Capital of Joint-Stock Companies. The first table shows for the United Kingdom the number of companies, and the amount of their nominal capital, registered in the United Kingdom since the Companies Act, 1862, up to 1909. The record year for new capital subscriptions was 1888, with 2,550 companies having a nominal capital of £353,781,594; the only other year in which three hundred millions has been exceeded was 1896, with 4,735 companies and £309,532,947 of capital. The steady decline in the amount of the average capital per company illustrates the growing inclination to convert even small businesses into limited liability companies.

Of course, a large percentage of the 'new' companies recorded in the above table die a natural, if somewhat premature, death. Thus, the aggregate nominal capital of the companies registered between 1862 and 1909 is about £6,946,000,000, but the aggregate paid-up capital of the surviving companies believed to be carrying on business in April 1909 was about £2,163,133,000. The second table should be read in connection with the previous one.

Of course, a good deal of the capital subscribed from year to year in public companies is not new wealth, as the large proportion represented by vendors' shares is necessarily to a large extent merely a transfer of property from private individual ownership to that of a public company.

Capital Account. See BOOK-KEEPING.

Capital Punishment is the utmost penalty of the law—death. In many countries, in past times, it has been exacted for very slight as well as for grave offences. This was especially the case in the British Isles, both according to English and Scottish law; there were no less than 200 such offences at the time when Sir Samuel Romilly (1757–1818) began his successful efforts for an amelioration of this barbarous state of things. In England the capital offences now are murder, treason, piracy with violence, and burning ships of war, royal arsenals, or government stores. By the Judgment of Death Act, 1823, in all these cases except murder the judgment may be recorded and not pronounced, and this has the effect of a reprieve. In Scotland, under the Criminal Law (Scotland) Act, 1830, and the Criminal Procedure (Scotland) Act, 1887, the capital offences are treason, murder, and shooting, stabbing, strangling, throwing sulphuric acid, and other acts of violence which if fatal would have been murder. But murder and treason are in both countries the only offences for which capital punishment is the only penalty prescribed by law. By the Children Act, 1908, sentence of death may not be pronounced or recorded against any person under sixteen. Hanging is the form of capital punishment, unless, in the case of males guilty of treason, the sovereign orders decapitation. The sentence must be carried out within the prison, under the Capital Punishment Amendment Act, 1868, in the presence of the sheriff (or, in Scotland, the Lord Provost or other magistrate), the chaplain, jailer, and surgeon; and other persons may be authorized to attend. In England an inquest held by the coroner follows, and in Scotland an inquiry before the sheriff by the procurator-fiscal; and a certificate of the execution of the sentence is posted outside the prison. The body is buried within the prison walls. Capital punishment is in some cases carried out by shooting, when the sentence is pronounced by naval or military court-martial.

In most of the states of the N. American Union, murder, rape, arson, and treason are held to be crimes deserving of capital punishment, but there are some exceptions. Under the Federal law treason and piracy are punishable by death. Capital punishment has been wholly abolished in Wisconsin since 1853, and in Maine was abolished in 1876, restored in 1883, and again abolished in 1887. It was abolished in New York in 1860, but restored in 1862; and Iowa underwent a similar experience in 1872–8. In Michigan since 1846 the death penalty can only be inflicted for treason. When capital punishment was abolished, the number of murders increased to an alarming extent; as soon as it was re-enacted, they became as manifestly rare. Nevertheless, it would be dangerous to generalize from these three instances. The abolition of capital punishment in Wisconsin and in many European countries does not seem to have resulted in an increase of murder. In Switzerland it has been alternately abolished and restored in certain cantons. In France it is still legal, but till 1909 the President has habitually exercised the prerogative of mercy. It is abolished in Italy and Holland, and though still legal in Belgium no execution has taken place since 1863.

See H. Romilly's *The Punishment of Death* (1886), Tallack's *Penological and Preventive Principles* (1889).

Capitals, ROMAN, in caligraphy and typography. These were originally the only Roman letters. They are called capitals from their principal modern use in headings and as initials (Lat. *caput*, 'a head'). When they began to be supplanted by smaller letters, they were still retained for a time in specially handsome MSS. The latest MSS. of this class belong probably to the 6th and 7th centuries A.D. There were two principal manuscript types, square capitals and rustic capitals. The former are those generally employed in printed books; the latter have less apparent finish, and are marked by the use of curves and more slender strokes. In English printing and writing, capital letters are now employed as the initial letters of words which have some special distinction—all proper names and their derivative adjectives, all nouns which refer to the Divine Being, the pronoun I, the first words of new sentences and of lines of poetry. Official titles and the technical words of a treatise may be singled out by the use of an initial capital. In headings and in book titles whole words are printed in capitals, and even the first word of a chapter or paragraph may be printed in the same way. Capitals without admixture of other letters are employed in inscriptions, and even in the reproduction of inscriptions. Initial capitals are not so freely used in England as they used to be. In the German language every noun still has an initial capital. Regarding the forms of the letters, see ALPHABET, and the articles on the individual letters.

Capito, CAIUS ATEIUS (*c.* 40 B.C.–22 A.D.), Roman jurist, was the founder of a school, as was also his rival, Labeo. He was consul in 4 A.D. See Bruns's *Fontes Juris Romani Antiqui* (6th ed., by Mommsen, 1893); Girard's *Textes de Droit Romain* (1890).

Capito, originally **Köpfel**, WOLFGANG FABRICIUS (1478–1541), German reformer, born at

Hagenau in Alsace; joined the Benedictines, and became pastor at Bruchsal (1512). In 1515 he was appointed professor of theology at Basel, and shortly afterwards declared for the reformation. He removed to Mainz in 1519, at the request of the Elector Albert of Mainz, who appointed him his chancellor. In 1523 he settled at Strassburg. He was a member of the conferences of Zürich and Marburg, and in 1530, with Bucer, he presented the Confession of Augsburg to the emperor. Later, he endeavoured to reconcile the differences of the Lutherans and Zwinglians over the sacrament. His friendship with Martin Cellarius and other Socinians brought upon him a charge of Arianism. He wrote *Hebraicarum Institutionum libri duo; Enarrationes in Habacuch; Vita Œcolampadii*, etc. See Baum, *Capito und Bucer*, 1860.

Capitol, in Rome, the temple of Jupiter, and the hill on which it stood. The temple was begun by Tarquinius Priscus, but only finished in 507 B.C. It was destroyed by fire during the civil wars, in 83 B.C., in 69 A.D., and again in 80 A.D. The temple was restored with great magnificence by Domitian. It was the centre of the religion of Rome: there the Sibylline books were kept, the consuls made their vows, and triumphant generals returned thanks for their successes. Not far from the temple was the famous Tarpeian Rock. Amongst other edifices was the Tabularium, built by Quintus Lutatius Catulus (78 B.C.), in which the archives were kept. Round the principal temple, on an esplanade, were numerous statues of divinities or illustrious personages. In all twenty-seven different temples stood on the slopes and top of this hill. In mediæval times it was a collection of mere ruins. Pope Paul III. in 1534 commissioned Michael Angelo to draw up the plans for the existing buildings. The hill now contains a square, having in the middle the equestrian statue of the Emperor Marcus Aurelius, and at the end the senatorial palace (built in 1579): on one side is the Palace of the Conservators (built in 1593), which contains a collection of art treasures; and on the other side is the Capitoline Museum (built in 1644), also with a collection of art treasures. During the imperial period several provincial towns built capitols after the model of that of Rome. The oldest is the capitol of Capua, dedicated by the Emperor Tiberius. Similar capitoline temples, now in ruins, exist at Brescia, Pompeii, etc. See Middleton's *Remains of Ancient Rome* (1892), Lanciani's *Ancient Rome* (1888), Jordan's *Kapitol* (1881), and *Le Capitole Romain* (1904), Rodocanachi's *The Roman Capitol in Ancient and Modern Times* (Eng. trans. 1906).

Capitularies, temporary edicts issued by the Frankish kings and emperors of the Caroling dynasty. The Caroling capitularies dealt with every sort of question connected with the administration. The administrative energy of Charles the Great stands revealed in his famous capitularies. The *Capitula Missorum* gave not only instructions to the royal *Missi*, but, with the *Capitula Omnibus Legibus Addenda* and the *Capitula per se scribenda*, formed a body of administrative territorial law which was obeyed over the whole of the Frankish empire. The capitularies were written in Latin, and a first collection was made by an abbé of Fontenelle in four books, containing about twenty-nine capitularies of Charlemagne and his son Louis. They were published for the first time by Baluze, under the title *Capitularia Regum Francorum* (1687;

2nd ed. 1780). In recent times a good collection was published by Boretius in 1883. See Boretius's *Beiträge zur Kapitularienkritik* (1874); Fustel de Coulanges's *Histoire des Institutions Politiques de l'Ancienne France* (2nd ed. 1901).

Capitulation. (**I.**) The act of surrendering to an enemy upon specified terms contained in a convention or other instrument, also known as a capitulation. Such agreements being made by virtue of an implied power confided to generals and admirals, do not as a rule require the ratification of the supreme power unless such ratification is expressly reserved in the act itself. Being bargains in the common interest of both contracting parties, they vary greatly according to the condition of the party contemplating surrender and the generosity of the victor. The surrendering force may become prisoners of war with certain privileges, or may be sent home on undertaking not to bear arms for a limited period; and the inhabitants of a besieged place may be promised security of religion and of private property. Under more honourable forms of capitulation, the garrison of a besieged fortress may march out with 'honours of war,' leaving the fortress and its warlike material in the hands of the victor. A stipulation affecting the political constitution or administration of a place, or for a perpetual cession of it, is *ultra vires*, and amounts to a *sponsion*, which must be confirmed by express or tacit ratification. Leading capitulations have been the convention at the Caudine Forks, disavowed by the Roman senate; the convention of Kloster Seven (1757), not ratified by George II.; the convention signed at El Arish (1800); the capitulation of Metz (1870), and that of Port Arthur (1905). The Brussels Conference of 1874 laid down (Art. 46) the following rules to regulate capitulations:—'The conditions of capitulations shall be discussed by the contracting parties. These conditions should not be contrary to military honour. When once settled by convention, they should be scrupulously observed by both sides.' See INTERNATIONAL LAW. (**2.**) An arrangement between Christian and non-Christian, or civilized and semi-civilized powers, by which the latter surrender to the former the civil and criminal jurisdiction they would naturally possess over the subjects of such Christian or civilized powers resident among them. Capitulations have been made with non-Christian powers, such as the Ottoman empire, China, and Japan, and with powers where the administration of justice is imperfect, such as Roumania and Servia; but some of these capitulations are now terminated. See FOREIGN JURISDICTION ACT, 1890; also text-books cited under INTERNATIONAL LAW.

Capiz, or CAPIS. (**I.**) Province, isl. of Panay, Philippines; has an area of 1,643 sq. m. Chief products, rice, sugar, corn, hemp, indigo, and tobacco. Gold and iron are found. Alcohol is the chief manufacture; others are silk, cotton, baskets, and hats. Pop. 230,000. (**2.**) City, cap. of above prov., on N. coast, 230 m. S.S.E. of Manila. Exports cotton, tobacco, sugar, and rice. Boatbuilding and fishing are carried on. Pop. 18,500.

Capmany y de Montpalau, ANTONIO DE (1742–1813), Spanish man of letters, born at Barcelona, whose principal works are *Teatro Historico Critico de la Elocuencia Castellana* (1786–94), *Filosofia de la Elocuencia* (1777), and *Memorias Historicas sobre la Marina, Comercio y Artes de la Antigua Ciudad de Barcelona* (1779-92).

Cap Martin, a small winter health resort on the Mediterranean coast of the French dep. of Alpes-Maritimes, situated between Mentone and Monaco.

Capnomancy, divination by observation of the smoke from incense or a sacrifice. Thin smoke ascending directly was a good augury.

Capo d'Istria (anc. *Ægida* and *Justinopolis*), tn., Istria, Austria, 9 m. S. of Trieste. It is a Venetian-looking town, built on a small rocky island, with a modern cathedral. The inhabitants, mostly Italians, prepare salt from sea-water, carry on fishing, and grow fruit and vegetables. From the 10th century it was in the hands of Venice and Genoa alternately. Pop. 11,000.

Capo d'Istrias, JOANNES ANTONIOS, COUNT (1776–1831), Greek politician, born at Corfu. When the Ionian Islands became subject to Turkey, under the protection of England and Russia, Capo d'Istrias held several administrative appointments on them between 1802 and 1807. When, in 1807, the islands reverted to France, he entered the service of Russia. As minister for Russia in Switzerland (1813), and as member of the Congress of Vienna (1815), he aimed at the Russification of Greece. President of Greece from 1827, his Russian bias provoked popular opposition, and he died by the hand of an assassin.

Cap of Maintenance, cap of dignity shaped like a bycocket—i.e. with the brim turned up, and ending in two points behind. It is borne before British sovereigns at coronation.

Cappadocia, a division of Asia Minor; in Roman times bounded on the E. by Armenia, S. by the Taurus Mts. and Cilicia, W. by Lycaonia and Galatia, and N. by Pontus. It was originally inhabited by a Hittite population, probably mixed with Semitic Syrians. After 560 B.C. it became part of the Persian empire, and remained so until Alexander's conquests about 330 B.C. For a time it belonged to the Syrian kingdom, and then was governed by independent kings. In 17 A.D., Archelaus, the last of them, died at Rome, and the Emperor Tiberius made it a Roman province. It was a rough and mountainous country, affording good pasturage. The chief city was Mazaca, afterwards called Cæsarea, now Kaisarieh.

Capparidaceæ, an order of plants of which the caper tree is the most familiar example. They are mostly natives of the tropics or of subtropical regions.

Cappel, or KAPPEL, vil., canton Zürich, Switzerland, 10 m. S. of Zürich. Here, on Oct. 11, 1531, Zwingli, the leader of the Protestants, was defeated and killed when fighting against the Roman Catholic forces. The civil wars (1529–31) between these two forces received the name of the wars of Cappel.

Capponi, GINO, MARCHESE (1792–1876), Italian historian and statesman, was born at Florence. He was in 1848 called for a short time to the head of the grand-ducal government. After the unification of Italy he became senator (1860), and president of the Historical Commission for Tuscany, Umbria, and the Marches. He was one of the editors of the *Archivio Storico Italiano*, and one of those who revised the text of the *Commedia* (1833), and prepared the fifth edition of the Academy's *Vocabolario*. Capponi's chief work is the *Storia della Repubblica di Firenze* (1875). See his *Life* in German by A. von Reumont (1880; Ital. trans. 1881); also account by Tabarrini (1879), and *Correspondence*, ed. by Carraresi (1882–99).

Capra, the genus to which the numerous goats and the European ibex belong.

Caprellidæ, a family of small crustaceans belonging to the order Amphipoda; many are common on weeds between tide-marks.

Capreolus. See ROEDEER.

Caprera ('goat island'), island off the N.E. coast of Sardinia; is rocky and bare, and measures 10 sq. m. in area. It was the residence of Garibaldi during the last thirty years of his life, and he died there in 1882.

Capri (anc. *Capreæ*), island of Italy, in Gulf of Naples, with precipitous (920 ft.) coasts, 5¾ sq. m. in area, and rich in fruits, wine and olive oil. Its people raise these products, engage in fishing, and cater for the numerous visitors. Many artists are attracted by its picturesque coast scenery (including several sea-grottoes, the Blue Grotto being the most famous), by the classic beauty of its women, by the limpid purity of its air and the glorious blue colour of its sea. The Roman emperors Augustus and Tiberius, more especially the latter, erected dwellings and lived on this island; ruins of one of the imperial villas of Tiberius (Tacitus, *Ann.*, iv. 67) still remain. Up on the rocky platform (460 ft.), between the two highest eminences, Monte Solaro (1,920 ft.) and Lo Capo, stands the chief town, Capri, with 4,000 inhabitants. The island was occupied by the English in 1806, but captured by a *coup de main* of the French two years later. Pop. 6,200. See Gregorovius's *Die Insel Capri* (1885), Canale's *Storia dell' Isola di Capri* (1887), Aller's *Capri* (Munich, 1894), and Trower's *The Book of Capri* (1907).

