilt by Waterhouse, the college was entered from Trinity Street through a small doorway called the Gate of Humility. Caius has always been the great medical college of Cambridge, and its character is partly maintained by the Tancred medical studentships. Dr. Harvey was educated here.

Trinity Hall, founded in 1350 by William Bateman, bishop of Norwich, for the study of the canon and civil law, has three courts. Architecturally this is one of the least interesting colleges in Cambridge. The library contains a very valuable collection of law books.

Corpus Christi, or *Benet College*, was founded (1352) by the town

guilds of Corpus Christi and the Blessed Virgin Mary. The new court was built by Wilkins (1823–27). The old court, built by the guilds, was the first closed quadrangle built in Cambridge, and the oldest collegiate structure still remaining. A gallery connects it with the neighbouring church of St. Benedict (Benet's), which for a long time served as the college chapel. The new library contains the unique collection of MSS. collected by Archbishop Parker, master in 1544, and the Lewis collection of coins, gems, vases, etc.

King's College was founded by King Henry VI. in 1440; but in 1443 the king enlarged the scope of his foundation, and connected it with Eton. The first stone of the chapel was laid in 1446; the fabric finished, 1515. The fellows' building, by Gibbs, was built in 1724; the hall, library, provost's lodge, and screen, by Wilkins, 1824; Scott's building, 1870; Bodley's building, 1893. The provost had within the precinct 'all manner of spiritual and temporal jurisdiction,' including the probate of wills. Till 1851 the scholars claimed and received the B.A. degree without submitting themselves to the examinations required from others. Of the buildings, however, intended by the founder the chapel alone was completed. This, says Fuller, 'is one of the rarest fabrics in Christendom, wherein the stonework, woodwork, and glasswork contend which most deserve admiration.' The beautiful glass in the twenty-six windows, the lofty fan vault of stone, and the rood or organ screen which divides the building into choir and antechapel, are beautiful and well-known features.

Queens' College, founded (1447) by Andrew Doket, under the patronage of Margaret of Anjou, queen of Henry VI., and refounded in 1465 under that of Elizabeth Woodville, queen of Edward IV., was built of red brick, after the plan of such a manor-house as Haddon Hall. The gallery over the cloister, a singularly beautiful specimen of the domestic architecture of the 16th century, connects the president's lodge with the western range, and contains many valuable pictures. The new chapel was built in 1891.

St. Catharine's College was founded (1475) by Robert Wodelarke, third provost of King's College. Nothing remains of the original buildings. Dr. Eachard (master, 1675–97) began to rebuild the present main court; the chapel was finished in 1704, and the new master's lodge in 1875.

Jesus College, founded (1497) by John Alcock, bishop of Ely, differs from every other college in Cambridge in that its plan follows the arrangement of the Benedictine nunnery of St. Radegund. The chapel is cruciform, with a central tower. It was restored in 1846. The windows of the ante-chapel and transepts were filled with stained glass by Burne-Jones and Madox Brown (1873–7).

Christ's College, originally founded (1436) by William Byngham, under the name of 'God's House,' was enlarged and practically refounded (1505) by the Lady Margaret Beaufort, Countess of Richmond, mother of Henry VII. The first court was probably completed by the foundress before her death in 1509. The hall was rebuilt in 1876 by the younger Scott. In the second court stands the fellows' building (1640–2), partly built by Inigo Jones, and called by Evelyn 'a very noble erection.....of exact architecture.' Beyond this building is another, similar in style, erected (1888–9)

by Stevenson. The garden is one of the most beautiful and least altered of the college gardens.

St. John's College—the second foundation of the Lady Margaret who in her will (1510) suppressed the hospital of St. John the Evangelist (founded 1135)—is entered through the most beautiful of all the Cambridge gateway towers. The first court, built in 1510–20, contains the new chapel, built by Sir G. G. Scott (1864–9), and the hall (lengthened 1865), which has good original panel-work and a valuable collection of college portraits. The second court is a most beautiful piece of Elizabethan brickwork, built (1598–1602) by Ralph Symons. On the right is the gallery—now used as a combination room—the finest specimen of its class left in England. Through the gallery we reach the library, built (1623–8) by John Williams, bishop of Lincoln, and an interesting example of Jacobean Gothic. The third court was built in 1669–73. The gateway on the west, and a covered bridge of one arch called the Bridge of Sighs, lead to the fourth court, which is commonly called the 'New Court,' built by Rickman and Hutchinson (1826–30).

Magdalene College (pron. *Maudlin*), founded (1542) by Thomas, Lord Audley, to replace Buckingham College, the site of which had been granted by Henry VI. (1428) to the English Benedictines. The entrance gateway (1585) opens into the single quadrangle containing the chapel (restored 1847–51), the hall (built in 1519–21 by the third Duke of Buckingham), and the foundation library. Beyond the hall is the Pepysian library, a valuable example of 17th-century architecture.

Trinity College was founded in 1546 by Henry VIII., by the union of King's Hall (1336), Michaelhouse (1323), Physwick's Hostel, and some minor hostels. The chapel contains the statues of Newton, Bacon, Barrow, Macaulay, and Whewell, and the graves of Bentley and Porson. The fountain, queen's gate, and hall were all three built by Nevile (1600–4). Through the screens is Neville's or the Cloister Court, the western side of which is the library, designed by Sir Christopher Wren. In the library there is a series of busts by Roubiliac, Thorwaldsen's statue of Byron, exquisite carvings by Gibbons, the MSS. of several of Milton's poems, a large collection of coins, and many rare books and manuscripts. Besides this court there are the New Court, Bishop's Hostel, the Great Court, and Whewell's Courts.

Emmanuel College, founded (1583) by Sir Walter Mildmay, occupies the site and buildings of the house of the Dominican friars. There are two quadrangles. The chapel and cloister (1666–77), with the master's gallery over, were designed by Sir Christopher Wren. The 'brick building' dates from 1633, and 'the hostel' 1885–94.

Sidney-Sussex College was founded (1589), by a bequest of the Lady Frances Sidney Sussex, on the site of the house of the Franciscan friars. It was incorporated by charter of Queen Elizabeth in 1594. There are three courts of three sides each. The present chapel is all that remains of the old Franciscan buildings. The hall contains the best extant portraits of Oliver Cromwell, who entered at Sidney-Sussex College.

Downing College, founded by the will of Sir George Downing, Bart. (1717), did not receive its charter till 1800, owing to the litigation following the death of the founder (1749). The build-

ings were designed by Wilkins in 1807, and consist of two parallel ranges.

Mention should also be made of Selwyn College (1882), a public hostel for members of the Church of England, and Fitzwilliam Hall, the headquarters of the non-collegiate students. Ridley Hall (1879–82), the Clergy Training School (both for candidates for holy orders), St. Edmund's House (for candidates for the Roman priesthood), Westminster College (1899, for Presbyterian students of theology), and the two colleges for women, *Girton* (1869) and *Newnham* (1871) have no formal connection with the university.

The Fitzwilliam Museum, a sumptuous building, contains a large collection of paintings, illuminated MSS., engravings, vases, coins, gems, etc. The museums of science, with lecture-rooms, laboratories, and workshops, cover a very large area in a central position on and near the site of the old botanic garden. The Sedgwick Memorial Museum, Squire Law Library and Law School, and the botanical laboratory have recently been erected on the Downing College site, opposite to the new medical schools in Downing Street. Other noteworthy institutions are the Pitt Press, the astronomical observatory, the geological museum (1900–1), and the museum of archæology (1884). In 1910 the number of students (undergraduates) was 3,726.

The 'Backs,' so called—walks extending along the river from St. John's College to Queen's Grove—are very beautiful, thickly shaded with ancient trees, between which the various college buildings in turn peep out.

The chief authorities are: C. Dickens's *Dict. of the University of Cambridge* (1884); *The Architectural History of the University of Cambridge*, by Willis and Clark (4 vols. 1886); J. Bass Mullinger's *History of the University of Cambridge* (1888); J. W. Clark's *Cambridge* (new ed. 1907); Atkinson's *Cambridge Described and Illustrated* (1897); A. H. Thompson's *Cambridge and its Colleges* (1910); and the *Student's Handbook to the University and Colleges of Cambridge*.

Cambridge. (1.) City of Massachusetts, U.S.A., one of the co. seats of Middlesex co., on the Charles R., which separates it from Boston. It is the seat of Harvard University (founded 1636), of Harvard Observatory, Radcliffe College, and the Protestant Episcopal Divinity School. There are extensive manufactures, meat-packing houses, machines shops, and printing works. The town dates from 1631. Pop. (1910) 104,839. (2.) Town, cap. of Dorchester co., Maryland, U.S.A., 57 m. S.S.E. of Baltimore, on Philadelphia and Baltimore Ry. Oysters and herring fisheries. Pop. 6,000. (3.) Town, cap. of Guernsey co., Ohio, U.S.A., 76 m. E. of Columbus. There are potteries, glass works, and rolling-mills; and coal, iron, and natural gas are found. Pop. 11,500.

Cambridge, ADOLPHUS FREDERICK, FIRST DUKE OF (1774–1850), the seventh son of George III., was born at the Queen's Palace, St. James's Park (now Buckingham Palace), London. He served in the campaign of 1794–5; was (1801) created Duke of Cambridge; was made field-marshal (1813), and viceroy of Hanover (1816–37).

Cambridge, GEORGE WILLIAM FREDERIC CHARLES, SECOND DUKE OF (1819–1904), born in Hanover, son of Adolphus Frederick, first duke (1774–1850), and first cousin of Queen Victoria. He led a division of Guards and Highlanders at the battle of the Alma (Sept. 20, 1854), and had a horse

shot under him at Inkerman. He was made field-marshal at the majority of the Prince of Wales (Nov. 9, 1862), general commanding in chief (1856–87), and commander-in-chief (1887–95). See *Military Life of H.R.H. George, Duke of Cambridge*, by W. Verner and E. D. Parker (2 vols. 1905), and *Memoir of His Private Life*, ed. by Edgar Sheppard (1906).

Cambridge Greensand, a nodule bed occurring in the base of the lower chalk (see CRETACEOUS SYSTEM); especially well known in Cambridgeshire, where it has been largely worked for the phosphatic nodules (misnamed coprolites) which it contains. At one time this was an important source of phosphatic manures. Fossils of Cambridge greensand were numerous and varied, but most of them had been derived from the erosion of beds of upper gault. They included many kinds of ammonites, and species of *Avicula*, *Terebratula*, *Rhynchonella*, etc. Fragments of bones of reptiles (ichthyosaurs, plesiosaurs, dinosaurs, etc.) were frequent, and the remains of one species of bird (*Enaliornis*) have also been found.

Cambridgeshire, inland co. of England, N. of Herts and Essex. Length (N. and S.), 49 m.; breadth (E. and W.), 30 m. The surface, except in the S. and S.E., where the Gog-Magog Hills (220 ft.) and the Royston and other downs (in some places 400 ft.) stretch to the Suffolk border, is uniformly flat and low, and forms a part of the old fen region or Bedford Level. (See FENS.) The chief rivers are the Ouse, with its affluents the Cam, Lark, and Nen. The Old and New Bedford canals are nearly straight and parallel channels, conveying the waters of the Ouse from near Earith to a little above Downham Market in Norfolk. Navigation is now practically confined to the New Canal. The fen soil is a rich alluvium; the south uplands are chalky, and the intermediate part clayey. Agriculture is the chief industry. Manufactures are limited—malt, beer, flour, bricks, coarse pottery, mats, and baskets being the chief industrial products. Cambridgeshire comprises two administrative divisions, in some respects distinct in character—viz. the county of Cambridge proper and the Isle of Ely; the latter, until the beginning of Victoria's reign, forming a separate 'liberty.' It has even now a separate county council, and retains certain administrative privileges.

At the time of the Roman invasion the district was occupied by the Iceni. The Romans founded a station at Camboritum (Cambridge). Under the Saxons it formed part successively of the kingdom of East Anglia, Mercia, and Wessex, and it suffered much from the ravages of the Danes. The valiant defence of Ely by Hereward the Saxon against the Norman Conqueror is one of the outstanding epochs in the history of the county.

Among archæological objects may be noted the Roman roads (including the Icknield, originally British), the Vandlebury entrenchment, and other supposed British remains on the Gog-Magog Hills; the Devil's Dyke, and three or four other embankments crossing the Icknield Way in the south. Area: co. proper 485 sq. m.; pop. 142,000. Isle of Ely, 374 sq. m.; pop. 65,000. Total pop. Cambridgeshire, 207,000. See Conybeare's *Hist. of Cambridgeshire* (1897).

Cambridgeshire. See RACE MEETINGS.

Cambuscan, a semi-fabulous prince of Cambulac (some say Sarra), in Tartary, whose story Chaucer 'left half told' in his *Squire's Tale*. Spenser treats the

tale in his *Faërie Queene*, bk. iv. cant. ii.–iii.

Cambuskenneth ('the field of Kenneth'), ruined abbey, Stirlingshire, Scotland, on river Forth, 1 m. E. of Stirling. The abbey was founded by David I. in 1147. Here, in July 1326, assembled the first Scots Parliament, attended by representatives of burghs. James III. and his queen, Margaret of Denmark, were interred here. During excavations in 1864 their remains were discovered, reinterred, and an altar monument erected over them by command of Queen Victoria in 1865.

Cambuslang, par. and tn. in N.W. Lanarkshire, Scotland, on l. bk. of Clyde, 5 m. S.E. of Glasgow, with station on C.R.; has coal mines and extensive steel works. Pop. of par. 20,000; of tn. 12,500.

Cambusnethan, civ. par. in Mid-Lanarkshire, Scotland, incorporated with Wishaw, 1 m. S.W.; has coal mines and iron works. Pop. 28,000.

Cambyses, son of Cyrus the Great, succeeded his father on the Persian throne, and reigned 529 to 521 B.C. His great achievement was the conquest of Egypt in 525. He treated the Egyptians and their religion with great severity, slaying the bull Apis, their god, with his own hands. He also ruled the Persians tyrannically, and had his own brother Smerdis murdered. A Magian then led a revolt, personating the dead man. On his way to quell it Cambyses died at Ecbatana, a town in Media, of an accidental wound. It is probable that his excesses were due to insanity.

Camden, city of New Jersey, U.S.A., the co. seat of Camden co., situated on the l. bk. of the Delaware, opposite Philadelphia. It is a large commercial and manufacturing centre (iron foundries, chemical and glass works, carpet factories, woollen and cotton goods, and machinery). Shipbuilding is one of its important industries. Pop. 95,000.

Camden, CHARLES PRATT, FIRST EARL (1714–94), born in London. Called to the bar (1738), he gained reputation by his successful defence of a bookseller against a prosecution for libel on the House of Commons. Becoming attorney-general (1757), and M.P. for Downton, he carried through a bill extending the Habeas Corpus to civil cases. Appointed chief-justice of common pleas (1761), he pronounced illegal the issue by government, in the case of Wilkes, etc., of general warrants. Created baron (1765), lord chancellor (1766), he continuously opposed the government in its American policy and its treatment of Wilkes. His judicial career ended in 1770. In Parliament he seconded Chatham in his efforts to avert the outbreak of hostilities in America. President of Council in the second Rockingham administration, he ably defended the policy of Pitt. He was created earl in 1786. See Campbell's *Lives of the Chancellors* (1845–7).

Camden, WILLIAM (1551–1623), English antiquary and historian, was born in London; became prebendary of Salisbury Cathedral (1589–1623), headmaster of Westminster (1593), and Clarenceux king-of-arms (1597–1623). He was commissioned by James I. to translate into Latin the account of the trial of the Gunpowder Plot conspirators. Camden founded his professorship of history at Oxford in 1622. In 1838 the Camden Society was founded, for the publication of early historical remains. Camden's most celebrated work, *Britannia*, a survey of the British Isles, first appeared in 1586. Philemon Holland first translated it from Latin into English in 1610, but the edition most prized

is that by Gough and Nichols (2nd ed. 4 vols. 1806). Some of the theories advanced by Camden in the *Britannia* are no longer tenable, but the work is still of much value to scholars as a storehouse of facts. Camden also compiled a list of the epitaphs in Westminster Abbey (1600), a collection of old English historians (1603), the *Remaines concerning Britain* (1605), and the *Annales* of Queen Elizabeth's reign, the first part of which appeared in 1615. An edition of his works in 6 vols. was published in 1870. See *Life* by T. Smith (1691), and Wood's *Athenæ Oxonienses* (Bliss ed. 1813–20).

Camden Town. See LONDON.

Camel, a name strictly applicable to both species of the genus Camelus, *C. dromedarius* and *C. bactrianus*, though the term dromedary is sometimes reserved for the former. These two species of camel, together with the llamas (genus Auchenia) of the New World, constitute the well-defined family Camelidæ, which belongs to the artiodactyle or even-toed section of ungulates. Camels, in the wide sense, differ from other artiodactyles in the combination of the following characters:—Incisor teeth are present throughout life in the upper jaw (contrast cows and sheep), and canines occur in both jaws, and are different from the incisor teeth; the thigh is long, and vertical in position—a peculiarity associated with the remarkable swaying gait; two toes only are present on each foot, and in walking the animal does not only use its hoofs, but rests on a broad callous pad beneath the toes; the neck is long, horns and antlers are absent, and though the animals ruminate, the stomach differs in structure from those of sheep and cows. In the first and second chambers, cells are present on the walls, which can be closed by muscles, and into which fluid only can enter. The llamas differ from the true camels very obviously in the absence of a hump or dorsal mass of fat. The Arabian camel or dromedary has one such hump, the Bactrian camel two.

It is a very remarkable fact that, of the two genera of the camel family, Camelus should be confined to the Old and Auchenia to the New World; but it is believed that the camel family originated in America, and one branch migrated to Asia by Bering Strait, while the other migrated to S. America. Camels are widely distributed in the Old World, occurring in India, Persia, the Caucasus region, Asia Minor, Arabia, N. Africa, S. Europe (*e.g.* Spain and Italy), and elsewhere; but it is unlikely that truly wild camels exist anywhere. The majority of those found have probably originated from escaped domestic animals. The camel was introduced into Australia in 1860, and has been used for exploration and other work. The Arabian camel is swifter, but is less resistent to cold than the Bactrian, which has a denser coat and shorter legs, and is more employed in mountainous regions. The two readily interbreed, and the hybrids are in some districts preferred to either of the pure breeds. The habit of carrying stores of water in the stomach cells, and the power of existing on very limited supplies of food, due to the presence of reserves of food in the hump, are the qualities which have made the camel the 'ship of the desert.'