Capriccio, or CAPRICE, in music, is a form of composition not governed by any set rules; also a picture painted under the same conditions. See FANTASIA.

Capricornus (the 'Goat'), an ancient constellation, and the tenth sign of the zodiac, that of the winter solstice. Its symbol is ♑. The goat-fish of Chaldea survives in Capricorn. Its premier star is a naked-eye pair, composed of α_1 and α_2 Capricorni, of third and fourth magnitudes respectively. The former is telescopically double, the latter closely triple. It is a spectroscopic binary, showing both bright and dark hydrogen lines in its spectrum.

Caprification is the name given to the process by which pollen is transferred from the flowers of male-blossomed fig-trees, or *caprifici*, to those of the female-flowered fig, or *ficus*. In fig plantations the greater number of the trees are female-flowering, as they produce the fruit; but generally a few male-flowering trees are also planted, in order that the female flowers may be fertilized by wasp-carried pollen. It is, however, probable that this is quite unnecessary, since fertilization in no way assists in the development of the fig as an article of food, and since seeds are not really required, for propagation is usually effected by cuttings. The process of caprification is extensively practised in the southern countries of Europe. Sometimes, however, instead of planting the capri figs among the cultivated trees, an occasional graft of the male is inserted on the female trees, and sometimes the still simpler method is adopted of hanging sprays of the capri about the plantation.

Caprifoliaceæ is a family of annual and perennial herbs, shrubs, and trees, of wide distribution. They have opposite foliage leaves, and flowers arranged in cymes. Among the genera are Lonicera, Linnæa, and Viburnum.

Caprimulgi, a sub-order of birds, including the night-jars or goatsuckers, the oil-bird, the American whip-poor-will, and others. The beak is short and the gape wide; the plumage soft and loose, giving the birds an owl-like appearance; the habit usually nocturnal, and the diet chiefly of insects.

Caprino, comm. Venetia, Italy, prov. of and 16 m. N.W. of Venice. Pop. 6,400.

Caprivi de Caprara de Montecuculi, COUNT GEORG LEO VON (1831-99), German chancellor, was born at Charlottenburg. He served with distinction in the Danish (1864) and Austrian (1866) campaigns; and in the Franco-German war of 1870 he acted as chief of the staff to the 10th Army Corps, and was a conspicuous figure in the battles of the Loire. In 1884 he succeeded Von Stosch as head of the Admiralty, which service he reorganized. In March 1890 General von Caprivi succeeded Prince Bismarck as imperial chancellor and minister for foreign affairs. In 1892-3 he passed the German Army Bill; but in October 1894 he suddenly resigned, owing to friction with Count Eulenberg on the question of the Agrarian League malcontents. See *Reden des Grafen von C.*, with Life, by Arndt (1894).

Caproic Acid, or normal hexoic acid ($C_5H_{11}COOH$), one of the products of the butyric fermentation of sugar. It can be made by the oxidation of hexyl alcohol, and is an oily liquid with faint disagreeable odour. Sp. gr. ·945 at 0° C.; m.p. $-2°$ C., and b.p. 205° C. It has eight isomeric varieties.

Capsicum is a genus of shrubs belonging to the order Solanaceæ, all of them natives of S. America. The usual height is from two to three feet. The fruit is a long membranaceous pod, usually when ripe of a deep-red colour. The fruits are commonly dried and exported as capsicums, chillies, or, when powdered, as cayenne pepper. The green fruits are sometimes pickled or used for making chilli vinegar. The annual capsicum may be grown in the open air in warm districts in Britain, if the seeds are sown early in the year under glass, the young plants being put out early in June. *C. fasciculatum* is the red cluster pepper, and *C. acuminatum* is the long cayenne. The perennial species are easily grown in greenhouses, and many are beautiful as well as useful.

Capstan, an engine for raising weights. A ship's capstan was formerly a massive column of timber formed like a truncated cone, and having its upper part pierced with holes to receive the bars of levers. It worked on a spindle stepped into the deck below, and was used for winding a cable in or out, or for any other purpose where extraordinary effort was necessary, such as hoisting heavy cargo or masts. With the introduction of steam, capstans were made of iron or steel instead of wood, although they were, as a rule, still fitted in such a manner as to be worked alternatively by means of bars manned as before by part of the crew. In some still more modern ships electrically-driven capstans have been successfully fitted. Much of the work done formerly by upright capstans is now performed by means of steam winches with a horizontal axis.

Capsule is the name given to those fruits which, when they are ripe and dry, open so as to allow the seeds to drop out. If the capsule splits longitudinally so as to form several valves, as in the foxglove, it is called valvular. If small openings occur for the escape of the seeds, as in the poppy, the capsule is called porous. If the top of the capsule comes off like a lid, as in anagallis, it is said to dehisce transversely. A siliqua is a capsule with a false vertical septum; the two sides of the capsule become detached from below upwards, ultimately leaving the septum with seeds attached to it. The fruit of the wallflower is a siliqua. When the siliqua, instead of being long and slim, is short and stumpy, as in the candytuft and cochlearia, it is known as a silicula.

Captain. In the British navy a captain ranks immediately below a commodore and above a commander. His rank is relative to that of a lieutenant-colonel in the army, and, after three years' service, to that of a colonel. He is responsible for the safe conduct of the ship, and the discipline and health of the crew. In his hands lies the punishment of offenders among the crew; but he is permitted only to arrest or suspend, not to punish, commissioned officers. The retiring age is fifty-five, or any age if three years have elapsed since the last service, or optionally at the discretion of the Admiralty. A flag-captain commands the ship which has the admiral on board; and the duties of the captain of the fleet, whose office is temporary, are chiefly secretarial.

In the British army every troop of cavalry and company of infantry is commanded by a captain, and there is one in every battery of artillery. On the Continent a captain is mounted.

Captain, a British turret ironclad of 6,950 tons displacement, built in 1869, and lost by capsizing off Finisterre, on Sept. 7, 1870. The ship-name, which dates in the navy from 1678, is associated with the battle of Beachy Head (1690), the battle of Barfleur (1692), the battle off Cape Passaro (1718), the battle of Minorca (1756), the operations against Louisburg (1758), the Quebec expedition (1759), Toulon (1793), Hotham's action off Genoa (1795), the action off Hyères (179 the evacuation of Corsica (179 the battle of Cape St. Vincent (1797), Copenhagen (1807), and the capture of Martinique (180 The name is intimately associated with the glories of Nelson.

Caption, in Scotland, a warrant for the apprehension of a debtor or obligant on account of non-payment of a debt or non-performance of an obligation. The simpler form of diligence, under the Personal Diligence Act, 1837, has superseded this form of warrant.

Capua, fort. tn. and archiepiscopal see, prov. Caserta, Italy, 20 m. by rail N. of Naples, on the Volturno. It possesses a cathedral dating from the 11th century, but greatly modernized, and a museum of antiquities. Pop. 14,000. The ancient city of Capua, once a rival of Rome, and long famous for its luxury, stood about 2 m. to the S.S.E. The basis of its wealth was its flourishing industries—its purple stuffs, leather goods, scarlet dyes, and fine linens—and the extraordinary fertility (corn and wine) of the adjacent Campanian plains. Moreover, it was famous for its pottery, its horses, and its perfumes, and was the seat of a celebrated gladiators' school. Capua was founded by the Etruscans. It allied itself with Rome in 343 B.C., but in 216 embraced the part of Hannibal, for which it was sternly punished by Rome in 211. But Cæsar helped it to fortune again, which lasted until the barbarians broke into Italy. After being devastated successively by Goths, Vandals, and Longobards, it was finally destroyed by the Saracens in 840; and about sixteen years later the modern city was founded. The revolt of the gladiators under the leadership of Spartacus broke out at Capua in 73 B.C. In 1860 Garibaldi and his forces defeated the Neapolitans outside the city.

Capuana, LUIGI (1839), Italian novelist and critic, was born at Mineo in Catania (Sicily); has written dramatic and literary criticism, also a number of novels and tales. Many of his articles have been collected in *Il Teatro Ital. Contemporaneo* (1872); *Studi sulla Lett. Contemp.* (1880–87); *Libri e Teatro* (1892). As a novelist he ranks among the foremost realists, his best-known work being *Giacinta* (1879). He also wrote two charming volumes of fairy tales, one of which, *C'era una Volta* (1882), has been translated into English (*Once upon a Time*—1892), the other being *La Reginotta* (1883). Mention should be made, too, of an interesting experiment in rhythmic prose, *Semiritmi* (1888).

Capuchin, a name sometimes restricted to the monkey whose specific name is *Cebus capucinus*, sometimes applied generally to the other apparently closely-allied species of the genus. All the species are restricted to tropical America, and resemble other New World monkeys in possessing prehensile tails, six cheek teeth at each side above and below, a broad division between the nostrils, and in being without cheek pouches. Several species are readily tamed, *Cebus capucinus* especially being frequently kept in captivity in Britain. The colour is very variable, the males being darker than the females, and usually possessing a beard, whence the name.

Capuchins, a branch of the Franciscans, founded by Matteo da Bassi, who advocated a return to the observance of the most rigid rules of St. Francis. In 1528 Clement VII. granted a bull authorizing them to wear the pyramidal hood (*capuccio*), go barefoot, grow beards, and to live as hermits. See FRANCISCANS.

Capulets. The Capulets and Montagues (Cappelletti and Montecchi) were two noble families of Verona, whose interest for us centres on their association with Shakespeare's *Romeo and Juliet.* The story seems to have been widely current in the 16th century, and it was from Arthur Brooke's versified translation (1562), through the French, of Bandello's Italian novel that Shakespeare drew his plot.

Capus, ALFRED (1858), French journalist and dramatist, a native of Aix. His faculty of observation and his wit made his contributions sought after by the chief Paris periodicals—*e.g.* the *Figaro.* He is the author of several entertaining plays—*Brignol et sa Fille* (1894), *Rosine* (1897), *La Bourse ou la Vie* (1900), *La Veine* (1901), *La Petite Fonctionnaire* (1901), *Les Deux Ecoles* (1902), *Notre Jeunesse* (1904), *La Châtelaine* (1904), and *Monsieur Piégois* (1905); also of some novels—*e.g. Qui Perd Gagne* (1890), *Faux Départ* (1891), *Monsieur veut rire* (1893), and *Années d'Aventures* (1895).

Capybara (*Hydrochœrus capybara*), the largest living rodent, found only in S. America, and allied to the cavies or guinea-pigs. It is a heavily-built animal, about four feet in length, covered with coarse bristly hair, and in general appearance meriting the German name of 'water-hog.' The feet are completely webbed, and the animal swims swiftly, though its movements on land are relatively slow. It feeds on water-plants, and haunts low, swampy ground in the vicinity of rivers and lakes. Its chief enemy is the jaguar; but the capybara is also hunted for sport, and for the sake of the hide. To Europeans the flesh is distasteful, but it is eaten by the natives.

Caqueza, tn., Colombia, 20 m. S. by E. of Bogotá. Pop. 8,000.

Caraballos Mountains, the central range of Luzon I., Philippines. It is divided into three chains, the Cordillera del Norte, the Caraballos Central, and the Caraballos Sur. The highest peak is the volcano of Mayón (8,000 ft.), 7 m. N.W. of Albay.

Carabidæ, a family of beetles which includes all the common ground-beetles. Some 12,000 to 13,000 species are said to have been described. The majority are carnivorous, and live mostly on other insects, especially grubs. Many of the British forms have no wings, or mere rudiments of wings, and all are largely terrestrial in habit. Common British carabids are *Carabus violaceus*, the violet-black beetle frequently found under stones, etc., in gardens, and *C. auratus*, another abundant form.

Carabiniers was formerly the name for all British regiments of light horse, but is now restricted to the 6th Dragoon Guards. In France the name was given to soldiers armed with carbines, and formed into special cavalry companies, then (1788) into two regiments, then (1866) *carabiniers de la garde impériale*. The name was abolished in the French army after 1870. In Italy the *carabinieri* are the gendarmery. See ARMS.

Carabobo, state, Venezuela, S. America, extending from the sea inland. The southern slope is densely peopled, and produces abundance of excellent coffee, fruit, sugar, and maize. Area, 2,984 sq. m. Pop. 220,000.

Caracal, or PERSIAN LYNX (*Felis caracal*), a small carnivore widely distributed throughout S. Asia and Africa. It is brown above and paler below, with black ears and a long tail, is actively carnivorous, and appears to be fierce in disposition. It is approximately the size of a fox, the body length being about two feet.

Caracal, tn., Roumania, 95 m. W.S.W. of Bucharest; named after the Emperor Caracalla. Pop. 12,000.

Caracalla (188-217 A.D.), son of Septimius Severus, was emperor of Rome from 211 to 217 A.D. His proper name was M. Aurelius Antoninus; Caracalla was a nickname given him from his wearing a long Gallic tunic. In 208 he accompanied his father to Britain, and when Septimius died at York, in 211, Caracalla and his brother Geta succeeded together. But on their return to Rome, Caracalla had Geta murdered. Then visiting Gaul, Germany, Dacia, Thrace, Asia, Syria, and Egypt, he marked his progress by wanton massacre. In an expedition against Parthia he ravaged Mesopotamia and destroyed the tombs of the Parthian kings. While he was preparing for another expedition beyond the Tigris, Macrinius, the prætorian prefect, had him murdered at Edessa. Caracalla was one of the worst tyrants that ever disgraced a throne. He is generally said to have conferred the Roman franchise on all the inhabitants of the empire in order to extract money from the provinces. He built at Rome the famous Thermæ Caracallæ, the ruins of which still survive, and also the triumphal arch of Septimius Severus.

Caracara, a name given to a Brazilian carrion hawk (*Polyborus tharus*), and frequently applied also by naturalists to certain allied forms. The caracara is a dull-coloured bird, with bare throat and cheeks, long legs, and feet almost like those of a game-bird. It has a powerful flight, but is largely terrestrial in its habits, running with great swiftness. The food consists largely of carrion, but the caracaras also hunt in packs, like dogs, on their own account. The nest is built on the ground.

Carácas, cap. of Venezuela, 6 m. S. of its port La Guaira;

with which it is connected by a narrow-gauge railway; seat of the archbishop of Carácas and Venezuela. The chief buildings are the federal palace, the university, museum and library, the cathedral, and the residence of the president, the Yellow House. The immediate surroundings constitute the federal district, 45 sq. m. in area, with a population of some 100,000. Caracas has no important industries, but is an export centre for coffee, cacao, tobacco, cattle, and hides. It has suffered severely from earthquakes, notably in 1812 and 1900. Pop. 80,000.

Caracci. See CARRACCI.

Caraccioli, noble family of Naples, of Greek descent, of which the following were the principal members:—GIANNI (d. 1432), the founder of the family, was after 1415 secretary to Queen Joanna II., but proved so tyrannical that he was assassinated in 1432.—MARINO (1468–1538) was sent by Leo X. as papal legate to Germany (1518); created a cardinal (1520), and by Charles V. appointed governor of Milan.—DOMENICO (1715-89), diplomatist, was successively ambassador at Turin, London, and Paris, where his bright humour made him a favourite with the Encyclopédistes. In 1780 he became viceroy of Sicily.—PRINCE FRANCESCO (1752-99), as admiral of the 'Parthenopeian Republic,' in 1799 repelled every attempt at landing made by the Sicilian-English fleet. After the capitulation he was betrayed, tried by court-martial, and hanged.

Caractacus, son of Cunobelinus, a king of the Silures in Britain, made a vigorous resistance to the Romans during the reign of Claudius. Betrayed to the Romans, he was taken to Rome to grace the triumph of Claudius, when he behaved in so dignified a manner that Claudius gave him his liberty. He appears to have ended his days in Italy. Caradoc is the modern Welsh form of the name. See Tacitus's *Annals*, xii. 33–38; *Histories*, iii. 45.

Caradoc, SIR JOHN HOBART, SECOND BARON HOWDEN (1799–1873), British diplomatist, was born in Dublin; entering the diplomatic service (1824), he went to Egypt, and was wounded at the battle of Navarino (1827). He became successively M.P. for Dundalk (1830), military attaché with the Spanish army (1834), equerry to the Duchess of Kent (1841), and minister plenipotentiary to Madrid (1850). He died at Bayonne.

Caradori-Allan, MARIA CATERINA ROSALBINA (1800–65), Italian singer and actress, born at Milan, and from 1822 appeared in London in Rossini's *Pietro l'Eremita*, and in *Il Barbiere di Seviglia*. But she won her greatest triumphs at concerts and musical festivals, at Westminster Abbey in 1834, and at the Manchester Festival (1836), when she sang with Malibran; also when she sang in Mendelssohn's *Elijah* at the Birmingham Festival (1846).

Caraffa, a noble Neapolitan family, of which the chief members were:—GIOVANNI PIETRO (1476–1559), who became Pope as Paul IV. in 1555. His nephews, CARLO (1519–61), ANTONIO (1538–91), and GIOVANNI, were entrusted with the temporal administration of church affairs. The ablest, Carlo, served in the armies of Charles V. of Germany and Henry II. of France. He was made a cardinal. To enrich these men, Paul stripped the Colonnas of their possessions. But this and other acts of gross injustice drew upon the Caraffas the hatred of the populace, and Paul was compelled to banish them from Rome. To satisfy their enemies, his successor, Pius IV., caused them to be put to death.—ANTONIO CARAFFA

(1539-91), their cousin, was created cardinal (1586) by Sixtus V., and entrusted with the revision of the Bible, the preparation of commentaries on the Council of Trent, and an edition of the papal decrees.—ANTONIO (d. 1693), Austrian field-marshal, distinguished himself at the deliverance of Vienna (1683). In 1685 he became governor of Hungary, and in this capacity presided over the tribunal of Eperies, which tried the partisans of Tököly. But he displayed so much cruelty that his name was execrated in Hungary, and he was recalled in 1687. He was, however, sent as commandant to Transylvania, which, chiefly by his victories (Munkacs, 1688) against the Turks, he helped to make an Austrian province. See *The Story of the Caraffa*, by Jenkins (1886).

Caragiale, JOAN LUCA (1852), Roumanian dramatist and novelist; born in the village of Margineni (Prahova district). His comedies are the best in the language. He has also written a powerful drama, *Napasta* (False Accusation), translated into French in 1890, and several novels, the best known of which is *Faclia de Pasce* (1892), or 'The Easter Candle.' He is the wittiest of Roumanian contemporary writers, and some of his characters and expressions have become bywords in the language. His comedies were published under the title of *Teatru* (1889; new ed. 1896).

Caraman. See KARAMAN.

Carambola (*Averrhoa Carambola*), known also as the COROMANDEL GOOSEBERRY, a small evergreen tree, is largely cultivated in India. It belongs to the order Geraniaceæ, bearing short racemes of red flowers, followed by round, yellow, orange-sized fruits, which are full of juice, but very sour.

Caramel, the brown or black substance produced by heating loaf-sugar in a saucepan over a slow fire, with constant stirring. When the temperature reaches 220° C., the liquid mass, which has become a dark brown, froths up. It is kept at this temperature from ten to fifteen minutes, and then poured on to a slab to cool. It is a brittle solid, with a persistent bitter taste, and is soluble in water. The solution, being highly coloured, is used for artificially colouring wine, beer, and vinegar.

Caran d'Ache. See POIRÉ, EMMANUEL.

Carangamite, or CORANGAMITE, shallow salt-water lake, Victoria, Australia, between Hampden and Grenville cos., about [illegible] m. W. of Geelong. Area, 90 sq. m.

Carapa, a genus of tropical trees, of which the best known is *C. guianensis*, a native of Guiana, where it reaches a height of fifty feet. It bears fruit as large as oranges, with a characteristic subacid flavour. It yields an oil which is used for anointing the body, for burning, and for making soap, and its bark is esteemed as a febrifuge.

Carapace, the protective shield which covers the anterior part of the body in such crustacea as crabs and lobsters; also the upper half of the bony case which protects the body of a tortoise, and similar structures in other animals.

Carapegua, tn., Paraguay, [illegible] m. S.E. of Asunçion; in rich cotton and sugar district. Pop. 13,000.

Carat, a measure of weight, now equal to about 3·2 troy grains, but slightly varying with time and place; used in the weighing of precious stones. The term is used also to express the proportions of pure gold in any alloy. The proportion is always calculated in twenty-fourths. Coinage gold contains twenty-two parts gold, and is therefore said to be 22 carats fine. *Carat*, or *caract*, is the Arab *girrat* = the fruit of the carob-tree, of which 24 are supposed = 1 oz.

Carate-Brianza, comm., Italy, 14 m. N. by E. of Milan. Pop. 13,000.

Carausius, MARCUS AURELIUS VALERIUS (? 250–293 A.D.), Roman general, a native of Menapia, who distinguished himself in Gaul, made himself master of Britain, and assumed the title of Augustus (287). He was assassinated by Allectus, an officer. See Webb's *Reign and Coinage of Carausius* (1908).

Caravaca, tn., prov. Murcia, Spain, 40 m. W.N.W. of Murcia. An ancient city, formerly belonging to the Knights Templars; in a valley surrounded by mountains, and dominated by a ruined mediæval castle. Important jasper quarries in district. Celebrated for sacred cross preserved in its church; manufactures textiles, paper, and chemicals. Pop. 16,000.

Caravaggio, tn., prov. Bergamo, Italy, 23 m. by rail E. of Milan; the birthplace of two Italian painters both known as Caravaggio — viz. Polidoro Caldara (born 1495) and Michelangelo Amerighi (born 1569). Here is a celebrated pilgrimage church, built in 1575; and here the Milanese defeated the Venetians in 1448. Pop. 9,000.

Caravaggio, MICHELANGELO AMERIGHI (1569–1609), Italian painter. As a protest against the insipidity of the religious painters of his day, his work was coarse, prosaic, realistic, material in feeling, but full of force. He was a master in the disposition of light and shade. In his earlier Venetian period he had a certain charm; but later, his figures, even of saints and heroes, look like brawny porters. His *Two Drinkers* (Modena) and *Fortune-teller* (Capitol, Rome) are his masterpieces. His religious work may be studied in Roman and Neapolitan churches. The National Gallery, London, has a *Supper at Emmaus;* and in Dublin is a *St. Sebastian.*

Caravaggio, POLIDORO CALDARA DA (1495–1543), Italian painter, born at Caravaggio, near Milan. Under Raphael's guidance he executed several frescoes in the Vatican. His greatest picture, *Christ bearing the Cross*, is now in the museum of Naples.

Caravanning. See CAMPING-OUT.

Caravans and CARAVAN TRADE. In the Orient and in Africa a caravan is a company journeying along a certain route, conveying produce — it may be slaves—to some well-known mart. One of the earliest glimpses of such a caravan is seen in the Midianites, or Medanites, to whom Joseph was sold by his brethren. The Arab routes of trade were various, leading to Egypt, to Syria, and eastward as far as Mesopotamia. The prophet Mohammed made his first essay in warfare by attacking and plundering the caravans of his own kinsmen that traded between Mecca and Syria. The time occupied in these expeditions is shown by the circumstance that the caravan of a certain Abu Sofian, which numbered a thousand camels, had travelled northward to Syria in the autumn of 623 A.D., and did not return to Mecca, with its northern freight, until the following January. But the Arab traders went much farther afield than Syria and Babylon. Between the 8th and 11th centuries A.D. Arab merchants seem to have travelled regularly as far as to the Baltic, Schleswig being frequently mentioned by them. Their route appears to have been by Armenia and the Black Sea, probably the same as that taken by the As-syrians two thousand years before. How close and continuous this intercourse was may be inferred from the fact that great numbers of Arabic coins have been found in the north-west of Europe, in Sweden, and particularly in the island of Gothland. (See Worsaae's *Danes and Norwegians*, 1852, pp. 103 - 104). Hoards of these coins have been found also in the British Isles, in one instance as far north as Orkney, where, on the links of Skaill, were found ten Cufic coins, minted at Bagdad and Samarkand at various dates from A.D. 887 to A.D. 945.

Most of the ancient caravan routes of Asia and Africa are still in use, with their recognized camping-places or 'desert stations,' usually beside a well. In the central Sahara, where the Tuaregs and Mabas are the great trading castes, the principal routes run northwards from Wadai through the Libyan Desert, *via* Kufra and Aujila, to Benghazi, and from Lake Chad, *via* Bilma and Murzuk, to Tripoli. In the western Sahara an important route starts at Timbuktu, and runs north as far as about 24° 20′ N. lat., where it divides, one branch proceeding *via* Tenduf to S.W. Morocco, and the other N. to Tafilet in S.E. Morocco. In the middle Sahara the chief routes from Sokoto and Nigeria converge upon Agadez in Aïr, and thence proceed N. to Ghadames, where they again radiate to the coast. Of the east-west routes the most important are those from Fezzan and from Bilma westwards to Taudeni and the W. Sahara, and the Mohammedan pilgrim route of N. Africa from Tafilet in Morocco to Cairo. Another minor track winds for 150 m. from Keneh, on the Nile, to Kosseir, on the Red Sea. In Asia the most noteworthy caravan routes are those from Damascus to Mecca (since 1908 replaced by a railway); from Trebizond, on the Black Sea, to Tabriz in N.W. Persia; from Tashkend in W. Turkestan eastwards to Kulja in the Ili valley, then along the N. foot of the Tian-Shan Mts. to Barkul, where it crosses the range to Khami, and thence across the Desert of Gobi to Su-chou-fu, in the Chinese province of Kan-su, whence it continues to Si-ngan-fu, and eventually to Peking; the Chinese-Siberian route from Kiakhta in Transbaikalia, *via* Urga and Kalgan, to Peking; the route N. of the basin of the Tarim from Kashgar, *via* Ak-su and Kara-shahr, to Urumtchi in the Tian-Shan Mts.; the route S. of the Tarim basin, from Kashgar, *via* Yarkand and Cherchen, to Su-chou-fu; and the great Lamaist pilgrim route from Mongolia to Lhasa in Tibet, *via* the Koko-nor. Whilst camels are the beasts of burden mostly used on all these routes except the last, asses are also used in Africa, as well as men in Central Africa, horses in Tibet and Mongolia, and yaks, and even sheep, in Tibet. Dogs are used for that purpose in the Arctic lands of Asia and America, and reindeer in those of Europe and Asia. The mule is used in Persia and S. America, and in the Andes the lama. See H. Barth's *Travels* (1855); G. Nachtigal's *Sahara und Sudan* (1879–89); and H. Junker's *Travels in Africa* (1896).

Caravansary, or CARAVANSERAI, the unfurnished inn of the East, is usually built round a courtyard with a well, and belongs to the government, to private individuals, or to mosques. Some are free and some make a charge.

Caravel. See CARVEL.

Caraway, a spice which has been used by the Arabians from time immemorial, and was known to the Greeks. The roots of caraways were formerly eaten in

England. 'Seed cakes' are mentioned by Tusser. The caraway plant, *Carum Carui*, which belongs to the order Umbelliferæ, occurs wild in England, but is a doubtful native. It is a herb about two feet high, with a much-branched stem, and umbels of white flowers in June. The plant is cultivated for its fruits, which are much used in cookery. From the fruits also is distilled an oil which is used in medicine as a stimulant and carminative.

Carayon, AUGUSTE (1813-74), French ecclesiastical historian, born at Saumur. Entering the Jesuit order, he soon made his mark by his historical works about this order. Among them are *Documents inédits concernant la Compagnie de Jésus* (23 vols. 1863-86), his most important book; *Bibliographie historique de la Compagnie de Jésus* (1864), which contains a complete bibliography of all the works dealing with the Jesuit order from its foundation; and *Première Mission des Jésuites au Canada* (1864).

Carballo, or BAÑOS DE CARBALLO, tn., Spain, prov. of and 20 m. S.W. of Corunna; has mineral springs, cattle-raising, and tanneries. Pop. 13,000.

Carberry Hill, 8 m. S.E. of Edinburgh, Scotland (alt. 400 ft.), where Queen Mary surrendered to the confederate lords, June 15, 1567.

Carbides are the compounds of carbon with other elements, principally metals; and though several have been known to exist for a long time, our knowledge has been greatly extended by the researches of Moissan with the electric furnace, by which they are most conveniently prepared. Calcium carbide, CaC_2, is manufactured on the large scale by heating coke with lime in the electric furnace, and is a crystalline compound from which acetylene is obtained for illuminating purposes by the action of water. Similar carbides are obtained from analogous metals, but these also yield other gases, such as methane, ethylene, and hydrogen, as well as acetylene. Iron forms a carbide of a different character, probably having the formula Fe_3C, and being the cause of the hardening of steel. Of the non-metals, silicon yields silicon carbide, or carborundum, SiC, by heating coke and sand in the electric furnace. See CARBORUNDUM.

Carbine, a firearm formerly used by cavalry regiments, somewhat smaller than the ordinary rifle, of which it is a modification.

Carbo, a Roman family of the Papirian clan, of which two members are well known in history. (1.) CAIUS PAPIRIUS CARBO was one of three commissioners appointed to carry out the agrarian law of Tiberius Gracchus; but after the death of Caius Gracchus, in 121 B.C., he changed sides, and even defended Opimius, the murderer of Gracchus. In 119 B.C. he was accused by Licinius Crassus, on a charge the nature of which is unknown, and, despairing of acquittal, poisoned himself. (2.) CNEIUS PAPIRIUS CARBO, consul in 85, 84, and 82 B.C., was one of the leaders of the Marian party against Sulla and the nobles. Pompey captured and executed him (82 B.C.) at Lilybæum.

Carbohydrates, a class name applied to an extensive group of natural carbon compounds, containing hydrogen and oxygen in the proportions in which they occur in water, the name not, however, in any sense conveying that these compounds are hydrates of carbon. It conveniently to-day is made to comprise other substances closely allied to the carbohydrates properly so called. Familiar examples are cellulose, starch, and sugar.

Carbohydrates possess great technical value—*e.g.* cellulose in papermaking and for explosives, and others (starch and sugars) are of dieteticvalue as heat-producing foods. The carbohydrates are of vegetable origin, saving glycogen, or animal starch, found in the liver, and possibly representing the animal carbohydrate reserve. Cellulose forms the more permanent woody fibre of the plant; starch is the reserve food of the seed; and sugars are found in fruits, and in some plant saps such as the sugar cane and beet.

The carbohydrates are classified into groups according to composition, each type of formula representing many isomeric compounds:—

$C_6H_{10}O_5$, the amyloses, or polysaccharides, including starch, cellulose, dextrine. The actual molecular structure is represented by a multiple of the simple formula.

$C_{12}H_{22}O_{11}$, the disaccharides, or bioses, cane sugar, maltose, and lactose or milk sugar.

$C_6H_{12}O_6$, the monosaccharides, monoses or hexoses, of which 16 are known, the commoner being glucose (dextrose or grape sugar), fructose (fruit sugar or levulose), mannose, and galactose.