The mounting of infantry on camels greatly increases its mobility; and though the men actually fight on foot, they can also perform the scouting and reconnoitring duties of cavalry and mounted infantry in hot, sandy, and badly-watered countries where the horse cannot be em-

ployed with advantage. 'Camel corps' are especially useful for making sudden raids. On an emergency a camel can travel from seventy to eighty miles per day, carrying his rider with sufficient food and water for a week. Camel corps have been constantly formed of European troops when operating in India, Afghanistan, Egypt, and the Sudan during the last twenty years. The Egyptian camel corps is a permanent branch of the Egyptian army. The men are Sudanese, Arabs, and fellahin. See Leonard's *The Camel* (1894); Count Gleichen's *With the Camel Corps up the Nile* (1888); and for the 'wild' camel, Sven Hedin's *Through Asia* (1898), and *Central Asia and Tibet* (1903).

Camel, an apparatus used for raising a ship over shoal water, consisting of large hollow vessels which are attached to the sides of the ship when full, and are then pumped dry.

Camelford, mrkt. tn. in par. of Lanteglos, Cornwall, England, 12 m. N. of Bodmin, on L. & S.W.R. It is supposed to be Camelot, the scene of the final battle between King Arthur and his nephew Modred. There are slate quarries in the neighbourhood. Pop. 1,000.

Camellia, a genus of Asiatic evergreen trees and shrubs belonging to the order Ternstrœmiaceæ. The genus strictly includes the tea-bearing shrub *C. theifera* and its varieties; but this will be described under TEA. The best-known species of camellia are the common *C. japonica* (the parent of most of our garden forms) and *C. reticulata*. The former, which grows to a height of 30 ft., was introduced into Britain from Japan in 1739. It bears reddish flowers about 4 in. in diameter. The latter, which was introduced from China a century later, is more dwarfish in habit, and bears large semi-double pink flowers. Another species worth growing is *C. oleifera*, which bears sweet-scented white flowers in late autumn. Camellias are usually grown in Britain under glass, but in the southern counties they might well be grown in sheltered situations in the open air. Easterly winds are the worst enemy to be guarded against, great cold being borne without injury. Propagation is usually by cuttings or layers, in the former case the ripe young shoots being cut off at a joint in August, planted in a mixture of loam, sand, and peat, and kept in a cool house during winter. In spring they should be placed in a warmer house, and in the following autumn moved into pots. Good hybrid varieties are *florida*, *elegans*, *imbricata*, and Lady Hume's blush.

Camelopardalis, a northern constellation added by Jakob Bartsch, Kepler's son-in-law and assistant, in 1624. It occupies the interval between Ursa Major and Cassiopeia, but includes no conspicuous stars. 2 Camelopardi is triple, the principal star being a very close double.

Camelon, par. Stirlingshire, Scotland, now forming part of the town of Falkirk; has iron and nail works. Pop. 6,500.

Camelot, in Arthurian romance the seat of King Arthur and the knights of the Round Table, has been identified by Geoffrey of Monmouth with Caerleon, Monmouthshire, and by others with Winchester or Queen's Camel, Somersetshire, and Camelford, Cornwall. Shakespeare alludes to it in *King Lear*, and Tennyson in *The Lady of Shalott* and the *Idylls of the King*.

Camel's Thorn (*Alhagi camelorum*), a spiny shrub, native of W. Asia, bears papilionaceous flowers in summer, and these are followed by legumes in August.

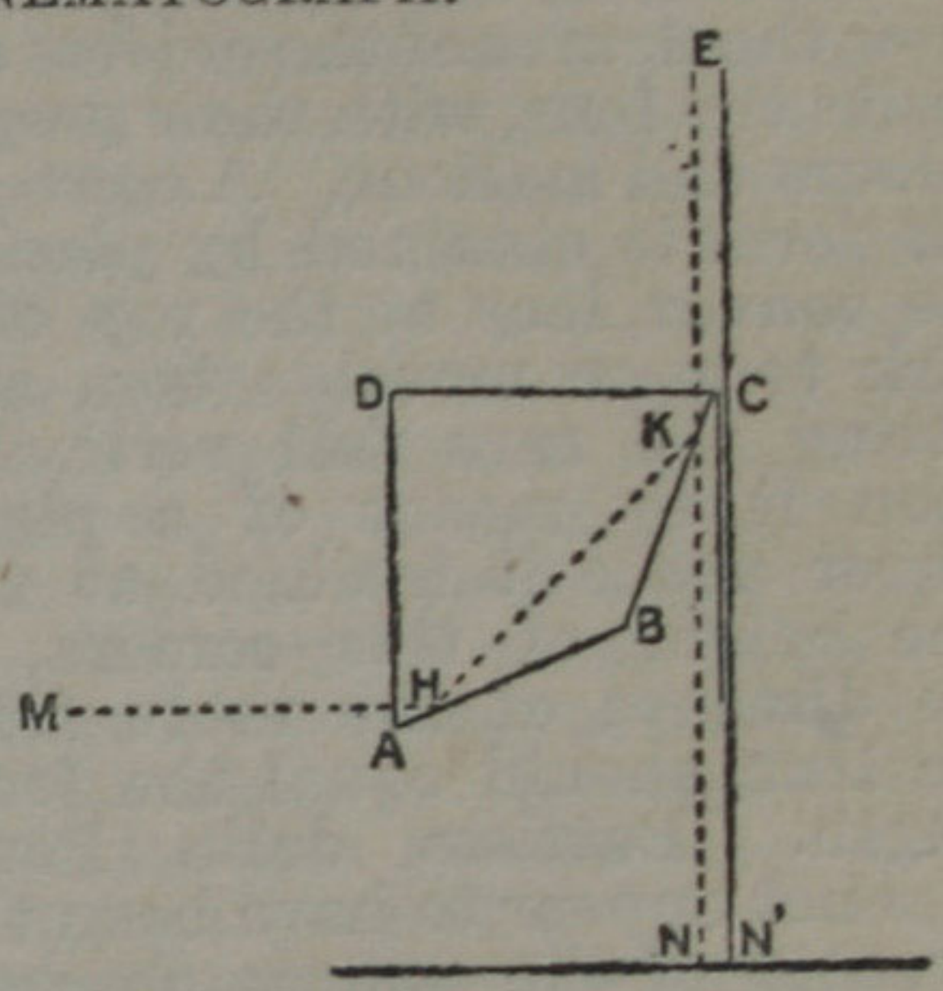
Camen, or KAMEN, tn., Westphalia, Prussia, 10 m. S.W. of

Hamm; has coal mines and iron foundries. Pop. 11,000.

Camenæ, prophetic nymphs, worshipped in the old Italian religion, and often identified with the Greek muses. They had a temple at the foot of the Capitoline Hill in Rome.

Cameo. The art of cameo-cutting consists in carving out a figure in the upper of two differently coloured layers of stone so that it stands out in relief on a darker ground. The phrase afterwards became loosely applied to all sorts of lapidary work. The materials used were: (1) translucent rock crystals—*e.g.* amethyst (purple), emerald smaragdus (vivid green), carbuncle, anthrax (rose), jacinth (orange red), chrysolite (golden), beryl (sea-green); (2) semi-translucent crystals—as various agates, the onyx, chalcedony or cloudy quartz and its varieties, such as the orange-red sardius, and, *par excellence*, the sardonyx; (3) opaque crystals—various jaspers, lapis-lazuli (sapphire), turquoise, and chrysoprase; (4) certain metallic oxides and bituminous substances were also used—*e.g.* hæmatite, malachite, and amber; (5) animal secretions—as coral and the inner layers of certain molluscan shells; lastly, and largely for purposes of imitation of the antique cameos, vitreous pastes. The cutting and polishing of agates is an industry at Oberstein in Oldenburg. M. Babelon asserts that the Egyptian scarabæus is doubtless the origin of the cameo. The art was much practised by many of the older races before the classical period, and reached its climax *c.* 150 A.D. Genuine antique cameos signed by the artist are of the extremest rarity. In the British Museum and the museums at Florence and Naples are a few of these; and the authentic signature of Dioscorides may be seen on a few intaglios, among which is the portrait of Cicero. Names of possessors were, in the antique and early Christian epochs, graven on the gem itself; later, on the metal mounting only. For *chefs-d'œuvre* of the art, see Babelon's *Catalogue des Camées Antiques* (1897). See also A. H. Smith's *Catalogue of Engraved Gems in the Brit. Mus.* (1888); and C. W. King's *Antique Gems and Rings* (1872).

Camera. See PHOTOGRAPHY; CINEMATOGRAPH.



Camera Lucida.

Camera Lucida. There are two instruments of this name: (1) that of Dr. Hooke, described in *Phil. Trans.*, xxxviii., for the purpose of casting the image of any object on the wall of a lighted room; (2) an ingenious contrivance of Dr. Wollaston for making outline sketches of any distant object. The best form is essentially a prism (vertical cross-section ABCD) such that AB makes 22½° with the horizon, and BC makes the same angle with the vertical. A horizontal ray from the object M is twice totally reflected (see REFLECTION AND REFRACTION) at H and K so as to emerge vertically from K to E. The eye at E refers the ray HK along the line EKN, and therefore the image of M is seen at N. But the eye at E sees also past the corner of the prism C, along the line EN′, and thus on

a paper placed at NN' the operator can trace the image of the object at M.

Camera Obscura (Lat. 'dark chamber'), so called by Battista della Porta in 1558, because the form described was really a dark room lighted only by a hole in the window shutter allowing the rays from without to pass through a convex lens. At the focal distance a sheet of white paper, especially if curved to suit the focal distance, will very faithfully show the figures of the objects opposite the lens, with their proper colours and motions. A convenient form is obtained by placing the convex lens at the top of a dark tent or movable box, and letting the rays fall vertically upon it by means of a plane mirror above it inclined at 45°. The height of this camera, or the distance of the table from the lens, should equal the focal length. Battista della Porta does not appear to have been the inventor of the camera obscura, since it is referred to by Leonardo da Vinci. Even in the 13th century it was known to Friar Bacon. The *periscope* in submarine vessels is really another name for the camera obscura.

Camerarius, JOACHIM (1500–74), German humanist and classical scholar, born at Bamberg, and in deference to the family's hereditary office of episcopal *Kämmerer* (chamberlain) he changed his proper name of Liebhard into Camerarius. An eminent humanist, and one of the greatest philological scholars of the 16th century, he took a large part in framing the Augsburg Confession (1530), established the study of the classics at Tübingen University (1535), and reorganized Leipzig University (1541). His works include a biography of Melanchthon (1566), excellent editions and translations of Greek and Latin writers, and contributions to Greek and Latin grammar and antiquities. He was a friend of Erasmus and Melanchthon.—His son JOACHIM (1534–98) was a distinguished physician and botanist.—RUDOLF JAKOB CAMERARIUS (1665–1721), also a physician and botanist, laid the foundation of the sexual theory of plants in his *Epistola de sexu Plantarum* (1694).

Camerino, tn. and archiepisc. see, prov. Macerata, Italy, 69 m. by rail (plus 6 by road) S.W. of Ancona; stands on a spur of the Apennines; is the seat of a 'free' university, founded in 1727, with 500 students. Pop. 12,000.

Camerlingo (It. 'chamberlain'), the cardinal in charge of the financial and judicial interests of the papacy when the Papal States were in existence. During an interregnum he presided over the apostolic chamber, and administered the functions of government till the election of a new pontiff.

Cameron, SIR ALEXANDER (1781–1850), British soldier, born at Inverailort, Inverness-shire. He distinguished himself in the Peninsular war, under Moore, at Vimeiro and Corunna; held important commands under Wellington at Torres Vedras, Fuentes de Oñoro, Ciudad Rodrigo, Badajoz, and Salamanca; was severely wounded at Vitoria; thereafter commanded a battalion in Flanders in 1813, and later at Waterloo, where he was again wounded.

Cameron, SIR CHARLES, FIRST BART. (1841), journalist and politician, born in Dublin. He edited the *N.B. Daily Mail* from 1864–74; represented Glasgow in Parliament (1874–85), then the College division of that city (1885–95), and Bridgeton division (1897–1900). Instrumental in the adoption of sixpenny telegrams, and in effecting various reforms in the Scottish liquor licensing laws, he was in recognition created a baronet in 1893.

Cameron, SIR CHARLES ALEXANDER (1830), born at Dublin, Irish agricultural chemist, was professor of hygiene at the Royal College of Surgeons, Ireland (1867), of which he was president in 1885. He was appointed public analyst for Dublin in 1867, and was knighted in 1886. Besides a history of his college, he has published *Chemistry of Agriculture* (1857), *Lectures on Public Health* (1868), *Manual of Hygiene* (1874), *Elementary Chemistry and Geology* (1896, 1898), etc.

Cameron, DAVID Y. (b. 1865), Scottish painter and etcher, was born in Glasgow. His etchings were first appreciated on the Continent, and his work is well represented in foreign galleries. He has a Rembrandtesque power over light and shade, and his etchings have, besides their mastery of technique, a rare imaginative and poetic quality. He was made an Associate of the Royal Academy in 1911. Among his chief etchings are *The Clyde Set* (1890), *North Holland Set* (1892), *North Italy Set* (1896), *The London Set* (1900), *Paris Etchings* (1904), and *Etchings in Belgium* (1907). A complete *catalogue raisonnée* of his etched works is in preparation by Frank Rinder (1911).

Cameron, SIR DUNCAN ALEXANDER (1808–88), British general, joined the Black Watch (1825), fought at the Alma (1854), at Balaklava, and at Sebastopol (1855); and became commander of the forces in New Zealand, where he defeated the Maoris(1863). He became general (1874).

Cameron, SIR EWEN or EVAN (1629–1719), of Lochiel, Highland chief, distinguished himself during the Highland insurrection under Glencairn in 1653, and later had a severe conflict with a body of English soldiers, whose commander—in a conflict which formed the model for the fight between Roderick Dhu and Fitz-James in the *Lady of the Lake*—he killed by seizing him by the throat with his teeth. In 1658 he arranged terms of submission with General Monck, whom he accompanied to London on his march south to restore Charles II. He was present under Dundee at Killiecrankie in 1690, and having advised the tactics which Dundee adopted, charged the soldiers of Mackay barefooted at the head of his clan. See *Memoirs* by Drummond (Bannatyne Club, 1842); Life in appendix to T. Pennant's *Tour in Scotland* (1769); Mackenzie's *Hist. of the Camerons* (1884).

Cameron, GEORGE POULETT (1806–82), colonel in Indian army. After fighting in Portugal, in Don Pedro's expedition to recover the throne for his daughter (1833), he served in the Persian army (1836–38). He retired from India in 1858, and next year accompanied the Austrians in their campaign in Italy. See his *Romance of a Military Life* (1853).

Cameron, JOHN (?1579–1625), Scottish scholar and theologian, born in Glasgow; after teaching classics and philosophy in several continental colleges, was appointed professor of divinity in the University of Saumur (1618). In 1622 he became principal of Glasgow University; but the odium excited by his advocacy of the divine right of kings compelled his resignation (1623), and ultimately he became professor of divinity in the University of Montauban (1624). His death, next year, was due to an assault made on him by opponents of his doctrine of passive obedience. He founded the sect of the 'Cameronites.' He wrote *Santangelus* (1616), *Theses de Gratia et Libero Arbitrio* (1618), *Theses XLII Theol. de Necessitate Satisfactionis Christi pro Peccatis* (1620), etc. See *Memoir* by Cappel (1642).

Cameron, RICHARD (*c.* 1648–80), Covenanting leader, was born

at Falkland in Fife. Converted from Episcopacy by the field preachers, he became an ultra-Presbyterian, and preached in Annandale and Clydesdale. After two years' residence in Holland he returned in 1680, and took part in the Sanquhar Declaration, for which a price of 5,000 merks was set on his head. He continued to preach whenever opportunity offered, until his party was surprised by a body of dragoons at Aird's Moss in Ayrshire, and Cameron and his brother were slain. See Howie's *Scots Worthies* (1876); *Richard Cameron*, by Professor Herkless, Famous Scots Series (1896); and Lang's *History of Scotland*, vol. iii. (1906).

Cameron, VERNEY LOVETT (1844–94), African traveller, born at Radipole, Dorsetshire. He took part in the Abyssinian campaign, and in suppressing the slave trade in E. Africa. At the head of an expedition to carry aid to Livingstone, Cameron left Zanzibar in 1873, but at Unyanyembe heard the news of Livingstone's death. He then determined the position of the southern portion of Lake Tanganyika. Having defined Nyangwe to be on the main stream of the Congo, he struck south, and then west, and discovered the sources of the Zambezi. He was (1875) the first traveller to cross Africa from east to west. In 1878 he explored the route for a railway from Beirut to Bushire, and in 1882 the Gold Coast. He was killed when hunting at Leighton-Buzzard, in Bedfordshire. His works include *Across Africa* (1877; 2nd. ed. 1885), and *Our Future Highway to India* (1880).

Cameronians, a sect of Scottish Presbyterians, originating in the latter part of the 17th century, deriving their name from their chief leader, Richard Cameron, who, along with his colleagues, John Semple, Alexander Peden, and John Welwood, definitely separated themselves from the great body of Presbyterians in Scotland, on the question of the spiritual independence of the church. Their defeat at Aird's (or Air's) Moss, and the relentless persecution by the Scottish government which followed had only the effect of intensifying their zeal and of increasing their numbers; and they continued to hold their conventicles among the moors (whence their name of 'hill folk' or 'hill men'). With high spiritual feeling they combined the fiercest fanaticism, and many of them were so ignorant as to ascribe supernatural and prophetic power to Peden, Cameron, and Semple. The early Cameronians present a remarkable compound of spiritual pride, bigotry, and intolerance of constituted authority. Their fierce polemical and controversial spirit is seen from the fact that, on one point or another, they were soon subdivided into petty sects, such as the Hamiltonians, the Harleyites, the Howdenites, the MacMillanites, and the Russelites: the founder of this last sect was James Russel, one of Archbishop Sharp's assassins. During the first half of the 18th century they were still a force in the S.W. of Scotland, and at one time entered into negotiations with the Jacobites.

The Cameronians are still represented by a few congregations. See Shield's *Faithful Contendings Displayed* (1780); *Testimony of the Reformed Presbyterian Church* (1842); and Walker's Lives of Peden, Semple, Welwood, Cameron, Cargill, and Smith, republished (1901) as *Six Saints of the Covenant*, and edited by Hay Fleming. The name is also given to the 26th regiment of foot, raised in the Scottish lowlands in 1688.

Cameroon. See KAMERUN.

Camiguin, isl., Philippines, 6 m. off N. ct. of Mindanao; area, 113 sq. m. It has several towns and a port at Catarman, and is very fertile. Pop. 30,000.

Camiling, tn., prov. Tarlac, Luzon, Philippines, 25 m. S.S.E. of Lingayen; produces timber, rice, maize, cotton, and sugar-cane. Pop. 25,000.

Camillus, MARCUS FURIUS, one of the early heroes of Rome, perhaps the first who is a character of history rather than of legend. He was censor in 403 B.C., military tribune with consular powers six times, and dictator five times. In 396 he defeated the people of Falerii and Fidenæ, and captured Veii. In 391 he was banished on the ground of having unfairly distributed the booty of Veii. We may disbelieve the patriotic fiction that he compelled the Gauls to relinquish the ransom of Rome and annihilated their forces. He rebuilt Rome, and so was called a second Romulus. In later campaigns he won victories over the Volscians and Etruscans, and finally, in 367 B.C., when eighty years of age, routed an invading band of Gauls. Two years later he died of the plague. Camillus was a patrician, and a rigid upholder of the rights of his order against the commons till 368, when he saw that reforms must come.

Camisards, the Protestants of the Cevennes who rose in arms after the revocation (1685) of the Edict of Nantes. They obtained their name from the white shirt (*camise*) which they adopted as a uniform. The ruthless cruelties of the ministers and troops (*dragonnades*) of Louis XIV. produced at first many converts to Roman Catholicism; but a stern and devoted minority held out in the mountains, and at last (1702) slew the Abbé du Chayla, for fifteen years their merciless persecutor. Then, under the daring leadership of Roland and Jean Cavalier, the latter a youth of eighteen, the rising took shape. A series of successes led to the appearance of Montrevel, a marshal of France, at the head of 60,000 men, and it became necessary to split the Camisard force, which never exceeded 3,000, into roving bands. During 1703 the royal army devastated the country, destroying over four hundred villages. In the following spring the Camisards gained the battle of Cannes, but in April a body of 1,000 was only saved from annihilation by the military genius of Cavalier. The latter now found himself opposed by the famous Marshal Villars, who adopted conciliatory tactics; and a meeting between the two leaders resulted in the acceptance by Cavalier of certain concessions. Nothing less than the restoration of the edict, however, would satisfy the fanatics of the party; and Cavalier and some of the more moderate Camisards having left the country, hostilities were resumed, ending in the slaughter or expatriation of the remnant. Some of the wanderers found their way to Spain, where Cavalier had taken service with the British, and distinguished themselves at the battle of Almanza (1707). After this engagement, where so many of his co-religionists perished, Cavalier went to Britain, and was governor successively of Jersey and the Isle of Wight. See *Revolt of the Protestants of the Cevennes*, by Mrs. Bray (1870), and *Cam. Mod. Hist.*, vol. v. (1908).

Camlet, a rich fabric made in the middle ages from camel's hair, but now generally made from the hair of the Angora goat, mixed with silk, wool, or cotton.

Cammarata, tn., Sicily, 37 m. S.S.E. of Palermo. Pop. 6,500.

Cammin, or KAMMIN, tn., Pomerania, Prussia, 40 m. N.N.E. of Stettin; has mineral springs. Pop. 6,000.

Camoens, or CAMÕES, LUIZ DE (1524–80), the greatest of Portuguese poets, was born at Lisbon in 1524. When only sixteen he had already written his *Amphitriões*. At the age of eighteen he fell in love with a lady of the court, Donna Caterina de Ataide; but her father forbade their union. Camoens remained true to her till her death, at a late period in his own life. In his *Rimas* he passionately celebrated his love. Banished from Lisbon for a time, he joined as a volunteer the expedition which John III. sent out against the Moors of Ceuta, and distinguished himself in several engagements. In a naval encounter in the Strait of Gibraltar he was among the foremost to board, and lost his right eye in the conflict. From 1550–3 Camoens was in Lisbon, where he led an erratic life. Having wounded one of the king's equerries, he was thrown into prison, and was only released on the understanding that he would volunteer for service in India. His vessel was the only one of four ships which arrived (1553) safely at Goa. At this time he fought under the king of Cochin against the king of Pimenta, and again took part in an expedition against the Arabian corsairs in the Red Sea. But his outspoken condemnation of certain Portuguese officials caused his banishment to Macao in 1556. Here he was glad to accept the post of administrator of the effects of deceased persons; which, however, enabled him to save a competency. A new viceroy having permitted him to return to Goa, he was shipwrecked in the passage on the coast of Cambodia, and it was with the greatest difficulty that he saved his life and his manuscript poems on a plank. On reaching Goa (1560) his troubles began again; for his enemies having accused him of malversation in office, he was cast into prison. After some years he obtained his liberation, and proceeded to the distant and barbarous settlement of Sofala. Finally, after an absence of nearly sixteen years, Camoens arrived at Lisbon, in abject poverty, in 1569. His celebrated work, *Os Lusiadas* (*i.e.* the Lusiads or Lusitanians, standing for the Portuguese), was published in 1572. The poem proved an immediate success; but its unhappy author died in the public hospital on June 10, 1580. In addition to his masterpiece, Camoens wrote a number of songs and eclogues, three dramas, and no fewer than 352 sonnets. An edition of his works appeared at Lisbon, in four volumes, in 1779–80, and a further edition, in five volumes, in 1782–3. The *Lusiads* have been translated into English by Sir R. Fanshawe (1655), Mickle (1771–5; new ed. 1877), Musgrave (1826), Quillinan, four books only (1853), Sir L. Mitchell (1854), Aubertin (1878), and Sir R. Burton (1881). A fine edition was published at Paris in 1817. A portion of the sonnets was translated by Aubertin in 1881, and a complete version of them by Sir R. Burton in 1885. See also *Life* of Camoens in German, by W. Storck (1890); *Poems* of Camoens, with remarks on his life and writings, by Lord Strangford (1805); *Camoens, his Life and his Lusiads: a Commentary*, by Sir R. Burton (1882); and Jayne's *Vasco da Gama and his Successors* (1910).

Camogli, ct. tn., Italy, prov. of and 12 m. E.S.E. of Genoa. Pop. 5,600.

Camomile. The common camomile, or chamomile (*Anthemis nobilis*), is an abundant perennial plant on waste land in England, and is much cultivated on the Continent. It has prostrate stems and downy, doubly-pinnate leaves, and in July and August bears solitary daisy-like heads of flowers, with central convex yellow discs and white

recurved rays. The flower-heads point downward before they expand. The whole of the plant has an aromatic fragrance, whence it derives its name of chamomile (*chamæmelon*). As *anthemis* the plant was known to the Greeks, and its dried flower-heads were early used in medicine, Dioscorides extolling its virtues in the treatment of intermittent fevers. The flowers should be picked in fine weather, as soon as they are fully open, and dried in the shade, care being taken to turn them frequently. The officinal infusion of camomile (*infusum anthemidis*), commonly known as camomile tea, is made by soaking an ounce of the dried flower-heads in a covered pan, containing a pint of water, for a quarter of an hour, and then straining off. The dose is from one to four ounces. It acts as a tonic, a stomachic, a diaphoretic and diuretic, and if given warm and in full doses, as an emetic.

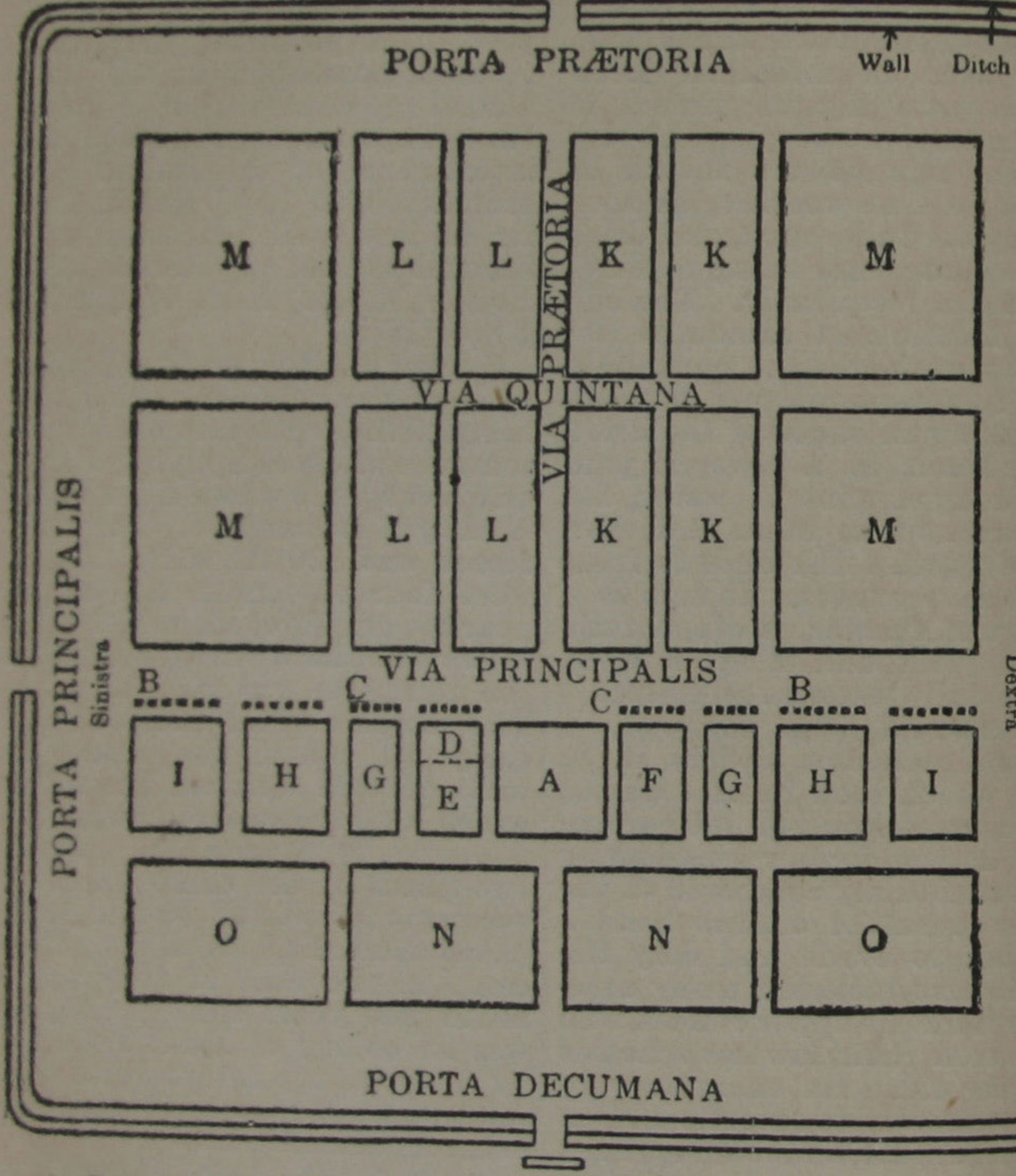
Camorra (Sp. *camorra*, a quarrel), a secret society in S. Italy, which took its rise during the times of Bourbon misgovernment in the former kingdom of Naples. Mainly composed of the poorer criminal classes banded together to evade and defy the law, it also included many associates from the upper classes, who carried on their lawless schemes with its aid. Its energies were chiefly directed to extortion, often on a large scale, and to smuggling; but at the same time it carried on brigandage, and lent itself to more serious crimes. The members were bound together by a stern and exacting discipline, and as a rule faithfully observed the oath of secrecy under which they worked. The last Bourbon minister of the interior, Liborio Romano, was in league with the Camorra, and used it for his own ends. The rebellion of 1860 was carried through largely with the help of the Camorra. But after the union of the kingdom of the Two Sicilies (Naples) with Sardinia, the governor of Naples, Lamarmora, effectually curbed its worst excesses. The organization towards the end of the 19th century assumed the aspect of a political party, and secured possession of the municipal government of Naples. Its corrupt methods aroused the interference of the Italian government (1899–1901), and in 1911 its leaders were arrested and brought to trial at Viterbo. See Bolton King's *Hist. of Italian Unity* (1889).

Camp. (1.) ROMAN. The Roman camp of the Polybian period surrounded the *prætorium*, or consul's tent, the whole camp lying within an exact square whose sides measured 2,017 Roman feet. The main street was 100 ft. wide. There were four entrances, one at or near the middle of each side. The *intervallum* between the tents and the ramparts was 200 ft. wide. The rampart which enclosed the camp all round was made of earth thrown up from the moat which lay outermost, and was surmounted by a palisade. About two-thirds of the camp afforded accommodation for two legions (9,000 men) and 9,600 allies. The camp in the time of Hyginus—about 250 years subsequently—was an oblong of about 2,400 ft. by 1,440 ft., the intervallum was reduced to 60 ft., and there were other modifications.

(2.) MODERN CAMPS. There are two different kinds of camp—the camp of exercise (see below), and the camp as used on active service and during manœuvres. In the latter case the camp is either composed of tents or of huts, or may be merely a bivouac where shelter from the weather is ex temporized out of branches, straw, or any handy material. Huts are used only when an army is occupying a defensive position for a long

time, as during a siege, or when resting in winter quarters in a hostile country. On active service, the principal consideration affecting the choice of site

moment's notice. Hence the camp must be on, or very near, the position chosen for fighting. But if the enemy be distant, the comfort of the troops becomes the



A—Prætorium.
B—Tribunes.
C—Prefects.
D—Legates.
E—Forum.
F—Quæstor.
G—Consular Guard (Horse).
H—Evocati.
I—Consular Guard (Foot).
K—First Legion.
L—Second Legion.
M—Allies.
N—Extraordinary (Horse & Foot).
O—Strangers.

Plan of Roman Camp.

for a camp is the proximity of the enemy. If he is near at hand, everything gives way to the condition that the troops must be ready to turn out and fight at a

first consideration, and the site of the camp is determined by facilities for obtaining water, wood, forage, and straw, sanitary considerations, etc. Military

camps are very small in area, that of a battalion over 1,000 men being only 65 × 100 yards.

(3.) CAMPS OF EXERCISE are formed at large permanent garrisons, where an additional force of regulars and auxiliaries can be accommodated under canvas. It is essential that the camp should be situated close to some large tract of comparatively uncultivated country, where the topographical conditions are as varied as possible, to which access is convenient, and where water and other essentials of a good camp are available. By the recent acquisition of land on Salisbury Plain, the British army has now seven camps of instruction—viz. Aldershot, Colchester, the Curragh, Shorncliffe camp, Strensall camp (near York), Salisbury Plain, and Stobs, near Hawick. Up to the present Aldershot has been the great training school for the army. Other camps of exercise are: Artillery practice camps, at Okehampton (Dartmoor), Trawsfynydd (N. Wales), and Glen Imaal (Ireland) for field artillery; Lydd (near Dungeness) for siege artillery; Isle of Wight and Devonport for garrison artillery; Shoeburyness for the annual meeting of the National Artillery Association, and Barry Links for the Scottish N.A.A. Engineer bridging camp at Wouldham (Chatham). Musketry camps at Bisley, Gravesend, Altcar, Chipping, Fleetwood, Kilworth (Ireland), and at all the camps of instruction.

Campagna. (1.) ROMAN (*di Roma*), a distinctive region of Italy, the plain which stretches for over 100 m. along the coast of the Tyrrhenian Sea, from Civita Vecchia south to Terracina, and bordered on the east by the Alban and Sabine Hills. It belongs for the most part to the church, but to the extent of about one-third is owned by the great nobles of Rome, who let their vast estates to wealthy tenants or companies of capitalist farmers. Though the soil is fertile, a relatively small part is cultivated (chiefly cereals, wine, and fruits); but as it is malaria-stricken, few people venture to live on it, the necessary labour being done by immigrants from the Apenninian provinces of the Abruzzi and Umbria. Horses and buffaloes (used for draught purposes) are reared, in addition to cattle, sheep, and goats. The vanished towns and numerous ruins which strew the Campagna show that in Roman times it was not unhealthy. The air of dreary desolation it now wears is due to the devastations of barbarian invaders—Goths, Vandals, and Longobards—and subsequently Normans and Saracens. The civil broils of Rome in the later middle ages also contributed to its ruin. Attempts have been made to drain it, to regulate and embank the Tiber and other rivers, to reclaim the riverine tracts by warping or the deposition of fluvial sediment, and latterly by planting eucalyptus and other trees. The mosquito explanation of malaria has led to interesting experiments. Residence has been attempted in huts provided with wire-gauze windows and doors. See Ashby's *The Roman Campagna* (1903). (2.) Town and episc. see, prov. Salerno, Italy, 20 m. E. of Salerno. Pop. 9,000.

Campagnatico, comm., Tuscany, Italy, prov. of and 13 m. N.E. of Grosseto. Pop. 6,600.

Campagnoli, BARTOLOMEO (1751–1827), Italian violinist, a pupil and imitator of Nardini. He attained celebrity in his day by his marvellous technique. He is now chiefly remembered for his *Studies* for the violin.

Campan, JEANNE LOUISE HENRIETTE (1752–1822), French educational writer, born in Paris;

was at fifteen appointed reader to the daughters of Louis XV.; and became first lady of the bedchamber to Marie Antoinette. After the Reign of Terror she opened a school at St. Germain, where she taught Hortense, the mother of Napoleon III. Napoleon I. appointed her (1807) superintendent of the imperial school at Ecouen, which, however, was suppressed by Louis XVIII. Her best-known work is *Mémoires de la Vie Privée de Marie Antoinette* (1822).