Other less numerous classes are the trisaccharides, $C_{18}H_{32}O_{16}$—*e.g.* raffinose; the pentoses, $C_5H_{10}O_5$—*e.g.* arabinose; and synthetical compounds containing four and three carbon atoms.

The structure of the members of the starch or amylose group is unknown, but the hexoses and simpler sugars are aldehyde or ketone (fructose) alcohols, and possess reactions of those classes; thus they are reducing agents, form oximes and hydrazones, yield acids on oxidation and alcohols on reduction.

The bioses are compounds of two molecules of hexose, like or unlike, with another of glucosidic character, and yielding the hexoses on fermentation by enzymes or hydrolysis by acids. Cane sugar gives in this way glucose and fructose (invert sugar), maltose gives two molecules of glucose, and lactose gives glucose and galactose.

The simplest possible compound of like formula to the hexoses and simpler sugars is formaldehyde, CH_2O, which yields sugar like polymerization products, and which is believed to play an intermediate *rôle* in the natural synthesis of carbohydrate in the green leaf. All the natural sugars of the C_6 group have been prepared synthetically, by E. Fischer, starting from the triose, $C_3H_6O_3$, derived from glycerol; and recently the formation of a biose, from the two molecules of hexose into which enzymes resolve it by the reverse action of the ferment itself, has been recorded. See "Carbohydrates" in *Monographs on Bio-chemistry* (Longmans).

Carbolic Acid, or PHENOL (C_6H_5OH), occurs in traces in some animal secretions, but is chiefly obtained by the destructive distillation of complex carbonaceous bodies such as wood or coal, phenol being one of the liquid products present in the 'tar' formed. It is separated by distilling coal-tar, the portions boiling from about 150° to 240° C. being shaken with caustic soda solution, which dissolves the phenol and similar substances. The solution obtained is separated from the oily hydrocarbons, and the phenol set free again by the addition of sulphuric acid. It is afterwards purified by fractional distillation, or by the fractional precipitation of its solution in caustic soda by sulphuric acid.

Phenol is a colourless crystalline solid of sp. gr. 1·09 at 0° C.; m.p. 42° C., and b.p. 183° C. It gradually becomes red on being kept from the presence of an impurity, and is liquefied by the addition of a small amount of water. It is soluble in about fifteen parts of water, and much more so in alcohol, acetic acid, etc. Phenol is distinguished by a characteristic smell and a burning taste. It has a caustic action on the skin, and is a powerful poison. It also rapidly destroys organised ferments (microbes, etc.), and is thus a powerful antiseptic, hindering or stopping all actions they produce—a solution of phenol being much used in consequence for disinfecting and deodorizing purposes. The formation of a violet colour on the addition of ferric chloride, and the precipitation of tribromophenol with bromine water, are the most convenient tests for phenol.

Its constitution is exhibited by its formation from benzene sulphuric acid on fusion with caustic potash, a hydroxyl group being introduced into the benzene ring in place of the sulpho group—$C_6H_5SO_3H + 2KOH = C_6H_5OH + K_2SO_3 + H_2O$. Phenol is not, therefore, an acid, though it forms phenoxides or 'carbolates' when acted on by alkaline hydroxides, but is more nearly allied to the tertiary alcohols. It is chiefly used for its disinfecting properties, but is also employed as a source of allied 'aromatic' compounds, such as salicylic acid, used in medicine, and of trinitrophenol or picric acid, used as an explosive under the name of lyddite. For medicinal purposes it is used in glycerin, in a suppository and an ointment, also in watery mixture and oily solution as an external antiseptic, and internally in small doses (one to three grains) for antisepsis of the alimentary tract. Externally applied in a strong solution, such as the officinal liquid carbolic acid, which contains 10 per cent. of water, carbolic acid acts as an irritant to the unbroken skin, with a burning sensation, which, however, soon disappears, leaving a white, hardened surface, the burning being followed by temporary anæsthesia. In strong solution carbolic acid penetrates the unbroken skin, and produces the results of carbolic acid poisoning in proportion to the amount absorbed.

In the proportion of from one to twenty to one to forty of water, carbolic acid is used as an antiseptic lotion for wounds, and to disinfect surgeons' hands and instruments, as well as in dressings of prepared gauze. It was one of the first antiseptics used by Lister, in the form of spray. In the case of children its external application has been followed by albuminuria, and if absorbed, that part of it which leaves the body through the kidneys stains the urine a characteristic olive-green or gray. Internally, in small doses taken by the mouth, it stops fermentative changes in the stomach. For this purpose it is generally given as a sulphocarbolate.

Poisoning.—A strong solution or the crude carbolic acid taken in at the mouth acts at once on the mouth, throat, and stomach as a caustic poison. It enters the circulation and acts on the brain as a narcotic, the patient becoming comatose, cold, and cyanotic. The immediate danger is that of death through dyspnœa; but if the patient recovers from the first effects, there is still danger of suffocation owing to subsequent swelling of the injured air-passages.

The first thing, in treating poisoning by carbolic acid, is to rid the stomach of what has not already been absorbed. The stomach-pump is not safe, because of the probable condition of the mucous membrane; but the soft siphon tube should be used, and the stomach washed out until there is no smell of carbolic acid in the washings. Sodium sulphate or magnesium sulphate (half an ounce of either to a pint of warm water) may be given, or a dram of saccharated solution of lime in a pint of water. After this olive oil (a quarter of a pint in a pint of warm water) may be given, or white of eggs in water, or large quantities of milk, keeping up the warmth of the body, and using alcoholic stimulants if necessary. A hypodermic injection of caffeine with sodium salicylate has been reported as successful (*Brit. Med. Jour.*, Sept. 14, 1901). Mitchell Bruce suggests that the soluble sulphates act by forming sulphocarbolates. After the first dangers of collapse and dyspnœa have been overcome, great care must still be taken in feeding that the throat and œsophagus do not suffer from irritation by solid food. See MATERIA MEDICA.

Carbon (C, 12) is an element widely distributed in nature—being found free as diamond and graphite, and in an impure state as coal; whilst in combination it occurs in carbon dioxide, in many carbonates, such as limestone and dolomite, and as an essential constituent of all living things. The naturally occurring forms of carbon are sufficient for most purposes, but it can be prepared by the decomposition by heat of many of its compounds. Charcoal is obtained in this way from wood, which is set on fire in a heap that is partially covered with earth, when some of the wood burns, giving out heat enough to decompose the rest into charcoal and volatile products, such as tar, wood-spirit, and acetic acid. Coke, soot, lampblack, and 'gas'-carbon are obtained by processes that are theoretically similar to that by which charcoal is prepared.

Carbon, like several other of the elements, exists in allotropic forms—*i.e.* in varieties which, although they have totally different properties, consist of carbon and nothing else. This is proved by the fact that not only can one form be changed into another, but also that all the kinds burn in oxygen, and from equal weights yield the same weight of carbon dioxide—$C + O_2 = CO_2$. All the forms are solid, and volatilize without melting at the temperature of the electric arc. They are insoluble in any ordinary solvent, but dissolve in melted metals, such as iron, from which they crystallize on cooling in the form of graphite. If the cooling is made to take place under very great pressure, some of the carbon is obtained in the form of minute diamonds. Diamonds may have been produced in a somewhat similar way in nature, as they show signs of having been subjected to great pressure during formation.

The diamond is an exceedingly hard, somewhat brittle solid, colourless, transparent, and highly refractive when pure, and crystallizing in regular octahedra (sp. gr. 3·5). Unlike other varieties of carbon, the diamond is a non-conductor of electricity, and is converted into graphite when strongly heated, in the absence of air. Graphite (black lead or plumbago), besides occurring naturally, is prepared by heating anthracite coal in the electric furnace. It is a soft, greasy-looking, black solid (sp. gr. 2·25) that crystallizes in six-sided plates.

The other varieties of carbon are amorphous—*i.e.* without crystalline form—depending for their appearance on the way in which they are prepared. Thus, charcoal is soft, black, and porous, and resembles the wood it was obtained from. It has a great power of absorbing air and other gases, which become peculiarly active whilst in its pores. For this reason charcoal is sometimes used as a deodorant, and animal charcoal (obtained by charring bones) for decolourizing syrups, etc.

Chemically, carbon is unique in forming an almost infinite series of compounds—a fact that is due to its nearly unlimited power of uniting atom to atom to form open or closed chains, other elements being attached throughout the length of the chain. The study of such compounds, or 'organic' chemistry, almost exceeds that of all other branches of chemistry put together. Technically, on account of its refractivity diamond is used as a gem, and, on account of its hardness, as a cutting and abrading agent. Graphite is used to polish and protect iron, as a lubricant, and for pencils; whilst charcoal is mainly employed as fuel.

Carbon dioxide (CO_2), also known as carbonic acid gas, is a compound of carbon and oxygen, in the proportion of twelve parts of the former to thirty-two of the latter. It occurs in the air and in natural waters, some of the latter being highly charged with it. It is formed when any material containing carbon is burned, and being produced by the oxidation of food-stuffs, is also expired by animals. Technically, it is obtained, mixed with other gases, from limekilns, in which calcium carbonate is decomposed by heat—$CaCO_3 = CaO + CO_2$; or, if required pure, by the action of either diluted sulphuric or hydrochloric acids on chalk or limestone (calcium carbonate)—$CaCO_3 + 2HCl = CaCl_2 + H_2O + CO_2$. Carbon dioxide is a colourless, almost odourless gas, and is much heavier than air. It can be liquefied under a pressure of about 36 atmospheres, the liquid (sp. gr. ·94 at 0° c.) boiling at −79° c., and being readily converted into a snowlike solid by the cooling produced by its own evaporation. It is somewhat soluble in water, forming a faintly-acid solution, possibly containing carbonic acid, from which the important class of salts known as the carbonates are derived. It does not burn in air, or allow ordinary combustibles to burn in it, though metals like magnesium and potassium burn brightly in it, displacing carbon—$2Mg + CO_2 = 2MgO + C$. Carbon dioxide acts as a positive poison when inhaled, even when mixed with air, in amounts exceeding a small limit. It is this gas, under the name of 'after-damp,' which is produced by colliery explosions, and causes most of the deaths by suffocation. On the other hand, carbon dioxide is the main food of green plants, which, by the aid of the energy of the sun's light, break it up and utilize the carbon, along with water and a small amount of mineral constituents, to build up their structure. The presence of carbon dioxide is best demonstrated, if in large amounts, by its power of extinguishing a candle, and by its action on a clear solution of slaked lime (lime-water), which it turns milky owing to the formation of calcium carbonate—$Ca(OH)_2 + CO_2 = CaCO_3 + H_2O$; the latter test being readily given also by traces of the gas.

Technically, carbon dioxide is mainly used for aerating water—a quantity of the gas being forced into the water by pressure, thus imparting to it an agreeable taste and some dietetic qualities. Sparkling wines and beers owe their properties to a similar cause, the carbon dioxide being formed in the liquid by the decomposition of sugar under the influence of ferments. Carbon dioxide is also used to a limited extent in portable fire extinguishers, and in the solid state as a refrigerant.

Carbon monoxide, otherwise known as carbonic oxide, has the formula CO, indicating that it is composed of twelve parts by weight of carbon to sixteen of oxygen. It is not ordinarily present in nature, and is formed by the combustion of excess of carbon with oxygen; carbon dioxide being probably first formed, and then reduced to carbon monoxide—$C + O_2 = CO_2$, and $CO_2 + C = 2CO$. If required pure, it is best prepared by warming formic acid or a formate with concentrated sulphuric acid; the water produced simultaneously combining with the latter—$HCOOH + H_2SO_4 = CO + H_2SO_4H_2O$. Carbon monoxide is a colourless, odourless gas, that liquefies at – 190° c., and is almost insoluble in water. It burns in air with a blue flame (often seen on the top of a clear fire), forming carbon dioxide with the oxygen. The mixture of it with air or oxygen is explosive—$2CO + O_2 = 2CO_2$. It is exceedingly poisonous, the inhalation of a single litre being sufficient to cause death—the carbon monoxide combining with the red colouring matter of the blood, and preventing it from carrying the necessary oxygen to the tissues. Breathing pure oxygen is the best antidote.

Technically, carbon monoxide is extensively used as a fuel. It is present in ordinary coal gas, and is largely prepared mixed with nitrogen, under the name of 'producer gas,' by drawing air through heated coal, and as 'water gas' by blowing steam through red-hot coke, when a mixture with hydrogen in equal volumes is obtained—$C + H_2O = CO + H_2$. 'Mond' and 'Dowson' gases are similar to these. Producer gas is used for furnace-heating and for gas-engines; water gas being also employed for lighting, after admixture with sufficient oil vapours to give it luminosity.

Carbon disulphide (CS_2) is a compound of twelve parts of carbon to sixty-four of sulphur. It does not occur naturally, and is prepared by passing the vapours of sulphur over strongly-heated charcoal—$C + S_2 = CS_2$. The sulphur is melted, and flows to the bottom of a vertical cast-iron retort, which is heated by an external fire, or internally by electric arcs or resistances. As a result the sulphur is vaporized and combines with the charcoal, the carbon disulphide formed being led off through cooled pipes and condensed. It is afterwards purified by distillation. Carbon disulphide is a highly refractive, colourless liquid, somewhat heavier than water, with a not unpleasant odour resembling chloroform. Usually, however, the liquid smells badly from the presence of impurities which form upon keeping it. Carbon disulphide has sp. gr. 1·29 at 0° c., boils at 46° c., and readily evaporates to a heavy vapour. It is only slightly soluble in water, but is itself an excellent solvent for oils, fats, gutta-percha, etc. It burns with a pale blue flame, forming carbon dioxide and sulphur dioxide if there is excess of air—$CS_2 + 3O_3 = CO_2 + 2SO_2$; though with a limited access of the latter sulphur is also set free. In oxygen or nitric oxide the vapour burns brilliantly, the combustion being explosive if the vapour is previously mixed with air or oxygen. Though neutral to litmus, carbon disulphide exhibits some acidic properties, uniting with alkaline sulphides to form sulphocarbonates. Its vapour is very poisonous when breathed.

Technically, carbon disulphide is used to dissolve oils and fats from animal refuse, wool, etc., and as a solvent for sulphur chloride in vulcanizing india-rubber. It has also had some employment as an insecticide, but as the mixture of its vapour with air explodes at as low a temperature as 147° C., it must be used with great caution.

Carbonado, a name given to the large impure diamonds found in Bahia, Brazil. The largest known specimen weighed over 3,150 carats.

Carbonara, tn., Apulia, Italy, prov. of and 5 m. S. of Bari. Pop. 8,000.

Carbonari, a secret political society originally formed early in the 19th century to resist the bad government of the Bourbon princes in Naples. It had statutes and a ritual similar to those of the Freemasons, with which it had close connections. It aimed at Italian freedom and unity, but its political views were somewhat vague and ill-defined. It soon extended all over Italy, and prepared the revolutions of 1820–1 in Naples and Piedmont, but collapsed before the Austrian troops. Paris then became the centre of activity of the party (*Charbonnerie*), under the leadership of such men as Buonarroti, Teste, and D'Argenson. Their efforts served to keep the revolutionary spirit alive in Italy, and were largely responsible for the risings of 1831. But this form of Carbonarism did not last long. The Carbonari societies were subsequently more or less superseded by Mazzini's 'Young Italy' Society, though the name of Carbonarism lingered on till 1867. See *Cambridge Modern History*, vol. x. *passim* (1907), and G. M. Trevelyan's *Garibaldi and the Thousand* (1909).