Campaña, tn., Argentina, on R. Parana, 40 m. N.W. of Buenos Ayres. Industries include petroleum refining and paper making. Pop. 5,000.

Campanario, tn., Estremadura, Spain, prov. of and 70 m. E. of Badajoz. Manufactures soap and woollen and hemp goods. Pop. 7,700.

Campanella, TOMMASO (1568–1639), Italian philosopher, was born at Stilo, in Calabria, and entered the Dominican order. He became the leader of a political conspiracy to expel the Spaniards from Naples, for which he was imprisoned for twenty-seven years. On his release in 1626, by Urban VIII., religious persecution drove him to France, where he was protected by Cardinal Richelieu, and for the remainder of his life he devoted himself to philosophy. The contemporary of Bacon, like that philosopher he was an opponent of the *à priori* conceptions of the Aristotelian school, and endeavoured to ground philosophy on experiment and the observation of nature. He also made an attempt to classify the sciences, and to form a philosophy of history and politics, following out the principle of the indefinite progress of mankind as leading to a universal communion of nations and the extinction of evil. His chief works were *De Sensu Rerum* (1620); *De Monarchia Hispanica Discursus* (1640; Eng. trans. 1654); *Philosophia Rationalis* (1638); *Philosophia Universalis seu Metaphysica* (1637); *Civitas Solis* (1643; new Eng. trans. 1885), which describes an ideal communistic organization of society on the model of Plato's *Republic.* A new complete edition of his works was published by A. d'Ancona (1854). His sonnets were translated into English verse by J. A. Symonds (1878). See Amabile's *Fra Tommaso Campanella* (3 vols. 1882), and Sigwart's *T. Campanella und seine politischen Ideen* (1889).

Campanha, tn., Minas Geraes, Brazil, 150 m. N.W. of Rio de Janeiro. There are hot springs in the neighbourhood. Mining is the chief industry. Pop. about 7,000.

Campania, territorial division of Italy, coinciding practically with the modern provinces of Avellino, Benevento, Caserta, Naples, and Salerno, with an area of 6,290 sq. m., and a pop. of 3,300,000. The Neapolitan Apennines fill the greater part of the region. The Salernian plain, drained by the Sele, is in great part malarious. The Campanian, drained by the Volturno, is very fertile, and seems from time immemorial to have been densely peopled. The products of prime importance are wheat, maize, wine (celebrated in antiquity—*e.g.* Falernian), fruits, hemp, silk, and sulphur. The oldest part of this region known to history is that round Cumæ, a Greek settlement (*Kyme*). The notable cities of the distant past were Naples, Buxentum, Elea (or Velia), Posidonia (afterwards Paestum), Salernum, Puteoli, Caieta, Capua, Volturnum, Nola, Beneventum, Herculaneum, Pompeii and Stabiæ (the three last buried under the ashes of Vesuvius, 79 A.D.). The chief seat of commerce in S. Italy in the 11th century was

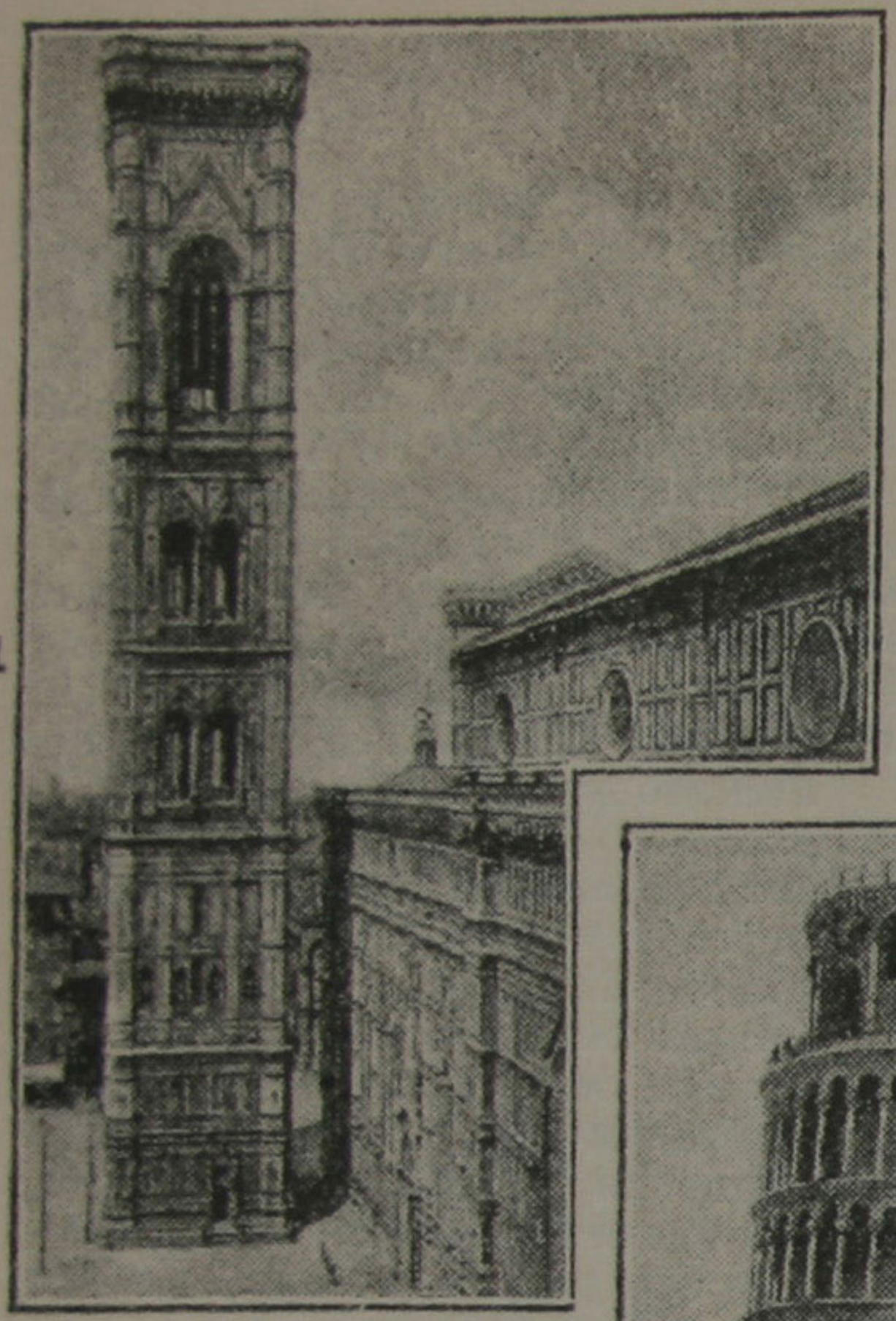
Amalfi. The vicinity of Cumæ is rich in classic reminiscences, chiefly owing to its attractions (Baiæ, etc.), its associations with celebrated men (Cicero, Augustus, Nero, and Hadrian), and its mythological sanctity (Lake Avernus and the Sibyl's Cave). The Oscans, Etruscans, Samnites, and Romans were successively predominant in this region. In modern times it has shared the destinies of the kingdom of Naples.

Campania, a mail steamer of the Cunard Line, built in 1893. She is 610 ft. long, of 12,950 tons gross, of 30,000 indicated horse power, and of 22 knots speed.

Campanile (Ital. 'belfry' or 'steeple'), although literally applicable to any bell-tower, is specially held to denote the tall, graceful, and usually rectangular structure which forms so striking an adjunct to many of the churches and palaces of Italy. The Italian campanile usually stood close to, but detached from, the neighbouring church. The leaning tower of Pisa and its two congeners at Bologna are all of the 12th century, and present several exceptional features. Perhaps the noblest of the Italian campaniles was that of St. Mark's in Venice, which suddenly collapsed on July 14, 1902, but is now (1911) in course of reconstruction. Founded upon a rectangular base of Istrian stone, its brick walls tapered gently up to a height of about 200 ft., in a series of eight stories pierced with windows, and above the platform rose an open *loggia* of marble 50 ft. high, being the actual belfry, wherein hung five great bells of bronze. The high-pitched belfry roof was surmounted by a copper figure of an angel 16 ft. high, the total height of the campanile being thus 325 ft. The tower was founded in 888, added to in 948 and 1148, and completed to the platform in 1170. The marble *loggia* was not added until 1349. Other examples of the campanile are those of Giotto at Florence (275 ft. high), at Cremona, the highest in Italy (396 ft.), and the Palazzo de Signora at Verona (250 ft.).

Campanology, the art of bell-ringing. See BELL.

Campanula, the genus of bell-flowers, includes about 300 species. In addition to the species themselves, there are numerous varieties cultivated in gardens. Most of the campanulas are herbaceous perennial plants, but a few are annuals or biennials. The colour of the flowers ranges between white and blue, though occasionally a suggestion of pink is seen. In size they vary from the tiny *C. Raineri*, about two inches in height, to the chimney campanula (*C. pyramidalis*), often three feet or more in height. The annual species may be raised from seed, sown under glass in early spring or in the open border at the end of April. In any case they should be planted out into deeply dug, moderately rich soil, as soon as they are fit to handle. Of the annuals may be named *C. macrostyla*, so called from its long, brown, spindle-shaped style, a purple flowering species about eighteen inches high; and the dwarfer *C. Erinus*, which produces white and blue flowers in June and July. Of the biennial kinds, the most important is the Canterbury bell (*C. medium*). There are blue, white, purple, and double varieties, and also a variety known as *C. medium calycanthema*, in which the calyx is coloured like the corolla, the latter standing on the former as on a plate. The biennials may be raised from seeds, sown at the same seasons as the annuals. If sown under glass in March, they usually flower the same year; if sown in April or May, they usually do not flower until the following



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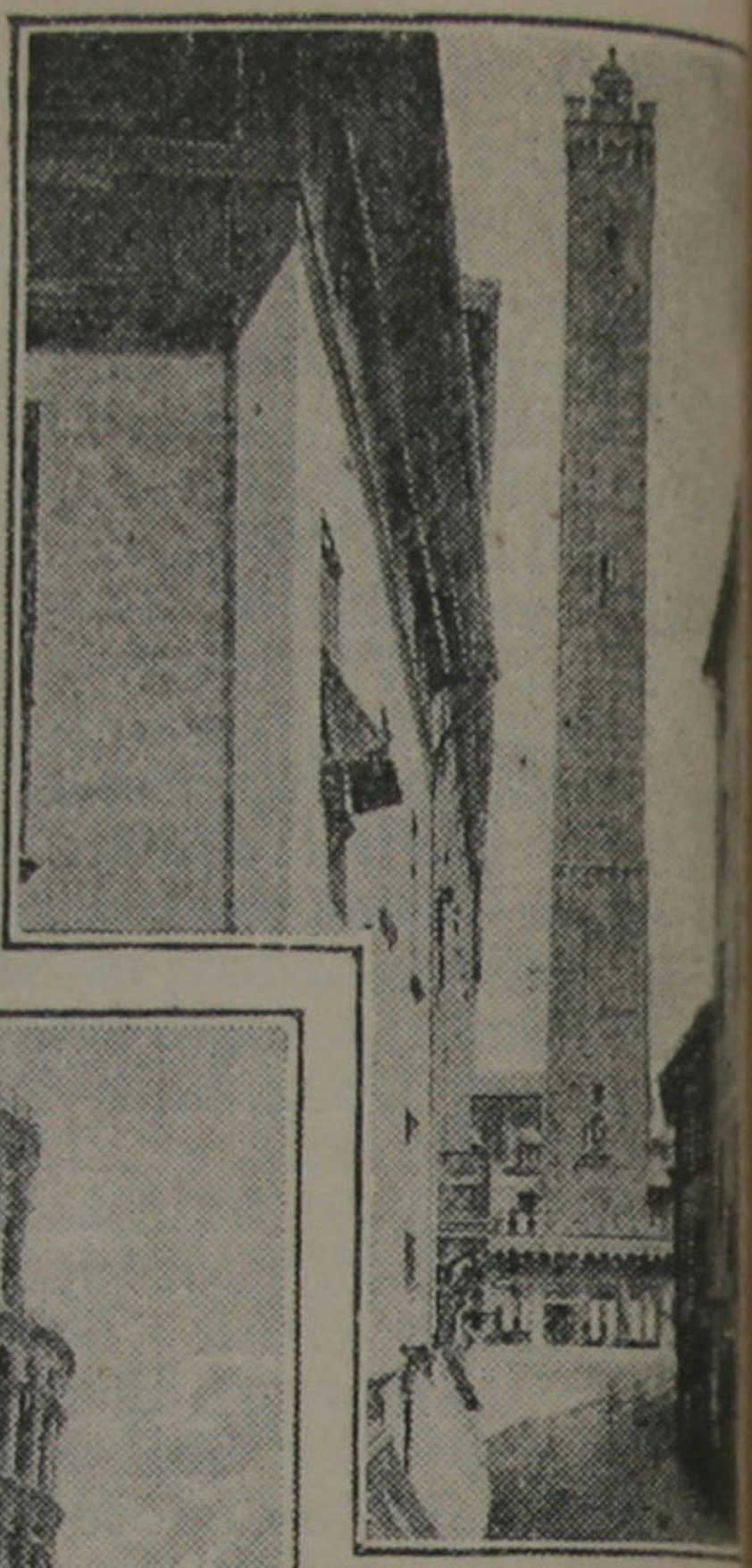

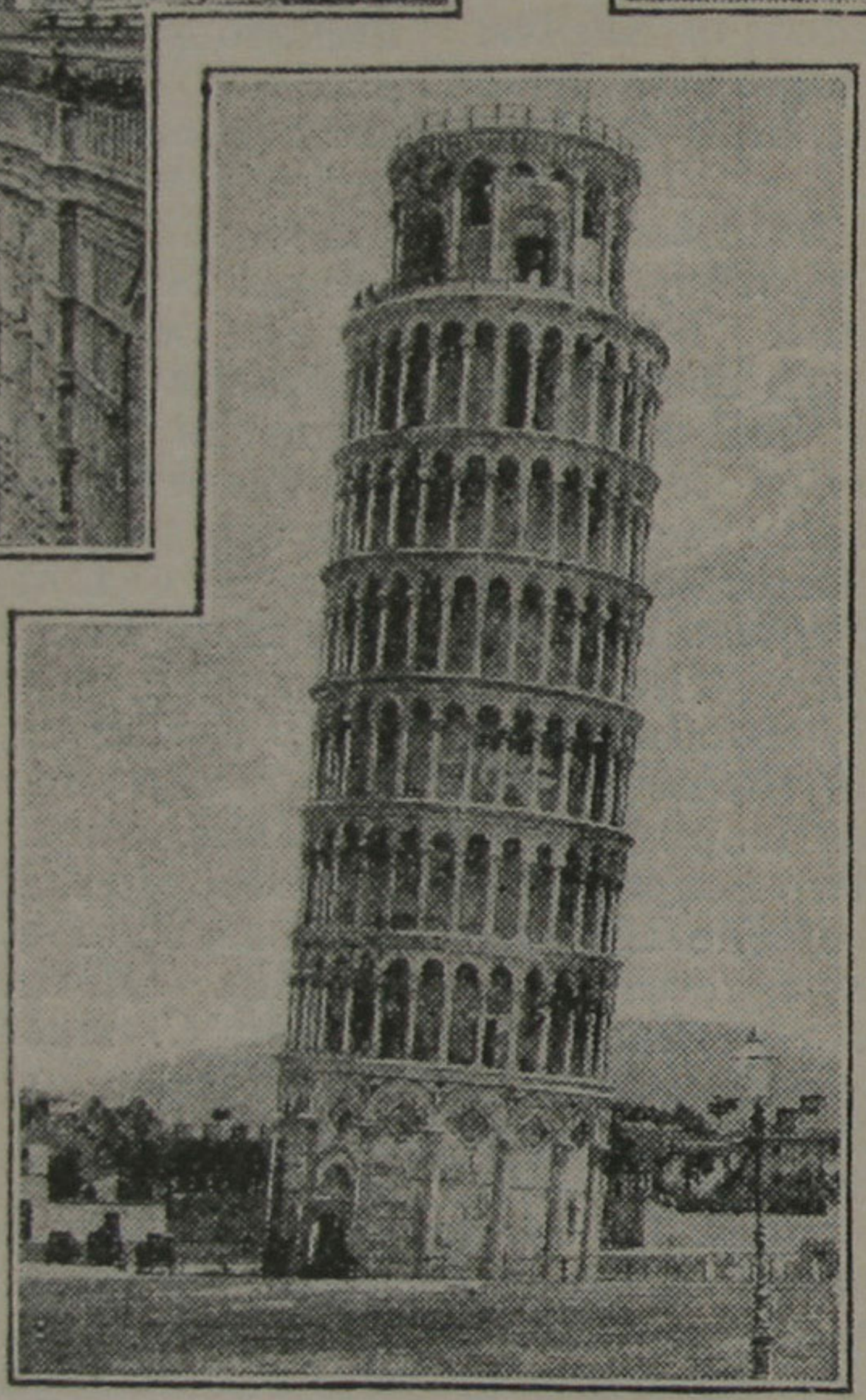

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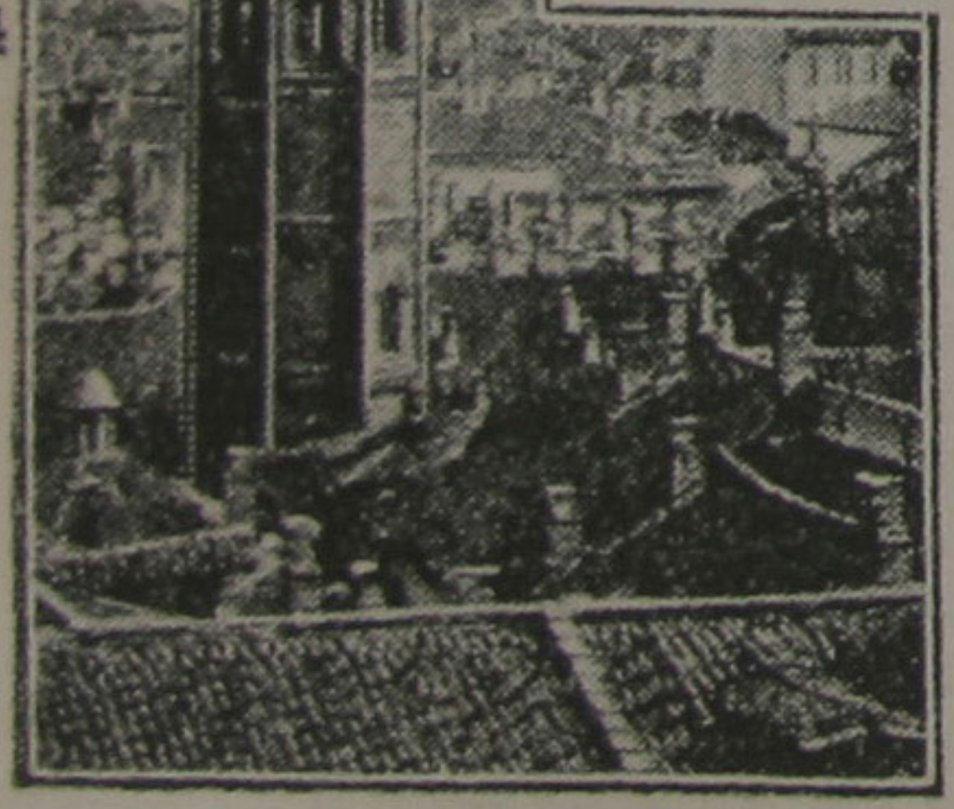