Carbonates are the salts derived from the hypothetical dibasic acid, carbonic acid, H_2CO_3, and are of three varieties—*normal*, *acid*, and *basic*—all of which are decomposed by dilute sulphuric or hydrochloric acids with evolution of carbon dioxide. The normal carbonates, in which the hydrogen of carbonic acid has been exactly replaced, are, as a rule, crystalline solids, and, with the exception of those of the alkali metals, are insoluble in water, and decomposed into oxides and carbon dioxides when strongly heated. Calcium carbonate (calcspar, limestone) and sodium carbonate (washing soda) are typical. The acid carbonates or bicarbonates, in which the hydrogen is only partially replaced, are less known, and are characterized by being decomposed with evolution of carbon dioxide on heating to the temperature of boiling water. Sodium bicarbonate is an example of this class, and is used in baking powder, seidlitz powders, etc., from the ease with which carbon dioxide is set free from it. The *basic* carbonates, which may be looked on as formed by the incomplete neutralization of the base by carbonic acid, are complex, and have been but little investigated; white lead, $Pb(OH)_2 2PbCO_3$, may be taken as typical.

Carbondale, city, Lackawanna co., Pennsylvania, U.S.A., situated in the anthracite coal region, 12 m. N.E. of Scranton. Its manufactures include paints, silks, and chemicals, and there are car and machine shops and foundries. Pop. 15,000.

Carbone, TITO (1863–1904), professor of pathology and anatomy in the University of Modena, acquired celebrity by his discovery of the microbe of Mediterranean fever (Malta fever), and was well known as a successful investigator. In isolating the microbe Melitensis, the infective agent, he accidentally inoculated himself with it, and died from the fever. During his illness he wrote a complete monograph, noting down the progress of the disease and his observations upon it. He was the author of several medical treatises.

Carbonear, seapt., Conception Bay, Newfoundland, 20 m. N.W. of St. John's; large fisheries. Pop. 3,700.

Carbonic Acid. See CARBON—*Carbon Dioxide.*

Carboniferous, one of the great periods or divisions of geology. From the Carboniferous system the world derives its principal supplies of coal, though that commodity is by no means confined to this series of rocks. Extensive supplies of ironstone, metallic minerals, fireclay, building stone, and other valuable materials are also drawn from this formation.

The Carboniferous overlies the Devonian and Old Red Sandstone, and is succeeded by the Permian. It falls naturally into two great subdivisions—a lower, consisting mostly of marine deposits, rich in limestone, but poor in workable coal; and an upper series, mostly deposited in fresh water, and containing many valuable seams of coal and ironstone. This is very well exemplified in the great Carboniferous series of the north of England, where the succession is as follows, from above downwards:—

III. Coal Measures.
II. Millstone Grit.
I. { Yoredale Beds.
Carboniferous Limestone.

The Carboniferous Limestone is crowded with corals, crinoids, and brachiopods, forms which now inhabit clear sea-water of moderate depth. The Coal Measures contain only remains of plants, fresh-water molluscs and fishes, and accumulated in fresh water, probably in enclosed lagoons. In Scotland the water appears at first to have been shallow and brackish or even fresh (cement stones and calciferous sandstone); then for a relatively brief period marine conditions prevailed (Carboniferous Limestone); rapidly succeeded by a great fresh-water formation, the Coal Measures. In Belgium we find also a lower limestone group overlain by coal measures. In France, Spain, and China the same succession holds; and in the magnificently-developed Carboniferous of N. America, which in the United States covers over 200,000 sq. m., we have a lower limestone series, the 'sub-Carboniferous,' and the upper Coal Measures, with between them a coarse grit or conglomerate—the representative of the English Millstone Grit. In Russia, however, the Upper Carboniferous consists mainly of limestones (Fusulina limestone); and in Spain, Asia, and N. America marine limestones are present in the Upper Carboniferous.

The Lower Carboniferous rocks are mostly sandstone, limestone, and shale; the Upper are sandstones, black shales, fireclays, coals, and ironstones. As a whole, they are less resistant than the Devonian and older rocks which often surround them, and tend to form low ground, which in many cases rises into hills of minor elevation (*e.g.* the Pennine range). They have usually been folded into gentle anticlines and synclines or basins, the latter of which may be occupied by the coal measures. But in the Alps, the Appalachians, and in Belgium the Carboniferous has been in places greatly broken, disturbed, and plicated, and may have, as the result of these movements, taken on many of the characters of the older crystalline schists.

The Lower Carboniferous rocks in Devonshire are highly folded, and differ so greatly from the rocks of similar age in the rest of England that the name 'culm' has been given to them. They contain little limestone and few fossils, and consist mainly of sandstone and shale, with thin occasional beds of radiolarian chert.

In the southern hemisphere a very different facies prevails in the Carboniferous. The Lower Carboniferous of Australia contains the same genera of fossils as the English Carboniferous; but the Upper or Permo-Carboniferous strata, which include many seams of coal, are distinguished by the presence of a flora, of which the most prominent member is the fern Glossopteris. This glossopteris flora occurs also in India and S. Africa, and the beds which contain it are relegated to a later period than the English Coal Measures. In this series of rocks certain conglomerates are found which have occasioned much discussion. They are full of large striated blocks, and are believed by most geologists to be of glacial origin (Talchir conglomerate of India, Dwyka conglomerate of S. Africa). With this exception, all evidence points to the climate of Carboniferous times having been moist, warm, and equable. The abundance of ferns, in particular, is very suggestive.

In plants this formation is exceedingly rich: they are mostly ferns, conifers, lycopods, and Equisetaceæ. Owing to the fortunate preservation of petrified stems, even the minute anatomy of these is very well known. The highest animals were reptiles and giant amphibians (Labyrinthodonts). Fishes abounded, principally ganoids and sharks; and in the limestones all kinds of marine life are abundantly represented—corals, crinoids, blastoids, brachiopods, molluscs, worms, Polyzoa and Foraminifera being the most common. For many years geologists have endeavoured to establish life-zones in the Carboniferous limestone; the problem has been one of great difficulty, as the fossils seem to recur again and again with the greatest persistence. At the present time there are many workers in this field, and a working system is rapidly being established.

One of the most interesting features, brought out by Garwood, is the importance of algæ as rock-builders in the Carboniferous of the north of England. See Garwood, *Geol. Mag.*, 1907, *Geol. Ass. Jubilee Vol.*, 1910, pt. iv., Northumberland and Durham; Vaughan, *Q.J.G.S.*, 1905, 1906, and 1908; Sibly, *Q.J.G.S.*, 1905, 1908.

Carbon Print. See PHOTOGRAPHY.

Carborundum is a carbide of silicon, SiC, prepared by heating sand with coke in an electric furnace. It is a crystalline solid which is colourless when pure, but commercially is brown or black, from the presence of impurities. It is very stable, and hard enough to scratch ruby—the latter property making it a better abrasive than emery.

Carbuncle, a name given by jewellers to almandine or precious garnet, which is of a deep claret-red colour when cut *en cabochon* —*i.e.* with a rounded, smooth surface without facets. Pliny uses the term *carbunculus alabandicus* for the precious garnet, hence the alternative name almandine. It is softer and more deeply coloured than the ruby, and is, of course, far less valuable. In artificial light it appears more yellow, resembling a glowing coal. Fine specimens are obtained from Ceylon, Pegu (Burma), and Brazil.

Carbuncle, a circumscribed gangrenous inflammation of skin and subcutaneous tissue, similar to a very large boil, but far more serious because of its size. It is of bacterial origin. A carbuncle begins with a circumscribed induration of skin and subcutaneous tissues, generally on the back of the neck, the shoulders, head, or abdomen; rarely on a limb. The hard area reddens, and then becomes purple; there is great localized pain, throbbing, and tenderness. There may also be a rise of temperature. Later the hardness gives place to a soft or 'boggy' feeling to the touch; the skin breaks in several spots, and oozes. Discharge may continue for a long time through several separate openings, or they may run together, the skin may come away, and a gray mass of dead tissue be exposed.

Treatment.—Rest in bed, evacuation of the bowels by a mercurial and saline, the local application of hot fomentations wrung out of antiseptic solution, and in later stages free incision and evacuation of contents are the proper treatment. In obstinate cases, vaccine therapy is recommended. See also Boil.

Carburettor, the apparatus in motor car and oil-engines in which oil or spirit is vaporized and mixed with a regulated supply of air to form an explosive mixture. Practically all carburettors now used are of the spray type, in which the fuel is pulverized by issuing at high speed from a fine nozzle and striking against a surface of conical form. The most recent types of carburettors have the air supply controlled automatically by the suction of the engine or the pressure of the exhaust, so that the carburation may be correct at all speeds and loads. See Motor Cars; Oil-Engines.

Carcagente, tn., prov. Valencia, Spain, near Jucar R., 25 m. S.W. of Valencia; large mulberry and orange groves. Manufactures textiles. Pop. 12,000.

Carcano, Giulio (1812-84), Italian poet and novelist, born at Milan. In 1839 he published *Angiola Maria*, which marks the beginning of the domestic novel in Italian literature, just as Manzoni's *I Promessi Sposi* marks that of the historical novel. Like all the Italian authors of that time, he fought for the liberation of Italy, and had to fly into exile. In 1859 he became professor at the Academy of Milan, and was afterwards nominated senator. Among his numerous works are the novels *Racconti Semplici* (1843), *Damiano* (1851), *Dodici Novelle* (1853); the collections of *Poesie edite ed inedite* (2 vols. 1861-70) and *Poesie varie* (1875); and the tragedies *Spartaco* (1857), *Ardoino* (1860), and *Valentina* (1870). One of his principal achievements was the translation of Shakespeare's plays into Italian (1874-82). A new and complete edition of his works appeared in Milan in 10 vols. (1892-6).

Carcar, pueblo, Cebu I., Philippines, 23 m. S.W. of Cebu, at head of Carcar Bay; has active coast trade. Sugar-cane and fisheries. Pop. 32,000.

Carcassonne, tn., France, cap. of dep. Aude, 55 m. S.E. of Toulouse. It is the seat of a bishop, and has a library and museum. The town consists of two parts — the lower or new town, well built and prosperous, on the l. bk. of the Aude; and the upper or old town on the hill opposite. The latter is said to exhibit the most complete examples of the fortifications of the middle ages. Other buildings are the lately restored Cathedral of St. Nazaire (11th century), the Court House, and an old market. There are a few Gothic remains in the lower town. There are manufactures of woollens, cottons, and other textiles, paper, leather, and soap. Carcassonne dates from the time of Cæsar, and was the scene of the massacre of the Albigenses by Simon de Montfort in 1210. The Black Prince burned the town in 1356. Pop. 30,000.

Carcharias. See Blue Shark.

Carcharodon, the genus including the largest living shark.

Carchemish, tn. of the Hittites (2 Chron. 35 : 20), at the ferry between Haran and Syria. It is identified with the ruin Jerablus (Hierapolis), in the N. of Syria, on the W. bk. of the Euphrates.

Carchesium, an interesting fresh-water protozoön common in aquaria. It consists of a colony of little bells, each bell resembling a vorticella.

Carcinoma. See Cancer.

Carcinus, the genus to which the common shore-crab (*C. mænas*) belongs. See Crab.

Cardale, John Bate (1802–77), one of the founders (1835) and the first apostle of the Catholic Apostolic Church. In 1842 he compiled the liturgy then adopted, and wrote several religious works of a doctrinal and practical character, including *A Manual or Summary of Special Objects of Faith and Hope* (1843), *The Confession of the Church* (1848), *The Doctrine of the Eucharist* (1856; 2nd ed. 1876), *A Discourse on Tithes* (1858), *The Unlawfulness of Marriage with a Deceased Wife's Sister* (1859), *Notes on Revelations* (1860), *The Certainty of Final Judgment* (1864), *The Fourfold Ministry* (1871), *The Doctrine of the Incarnation* (1873), and *A Short Sermon on War* (1876).

Cardamine is the pale purplish-white and lilac cuckoo flower, or lady's smock (*Cardamine pratensis*). Its pinnate leaves are somewhat distinctive—the lower ones have their leaflets rounded, the higher ones are lanceolate in shape. Another species very common in Britain is the annual *C. hirsuta*, the hairy bitter cress, which may commonly be found bearing its small white flowers from March to August. The leaves may be used as a salad. The pods of this plant, as of all other members of the genus, are straight and linear, with valves which, when the pod is ripe, curl up and separate with a spring; in that way the seed is scattered to a considerable distance. Many of the species are worthy of garden cultivation. Among these are the double variety of *C. pratensis;* the dwarf white-flowered *C. trifolia*, which blooms in April; the Italian *C. asarifolia*, whose white flowers appear a month later; and *C. rhomboidea*, of which there are white and purple flowering varieties. Cardamine is a genus of the order Cruciferæ.

Cardamom, the dried capsule of a herbaceous plant known as *Elettaria Cardamomum*, which is a native of the coast of Malabar, India, where it is found growing in clearings in forests. It reaches a height of about eight feet, and bears drooping scapes of flowers. The capsules are gathered in the late autumn and dried in the sun. Cardamom is used in medicine as a carminative, being chiefly administered in the form of the compound tincture, which contains also caraway, cinnamon, raisins, and cochineal. In India, Scandinavia, and Russia the cardamom is used as a condiment in cookery.

Cardamom Hills, range of hills (alt. 2,000–4,000 ft.) in Travancore state, Madras, India; owes its name to the large quantity of cardamoms cultivated and gathered there.

Cardanus, or Cardan, whose proper name was Geronimo

CARDANO (1501-76), Italian philosopher, mathematician, and astrologer, born at Pavia; taught medicine and mathematics at Milan (1534), Pavia (1547), Bologna (1560), and in Rome. In spite of his extravagant pretensions, Cardan was a man of vast erudition and an original thinker. He discovered, or was the first to demonstrate, the formula for the resolution of equations of the third degree—'Cardan's formula;' and left several works—*e.g. Ars Magna sive de Regulis Algebraicis* (1545), *Practica Arithmetici* (1539), *De Subtilitate* (1550). He is said to have foretold the date of his decease, and to have himself ensured the fulfilment of his prophecy.

Cardboard. See PASTEBOARD.

Cardenal, PEIRE (d. 1306), Provençal troubadour, born at Puy-en-Velay, and flourished about the beginning of the 13th century. He was a canon of the Puy-en-Velay Cathedral, and composed songs, some seventy of which have come down to us, and are, for the most part, *sirventes*, dealing with the corrupt manners of the clergy and nobles. He also espoused the cause of the Albigenses. At its best his poetry is characterized by vigour and passion. His songs have been printed by Mahn in his *Gedichte der Troubadours* (1856-73).

Cardenas, seapt., Matanzas prov., Cuba, N. coast, 76 m. E. of Havana, is one of the principal sugar-exporting places of the island. Tobacco, distilled liquors, and leather are also exported. It is connected by rail with Matanzas, Havana, Santa Clara, and Cienfuegos. Pop. 22,000.

Cardiac murmurs. See HEART.

Cardialgia (Gr. 'heart-pain'). See HEARTBURN.

Cardiff, city, munic. and co. bor., cap. of Glamorganshire, Wales, on G.W.R., 1 m. from the mouth of the Taff. Its industries include smelting, shipbuilding, engine-building, iron-founding, brewing, manufacture of paper and chemicals. It exports coal (17,000,000 tons, valued at £13,000,000 per annum) and iron from its 111 acres of docks, and has extensive timber and slate depots. Cardiff has grown rapidly. The old town hall and municipal buildings have been replaced by fine new buildings in Cathays Park (60 ac.), where also is the University College of South Wales, and where ground has been reserved for a Welsh national museum. The Central Board of Education for Wales has its offices in the town, and there are also borough technical schools and the Baptist theological college. The free libraries have a museum and art gallery connected with them. The Philharmonic and Cory memorial temperance hall, the exchange, the mercantile marine office, the infirmary, the sanatorium at Canton, and the blind institution are among the other chief buildings. Cardiff Castle is the residence of the Marquis of Bute. The parks include Roath Park (121 ac.), Cardiff Arms Park, Sophia Gardens, Victoria Park, and Canton Common. It returns one member to Parliament. In Cardiff Castle (*c.* 1090) Robert, son of William I., was imprisoned for twenty-six years. The town was besieged and nearly destroyed by Owen Glyndwr (Glendower) in 1404. Pop. 200,000. See Jenkins's *Hist. of the Town and Castle* (1854).

Cardigan. (I.) Parish, munic. bor., and seapt. tn., on r. bk. of the Teifi, S.W. Cardiganshire, Wales. Tile and brick making and the manufacture of agricultural implements are carried on; fishing is an important industry. Cardigan Castle, now in ruins, was built in the 12th century.

and for a time formed the residence of Edward I. The exports include bricks, slates, flags, and earthenware. Pop. 3,500. (2.) BAY, on the W. coast of Wales, extending from Braich-y-Pwll to St. David's Head, and skirted by the counties of Carnarvon, Merioneth, Cardigan, and Pembroke. The coast-line measures about 130 m.

Cardigan, JAMES THOMAS BRUDENELL, SEVENTH EARL OF (1797–1868), was born at Hambledon, Hampshire. In the Crimea he led the Light Brigade at Balaklava (1854).

Cardiganshire, a maritime county in the W. of Wales. Its length N.E. and S.W. is about 51 m.; breadth E. and W., 40 m. to 16 m. The surface is mountainous, especially in the northern and central districts, known as Upland Cardigan, where is the Plinlimmon group (2,468 ft.). The southern division, known as Lower Cardigan, is hilly or undulating, and rises in parts to 1,000 ft. The coasts are generally high. Many small lakes are scattered over the surface, especially in the northern section. The valleys, notably those of the Teifi and Ystwith, present picturesque and romantic scenery. The climate is mild and moist in the valleys; cold, wet, and windy in the uplands. The soil is varied—fertile in the lower valleys and coast-lands, poor in the mountains. Considerable numbers of sheep are reared, besides cattle and ponies. Lead and zinc are obtained to a very limited extent; other minerals are slate, sandstone, and brick clay. Gloves and flannel are made. The county returns one member to Parliament.

The territory was in ancient times inhabited by the Demetæ, who were subjugated by the Romans about 70 A.D. About the middle of the 5th century it came into the possession of a British chief, Caredig (corrupted into Cardigan), from whose family, in the 9th century, it passed by marriage to Roderic the Great, king of N. Wales, and to his son Cadell. In the Welsh revolt under Owen Glendower, and during the civil war of the 17th century, the county was the scene of many conflicts.

Cardiganshire is very rich in antiquities, including ancient British fortifications, stone circles, cromlechs, and inscribed stones. There are also remains of several mediæval castles (Aberystwith, Cardigan, etc.) and monastic buildings (Strata Florida), besides interesting examples of ecclesiastical architecture. Area, 930 sq. m. Pop. 80,000. See Evans's *Cardiganshire and its Antiquities* (1903).

Cardinal, one of the body of senators of the Church of Rome who constitute the Sacred College, and whose position, in dignity and influence, is second only to that of the Pontiff himself. On the death of a Pope, his successor is elected by the cardinals, assembled in conclave; and they generally select one of their own number, although this is not imperative. During the period between the death of the Pope and the appointment of his successor the affairs of the church are under the control of the Sacred College, which at all other times acts as the counsellor of the Pontiff. It is the Pope alone who has the power of appointing a cardinal. The number of cardinals is not allowed to exceed seventy, of which not more than six are nominally 'bishops,' while of those described as 'priests' the maximum number is fifty, and of 'deacons' fourteen. In the early centuries of Christianity their number was smaller, and they took no exclusive part in the papal election till 1179 A.D. They meet in consistory once a fortnight, the Pope being usually present as the presiding power. For matters of detail the Sacred College divides itself into 'congregations,' which meet separately and consider various special questions. Certain cardinals are styled 'protectors,' usually because they belong by birth to some other nation than the Italian, and can thus best interpret the sentiments of their countrymen on any particular point.

Cardinal Bird, RED BIRD, or VIRGINIAN NIGHTINGALE (*Cardinalis virginianus*), a handsome N. American bird, the male being of a fine red colour marked with black. It belongs to the finch family (Fringillidæ), and has a bright, sweet song. The range is from Mexico to Massachusetts. It is hardy in confinement, and is kept as a cage-bird.

Cardinal Virtues, the four chief kinds of goodness recognized by the ancients—viz. justice, prudence, temperance, and fortitude. Whewell, in his so-called correction of the classification, placed benevolence first; then followed justice, truth, purity, and order. In Roman Catholic theology the virtues are theological and moral, the former *immediately* regarding God, the latter being commanded and rewarded by God for our benefit. In these systems all moral virtues spring from prudence, fortitude, temperance, and justice. See ETHICS.

Cardinal von Widdern, GEORG (1841), German military writer, was born at Wollstein, in Posen; took part in the campaigns of 1866 and 1870-1; was professor at the military academies in Metz (1881) and Neisse (1877), and retired in 1890. Among his works are *Der Rhein und die Rheinfeldzüge* (1869-70); *Die Russischen Kavalleriedivisionen und die Armeeoperationen im Balkanfeldzug, 1877-8* (1878), a capital work for the military treatment of this war; *Handbuch für Truppenführung* (4th ed. 1891); *Die Infanterie im Gefecht und im kleinen Kriege* (2nd ed. 1888); *Das Nachtgefecht im Feld und Festungskrieg* (2nd ed. 189; *Das Gefecht an Flussübergangen* (1890 and 1891); *Der kleine Krieg und der Etappändienst* (1892); and *Kritische Tage* (1897-9).

Carding, the process of combing wool, flax, or cotton. See COTTON—*Carding;* WOOLLEN TEXTILES, and SILK.

Cardiograph, an instrument which records the movements of the heart by tracings, for the purpose of physiological and pathological research. It consists essentially of a spring (which is placed against the chest-wall in such a position as to be moved by the apex beat of the heart), and an elastic drum to which a lever is attached. The movements of the spring are conveyed to the drum by means of a connecting tube, after the principle of Marey's tambours. The end of the lever writes upon smoked paper which is in constant movement, producing a wavy line whose oscillations give information as to the regularity of the heart's action, rate, and strength.

Cardona, tn., prov. Barcelona, Spain, 44 m. N.W. of Barcelona, has very strong defensive works. To the S.W. is a hill of rock salt, 250 ft. high and 3 m. in circumference, which is regularly worked. Pop. 4,000.

Cardoon. The cardoon (*Cynara Cardunculus*) is one of the handsomest species of the tribe of thistles, being larger and also more vigorous than the globe artichoke, which it much resembles. It was introduced into Britain from the south of Europe towards the end of the 17th century, although long grown on the Continent. The cardoon is raised from seed sown in May in trenches, about 3 ft. being allowed from plant to plant. The trenches should be 2 ft. wide and 18 in. deep, a little rich soil occupying the bottom of the trench. During the summer the plants should be liberally supplied with water, and in September straw or hay should be wrapped round the stalks and tied with string or cord, so that only the tops of the leaves are left bare. The soil is then earthed up in a ridge, so as almost to bury the plants. In three or four weeks the stalks will be blanched and ready for cooking. The outer leaves and stalks should be thrown away, only the more tender central ones being used. The Tours cardoon is the best; but the Spanish cardoon, which is not prickly, is more comfortable to handle.

Cardross, par. and vil., Dumbartonshire, Scotland, on the Clyde, 3 m. N.W. of Dumbarton. At Cardross Castle Robert the Bruce died, on June 7, 1329. Near it is Dalquharn House, where Smollett the novelist (1721-71) was born. Pop. of par. 11,000.

Cards, PLAYING, were known in Belgium as early as 1379 (D'Allemagne), though it was long believed they were invented in France in 1392 to divert Charles VI. The earliest pictorial representation of a game of cards occurs in a French MS., the date from 1330 to 1400. In an edict (1397) of the provost of Paris, working-people are forbidden to play certain games on working days, and among these cards are mentioned; in 1369 an ordinance of Charles V., similarly forbidding certain games, had no mention of cards. From this it is inferred that cards became popular in France between these dates. Covelluzo, a 15th-century writer, says that cards were introduced into Italy from Arabia in 1379; a statement unsupported by details. Early in the 15th century the manufacture of cards had become established in Germany, by 1425 in Italy, and before 1463 in England; for by 3 Edw. IV. the importation of cards is forbidden, as prejudicial to English manufacturers. In 1615 a duty was first levied on cards in this country, at the rate of 5s. a gross of packs. In 1710 this was raised to 6d. per pack, in 1756 to 1s., in 1767 to 1s. 6d., in 1789 to 2s., and in 1801 to 2s. 6d. This high duty led to evasions of payment, and the tax was reduced in 1828 to 1s., and finally in 1862 to 3d. per pack, at which it has since remained.

The earliest cards used in Britain were hand-painted. The court (or, more correctly, *coat*) cards were then king, chevalier, and knave, the queen being subsequently introduced in place of the chevalier. The pips were first, in German cards, hearts, bells, leaves, acorns; next came, especially on Italian cards, swords, batons, cups, money. In the 16th century the French adopted those now common in Britain—to wit, hearts, clubs, spades, and diamonds.

Besides the cards in common use, designated 'numeral' cards, there are also *tarots*, also called *atouts*, *atutti*, and *triomphes* (trumps), because they override numeral cards in games combining the two kinds. Whether tarots were earlier than the ordinary numeral cards is still undecided. A pack of tarots consists of 78 cards, comprised of 22 emblematic and 56 ordinary cards, divided into 4 suits of 14 cards each—viz. 4 coat cards (king, queen, chevalier, and valet) and 10 point or pip cards, numbered from 1 to 10. The game played with these cards is called *tarocchi.*

As to the Eastern origin of cards, and the theories connecting them with early Eastern occult philosophy, Dr. Willshire regards them as of too recondite and shadowy a character to admit of satisfactory discussion. He inclines to the belief that Italy was the European country, and Venice the district, in which they first appeared. A Swiss monk, in a MS. of 1377, says the *ludus cartarum* came to Switzerland that very year. See H. R. D'Allemagne's *Les Cartes à Jouer du* XIV^e. *au* XX^e *Siècle* (1906); W. A. Chatto's *Facts and Speculations on the Origin and History of Playing Cards* (1848); T. Willshire's *Descriptive Catalogue of Playing and other Cards in the British Museum* (printed by order of the trustees, 1876); Taylor's *History of Playing Cards* (trans. from the French of D'Ambly, 1885); 'Playing Cards of various Ages and Countries,' from Lady Charlotte Schreiber's *Collection* (3 vols. 1892-5).

Carducci, GIOSUÈ (1836-1907), Italian poet, born at Valdicastello, near Pietrasanta, Tuscany. His boyhood was spent near the Pisan Maremma, and it is probable that the austere aspects and classic associations of this desolate region profoundly affected both the quality of his imagination and the character of his style. It was for his erudition, and not because of his achievements as a poet (for his first volume, *Rime*, 1857, and the scattered poems afterwards reprinted as *Juvenilia*, have only a relative value), that in 1860 he was appointed to the chair of Italian literature at Bologna.

Although for some years (1861-67) immersed in his lectures, and in what he called his 'cold bath of erudition,' it was during this fruitful period that he wrote (in 1863—and, it is said, at a sitting) his most famous poem (technically the triumph of modern Italian poetry in its brief *'sdrucciolo* metre), the now universally celebrated *Hymn to Satan.* In this poem, however, it is not the Mephistopheles of Goethe, nor the Lucifer of Milton, and still less the vulgar Devil of the common tradition, that is meant, but the principle of revolt, of insurgence, against effete conditions, usages, and ideas. The most famous of his poetical works are the three series of *Odi Barbare* (1877, 1882, and 1889). In style occasionally pedantic and often ultra-remote and severe, his poetry counts at its best among the noblest in the classical tradition written by any modern poet in any country. We have to go back to Catullus to find lyrical verse finer than Carducci's *Ruit Hora*, to give a single example. As for his ethical message, it is summed up in these words: 'To the good work, then, O few and strong, for truth is of the depths!' In 1906 Carducci was awarded the Nobel prize for literature. There is a collected edition of Carducci's writings in sixteen volumes. In 1900-1 a complete edition of the poetical writings was issued in one volume. See 'Italian Poets of To-day,' in the *Quart. Rev.* (July-September 1902). and the brief biography and translated excerpts in G. A. Greene's *Italian Lyrists* (1893).

Carduchi, a people who dwelt in the mountains of modern Kurdistan; most likely the ancestors of the modern Kurds.

Cardwell, seapt., Queensland, on Rockingham Bay, 90 m. N.W. of Townsville. Its harbour is one of the safest and most accessible in Queensland. Dugong-fishing and the extraction of its oil are important industries. Pop. 3,500.

Cardwell, EDWARD (1787-1861), English ecclesiastical historian; became successively Camden professor of ancient history (1826-

61), rector of Stoke Bruern, Northamptonshire (1828), and principal of St. Alban Hall, Oxford (1831). His published works include *Lectures on the Coinage of the Greeks and Romans* (1833); *Documentary Annals of the Reformed Church of England* (2 vols. 1839); *Hist. of Conferences* (1840; 3rd ed. 1850); *Synodalia: a Collection of Articles of Religion* (1842); *Reformatio Legum Ecclesiasticarum* (1850).

Cardwell, EDWARD, VISCOUNT (1813–86), English statesman, was born at Liverpool. He entered Parliament for Clitheroe in 1842, and was returned for Liverpool in 1847, but lost his seat in 1852. In the same year he was elected for Oxford city. He was successively secretary to the treasury (1845), president of the Board of Trade (1852–5), chief secretary for Ireland (1859–61), chancellor of the Duchy of Lancaster (1861), secretary to the colonies (1864–6), and in 1868 was appointed secretary of state for war, the office with which his name is most associated. In 1871–2 he carried out a great scheme of army reform, by which all the various branches of the British military system were welded together into a single whole. He withdrew British troops from colonial stations, and abolished transportation. The purchase of commissions by officers was abolished (by royal warrant 1871), and the short-service system introduced. In 1874 he was raised to the peerage as Viscount Cardwell of Ellerbeck. See Biddulph's *Lord Cardwell at the War Office* (1904).

Care, CARLE SUNDAY, or 'Carling Sunday,' the Sunday previous to Palm Sunday, is the Scottish name for Passion Sunday. 'Carlings' are fried or roasted peas.

Carême. See QUADRAGESIMA.

Carême, MARIE ANTOINE (1784–1833), French *chef*, was born in Paris; became cook first to Talleyrand, afterwards to the Prince Regent (George IV.) of England and the empresses of Russia and Austria. His name is proverbial for artistic cookery. He was *chef* at the congresses of Aix-la-Chapelle, Vienna, and Laibach. He wrote *Le Pâtissier Pittoresque* (4th ed. 1842); *Le Maître d'Hôtel Français* (2nd ed. 1842); *L'Art de la Cuisine Française aux XIX^{e} Siècle* (1833).

Carew, GEORGE, BARON CAREW OF CLOPTON and EARL OF TOTNES (1557–1629), English statesman. He defeated Rory Oge O'More (1577), and was given command of the troops in Ireland (1579); then master of ordnance in Ireland (1588–92). After service with the expeditions to Cadiz (1596) and the Azores (1597), he was employed as envoy to France (1598).

Carew, JOHN EDWARD (1785–1868), Irish sculptor, born at Waterford, became articled in London to Sir R. Westmacott (1809–23), and produced various statues and busts for Lord Egremont (1823–7). He exhibited at the Royal Academy in 1830, and at various intervals until 1848, his chief works including statues of *Whittington Listening to the London Bells*, *The Death of Nelson at Trafalgar*, and the *Model of a Gladiator*. He died in London.