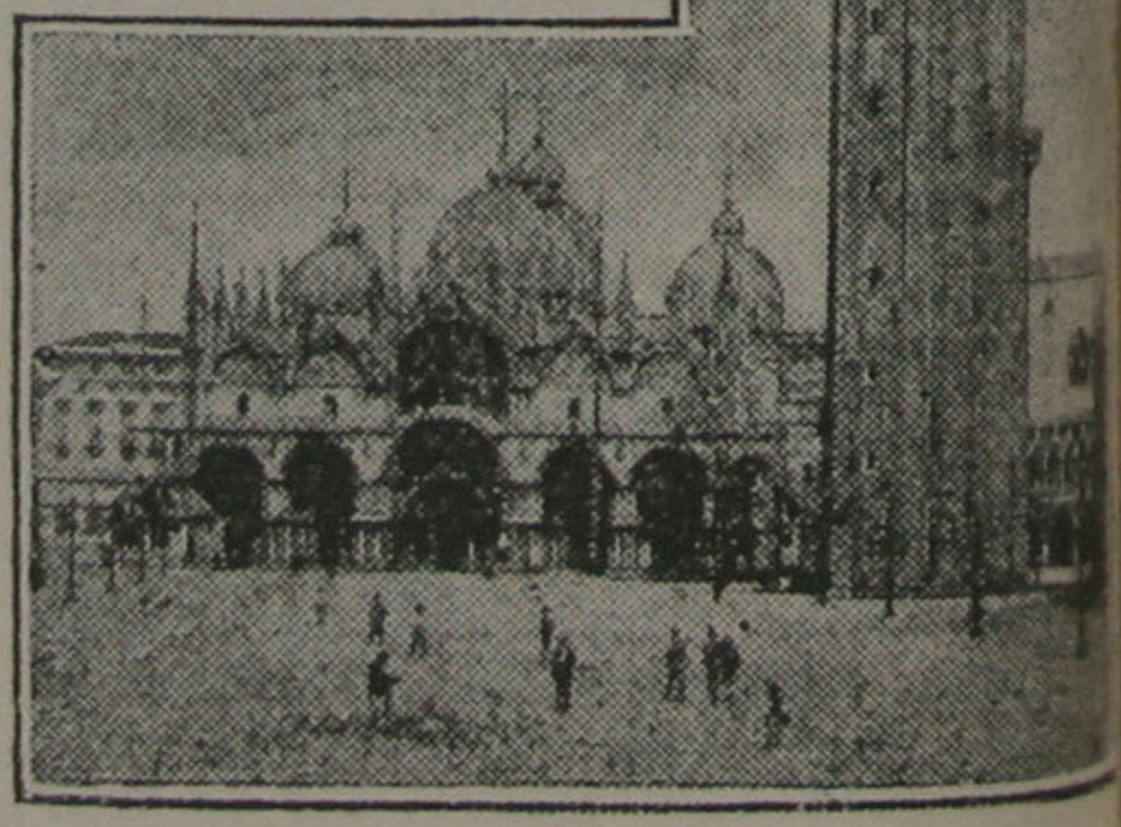

Famous Campaniles.

1. Florence Cathedral: Campanile, by Giotto. 2. Bologna: Torre Asinelli (12th century). 3. Pisa: the Leaning Tower. 4. Milan: San Gottardo, by Francesco de Pecorari. 5. Venice: St. Mark's (now being rebuilt after its fall in July 1902).

year. The perennial species are probably the most important from a gardening point of view. They also may be raised from seeds, or they may be propagated by division, or in some cases by cuttings. The following are the most beautiful kinds: *C. pyramidalis*, which bears spikes of blue flowers in July and August, the spikes often three or four feet in height; the peach-leaved campanula (*C. persicæfolia*, about two feet high, with white and blue varieties; *C. grandis alba;* and the dwarfer species — *C. pusila*, blue, *C. punctata*, white, spotted with red, *C. carpatica*, with blue and white varieties, *C. isophylla*, with blue and white varieties, *C. fragilis*, and *C. garganica hirsuta*, a beautiful pale blue. The slender and graceful native harebell, 'the blue bell of Scotland,' is *C. rotundifolia*, of which there is a remarkable semi-double-flowered variety (*C. r. soldanellæflorœ*).

Campanularia, CAMPANULARIDÆ, names applied respectively to a genus and to a family of Hydrozoa, in which the individual zooids or polypes of the colony are placed in bell-shaped cups borne on the ends of short stalks.

Campas. See ANTIS.

Campbell, ALEXANDER (1788–1866), founder of the sect of the 'Campbellites,' was a native of Antrim, Ireland. He emigrated to America (1809), and in 1811 received a licence to preach from the Christian Association of Washington, a sect established by his father on the basis of 'the Bible alone the sole creed of the church.' After some years' alliance with the Baptists, he quarrelled with them, and formed his followers into a separate organization known as the 'Christians,' the 'Disciples of Christ,' or the 'Campbellites.' Bethany College, W. Virginia, founded in 1841 by Campbell for the education of ministers, was endowed by him at his death. The views of the denomination are set forth in the *Christian Baptist* (1823–30), and its successor, the *Millennial Harbinger* (1830). The most important of Campbell's works are his *Translation of the New Testament* (1835), *The Christian Messenger and Reformer*, and *Christian Baptism* (1853). See Richardson's *Memoirs of A. Campbell* (1871), Rice's *Campbellism* (1850).

Campbell, SIR ALEXANDER (1822–92), Canadian statesman, born at Heydon, Yorkshire, the son of a physician who emigrated to Canada in 1824. Called to the bar in 1842, he was elected to the Legislative Council in 1858, of which he became Speaker in 1863, and the first postmaster-general of the Dominion (1867–73). From 1878 till 1887 he held various offices in succession in the Macdonald administration, including the portfolios of postmaster-general and minister of justice.

Campbell, SIR ARCHIBALD (1769–1843), British general, served in India (1788–99), and was present at the storming of Seringapatam, where he greatly distinguished himself. He saw service in Portugal, and in Spain under Sir John Moore (1808). From 1816–20 he acted as Portuguese commander at Lisbon. Being entrusted with the prosecution of the Burmese war, he captured Rangoon (1824), defeated Bundoola, the chief Burmese general, and took Prome (1825). Raised to the rank of major-general, he marched on Ava, where he dictated terms of peace (1826). Appointed governor of British Burma (1826–9), he was made a baronet (1831) and a lieutenant-general (1838), having been lieutenant-governor of New Brunswick (1831–7).

Campbell, LORD ARCHIBALD (1846), son of the eighth Duke of Argyll, a partner in the banking

business of Coutts and Co. He has written *Records of Argyll* (1885), *Waifs and Strays of Celtic Tradition* (1889), *Children of the Mist*, *Highland Dress, Arms, and Ornament* (1899), *Reveries* (1902), and *Argyllshire Galleys* (1907).

Campbell, SIR COLIN, LORD CLYDE (1792-1863), British field-marshal, the son of a carpenter in Glasgow. He served in the Peninsula and in America; also with Sir Hugh Gough's army in N. China (1842), and was conspicuous in the second Sikh war (1848-49). He commanded the Highland Brigade in the Crimea, and was mainly instrumental in winning the battle of the Alma. On the outbreak of the Indian mutiny (1857) he was made commander-in-chief, and after clearing Lower Bengal, fought his way step by step to Lucknow, then by a masterly campaign in the following spring (1858) completed the capture of Lucknow and the pacification of N. India. After organizing the successful campaign in Central India under Sir Hugh Rose, he was made a general, created field-marshal, and raised to the peerage.

Campbell, GEORGE (1719-96), Scottish divine, born in Aberdeen. Becoming (1759) principal of Marischal College, Aberdeen, three years later he published his *Dissertation on Miracles*, controverting Hume's famous argument by its converse, that the highest anterior improbability of an alleged event is counterbalanced by slight direct evidence. In 1771 he became professor of divinity in Marischal College and minister of Greyfriars', and wrote *Philosophy of Rhetoric* (1776), and *A New Translation of the Gospels* (1789). His *Lectures on Ecclesiastical History* appeared posthumously in 1800. See Life by G. S. Keith, prefixed to *Lectures* (1800).

Campbell, SIR GEORGE (1824-92). Indian administrator, accompanied Sir Hope Grant to the relief of Cawnpur and Lucknow; became a judge of the court of Bengal (1862), lieutenant-governor of Bengal (1871), and gave great attention to education. He sat for some time in Parliament as member for Kirkcaldy. He wrote *Modern India* (1852), *The Ethnology of India* (1866), *Tenure of Land in India* (1870; new ed. 1881). See *Memoirs of My Indian Career* (2 vols. 1893).

Campbell, JOHN, BARON (1779-1861), British judge and biographer, born at Cupar-Fife, was called to the bar in 1806, for a time also serving on the staff of the *Morning Chronicle*. In 1830 he entered the House of Commons for Stafford, became solicitor-general in 1832, and attorney-general in 1834, and passed 'Lord Campbell's Act,' for the amendment of the law of libel as it affects newspapers. In 1834 he was elected M.P. for Edinburgh. Campbell was the author of *Reports of Cases determined at Nisi Prius* (1809-16). In 1841 he was created Lord Chancellor of Ireland, with a peerage, but resigned office shortly afterwards, on the fall of the Melbourne ministry. He then devoted himself to literature, writing first a work on *Shakespeare's Legal Acquirements*, in order to prove that Shakespeare spent his youth in an attorney's office. In 1846-7 he published his *Lives of the Lord Chancellors*, which was followed in 1849 by the *Lives of the Chief-Justices:* neither work is to be trusted absolutely throughout. In the Whig cabinet of 1846 Campbell was Chancellor of the Duchy of Lancaster, was appointed Lord Chief-justice in 1850, and became Lord Chancellor of England in 1859. He died suddenly (June 23), and was buried within the ruins of Jedburgh Abbey. See the *Life of*

Lord Campbell by his daughter, the Hon. Mrs. Hardcastle (1881); Foss's *Judges of England* (1861); Harriet Martineau's *Autobiography* and *Biographical Sketches* (1869); Atlay's *Victorian Chancellors* (1908); and Sugden's *Misrepresentations in Campbell's Lives* (1869).

Campbell, Sir John (1802–77), Indian officer, was born at Kingsburgh, Skye. Entering the service of the East India Company in 1820, he served in the Gumsur war of 1836–7, and was in civil charge of the Khond tribes in the Orissa Hills, with instructions to suppress human sacrifice (1837–42), and was reinstated (1847–9) when the Khonds again became troublesome. See his *Personal Narrative of Thirteen Years' Service in Khondistan* (1864).

Campbell, John Francis (1821–85), better known as 'Campbell of Islay,' was born in Islay, and died at Cannes. He was a keen and diligent collector of Highland oral tradition, and his *Popular Tales of the W. Highlands* (4 vols. 1860–2), together with his *Leabhair na Feinne* ('Book of the Fians'), published in 1872, is the best collection of genuine Gaelic tales and ballads. One result of his research was to show that Macpherson's *Ossian* was mostly Macpherson's own creation, although his personages were taken from actual current legends. Campbell also wrote several records of his travels—*Circular Notes* (1876), *Frost and Fire*, partly scientific (1865), and *A Short American Tramp in the Fall of 1864* (1865).

Campbell, John M'Leod (1800–72), Scottish divine, was born at Kilninver, Argyllshire; in 1825 became minister of the parish of Row, near Helensburgh. After six years' zealous work, being deprived of his living by the General Assembly on account of his teaching concerning 'assurance' and 'universal atonement,' he worked in the Highlands as an evangelist for two years, thereafter ministering in Glasgow. In 1856 he published a work called *The Nature of the Atonement*, which placed him in the front rank of living theologians. In 1862 he published his *Thoughts on Revelation*. See his *Reminiscences and Reflections* (1873); 'Memorials of J. M'Leod Campbell,' by Donald Campbell, in *Contemp. Rev.*, June 1878.

Campbell, Lewis (1830–1908), Greek scholar, born in Edinburgh. From 1863 to 1892 he was professor of Greek at St. Andrews. His works include *The Theætetus of Plato* (1861); *The Sophistes and Politicus of Plato* (1867); *Sophocles: The Plays and Fragments* (2 vols. 1871–81); *The Life of James Clerk Maxwell* (1882), with William Garnett; with Abbott, *The Life and Letters of Benjamin Jowett* (1897); *Tragic Drama in Æschylus, Sophocles, and Shakespeare* (1904).

Campbell, Mrs. Patrick (1867), English actress, born at Kensington, London. After making dramatic tours (1888–91), she attracted special attention by her impersonation of Helen in an amateur performance of *The Hunchback* at Colchester. So favourable was the reception she met in London when playing (1890) in *A Buried Talent*, that in June 1891 she ventured to take the Shaftesbury Theatre in order to make trial of *Rosalind*. At the Adelphi she created four parts, including Astrea in *The Trumpet Call*, and Tress Purvis in *The Lights of Home*. Next, at St. James's, she achieved a brilliant success in the title rôle of *The Second Mrs. Tanqueray*. Other parts in which she has played include those of Kate Cloud in *John a' Dreams*, Agnes in *The Notorious*

Mrs. Ebbsmith, Juliet (September 1895), Lady Teazle, Lady Macbeth (1898), Ophelia, and Magda (1900). Her daughter, Miss Stella Campbell, shows much promise as an actress.

Campbell, REGINALD JOHN (1867), Congregationalist minister, was educated at Christ Church, Oxford, and became (1895) minister of Union Street Church, Brighton. After the death of Dr. Parker, Mr. Campbell was (1903) made pastor of the City Temple. He actively opposed the Education Act of 1902, urging all whom he addressed to join in the Passive Resistance movement. In October 1904, an article by him in the *National Review*, reflecting on the habits of part of the working classes, aroused demonstrations against him, and he met working-men representatives in debate on the question. Shortly after he inaugurated the 'New Theology' movement, which finally separated him from orthodox Nonconformity. Through his paper, the *Christian Commonwealth*, he preaches a form of Christian Socialism. In 1909 he became joint-minister of the Weigh House Chapel, London. He is the author of *The New Theology* (1907); *Christianity and the Social Order* (1908).

Campbell, THOMAS (1777–1844), British poet, was born in Glasgow. He became a tutor first in Mull, and afterwards at Downie, near Lochgilphead, and thereafter (1797) went to Edinburgh, where he found temporary employment in the Register House. Being brought into contact with the literary society of the Scottish capital, he applied himself to *The Pleasures of Hope*, which was published in April 1799. The poem was an immense success. The winter of 1800–1 was spent at Altona, near Hamburg, where he met the hero of his *Exile of Erin*. He returned to England in April 1801, sailing past the Danish batteries, the sight of which suggested his famous *Battle of the Baltic*. After one or two visits to London, he settled at Sydenham in 1804. For some time after this he was engaged in anonymous writing and compilation, until his *Gertrude of Wyoming* appeared, in 1809. It was favourably received by the public, and particularly by the Whig party, to whose leaders Campbell was personally known. Returning to hack work, he produced *The Annals of Great Britain*, and lectured on 'Poetry' at the Surrey Institute in 1812. In 1820 he was engaged by Colburn as editor of the *New Monthly Magazine*. His *Theodric* appeared in 1824, only to be met with universal censure. In 1834 he made a trip to Algiers, an account of which may be read in his *Letters from the South* (1837). His last considerable poem, *The Pilgrim of Glencoe*, appeared in 1842. It fell still-born from the press, and Campbell, feeling that his work was done, retired to Boulogne, where he died. He was buried in the Poets' Corner of Westminster Abbey. Campbell survives almost entirely by his war-songs, notably by *Hohenlinden*, *The Battle of the Baltic*, and *Ye Mariners of England*. Some of his shorter pieces, such as *Lord Ullin's Daughter* and *O'Connor's Child*, reproduce faithfully the style of the new romantic poets, and his *Lochiel's Warning* is still popular in certain circles. *The Pleasures of Hope* and *Gertrude of Wyoming* retain a kind of conventional fame, but neither can be called a great poem. See William Beattie's *Life and Letters of Thomas Campbell* (3 vols. 1850); also the monograph by J. Cuthbert Hadden in 'Famous Scots Series' (1899).

Campbell, FAMILY OF. See ARGYLL.

Campbell - Bannerman, Sir Henry (1836–1908), British statesman, familiarly known as 'C.-B.,' was parliamentary representative for the Stirling Burghs from 1868 until his death. His official career began as financial secretary to the War Office (1870–4) in Mr. Gladstone's government, and was crowned in February 1899 by his unanimous election to the leadership of the Liberal party in the House of Commons on the retirement of Sir William Harcourt. He was again financial secretary to the War Office from 1880 to 1882, when he was transferred to the Admiralty as secretary (1882–4). During the last year of Mr. Gladstone's administration (1880 - 5) he was chief secretary for Ireland. It was intended to propose him as Speaker on the retirement of Mr. Brand (1884), but Mr. Peel's (Viscount Peel) acceptance of Mr. Gladstone's offer of the position upset the plans of the cabinet. On the formation of the Home Rule government (February–July 1886), Campbell-Bannerman was made secretary of state for war. In 1892, when Mr. Gladstone was again prime minister, he resumed his place at the War Office. There he remained, under the subsequent premiership of the Earl of Rosebery, until the ministry was defeated on the cordite vote (June 21, 1895). In 1897 Sir H. Campbell - Bannerman (G.C.B. 1895) was a member of the Jameson Raid Committee. His strong disapproval of the war against the Transvaal provoked the formation of the Liberal Imperial League, afterwards the Liberal League; but a general meeting of the Liberal party in July 1901 confirmed him in his leadership. On the resignation of Mr. A. J. Balfour's government in December 1905, Sir H. Campbell - Bannerman was commissioned by the King to form a Liberal cabinet, and the general election in January 1906 resulted in his beginning his administration with an overwhelming majority. The outstanding features of the Campbell - Bannerman administration were the grant of a constitution and responsible government to the Transvaal Colony; the prohibition of further importation of Chinese labour into the Transvaal; Mr. Haldane's new army scheme; an Education Bill for England and Wales (rejected by the House of Lords); the Criminal Appeal Act; the Deceased Wife's Sister's Marriage Act, which was passed amidst a storm of opposition in 1907. Early in April 1908, Sir Henry resigned office, and he died some three weeks later.

Sir Henry Campbell - Bannerman had a keen sense of humour, and on many occasions he turned a dangerous attack by some clever raillery of his opponents. His most successful passages do not lend themselves readily to quotation, and are rarely epigrammatic, but can best be described as a continual diffusion of pleasantries without bitterness, and a sustained drollery — a humour typically Scottish. He was also a most active and courageous leader, a good judge of men, and a remarkable diplomat. No Liberal prime minister has been so universally popular in his party.

Campbellford, tn., Northumberland co., Ontario, Canada, 30 m. E. of Peterborough, on the R. Trent. Manufactures paper, leather, woollens, and flour. Pop. 3,000.

Campbell Island, an uninhabited, mountainous, peaty, wooded island, nearly 100 sq. m. in area, the most southerly land of New Zealand, about 145 m. S.E. of Auckland Is.; discovered in 1810 by Captain Hazelburgh.

Campbellton, seapt., Restigouche co., New Brunswick, Canada, 15 m. w.s.w. of Dalhousie, at the head of Chaleurs Bay. Fishing and lumbering are the chief industries. In 1910 it was almost destroyed by fire. Pop. 5,000.

Campbeltown, seapt. and roy. bur., par. Kintyre, Argyllshire, Scotland, 37 m. s. of Tarbert. It possesses a splendid harbour, sheltered by Davaar I. (with a lighthouse). Its industries comprise net factories, shipbuilding, and distillation of whisky (largely exported). An important fishing station. Pop. of par. 10,000; of tn. 8,000.

Campbelltown. (1.) Suburban tn., S. Australia, 5 m. E. of Adelaide. Pop. 1,800. (2.) Munic. tn., 34 m. by rail S.W. of Sydney, N.S.W., one of the oldest settlements in the state. Pop. 2,200.

Camp du Marechal, comm., Algeria, 45 m. E. of Algiers. Pop. 8,300 (Europeans, 200).

Campe, JOACHIM HEINRICH (1746–1818), German educationist, was tutor to Wilhelm and August von Humboldt; became director of the Philanthropin at Dessau (1776–7), and in 1783 conducted a small private school of his own, after which Duke Karl Wilhelm Ferdinand invited him to reform education in Brunswick. In 1779 appeared his *Robinson* (based on Defoe's work), which attained immense popularity (115th Ger. ed. 1890; new Eng. ed. *Robinson the Younger*, 1855); and between 1785 and 1791 he issued, in sixteen volumes, his *Allgemeine Revision des gesammten Erziehungswesens*, a journal to which all the best educational authorities contributed, and which did much to popularize and render practicable Rousseau's ideas on education. He then endeavoured to purify the German language in his *Wörterbuch der....unserer Sprache aufgedrungenen fremden Ausdrücke* (1801). His *Wörterbuch der deutschen Sprache* (1807–11) contains a very large store of words; but its value is otherwise slight, as the general historical knowledge of the language was at the time still imperfect. The best biography is by Leyser (2nd ed. 1896); and there is a good dissertation by Lötze on *J. H. Campe als Pädagog* (1890).

Campeachy (Span. *Campeche*). (1.) State, in S.W. of Yucatan, Mexico. It consists of 18,087 sq. m. of flat land, from which are produced crops of rice, sugar-cane, tobacco, etc. Logwood, mahogany, chewing gum, skins, are exported. Pop. 85,000. (2.) Town, seapt., and cap. of above, is situated on the Bay of Campeachy, 90 m. by rail S.W. of Merida. The harbour is not suitable for large vessels. The chief exports are logwood, hemp cordage, wax, hides, cocoa, and salt. The only important manufacture is that of cigars. Pop. 19,000. (3.) BAY OF C., the S.E. part of the Gulf of Mexico, to the W. of Yucatan peninsula.

Campeggio, LORENZO (1474–1539), Italian cardinal, born at Bologna, was twice sent to England as legate of the Pope—on the first occasion (1519) to endeavour to persuade Henry VIII. to take part in a Christian league against the Turks, and subsequently (1528) to act as a judge with Cardinal Wolsey regarding the divorce of Henry VIII. and Catherine of Aragon.

Campell, ULRICH (*c.* 1510–83), the first descriptive historian of the Grisons (Switzerland) and the Engadine. Part of his life was spent, as Protestant pastor (1550–70), at his birthplace, Süs, in the Lower Engadine; thereafter he was pastor at Coire (1571–4), and, till his death, at Schleins (Lower Engadine). He was a violent theological controversialist. His translation of

the Psalms (published in 1562) into the Ladin dialect of his native valley is the third work printed in that dialect, and his two dramas, *Judith* (1554) and *Joseph* (1564), were the first religious plays acted there. He composed in Latin his *Rætiæ Alpestris Topographica Descriptio* (first printed at Basel in 1884), and his diffuse *Historica Rætica* (published first at Basel in 2 vols. in 1887 and 1891). A German translation of parts of these works appeared at Coire in 1853. Campell's writings are uncritical, and his style is involved.

Camper, PETER (1722–89), Dutch naturalist and anatomist, born at Leyden, was appointed successively professor of medicine and surgery at Franeker (1750), Amsterdam (1755), and Groningen (1763). He made many important discoveries in natural history, among them the auditory organs in fish (1761), the structure of the bones of birds and their relation to respiration, and the anatomical differences between man and the orang-outang. He also studied fossils, and he was the formulator of the 'facial angle' system of measurement in craniology.

Camperdown. (1.) Western suburb of Sydney, New South Wales, containing the Sydney University and several large colleges and schools, also the Prince Alfred Hospital. Pop. 8,000. (2.) Village, Netherlands. See KAMPERDUIN.

Camperdown (properly KAMPERDUIN), THE BATTLE OF. On Oct. 11, 1797, Admiral Adam Duncan (*q.v.*) bore down upon the Dutch, under De Winter, broke through the Dutch line, and engaged closely from leeward. The action was bloody and determined on both sides, and resulted in a decisive victory for the British, who captured seven ships of the line (including both flagships), two 50's, and two frigates. This victory, coming just after the distressing naval mutiny, was particularly reassuring to the nation. See *Political History of England*, vol. x. ch. 18 (1905).

Camphausen, OTTO VON (1812–96), Prussian statesman, born at Hünshoven, near Aix-la-Chapelle; was elected to the second chamber (1849), where he joined the Moderate Liberal party. As minister of finance from 1869 tc 1878 he succeeded in transforming a large annually recurring deficit into a surplus, and, with the aid of the French war indemnity, considerably reduced the national debt, these services earning for him the appointment of vice-president of the ministry (1873–8). His strong adherence to free trade principles resulted in continual conflict with Bismarck, and finally caused his retirement.

Camphausen, WILHELM (1818–85), German historical and battle painter, was born at Düsseldorf, and became a representative of the local school of art. His works are accurate, but monotonous in theme, and comprise *Cromwell's Guard watching the Approaching Enemy* (1846), *Puritans with a Convoy of Prisoners, Charles II. escaping after the Battle of Worcester* (1849), *Charles I. at the Battle of Naseby* (1852), *Morning Watch of the Puritans* (1852). He afterwards executed a great number of paintings of Frederick the Great's wars, the Schleswig-Holstein campaign of 1864, the Austro-Prussian war of 1866, and the Franco-German war of 1870. Of the last series may be mentioned the two colossal canvases *Wilhelm I. on a Battlefield, accompanied by Roon, Bismarck, and Moltke* (1872), now in the Cologne Gallery, and *Wilhelm I. with Moltke* (1873). Other well-known compositions of his brush are *The Meeting of Bismarck and Napoleon III.*, and *The Entry of the Victorious Army into Berlin.*

Camphene ($C_{10}H_{16}$), a solid hydrocarbon, crystallizing in white prisms, and prepared by heating pinine hydrochloride or artificial camphor with sodium stearate. It smells like turpentine and camphor, and exists in a dextro and levo modification.

Camphine, the trade name of a purified spirit of turpentine, formerly used for burning in lamps, and generally prepared by distilling good turpentine with quicklime.

Camphor ($C_{10}H_{16}O$) is a ketonic derivative of paracymene, obtained from the laurel (*Laurus camphora*) of China and Japan. The wood is chopped up finely, and is distilled with water, and the camphor condenses upon straw packed in the head of the still. It is then purified by sublimation in glass vessels in the presence of lime. Camphor is a very volatile, aromatic, semi-transparent, crystalline substance that dissolves slightly in water (1-1,000), but readily in ether or alcohol. A fragment thrown on the surface of water gyrates in a very curious way. It melts at 175° C. and boils at 204° C., and burns with a bright flame and much smoke. Its specific gravity is very slightly less than that of water. Borneo camphor ($C_{10}H_{18}O$), obtained from *Dryobalanops camphora*, is the alcohol corresponding to common camphor, and may be prepared from it by the action of sodium on its solution. Camphor oil is obtained as a by-product of the distillation of the camphor wood. Externally applied in solution, it is of value in sprains, inflammation, and sciatica; internally, it is a mild stimulant, useful in cases of hysteria, diarrhœa, and dysentery, and also for nasal catarrh and gout. Recently the synthesis of camphor in the laboratory has been accomplished, but camphor substitute (artificial camphor) is usually pinene hydrochloride, got by the action of hydrochloric acid gas on the terpene pinene. See also MENTHOL, THYMOL, for other forms of camphor.

Camphuysen, DIRK RAFAELSZ (1586-1627), Dutch poet, born at Gorinchem, was a teacher and pastor (1616), but was deprived (1619) of his living because of his Arminian views. He wrote *Stichtelijke Rijmen* (1625, and numerous other editions), mostly religious poems in a simple style characterized by some natural force. There is a *Life* in Dutch by Kindermann (1852).

Campi, a family of artists of Cremona, in Italy. (1.) GALEAZZO CAMPI (1475-1536), painter, was influenced by Perugino, and was the father of three more famous sons. (2.) GIULIO CAMPI (1500-72), painter, influenced chiefly by the style of Giulio Romano, has left fine specimens of his art at Cremona and Milan. (3.) ANTONIO CAMPI (1536-91), architect, painter, and historian, not only added to the valued paintings of Cremona and Milan, but composed a *Chronicle* (1585) of Cremona adorned with plates of his own engraving. (4.) VINCENZO CAMPI (1532-91) excelled his brothers in portraiture and still life. (5.) BERNARDINO CAMPI (1522-90) may have been related to (1)-(4); his works show study of his master Giulio Romano, and of Titian, Correggio, and Raphael. His great work in the cupola of San Sigismondo represents the assembly of Old and New Testament saints. In the Louvre is his *Mater Dolorosa.* In 1584 he published a work on painting.

Campi Bisenzio, tn., Tuscany, Italy, 7 m. N.W. of Florence; has tile and iron works. Pop. (comm.) 14,000.

Campidano, the fertile plain in Sardinia which stretches across the island from the Gulf of Cag-

liari, in the S., to the Gulf of Oristano, in the W., and produces especially wine, fruits, and cereals. It is hot, dry, and in parts malarious.

Campiglia Marittima, comm., Pisa prov., Italy, 35 m. S.S.E. of Leghorn; has Etruscan cemetery, a ruined castle, and some fine marble structures. Lead, iron, and copper are mined. Pop. 8,000.

Campillos, comm., Spain, prov. of and 35 m. N.W. of Malaga; manufactures cloth and leather. Pop. 6,200.

Campinas, one of the finest cities of S. Paulo, Brazil, about 55 m. N.W. of the capital, São Paulo. The manufactures are agricultural implements, machinery, hats, cotton goods, etc. Coffee is an important crop in the district. Pop. 12,000.

Campine, LE (in Flem. *Kempen* or *Kempenland*), a sandy region of Belgium, stretching along the N. frontier, in the provinces of Antwerp and Limburg. Several thousand acres of its heath-clad surface have been won to cultivation by spade labour.

Camping-out, one of the most healthful and pleasant ways of spending a summer holiday. To make a holiday of this kind successful, there should be at least three or four in the company. The most enjoyable way of camping-out is to use a rowing-boat which has sufficient accommodation to hold the tent, table, seats, stove, and the necessary utensils and provisions. If walking is preferred, a pony or a donkey should be taken to carry whatever baggage is required; the animal's own sustenance can be mostly procured by the wayside. If caravan travel is chosen—though this is hardly camping-out—the expense is considerably increased, but in some ways the fatigue is less and the comfort greater. The best time of year for camping-out is from the middle of June to the end of September. One of the most serviceable tents is the well-ventilated, expanding balloon tent; but the ordinary ridge tent is equally useful. There are also the small round bell and gypsy tents, but these are not so comfortable. The main conditions to be satisfied are that the tent should be (1) watertight, (2) light, (3) easily portable, (4) roomy.

In S. Africa, camping-out on a hunting expedition requires a full tent Cape wagon, a team of twelve or fourteen oxen or donkeys, drivers, 'boys,' a cook, and two horses for the personal use of each sportsman. The necessary guns, ammunition, and stores, including canvas, furniture, provisions, medicine chest, etc., had better be purchased in England. The cost of such an expedition is considerable—for a wagon and team, about £200; horses, £25 each; and a large monthly outlay for pay and rations. A wagon and team can generally be hired in the larger towns of the colony, but it is better to purchase outright; and if a fairly good wagon is taken, the price it will fetch at the end of the trip will probably recoup a good deal of the first outlay. If the country to be visited is infested with the tsetse fly, horses, wagon, and team must be dispensed with, and tents and stores be carried by natives, who will each take 60 or 70 lbs. for a wage of 20s. or 25s. a month and partial rations. A Willesden canvas tent, 7½ ft. by 6 ft., weighing about 100 lbs., and costing £9, will accommodate two Europeans; and a camp bedstead with mosquito curtains, costing £3, table, and folding chairs, should also be included. As everything has to be carried, parcels and boxes should be made up so as to weigh about 60 lbs. each. In N. America, camping-out is necessary in fishing and big-game shoot-

ing expeditions, and the usual camp furniture, utensils, and stores are needed. A ∧-shaped tent is the best. The canvas alone need be carried; poles and supports can be cut at each camping ground. For work in winter the Indian 'tee-pee' is the best. It is cone-shaped, admits of a fire, and has a hole in the roof for the escape of the smoke; it can only be purchased from the Indians. When a man has to carry his own outfit, a canvas sheet, 8 ft. by 5 ft., fixed up to windward, makes a very serviceable shelter. In the mountain districts wagons can rarely be utilized, and pack-horses, Indians, or canoes must form the transport. In India tents and other necessaries for shooting trips can readily be purchased or hired; for one or two sportsmen the double-roofed Kabul tent, or a square tent with light bamboo framework, is sufficient. The bullock cart will be found to be the most convenient mode of carriage. See R. L. Stevenson's *An Inland Voyage* (new ed. 1902) and *Travels with a Donkey in the Cevennes* (1879); A. A. Macdonell's *Camping-out* (All England Series, 1893); *Camping Voyages on German Rivers* (1890); *The Encyclopædia of Sport* (1910); S.E. White's *The Forest* (1904) and *The Mountain* (1906); and Bertram Smith's *Art of Caravaning* (1907).

Campion, a group of caryophyllaceous plants contained in the two genera Silene and Lychnis. The bladder campion (*S. inflata*) is a well-known weed in cornfields, its glaucous foliage, bladder-like calyx, and white petals distinguishing it from other summer-blooming plants. It much resembles its relative the sea campion (*S. maritima*), often seen on cliffs and other places by the sea. The purple-flowered moss campion (*S. acaulis*) is better known in gardens than wild in Britain, where it only occurs on the higher parts of mountains. The ragged robin (*L. flos-cuculi*) is well known among other marsh plants by its much-divided, 'ragged,' rose-coloured petals. The pink campion (*L. diurna*) and the evening campion (*L. vespertina*) are pleasant hedgerow plants. Campions are mostly of easy culture in ordinary garden soil. Among the best are *L. chalcedonica*, a perennial species bearing scarlet flowers in June and July; *L. coronaria*, also scarlet, known as the cross of Jerusalem, the flower of Constantinople, and the cross of Malta; *L. fulgens*, and its variety *L. fulgens Haageana;* and *L. viscaria*, a native of Britain.

Campion, EDMUND (1540–81), English Jesuit, born in London. During a visit to Dublin he advocated the cause of Irish education in a pamphlet called a *History of Ireland* (1569). After studying in the English College at Douay, he openly recanted (1571) Protestantism, and was chosen by the Society of Jesus for the mission to England (1580), during which he preached with such effect that wavering Catholics drew to him in crowds. At the same time he wrote the *Decem Rationes* (1581), against the Protestants. Betrayed to the government, he was thrice put to the torture, and was hanged at Tyburn. See *Life of Campion*, by Richard Simpson (1867).