Carew, RICHARD (1555–1620), English antiquary, born at Antony, East Cornwall; translated and published the first five cantos of Tasso's *Godfrey of Bvlloigne, or Jerusalem Delivered* (1594), and a *Survey of Cornwall* (1602).

Carew, THOMAS (*c.* 1594–1639), English poet, of Cornish blood, but born at W. Wickham, in Kent; accompanied his kinsman, Sir Dudley Carleton, to Italy and the Hague. Accompanying Lord Herbert of Cherbury on his embassy to France (1619), he thereafter became gentleman of the privy chamber, and later sewer to Charles I. His poetry, of which little was published in his lifetime, consists chiefly of occasional verses and love lyrics to an unidentified Celia. It shows the influence of John Donne. Carew belonged to the poetic circle that gathered round Ben Jonson, and he had a special friend in Sir John Suckling. His works are *Cœlum Britannicum*, a masque (1634); *Poems* (1640); *Collected Works*, by W. C. Hazlitt (1870), J. W. Ebsworth (1893), A. Vincent (1899).

Carex, a genus of perennial grasslike herbs frequenting the water-side, mostly in temperate climates. They are commonly known as sedges, and the spikes of unisexual flowers are conspicuous objects in many British ponds and ditches. They are mostly easy to cultivate in moist garden soil, though a few require a pond to do themselves justice. Among the species best worth cultivating are *C. Morrowi*, whose pointed leaves are decorated with an edging of white; the British *C. pendula*, with flowering stems that reach upwards of 6 ft. in height, and drooping flower-spikes about 6 in. long; *C. pseudo-cyperus*, also a British species, with drooping flowers; and the Indian *C. baccans*, with beautiful panicles of red berries in due season. Owing to the creeping, spreading habit of its roots, *C. arenaria* is employed to bind sand-dunes such as those which occur along the shores of the North Sea and the Baltic Sea.

Carey, HENRY (?1690–1743), English poet and musician, is believed to have been the illegitimate son of George Savile, Marquis of Halifax. His first volume of poems appeared in 1713; others in 1720 and 1729. He wrote farces, burlesques, and dramatic pieces, frequently with the accompanying music. His best-known poem is *Sally in our Alley.* A claim, later discovered to be unfounded, was advanced that he was the author and composer of *God save the King.*

Carey, HENRY CHARLES (1793–1879), American political economist, born at Philadelphia, and (1821–35) head of a great publishing house. He published *Principles of Political Economy* (3 vols. 1837–40); *Credit System* (1838); *Past, Present, and Future* (1848); *Social Science* (3 vols. 1858–9); *Unity of Law* (1872). Regarding free trade as only an ideal principle, he advocated protection as dictated by the actual and historical situation. See Elder's *A Memoir of Carey* (1880).

Carey, JAMES (1845–83), Fenian, was born in Dublin, and was by trade a bricklayer. Joining the Fenian conspiracy (1861), he became one of the founders of the Invincibles (1881). On May 6, 1882, Lord Frederick Cavendish and Mr. Thomas Burke, permanent Irish under-secretary, were murdered by Fenians in Phœnix Park, Dublin, the victims having been pointed out by Carey. He turned queen's evidence, but was murdered on board a vessel near Cape Town by Patrick O'Donnell.

Carey, MATTHEW (1760–1839), Irish-American publisher, was the son of a Dublin baker. He conducted the Dublin *Freeman's Journal* (1781) and the *Volunteers' Journal* (1783). Then emigrating to Philadelphia (1784), he worked as a journalist (1785–92), and established himself as a bookseller and publisher (1792–1824). He published *Vindiciæ Hibernicæ* (1819), etc.

Carey, SIR ROBERT, FIRST EARL OF MONMOUTH (?1560–1639), son of the first Lord Hunsdon. After serving as a volunteer against the Spanish Armada, he took part in the siege of Rouen, and during the last ten years of Elizabeth's reign was English warden in the Border marches. He carried the news of the queen's death, of which he was a witness, to Edinburgh in sixty hours. He was created Earl of Monmouth by Charles I. in 1626. See *Memoirs* (ed. 1808).

Carey, ROSA NOUCHETTE (d. 1909), writer of stories for girls, was born in London, and began her career as a novelist in 1868. She produced about thirty novels, including *Barbara Heathcote's Trial* (1871), *Nellie's Memories* (1868), *Uncle Max* (1887), *The Mistress of Brae Farm* (1896), *My Lady Frivol* (1899), *Trivial Round* (1900), *At the Moorings* (1904), *No Friend like a Sister* (1906), and *The Angel of Forgiveness* (1907).

Carey, WILLIAM (1761–1834), English missionary, was born at Paulerspury, Northamptonshire. Chosen as the first Baptist missionary to India (1793), he arrived in Calcutta (1794), studied the Bengali dialects, and preached in the vernacular in 1795. Having founded the Serampur mission in 1799, he was professor of Oriental languages at the college of Fort William until 1830. He published Marathi, Sanskrit, and other grammars and dictionaries, and portions of the Bible in about forty Oriental languages, besides editing the *Râmâyana* (1806–10). See *Memoirs* (1836), and *Life of William Carey*, by George Smith (1885).

Carfin, tn., Lanarkshire, Scotland, 2 m. N.E. of Motherwell, with coal mines. Pop. 2,000.

Cargados, NAZARETH, or ST. BRANDONS ISLANDS, a group of small islands, Indian Ocean, a dependency of and 300 m. N.E. of Mauritius.

Carham, par. and vil., Northumberland, England, 6 m. S.W. of Cornhill. Here Malcolm II. of Scotland decisively defeated the Northumbrians, and fixed the Scottish boundary at the river Tweed.

Cargill, DONALD or DANIEL (1619–81), Scottish Covenanter, was born at Rattray, Perthshire. Opposed to the Restoration, he denounced those who accepted the Indulgence in 1672, and became a field preacher. He fought at Bothwell Bridge (1679), and took part with Richard Cameron in the Sanquhar declaration (June 22, 1680). After excommunicating the king and others at Torwood, near Stirling, he was captured (Sept. 12, 1680), and executed at the cross of Edinburgh.

Cargo. See BILL OF LADING, CHARTER-PARTY, FREIGHT, INSURANCE (MARINE).

Caria, the S.W. region of Asia Minor. The coast was largely occupied by Greek colonists: in prehistoric times the interior was held by the Leleges, a people akin to the pre-Hellenic population of Greece; later, by the Carians proper, a race akin to the Lydians. Caria was a principal source of the slave trade for Greece. In the 4th century B.C., its native princes, of whom Mausolus is the best known, rose to wealth and power, though they were then tributary to Persia. Alexander the Great conquered the country in 334 B.C. Under the later Roman republic the pirates of Caria and Cilicia were notorious; they were suppressed by Pompey in 66 B.C.

Cariaco, seapt., Venezuela, near the head of gulf of same name, 38 m. E. of Cumana. Pop. 7,000.

Cariacus, the genus of mammals to which belong the American deer. The members of the genus differ from typical deer chiefly in the form of their antlers. See VIRGINIAN DEER.

Cariama, the genus of birds to which belongs the interesting seriema, or crested screamer (*C. cristata*) of Brazil. It is a bird somewhat larger than the bittern, and presents a striking though apparently superficial resemblance to the secretary bird. The colouring is inconspicuous, but there is a well-marked crest. In habits the birds are chiefly diurnal; they inhabit open country, and feed on snakes, lizards, rats, etc., and in consequence are protected by the Brazilians, who often domesticate them. In all probability the seriema should be placed among the cranelike birds (Gruiformes).

Caribbean Sea, division of the Atlantic Ocean, from which it is separated by the West India islands, while on the S. it is enclosed by Venezuela and Colombia, and on the W. by the Central American states and Mexico. At the N.W. it connects with the Gulf of Mexico through the Yucatan Strait. A broad submarine plateau, nowhere exceeding 1,000 fathoms in depth, between British Honduras and Jamaica, divides it into two deep basins. Of these, the eastern has a general depth over 231,000 sq. m. of 2,600 fathoms, and a maximum depth of 2,844 fathoms. The western basin has about the same mean depth, but is much less in extent, and in a narrow trough sinks to a much greater depth—viz. 3,428 fathoms. In many respects the Caribbean Sea resembles the Mediterranean, both, for instance, filling primitive depressions of the earth's crust, and both being inland seas.

Caribbee Islands, the name given to the chain of West India islands which begin with Saba, on the N., and end with Grenada, on the S. The chain consists of eleven conspicuous members, including Saba, St. Eustatius, St. Christopher (St. Kitts), Nevis, Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, and Grenada. Saba and St. Eustatius are Dutch; St. Kitts, Dominica, Montserrat, and Nevis, British; Guadeloupe and Martinique, French; and from Martinique southward the remainder are British possessions.

Cariboo. A gold-mining district of N.E. British Columbia, in the great bend of Fraser R.

Caribou. See REINDEER.

Caribs, a S. American race whose original home has been traced to the head-waters of the Xingu and other southern affluents of the Amazons in Central Brazil. Here they are still represented by the Bakaïri and other primitive tribes. Hence the Carib migrations spread from this region through the Guianas and Venezuela north to the W. Indies, Nicaragua, and Honduras, and not from N. America south, as was formerly supposed. From the W. Indies all these tribes had disappeared before the close of the 18th century, the last survivors having been removed from St. Vincent to the Bay Is., Honduras, in 1796. But elsewhere numerous Carib communities are still found scattered over an immense area from Central America to Central Brazil. They possess, however, no kind of political or social coherence; their kinship rests entirely on their common speech, a highly polysynthetic stock language, represented by a great number of extremely divergent branches and dialects.

When first brought into contact with Europeans, the Caribs were a fierce, restless people, marauders on the mainland, corsairs on the high seas, and undoubted cannibals—this very word (*cannibal*) being a Spanish formation from *Canib* = *Calib* = *Carib*. The Caribs are physically a fine race, above the average height, shapely and robust, with long face, slightly oblique eyes, reddish-brown complexion, long, lank, black hair, and features of a somewhat softened American type.

Caricature, a representation, usually pictorial, in which the salient characteristics of a person or persons are made ludicrously prominent. Fundamentally, draatic mimicry is caricature, and aricature in its crudest form. We see it inherent in monkeys in a marked degree, as also among low races of men; and it is the first resort of the uneducated in an effort to belittle an opponent. For ages also, in all civilized countries, caricature or burlesque has held a recognized position on the stage. In literature, moreover, its place is equally well defined. But a caricature is, before everything else, a pictorial or sculptured representation, generally satirical, sometimes offensive to the extreme of grossness, but often executed with the most perfect good-nature, a gentle raillery taking the place of satire or malice. Egyptian papyri, Etruscan vases, Greek pottery, the walls of Rome, Herculaneum, and Pompeii, and the ruins of Yucatan all afford evidence of a love of caricature, whether displayed in mere rude *graffiti* (wall scribblings) or in much more skilful and elaborate representations. Some of these are wonderfully modern in style and feeling. In Thomas Wright's *History of Caricature* (Lond. 1865) there are ancient Greek caricatures of a 'Romeo and Juliet' scene, and of 'Apollo at Delphi,' which would not seem out of place in the pages of *Punch*. Perhaps the *graffiti* appeal even more strongly to the modern mind, consisting as they do of pointed and personal references to contemporary citizens, glossed with a few explanatory words.

No other nation is imbued more strongly than the Japanese with love of caricature. The tendency is nowhere more powerfully and cleverly displayed than in their pictures of the aboriginal Aïnos.

The discovery of printing gave an immense impetus to this phase of art. It is in the 15th century, therefore, that the real efflorescence of caricature in Europe begins, especially in connection with the names of Holbein and Cranach. And just as the early Christians were caricatured in Pompeii on account of their religion, so we find Martin Luther and his fellow-reformers satirized in this way as the preachers of new ideas, though not of a new religion. The end of the same century saw the birth of Jacques Callot, who is usually included among caricaturists on account of his keen satirical humour and the intense vivacity of his figures, which, however, are not strictly caricatures. In the 18th century genuine caricature had reached its full growth, and Hogarth was its unsurpassable exponent. In its very lowest phases the art was also then represented by the woodcuts of popular broadsheets and chapbooks, coarse in execution, and vulgar and sometimes indecent in tone—a style of art prolonged through the 19th century and even into the 20th, and exemplified by the 'comic' valentines of the early Victorian period, and by the equally comic illustrations in certain foreign journals of the baser sort. A noted caricaturist died in 1909 in Caran d'Ache, whose work is perhaps the cleverest example of continental caricature.

The contemporaries Gillray (1757–1815) and T. Rowlandson (1756–1827) were caricaturists of the first rank, and not less notable were their successors, Cruikshank, Thomas Landseer, Leech, Tenniel, Richard Doyle, and Hablot K. Browne ('Phiz'), the last named chiefly known by his illustrations of Dickens's novels, and most of the others by their work in *Punch* and in Gilbert à Beckett's *Comic Blackstone* (1886), *Comic History of England* (1847), and *Comic History of Rome* (1852). A bright light, too early extinguished, was Randolph Caldecott (1846–86), whose style, while never becoming farcical, was always characterized by that touch of exaggeration necessary to true caricature. Linley Sambourne, E. T. Reed, Harry Furniss, Phil May, and Sir F. C. Gould (*Westminster Gazette*) are all caricaturists in the strictest sense; and George du Maurier, whose name, like theirs, is chiefly associated with *Punch*, may also be grouped with them, although his *métier* was rather to depict modern London society, with a special eye to its foibles. Pellegrini ('Ape') and Leslie Ward ('Spy') have made the London weekly, *Vanity Fair*, famous for its caricature-portraits. Mr. Max Beerbohm ('Max') is perhaps the subtlest, as well as the most extravagant, caricaturist of our day. See G. Paston's *Social Caricature in the Eighteenth Century* (1905).

Caries is a condition in bone corresponding to ulceration of soft parts. It is found mostly in the spinal vertebræ, in the extremities of the long bones, and in the short bones of the wrist and ankle. The bone becomes disorganized, crumbles, and comes away in particles. Caries is believed to be generally the result of syphilis, tubercle, or of the not perfectly defined condition known as 'struma.' First there is swelling of the soft parts over the bone, with pain and tenderness; and later the suppuration which has been going on in the bone channels a way to the surface; a fistula is thus formed, from which comes a purulent discharge. In 'dry' caries, which is, sometimes at least, of tuberculous origin, there is no suppuration, discharge, or swelling, but there are pain and, if it be near a joint, stiffness, with possibly an atrophy of the surrounding soft parts. Radiography is used to show the condition of the bones where no sinus has been formed.

Treatment.—The general health must be improved as far as possible by tonics, fresh air, and good feeding. Phosphate of lime has lately been strongly recommended for internal use, to help in healthy bone-formation. Surgical treatment consists in removing the diseased bone, or its diseased part, and scraping the cavity, with antiseptic precautions. See NECROSIS.

Carigara, pueblo, Leyte I., Philippines, 21 m. W.N.W. of Tacloban. It is an important hemp port. Pop. 17,000.

Carignan, tn., Ardennes, France, 12 m. S.E. of Sedan, where the last stand of the French army was made before falling back on Sedan (1870). Pop. 2,200.

Carignano, tn., prov. Turin, Italy, 12 m. S. of Turin, on the Po. Silk industries are carried on; it is noted for citron peel. Pop. 7,000.

Carijos, a S. Brazilian nation who at the discovery were found in possession of the seaboard between the Patos Lagoon and Cananea Bay. They were a quiet, harmless people, who gave a friendly reception to the first Portuguese settlers. But having been attacked by some of the Paolistas from São Vicente in 1585, they killed the whole party in self-defence. The result was a war of extermination, from which only a few escaped to the backwoods.

Carillon. See BELL.