Campion, THOMAS (*c.* 1567–1620), English poet and composer of music. He seems to have become a member of Gray's Inn, but turned from law, and practised as a physician. About 1593 he was known as a poet, both in Latin and in English. Between 1601 and 1617 he published a series of exquisite song-books, writing both words and music. He also wrote on the theories of poetry and counterpoint, and worked with Inigo Jones in the production of

court masques. He was highly esteemed by his contemporaries, but forgotten by posterity, until the labours of Mr. A. H. Bullen gave new life to his fame. Works: *Epigrams* (Latin, 1595, 1619); *A Book of Ayres* (with Philip Rosseter, 1601); *Songs of Mourning* (1613); *Two Bookes of Ayres* (c. 1613); *Third and Fourth Bookes of Ayres* (c. 1617); *Observations in the Art of English Poesie* (1602); *New Way of making Fowre Parts in Counterpoint* (c. 1617). *Collected Works*, ed. A. H. Bullen (1889, 1903), E. Rhys (1896); *Songs and Masques*, A. H. Bullen (1903); *Poems* (1907) and *English Works*, P. Vivian (1908).

Campi Raudii, the Raudian Plains, in the N. of Italy, near Vercellæ. In 101 B.C. a great victory was won there by Marius and Catulus over the invading hordes of the Cimbri and Teutones.

Campi Salentino, tn., Apulia, Italy, prov. of and 8 m. N.W. of Lecce. Pop. 7,000.

Campli, comm., Abruzzi, Italy, prov. of and 6 m. N. by E. of Teramo. Tanning and cattle raising are industries. Pop. 10,000.

Camp-meetings, religious gatherings held out of doors in a temporary encampment, and usually continued for about a week. These meetings originated with the Methodist Church in America in 1799, and were shortly afterwards introduced into England by Hugh Bourne, a Wesleyan Methodist. These being discountenanced by the church authorities, Bourne and his followers severed their connection with the Wesleyans, and formed a new body, called Primitive Methodists. See Pette's *Hist. of Primitive Methodist Connexion.*

Campoamor y Campoosorio, RAMON (1817–1901), Spanish man of letters and politician, born at Navia in Asturias, was one of the most popular poets in Spain. He claimed to be the creator of two new *genres* of poetry, the *dolora* and the *pequeño poema.* The *Doloras*, the first collection of which appeared in 1847 (18th ed. 1888), illustrate or enforce some moral or philosophical idea; while the *pequeño poema* is a novel or novelette in verse, turning upon some social or psychological theme. Collections of *pequeños poemas* appeared in 1879, 1887, etc., among the most celebrated being *La Nina y el Nido*, *El Tren Express*, *Los Grandes Problemas*, etc. Among his other works are *Nuevos Poemas* (1892); *El Idealismo* (1883), an exposition of philosophical principles; *El Drama Universal* (1873 and 1891), a long poem; the dramas, *Dies Iræ* (1873) and *Glorias Humanas* (1885); and the comedies, *Cuerdos y Locos* (4th ed. 1887) and *El Honor.* But his best productions are undoubtedly his lyrical works (*e.g. Obras Poeticas*, 1900), some of his shorter sentimental poems being characterized by highly-polished diction and by subtle thought. Campoamor was an eloquent speaker in the Cortes, in which he sat for several years. A revised edition of his *Obras Completas* was begun at Madrid in 1901, and in 1885–6 Brockhaus of Leipzig published a useful selection of *Obras Escogidas* in 3 vols. See Bôris de Tannenberg's *La Poésie Castellane Contemporaine* (1892), and article on Campoamor by Gonzalez Serrano in the Madrid review, *Nuestro Tiempo*, March 1901.

Campobasso. (1.) Province of Italy, formerly called Molise, and forming part of Abruzzi and Molise; stretches from the S. Apennines—*i.e.* Monte Matese (6,730 ft.)—N.E. down to the Adriatic. Grazing sheep and cattle is the chief industry in the mountainous parts. The coast lands and lower valleys

yield wheat, maize, wine, olives, and hemp. Cutlery, paper, hats, and silk are manufactured. Area, 1,700 sq. m. Pop. 370,000. (**2.**) Capital of above prov.; lies in the heart of the Neapolitan Apennines, 52 m. N. of Benevento, with several large churches; is famous for its cutlery. Pop. 15,000.

Campobello. (**1.**) Town, prov. Girgenti, Sicily, 15 m. by rail N. of Licata, with sulphur mines. Pop. 12,000. (**2.**) Town, prov. Trapani, Sicily, 22 m. S.E. of Marsala. Close by are gigantic stone quarries, left exactly as they were when last worked in 409 B.C. Pop. 9,000. (**3.**) Island, 8 m. long, in Bay of Fundy, New Brunswick, Canada, at entrance to Passamaquoddy Bay. A favourite summer resort. Pop. about 1,200.

Campo de Criptano, tn., Ciudad Real, prov. Spain, 80 m. S.E. of Madrid. Pop. 7,700.

Campodea, a small though abundant insect — apparently widely distributed over the world—which has acquired considerable importance from the fact that it has been supposed to be the nearest living representative of the ancestral insect. See APTERA (to which order it belongs) and THYSANURA.

Campoformido, vil., Venetia, Italy, prov. of and 6 m. S.W. of Udine. Here, in 1797, peace was signed between Austria and Napoleon at the end of his first Italian war.

Compo Major, fort. tn., Alemtejo prov., Portugal, 10 m. N.N.E. of Elvas; taken by the Spaniards in 1801. Pop. 6,000.

Campomanes, PEDRO RODRIGUEZ, CONDE DE (1723–1802), Spanish statesman and economist, born in Asturias; held successively the offices of president of the Cortes, director of the Royal Academy of History, and minister of state, but retired from public life on the accessi of Charles IV. His works incl *Tratado de la Regalia de la Am tizacion* (1765); *Discurso sobre Fomento de la Industria Popul* (1774), the first Spanish work any value on political econom *Discurso sobre la Educacion Pop lar de los Artesanos, y su Fomen* (1775–7). To his efforts are d several of the most importa economic measures in Spain, su as the creation of a nation bank, the opening of Spani ports to foreign trade, the fr importation of raw materials, a the foundation of agricultur and industrial societies.

Campori, GIUSEPPE, MARCHE (1821–87), Italian historian, bo at Modena; devoted his life historical research. Among h numerous books are *Gli Arti Italiani e Stranieri negli St Estensi* (1855); *Una Vittima del Storia* (1866), the first attem at a rehabilitation of Lucrez Borgia; *Memorie Storiche Marco Pio di Savoia* (187 *Memorie Biografiche degli Sc tori, Pittori, etc.; Nativi di Ca rara* (1873); *Torquato Tasso e g Estensi* (1883); and three volum of novels, *Racconti Artist* (1852–8).

Campos, tn., Brazil, state and 150 m. N.E. of Rio de Janeir connected by rail (37 m.) with th port of São João do Barra, at th mouth of the Parahyba. It h an active export trade in sugar coffee, etc. Pop. about 30,000.

Campos, ARSENIO MARTIN DE (1831–1900), Spanish marsha and statesman, born in Segovia distinguished himself in the M rocco campaign of 1859–60; serve in Cuba from 1869 to 1872; an commanded against the Carlist (1873). Returning to Madrid, he with General Jovellar, succeede in placing Alfonso XII. on th throne (1874), after which he finally defeated the Carlists a Peña de Plata (1876), thus end

ing the civil war. Appointed commander-in-chief of the army in Cuba (1877), he was uniformly victorious; but peace was not restored until important concessions had been promised to the Cubans. Thereafter he was successively minister of war (1879 and 1881–3), president of the Senate (1885), minister of war (1887), captain-general of Madrid (1888). Returning to Cuba in 1895 to quell disturbances rekindled by the refusal to grant reforms, he was unsuccessful, and was replaced by General Weyler. On his return Campos became governor of Madrid and president of the Senate, and during the minority of Alfonso XIII. was the trusted counsellor and adviser of the queen-regent.

Campo Santo (lit. 'the sacred plain'), the word used to denote a cemetery in Italy and Spain, where some of the resting-places of the dead are laid out with great artistic taste and beauty. For example, the Campo Santo at Pisa is an oblong court built in the form of an arcade, the wall space being completely covered with tempera and fresco works by the early painters, beginning with Giotto, and continued by Orcagna and Benozzo Gozzoli. The Campo Santo of Genoa is remarkable for its fine collection of sculptures.

Campra, ANDRÉ (1660–1744), French musical composer, born at Aix. He was successively (1679–94) conductor at the cathedrals of Toulon, Arles, and Toulouse. In 1694 he came to Paris, where later on he became conductor at the Notre-Dame, but resigned the post in 1700 to devote himself to the composition of operas. He was the most successful French composer of his time, and fills at the Paris opera the time between Lully and Rameau. His music is rhythmical and animated, and presents a great contrast to the heavy style of his contemporaries. Among his operas, which number about twenty, are *L'Europe Galante* (1697), *Le Carnaval de Venise* (1697), *Les Fêtes Vénitiennes* (1711), in lighter *genre;* and *Hésione* (1700) and *Tancrède* (1702), in a more serious vein. Besides, he composed three books of cantatas and five books of motets. See Pougin's *Campra* (1861).

Campsie, par. (Lennoxtown and Landward Campsie) in Stirlingshire, Scotland, 10 m. N.E. of Glasgow, on N.B.R.; coal mines, limestone quarries, chemical works, bleachfields. Campsie Glen is a picturesque ravine of the Campsie Fells (1,894 ft.) in the Lennox range. Pop. of par. 5,500.

Campu-Lung, or KIMPOLUNG, tn., cap. of prov. Muscel, Roumania, near the Carpathians, 80 m. N.W. of Bucharest; has Roman remains; was the first capital of Walachia, in the 14th century. Pop. 13,000.

Campus Martius, the N.W. portion of the plain which lies in the bend of the Tiber, just outside the walls of Rome, and to the N.E. of the city. It was the regular place of exercise for the Roman youth, and also the ground on which the Roman people met in the assembly of centuries—*i.e.* as an army. It was enclosed by Aurelian (270–275 A.D.) within the walls of the city.

Campveere, or CAMPHIRE, decayed tn. of the Netherlands, prov. Zeeland, on the E. shore of Walcheren I.; was from 1444 to 1795 the seat of a privileged Scottish factory, with independent judicial rights. The office of 'lord conservator at Campvere' survived as a sinecure until the middle of the 19th century. The present name of the place is VERE or VEERE. It was occupied by the British in 1809. The remarkably fine town hall and cathe-

dral church still survive. Pop. of comm., 900. See Davidson and Gray's *Scottish Staple at Veere* (1909).

Camtoos. See GAMTOOS.

Camuccini, VINCENZO (1775–1844), Italian painter, the head of the pseudo-classic school instituted by the French painter David. During Camuccini's lifetime his works were highly valued, but his reputation has not stood the test of time. His chief pictures are *Young Romulus and Remus*, *Horatius Cocles*, *Incredulity of St. Thomas* (copied in mosaic for St. Peter's at Rome), and *The Presentation of Christ in the Temple*.

Camus, ARMAND GASTON (1740–1804), French lawyer and politician, born in Paris, became advocate to the French clergy. At the revolution he was elected a deputy to the States-General and to the National Convention, and was one of the accusers of Louis XVI. He was also appointed keeper of the archives, and preserved the records from destruction. When sent in 1793 to arrest Dumouriez he was seized and given up to the Austrians, but after thirty months' imprisonment was liberated by exchange. In 1796 he was president of the Council of Five Hundred. Among other works, he wrote *Lettre sur la Profession d'Avocat* (1772) and *Histoire des Animaux d'Aristote* (1783). See Carlyle's *French Revolution*.

Camus, CHARLES ETIENNE LOUIS (1699–1768), French mathematician and astronomer, born at Crécy-en-Brie. In 1736 he accompanied Maupertuis and Clairvaut to Lapland on their expedition to measure a degree of the earth's surface. He wrote *Traité sur l'Hydraulique* (1739), *Cours de Mathématiques* (1749), etc.

Camwood, a wood from which an important and rich red permanent dye is obtained. The tree (*Baphia nitida*) is a native of Angola, W. Africa, is leguminous, and belongs to the same sub-order (Cæsalpinieæ) as Brazilwood. Barwood, also a red dye of somewhat inferior colour, is said to be obtained from the same tree.

Cana OF GALILEE, the scene of Christ's first miracle (John 2:1–11), is by some authorities identified with Kefr Kennah, 3¾ m. N.E. of Nazareth, Palestine; by others with Kanah, farther N. But Conder holds that it must have been at Ain Kana, near Nazareth.

Canaan ('the low lands') originally denoted the sea-coast of Palestine and the valley of the Jordan (Num. 13 : 29), but was afterwards applied to the whole of Palestine. In the Tell-el-Amarna tablets it is found under the forms of Kinakhna and Kinakhkhi, the latter corresponding with the Khna of the Greeks.

Canaanite, or better CANANÆAN, the surname of Simon, one of the disciples of Jesus (Matt. 10 : 4), in Luke 6 : 15 called Simon Zelotes—*i.e.* the Zealot. The name has nothing to do with Canaan, but was given to a Jewish sect, the Zealots, who conspired to throw off the Roman domination, and who in the siege of Jerusalem (A.D. 70) were noted for their fanaticism and cruelty. See Schürer's *Hist. of the Jewish People in the Time of Christ*, ii. 80 *f.* (1890).

Canaanites, according to Gen. 10 : 15 *f.* the descendants of Canaan, the son of Ham and grandson of Noah, who inhabited Palestine previous to the Israelitish invasion. The name is often applied generally to the aboriginal tribes, such as the Hittites, Amorites, etc., dispossessed by the Israelites, and even to other peoples, such as the Arkites, Arvadites, etc., with whom the invaders were hardly brought into contact

at all (Josh. 3 : 10). We now know, however, that the relation between some of those nations was purely geographical, not racial; and probably this is all that the Biblical genealogy is meant to imply. (See HITTITES.) The Greek equivalent of Canaanite is Phoinix — *i.e.* Phœnician. See, further, PHŒNICIA.

Canada, originally the French colony of New France, which comprised the range of territory as far west as the Mississippi, including the great lakes. After the treaty of 1783 it was confined to what are now the provinces of Quebec and Ontario, once known as Upper and Lower Canada. At the confederation (1867) it included only these two provinces, with New Brunswick and Nova Scotia; and since then it has been extended by purchase (1870), by accession of other provinces (British Columbia 1871, Prince Edward Island 1873), and by imperial order in council (1880), until it includes all the N. American continent north of United States territory, with the exception of Alaska and a strip of the Labrador coast administered by Newfoundland, which still remains outside the Dominion of Canada. On the Atlantic coast the chief indentations which break its shores are the Bay of Fundy (remarkable for its tides), the Gulf of St. Lawrence (80,000 sq. m.), and Hudson Bay (350,000 sq. m.). The Pacific coast above Fuca Straits is remarkably broken up by fjordlike indentations. Off the coast are many islands, some of them of considerable magnitude — Prince Edward I., Cape Breton I., and Anticosti being the most considerable on the Atlantic side, Vancouver and Queen Charlotte Is. on the Pacific; and in the extreme north is the immense Arctic archipelago, bound in perpetual ice. The surface of the country east of the great lakes is diversified, and characterized by very prominent features. Two ranges of hills skirt the St. Lawrence — that on the north, the Laurentians, stretching from Lake Superior to the Atlantic; the southern range culminating in the bold capes and cliffs of Gaspé. The St. Lawrence and its tributaries form the dominating physical features in this section, the other rivers being the St. John, the Miramichi, and the Restigouche, in New Brunswick. Eastern Canada is practically the Canadian part of the St. Lawrence valley (330,000 sq. m.); and the great physical feature is the system of lakes, with an area of 90,000 sq. m. In addition to the rivers already mentioned, the Dominion boasts the Fraser, the Thompson, and the greater part of the Columbia River, in British Columbia; the Athabaska River, which flows into Lake Athabaska; the Peace River, which flows N. then N.E. through the Rocky Mts., and nearly as far as Lake Athabaska, where it turns in a N.W. direction, from which point it becomes the Great Slave River, and flows to the Great Slave Lake; it issues from the Great Slave Lake and flows into the Arctic Ocean as the Mackenzie River (total length, 2,800 m.); the Albany and the Churchill, flowing into Hudson Bay; and the Nelson, which discharges from Lake Winnipeg into Hudson Bay the united waters of the Assiniboine, the Saskatchewan, the Red River, and the Winnipeg. The largest lakes (in addition to the Great Lakes which are partly in Canada) are Athabaska (3,000 sq. m.), Great Slave, Great Bear, Winnipeg (9,000 sq. m.), Winnipegosis, Manitoba, Lake of the Woods, Mistassini, and Lake of St. John.

West of the great lakes to the Rocky Mts. stretches a vast level plain of a prairie character, gradually rising from 600 ft. at

the east end to 3,000 ft. at the foothills of the Rockies.

Between the great plain and the Pacific Ocean stretches the Rocky Mountain region, which is sometimes called the Cordilleran Belt. It is made up of a number of parallel ranges, the whole band being about 400 m. wide. It covers nearly all British Columbia, part of Alberta, and in the north forms the whole of the Yukon territory. The eastern range is the Rocky Mts. proper. It contains a number of peaks averaging about 10,000 to 12,000 ft. in height. The highest which has yet been measured is Mount Robson (13,700 ft.). This was ascended by two Canadian mountaineers in 1909 (see *Alpine Journal*, 1910). The other clearly marked range is the Coast Range, which follows the sea-line. In British Columbia the summits do not go beyond 9,000 ft., but in the far north appears a group of very lofty mountains, including Mount Logan (19,540 ft.), Mount Fairweather, and Mount St. Elias (18,000 ft.). The highest peak in North America is Mount M'Kinley (20,000 ft.), which is in this group, a little further north in Alaskan territory. Between the coast range and the Rocky Mts. proper are several lesser ranges, such as the Selkirks, the Gold Range, and the Caribou Mts. There are several peaks in the Selkirks over 10,000 ft. The Cordilleran Belt still awaits proper mapping and surveying, but through the efforts of the Canadian Alpine Club our knowledge of this region is extending every year.

Forest and Climate.—The eastern and western portions of the Dominion are heavily wooded, and comparatively little inroad has been made on the forest wealth of the country. It is estimated that there are 1,200,000 sq. m. of woodland and forest, chiefly spruce and pine, including about a hundred varieties; consequently the industries connected with the forest are of great importance, especially since the development of the pulp industry. The central prairie plain is almost devoid of forest. The Canadian climate is cold in winter and warm in summer, but healthy all the year round. With all its extremes of cold, it permits of the cultivation in the open air of grapes, peaches, tomatoes, tobacco, and maize. The snow is an essential condition of the prosperity of the timber industry, and much utilized means of transport in winter, the protector of the soil from frost, and the source of endless enjoyment in outdoor sports.

Agriculture.—Agriculture is the dominant industry in Canada, not only in the great fertile plains of the centre, but also on the lands which have been cleared of forest and settled in other parts of the Dominion. The total value of the animal, agricultural, and forest exports of Canada, for the year ending March 31, 1910, was over 31 millions sterling, of which wheat and wheat flour accounted for nearly 16 millions (as compared with 3 millions in 1900), and the lumber, wood manufactures, and wood pulp exports for over 9½ millions. Dairy-farming is carried on in every section of the country, and Canadian cheese and butter, manufactured in co-operative creameries and factories to a large extent, have a very high place in the English market. The development of transport facilities, especially of cold storage *route* and at the terminus, has given a great impetus to this trade, and also to the export of meat. There are five government experimental farms in various parts of the Dominion, the central farm being near Ottawa.

The vast areas of unoccupied

land still available for settlement are controlled by the provincial governments, except in the case of Manitoba, Alberta, Saskatchewan, and the N.-W. Territories, where the public lands are the property of the Dominion. As a consequence of the successful growth of wheat in the western provinces, there has been an enormous influx of population into that part of the Dominion during the past few years. During the years 1901–1905 the total arrivals numbered 641,422, of whom 128,364 came in 1903, 130,330 in 1904, and 146,266 in 1905. Since then the immigrants have averaged nearly 200,000 annually. A very large proportion of these people have come from the western parts of the United States.

Minerals.—Mineral resources are very great. Gold is mined in Nova Scotia, Quebec, Ontario, British Columbia, and the Yukon district. The mineral output in 1909 was £18,500,000, of which £2,012,389 was for gold, £2,951,430 for silver, £1,893,000 for nickel, £1,442,633 for copper, and close on £5,000,000 for coal. Iron is found in great abundance in Nova Scotia and Quebec. Copper is mined in British Columbia and in Ontario, and nickel in Ontario. Asbestos, phosphates, oil, salt, antimony, and gypsum are exported. The chief coal areas are in Nova Scotia, British Columbia, and the N.-W. Territories.

Fisheries.—These are another of Canada's great resources, and include sea, lake, and river fisheries. In 1909–10 the total value of the catch was over £7,000,000, of which about £3,152,000 was exported. The fish which are most important commercially are cod, herring, lobster, and salmon.

Manufactures.—The manufacturing development is still comparatively slight. Since 1879, when the 'national policy' of protection was inaugurated, growth has been more rapid, and in 1910 manufactures to the value of about £17,000,000 were exported, which included, as the principal items, whisky, deals, and boards, wood pulp, musical instruments, boots and shoes, carriages, bicycles, cotton goods, and agricultural implements.

Commerce.—Since 1875 the growth of commerce has been rapid, Great Britain and the United States absorbing by far the largest portion of Canadian trade. In 1875 the total trade amounted to £40,223,393, of which £24,613,619 was the value of the imports, and £15,609,774 that of the exports. In 1890 the total trade was valued at £43,047,972, of which £23,171,010 represented imports, and £19,876,962 exports. By 1910 the corresponding totals had increased to £138,123,000 — £78,370,000 imports and £59,753,000 exports respectively. In 1890 Canada sent 42 per cent. of her total exports to the United States and 50 per cent. to the United Kingdom, as compared with 37 and 51 per cent. respectively in 1910; and in 1890 she received 46¼ per cent. of her imports from the United States and 38½ per cent. from the United Kingdom, as compared with 60 and 24½ per cent. respectively in 1910. The goods imported free of duty are mainly raw materials for various Canadian industries, and are derived chiefly from the United States and Great Britain. Canada's chief imports from the United Kingdom are woollen goods, cotton goods, and iron and steel manufactures; her chief exports to this country are live stock, grain of all kinds, fruit, fish, butter, cheese, eggs, bacon, lumber, and wood pulp. From the United States Canada imports Indian corn, coal, wheat, iron and steel manufactures, tobacco, raw cotton; and exports

to that country gold and silver and lead ores, nickel and asbestos, coal, fish, hides, timber.

Tariff.—During 1873–8 Canada had a revenue tariff averaging 13·74 per cent. In 1879 a definitely protective tariff was established, averaging 17·13 per cent. in 1896. In 1897 the policy of preferential trade was inaugurated, by which Great Britain received a preference of 25 per cent. This preference was increased in 1900 to 33⅓ per cent. The effect of the preference has been to prevent a decrease of the British export trade to Canada, as compared with that of the United States. It should be remembered that Canada has a free list for certain raw and semi-raw materials, from which Britain cannot benefit, but from which the United States benefit largely. Over all goods, therefore, taking the dutiable as well as the free, the average *ad valorem* rate, after allowing for the preference, is 19 per cent. for British, and 13 per cent. on United States goods. British manufacturers also complain that much of the preference has gone to the shipping companies, who have raised their rates. In 1906 an intermediate scale of duties was adopted, to be used for countries with which Canada had treaty arrangements. Her first treaty was with France, and this was followed by the extension of the French arrangement to Switzerland, Austria, Russia, and other countries. Other treaties have been concluded with Holland, Belgium, and Italy. The effect of these treaties has been to reduce the margin of preference enjoyed by British products. German imports have decreased owing to the surtax of 33⅓ per cent., which first came into operation in 1904, as a retaliation for the super-duties imposed by Germany on Canadian products. An agreement, however, is now in sight, under which Germany will withdraw her claim to the same preferential treatment as Britain and will impose the minimum duties upon Canadian articles while Canada will withdraw her surtax. At the end of 1909 the United States adopted the Payne-Aldrich Tariff, and in order to escape the necessity of applying the new maximum duties to Canadian goods, President Taft invited a conference. An agreement was made in March 1910, under which Canada extended to the United States concessions on thirteen groups of articles in the Franco-Canadian Conventions. Further negotiations were conducted with the United States, and in the beginning of 1911 a draft arrangement was concluded which virtually amounted to reciprocity. The gist of the arrangement is that Canadian raw products, such as wheat, wood pulp, etc., should enter the United States free of duties, while a small reduction of the Canadian tariff would be made in the case of imports from the United States. The arrangement would throw open a vast market close at hand for the farmers of Western Canada. But the scheme is opposed both by the manufacturers of Eastern Canada, who fear competition, and by those Canadians who value the trade relations with Britain, and fear that a commercial agreement with the United States may end in political absorption. Whatever the ultimate fate of this measure, it seems inevitable that in the future Canada should find a large market in the United States for raw materials, since the latter cannot do without the wood pulp and the wheat of Canada. A useful analysis of the effect of the agreement upon different articles of trade has been issued by the Tariff Reform Commission, March 1911. For the recent history of Canadian tariffs, see Schulze-Gaevernitz's

Britischer Imperialismus und Englischer Freihandel, and G. Drage's *Imperial Organization of Trade* (1911).

Canals.—The canals of the Dominion are owned and operated by the Federal government. According to their geographical position, they naturally comprise six main systems. The first and most important is that constructed to afford a navigable water route between Lake Superior and Montreal, at the head of ocean navigation. This series of canals has a total length of 73 miles, and comprises the Sault Ste. Marie Canal, between Lake Superior and Lake Huron, with a minimum depth of 20¼ ft.; the Welland Canal, between Lakes Erie and Ontario; and the Murray, Galops, Rapide Plat, Farran's Point, Cornwall, Soulanges, and Lachine canals. The total number of locks between Lake Superior and Montreal is 48. The second system comprises the Grenville, Carillon, and Ste. Anne canals, having a combined length of 7 miles, and affording, in conjunction with the Ottawa River, water transportation between the city of Ottawa and the St. Lawrence River. The third system comprises the Chambly and St. Ours canals, which make it possible for boats to pass from Sorel at the mouth of the Richelieu River to Lake Champlain. These canals have a combined length of 13 miles. The fourth series of canals is included in what is known as the Rideau Navigation System, which connects the Ottawa River at the city of Ottawa with the eastern end of Lake Ontario at Kingston, a distance of 126 miles, a large part of which is a river waterway. The fifth system (the Trent Canal) is under completion. It is composed of a chain of rivers and lakes extending from Trenton at the mouth of the Trent River, on the Bay of Quinté, Lake Ontario, to Lake Huron, a distance of 200 miles, including about 20 miles of canals. St. Peter's Canal, forming the sixth system, connects St. Peter's Bay on the south side of Cape Breton Island, Nova Scotia, with the Bras d'Or; it is half a mile long, and has a depth of 81 ft. The St. Lawrence below Montreal has been dredged to a minimum depth of 30 ft. The total expenditure on these canals up to 1909 has been close on £20,000,000. In 1909, 32,500 vessels, of 24,271,000 tons, passed through the Canadian canals, carrying 272,000 passengers and 33,720,000 tons of freight. The construction of a new canal system, for the purpose of providing a shorter water route between the Great Lakes and Montreal, is in prospect. It is known as the Georgian Bay system. The course of this proposed waterway is from the north of Georgian Bay, Lake Huron, *via* French River, Nipissing Lake, and the Ottawa River. The length will be 440 miles, there will be 27 locks, and the total cost is estimated at £20,000,000. Vessels, 600 ft. long and with a draught of 22 ft., could then pass in three days from Georgian Bay to Montreal. The project has been sanctioned, and early in 1911 the first grant of £600,000 was made to begin its construction.

Railways.—The maritime provinces entered the confederation on promise of the building of the Intercolonial Ry., and the construction of a transcontinental line was made a condition by British Columbia. In 1909 there were 24,100 m. in operation, the three principal systems being those of the Canadian Pacific, the Canadian Northern, and the Grand Trunk of Canada. In 1904 the Grand Trunk Pacific Ry. was granted powers to construct a line

(3,500 m. in length) from Moncton, New Brunswick, to Prince Rupert, on the Pacific coast of British Columbia, to be finished in eight years. The Intercolonial system (1,510 m.) is the chief one over which the Dominion has any direct control, but the Federal government is building the eastern section of the Grand Trunk Pacific Railway. The Canadian Pacific, completed in 1891, forms an important link in the imperial connections with the east of Asia; and in connection with the road there are lines of steamers running to China, Japan, and Australia, and over the Atlantic to Britain, affording

Shipping.—In 1910 there were registered and owned in the Dominion some 8,000 vessels, of which half were steamers. The total tonnage was nearly 800,000. Exclusive of the coasting trade (which amounts to 56,750,928 tons entered and cleared), the tonnage of vessels entered and cleared in 1910 was 20,804,313 tons. To these figures has to be added a tonnage of 23,763,678 entered and cleared at the lake ports to and from the United States.

Area and Population.—The following are the areas and populations of the provinces and territories of the Dominion according to the census of 1901:—

Province.	Capital.	Area.	Population.	Population per sq. m.
Prince Edward Island.....	Charlottetown	2,184	103,259	47.30
Nova Scotia	Halifax	21,428	459,574	21·80
New Brunswick..	Fredericton	27,985	331,120	11·90
Quebec	Montreal	351,873	1,648,898	4·82
Ontario.....	Toronto	260,862	2,182,947	9·90
Manitoba	Winnipeg	73,732	255,211	3·96
British Columbia.	Victoria	312,646	178,657	0·51
Alberta.....	Edmonton	253,540	} 211,649	} 0·1
Saskatchewan ...	Regina	250,750		
N.W. Territories.	..	2,175,000		
Total		3,730,000	5,371,315	1·5

Total Water Area, 125,750 sq. m.

since 1906 a new and faster mail service to India and the East.

A new route to the wheat fields of Western Canada has been strongly advocated, both from a commercial and a political point of view. It is proposed to build a railway N.E. from near Prince Albert, Saskatchewan, to Fort Churchhill on Hudson Bay, and from thence ship the wheat during the open season through Hudson Strait direct to Europe, a nautical distance of only 2,946 m. This scheme has already taken shape in a government measure.

In 1901 there were 95 females for every 100 males, or 2,619,578 as against 2,751,473 males. Of those born outside the country, 390,016 were in 1901 natives of the United Kingdom, and 278,804 of other countries. The alien population is relatively small, though increasing. The population is almost stationary in the maritime provinces, steadily increasing in Quebec and Ontario, and rapidly increasing in the western provinces and territories. In 1911 the population was estimated to be 8,000,000.

French.—The French Canadians are almost exclusively the descendants of the French in Canada in 1763, there being practically no immigration from France. The French language is by statute an official language in the Dominion Parliament and in Quebec, but not now in any other province, though documents, etc., may for convenience be published in it. English is understood almost everywhere except in the rural parts of Quebec, where the *habitants* speak a patois which has preserved many of the characteristics of 17th-century French.

Indians.—The Indian people, numbering about 110,000, are scattered throughout the Dominion. They are usually located on reserves, where efforts, on the whole successful, are made to interest them in agriculture and industry. Many of them still follow their ancestral occupations of hunting and fishing, and they are much sought after as guides in the sporting centres. The Dominion government exercises a good deal of parental care over them and for them; but the race is stationary, though not declining. There are also from 15,000 to 20,000 Esquimaux scattered over Labrador and the north of Canada, from E. to W. See AMERICAN INDIANS.

Religion and Education.—There being no state church in Canada, priority among the denominations is determined by numbers only. In 1901 there were 2,228,997 Roman Catholics, 916,862 Methodists, 842,301 Presbyterians, 680,346 Anglicans, and 292,485 Baptists.

Canada has long been in the enjoyment of free education, and the control of the system is in the hands of the provinces, except where the Act of Confederation secures the permanence of the denominational schools which existed at the time of confederation. Teachers are trained at provincial normal schools. In 1909 the expenditure amounted to over £3,600,000. On the average one-third is contributed by the local government, and the remainder by the inhabitants of the school districts.

Social Conditions.—Local option prevails all over the Dominion, and is made use of to prohibit the liquor traffic. Divorce is rare, and is checked in all but three provinces — Nova Scotia, New Brunswick, and British Columbia—by the necessity of getting a private bill passed through Parliament. The standard of education is high. Members of Parliament are paid. There is, outside of a few towns in Ontario, no land question.

Constitution and Politics.—The constitution of Canada is federal combining elements of the British and the United States constitutions. The federated provinces retain their local legislatures. The Federal Parliament closely follows the British model, and the cabinet is responsible to the House of Commons. The members of the Senate are appointed by the governor-general in council, and retain their seats for life, and each group of provinces is entitled to so many senators. The numbers of the commons vary according to the population. In 1910 there were 87 senators and 221 members of the House of Commons. The local legislatures generally consist of one house, Quebec and Nova Scotia still retaining their upper houses. The Federal Parliament is quinquennial, the local legislatures quadrennial. The lieutenant-governors of the provinces are appointed by the governor-general in council. The governor-general (appointed by the King, though paid by Canada) has a right to

disallow or reserve bills for imperial consent; but the veto is seldom exercised. The constitution of Canada can be altered only by the Imperial Parliament, and for all practical purposes Canada has complete self-government. On Sept. 1, 1905, two new provinces were created —Alberta and Saskatchewan. The capital of the Dominion is Ottawa.

Revenue, Expenditure, and Public Debt.—The revenue of Canada for 1910–11 was £22,750,000. The expenditure was £15,300,000. The main heads of expenditure are debt charges, provincial subsidies, railways and public works, and militia. The gross debt in 1910 was £94,133,000, but the corresponding assets amounted to £36,000,000, leaving a net debt of over fifty-eight millions sterling. This debt represents mainly the financial conditions of confederation expenditure on canals and railways.

History.—In 1534 Jacques Cartier landed on the Gaspé coast of Quebec, of which he took possession in the name of Francis I., king of France. But nothing was done towards permanent occupation and settlement till 1608, when Samuel de Champlain, who had visited the country in 1603 and 1604, founded the city of Quebec. Meantime French settlements were made in what is now the maritime provinces, but known to the French as Acadia. France claimed, by discovery and settlement, exclusive control of the whole immense region from Acadia west to Lake Superior, and down the Mississippi to the Gulf of Mexico. But the control of this region was not uncontested. England claimed it by right of prior discovery. In the north the charter granted in 1670 by Charles II. to Prince Rupert to found the Hudson's Bay Company, with exclusive rights of trading in the Hudson Bay bas was maintained till 1869, wh on a payment of £300,000, th territory was transferred to t newly-created Dominion of Ca ada. A long struggle was carri on between England and Fran for the dominion of the N. Am ican continent, which ended the cession of Acadia by t treaty of Utrecht in 1713, a the cession of Canada by t treaty of Paris in 1763. Of its Canadian dependency Fran retained only the islands of St Pierre and Miquelon, off the coas of Newfoundland, and the vex tious French-shore rights.

During the war of American in dependence Canada was invad by the Americans, and the end the war saw a great influx of loya ists from the United States, a the formation of two new col nies—New Brunswick and Upp Canada (now Ontario). The treat of peace in 1783 took away fro Canada territory now include within Minnesota, Michiga Ohio, Indiana, Illinois, and Wi consin. In 1791, owing to diffe ences of race, Upper Canada wa separated from Lower Canad In 1837–8 a rebellion occurred i Lower Canada which occasione Lord Durham's mission and re port. He recommended th granting of responsible gover ment, with reservation as t lands, while the immediate re sult of his mission was the union of the Canadas in 1841, Upp Canada having a population o 450,000, and Lower Canada o 600,000. Under the union th history of the colony is chief concerned with the removal o commercial preferences enjoye in the English market; the navi gation laws being repealed in 1847, and the preference on tim ber abolished in 1860; the trans ference to the colony of the crown lands and civil list; the framing of tariffs and the rati