Carimata, group of islands (over 100 in number) in E. Indian Archipelago, lying off the W. coast of Borneo. The chief town is Palembang, on Grand Carimata. The area of the group is 58 sq. m., and the industries are iron-mining and fishing. Pop. 500.

Carinaria, a genus of heteropod molluscs whose members are characterized by their beautiful glassy shells. None of the species are British; but *C. Lamarcki* occurs in the Mediterranean, and other larger forms in tropical seas. The shells were formerly greatly prized on account of their rarity and delicacy.

Carinatæ, a division of birds which includes all living forms except the few running birds or Ratitæ—*e.g.* ostrich, emu, cassowary, etc. The name refers to the carina, or keel, on the breastbone; but there are a few carinate birds—*e.g.* the extinct dodo—in which this keel is virtually absent. Though other distinctions between Ratitæ and Carinatæ also exist, few are without exceptions, and it is rather the sum of several characters that is relied on than any one invariable point. See BIRD.

Carini (anc. *Hyccara*), tn., prov. Palermo, Sicily, 17 m. by rail W. of Palermo, has a mediæval Gothic castle. Pop. (1901) 13,887.

Carinthia (Ger. *Kärnthen*), crown land and titular duchy of Austria; has Tyrol on the W., and Styria on the E. Markedly mountainous, with ranges and groups of the E. Alps near the north boundary—Gross-Glockner, Königsstuhl, and other continuators of the Styrian Alps ranging from 8,150 to 12,450 ft.—and the Karawanken Alps (8,400 ft.) and Carnic Alps (7,000–9,000 ft.) along the south boundary. The province is drained from W. to E. (104 m.) by the Drave. Various passes, such as the Predil, the Loibl, the Seeberg, the Arlscharte, lead across these ranges. There are several beautiful Alpine lakes in Carinthia, and mineral springs in the vicinity of Villach. The climate in the mountainous parts is severe. At Klagenfurt, towards the E., however, the annual mean temp. is 45·5° F. Only 9 per cent. of the surface is unproductive, half the remainder being covered with forests, and the rest affording meadow and grazing land. Four-fifths of the cultivated area is in the hands of small owners and holders. Mining is active, excellent iron, lead, zinc, and lignite being worked. The most important manufactures are connected with these metals. In addition, there are industries of wood pulp, cement, cloth, leather, and saw-milling. Carinthia is coming into favour as a tourist resort. Klagenfurt and Villach are the chief commercial centres, the former being the capital. Area, 4,000 sq. m. Pop. 370,000. Two-thirds of the people are of German race, most of the remainder being Slavonic. Only 5 per cent. are Protestants, 95 per cent. being Roman Catholics. At the end of the 16th century the proportions were almost exactly reversed. The province is represented in the Austrian Reichsrath by ten delegates. Anciently part of Noricum, Carinthia was colonized by Slavs in the 6th and 7th centuries. In the 8th century it was compelled to acknowledge the sway of the dukes of Bavaria, but in 976 was created a separate duchy of the empire. Since 1335 it has been directly subject to the Austrian crown, except for the few years 1809–14.

Carinus, MARCUS AURELIUS, emperor of Rome (283–285 A.D.), the elder of the two sons of the Emperor Carus. Soon after his accession the troops in Asia put forward Diocletian as a rival. Carinus won a decisive victory near Margus, in Mœsia, but immediately afterwards was murdered by some of his officers.

Caripuna, a term applied by different writers at different times to various groups of S. American aborigines, who were all probably of Carib stock. Those of the Madeira are addicted to earth-eating.

Carisbrooke, par. and vil. in Isle of Wight, England, 1 m. S.W. of Newport; was at one time capital of the island. In its castle Charles I. was imprisoned (1647–

48). His daughter Elizabeth died here in 1650. Within the castle is a remarkable well, 200 ft. deep (dating from 1150). The castle dates back to a time before the Roman invasion, but the outworks were erected when the advent of the Spanish Armada was imminent. Pop. 4,000.

Carissa, a genus of white-flowered tropical shrubs belonging to the natural order Apocynaceæ, and bearing berry-like fruits. They are easily grown in greenhouses in a peaty soil, and may be propagated by means of cuttings. Among the species are the evergreen Christ's thorn, *C. Carandas,* which bears red fruits, used both for pickling and for dessert; the Natal plum, *C. grandiflora;* and the S. African *C. arduina,* which bears red fruits not unlike raspberries in flavour.

Carissimi, GIACOMO (1604-74), Italian musical composer, born at Marino, near Rome. In 1620 he was appointed conductor of the choir at Assisi, and in 1628 removed to Rome, where he had obtained a similar appointment at St. Apollinaris. Carissimi's most important work was done in the direction of developing and perfecting the sacred cantata and recitative, and in improving instrumental accompaniments. His principal oratorios—*Jephta* (considered to be his best), *Judicium Salomonis, Baltazar,* and *Jonas*—have been published by Chrysander in the second volume of the *Denkmäler der Tonkunst* (1882). Besides these he wrote twenty-two cantatas.

Carit Etlar, the pen-name of the Danish novelist and dramatist, JOHAN KARL CHRISTIAN BROSBÖLL (1816-1900), who was born at Fredericia. He was one of the most popular writers of Denmark in the 19th century, excelling especially in historical romances and tales of Jutland life—*e.g. Gjöngehövdingen* (1853), *Dronningens Vagtmester* (185 *Herverts Krönike* (1863), *Broge Selskab* (1869), and *Wiben Peter* (1875). He also wrote plays, which in point of artistic merit cannot rank with his novels. His *Collected Works* were published in 5 vols. (1873-9; new ed. 1888).

Carlaverock, par., Dumfriesshire, Scotland, on the coast, m. S.E. of Dumfries. In the parish churchyard is the grave of Richard Paterson, the original of Scott's Old Mortality. The castle (Scott's Ellangowan) was built about 1220, and was captured by Edward I. in 1300. Pop. 800.

Carlén, EMILIA (1807-92), Swedish novelist, better known as FLYGARE-CARLÉN, who was born at Strömstad, and whose many works portray popular life and customs, especially on the Kattegat coast, and are marked by a great sense of natural beauty and a very vivid style. Many of her novels have been translated into English, the most notable being *The Professor and his Favourites* (1840; Eng. trans. 1843); *The Rose of Tistelön* (1842; Eng. trans. 1844); *The Hermit* (1846: Eng. trans. 1853); *Gustavus Lindorm* (1839; Eng. trans. 1853); *En Natt vid Bullan Sjön* (1847); and, probably her best, *Ett Köpmanshus i Skärgården* (1859). Her *Samlade Noveller* appeared in 31 vols. (1869-75). There is a *Biography* of her in Swedish by Schöldström (1888).—Her daughter, Rosa (1836-83), was also a successful novelist, her most popular book being *Bryllup på Bränna* (1863).

Carlentini, tn., Sicily, 20 m. N.W. of Syracuse; devastated by an earthquake in 1693. Pop. 8,000.

Carleton, WILL (1845), born in Michigan, American poet, has written poems of American pioneer life well adapted for recitation—*Farm Ballads* (1873), *Farm Legends* (1875), *Farm Festivals*

(1881), *City Ballads* (1885), *City Festivals* (1889), *Drifted In* (1907). He is now the editor of *Everywhere*, Brooklyn.

Carleton, WILLIAM (1794–1869), Irish novelist, born at Prillisk, Co. Tyrone. He published, in 1830, *Traits and Stories of the Irish Peasantry* (2nd series, 1833); *Tales of Ireland* appeared in 1834, and in 1839 *Fardorougha the Miser*, a remarkable work which was dramatized, followed by the *Misfortunes of Barney Branagan* (1841), *Valentine M'Clutchy* (1845), and others. He ranks as one of the most realistically powerful of Irish writers.

Carli, GIOVANNI RINALDO, COUNT (1720–95), Italian antiquary, born at Capo d'Istria; became professor of astronomy and navigation at Padua; and was later appointed president of the new council of finance and public instruction at Milan (1771), where he induced Joseph II. to abolish the Inquisition. His works include *Della Moneta*, etc. (3 vols. 1754–60), *Antichità Italiche* (5 vols. 1788–91), and *L'Uomo Libero* (1772), against Rousseau's social theories.

Carlile, RICHARD (1790–1843), English freethinker, born at Ashburton, Devon; in 1817 took to publishing in London; reprinted (1817) the suppressed *Parodies* of William Hone, and wrote other parodies in imitation thereof, for which he suffered eighteen weeks' imprisonment. In 1818, for issuing the *Works* of Thomas Paine, he was sentenced to a fine of £1,500, with three years' imprisonment for other offences. He spent in all over nine years of his life in jail. He issued *The Republican* (1819–26). See Holyoake's *Life of Carlile* (1848).

Carlile, REV. WILSON (1847). In 1882 he founded the Church Army in the slums of Westminster, and in 1890 its social system. See Rowan's *Wilson Carlile and the Church Army* (1905), and CHURCH ARMY.

Carline Thistle. The Carline thistle (*Carlina vulgaris*) of the dry heath-lands of Britain is a biennial plant, bearing compound purple flowers in summer, all the florets of which are tubular and five-cleft. The outer scales of the involucre are spiny or thorny, and the inner ones glossy and yellow, and arranged in rays. The pappus is feathery. In moist weather the inner scales of the involucre rise over the flower-head to protect it; hence the use of the plant as a weather guide.

Carling, HON. SIR JOHN (1828), Canadian politician, born in London, Ontario, was a brewer in early life. He represented London in the General Assembly from 1857 till the confederation of the Dominion, and has held the posts of receiver-general of Canada (1862), minister of agriculture and public works for Ontario (1867–71), postmaster-general (1882–5), minister of agriculture (1885–92). From 1892 till 1895 he was a cabinet minister without a portfolio, and in 1896 became a senator.

Carlingford. (1.) Parish, seapt. tn., and mrkt. tn. on S. side of Carlingford Lough, Co. Louth, Ireland, 10 m. N.E. of Dundalk. It is a popular seaside resort, and its fisheries, especially of oysters, are valuable. There are ruins of King John's castle and of a monastery of the 14th century. Pop. of par. 6,000; of tn. 606. (2.) C. LOUGH, an inlet, 10 m. long by 2 m. wide, between Cos. Down and Louth, 9 m. N.E. of Dundalk. The Newry Canal connects it with Lough Neagh. The entrance is rocky and shoaly, and there are five lighthouses.

Carlisle. (1.) City and munic. and parl. bor. in Cumberland, England, on the Eden, railway centre, 300 m. N.N.W. of London. Its port is Silloth, 21 m. distant. The cathedral was founded as a priory church in 1092, and was converted into a cathedral in

1133. The east window is remarkably fine. There are several interesting monuments, including one of Archdeacon Paley (d. 1805). The castle, situated on a promontory overlooking the Eden, contains a massive Norman keep, with double gates and portcullis. The citadel, at the S.E. entrance to the city, consists of two large drum towers, rebuilt in 1810, and is now used for the courts of assize and jail. Other public buildings are the town hall and the guildhall (both ancient), county infirmary, general and fever hospitals, museum, art gallery, library, and science and art schools (installed in a 17th-century mansion and adjacent new buildings), and city cross (1682). Industries include cotton manufactures, dye works and biscuit bakeries, ironfounding and brewing, and there are large railway workshops.

Carlisle was a Roman station near the Roman wall. The place was destroyed by the Danes (875). William Rufus built the castle and commenced the fortifications (1092), but the latter were not completed till the time of David, king of Scotland who held the castle from 1135 to 1153. After the accession of Henry III. it was definitely included in England. Edward I. here held a Parliament, and assembled his forces for the invasion of Scotland (1298). During the civil war it was occupied alternately by the Royalists and the Parliamentarians, the latter gaining possession after a rigorous siege (1647). It also shared in the troubles of 1745, when several persons were hanged on Gallows Hill. Pop. 52,000. See Creighton's *Carlisle* (1889); Ferguson's *Carlisle Diocesan Hist.* (1899).

(2.) Borough, cap. of Cumberland co., Pennsylvania, U.S.A., 17 m. W.S.W. of Harrisburg. It contains Dickinson Methodist College, founded in 1783, and an Indian training school attended by 900 scholars. On July 1, 1863, the town was attacked by the Confederates. There are railway car, silk, and shoe manufactures. Pop. 10,000.

Carlisle, FREDERICK HOWARD, FIFTH EARL OF (1748–1825), English politician; was president of the Board of Trade (1779), and viceroy of Ireland (1780–2). He wrote a tragedy, *The Father's Revenge* (1783), which was warmly praised by Johnson and Walpole. He published *Tragedies and Poems* (1801). He was guardian in Chancery to Lord Byron, and was attacked in the latter's *English Bards and Scotch Reviewers.*

Carlisle, GEORGE WILLIAM FREDERICK HOWARD, SEVENTH EARL OF (1802–64), English politician, born in London; was a supporter of the Reform Bill, and represented (1831–41) the West Riding in the first reformed Parliament. He became chief secretary for Ireland (1835–41), and passed the Irish Tithe, Irish Municipal Reform, and Poor Law Bills. In 1847 he was again returned, along with Cobden, for the West Riding; but in 1848 he succeeded to the earldom, and took his seat in the House of Lords (1849). He was twice appointed lord-lieutenant of Ireland (1855–8 and 1859–64), and devoted himself during his terms of office to the improvement of Irish agriculture and manufactures. A collection of his poems was published in 1869.

Carlists, the supporters of the Legitimist pretender to the throne of Spain. In 1713, Philip V., the first of the Bourbon dynasty, settled the royal succession by a statute in favour of male heirs. His successor, Ferdinand VII., in 1830, was persuaded by his fourth wife, Christina of Naples, to issue a decree abrogating this statute. A daughter was born the same year, who thus became the heir to the throne in place of the king's brother, Don Carlos. Don Carlos had many ardent supporters, especially in the Basque provinces, and on Ferdinand's death (1833) he quickly secured all the north of Spain by force of arms, and his success was only cut short when Christina obtained the aid of Britain and France. Don Carlos was succeeded in his pretensions by his son, Don Carlos, in 1845; the latter, in 1861, by his brother, Don Juan; and the last named, in 1868, by his son, Don Carlos, the late claimant, who resided in Venice. Don Carlos *tertius* was accepted by the extreme French Legitimists as their recognized head. In 1867 he married Princess Margaret of Bourbon, daughter of Duke Carlos III. of Parma, and in 1894 Marie Berthe, Princess de Rohan. He died in 1909. His son, Don Jaime, the present claimant, was born in 1870. After the first Carlist war many risings took place, but the most formidable occurred in 1873, when the abdication of King Amadeo and the proclamation of a republic afforded an opportunity. This, the second Carlist war, was only suppressed in 1876, after which the Basque provinces were deprived of the last of their autonomous privileges. The Carlist party has now little hold upon the country. See SPAIN, and *Cambridge Modern History*, vol. x. *passim* (1907).

Carloforte, tn., Italy, on the little island of San Pietro, off the S.W. coast of Sardinia, 55 m. S.W. of Cagliari. It is a centre of the Sardinian tunny fishery, and, until its discontinuance in 1899, was also a centre of the Italian coral-fishing. Salt is made. Pop. 7,500.

Carlos I. (1863–1908), king of Portugal, the son of Luiz I., was born at Lisbon, and ascended the throne in 1889. During a time of financial difficulty he and his family generously surrendered a fifth of their income. In 1893 an attempt was made on his life, and in 1908 he and the Crown Prince Luiz were assassinated while driving in the capital.

Carlos, DON (1545–68), the son of Philip II. of Spain, was of vicious character and feeble intellect, and was deprived by his father of the right of succession to the crown in favour of the Archduke Rudolf. His betrothal to Elizabeth of Valois, daughter of Henry II. of France, was abruptly annulled by his father intervening and himself marrying Elizabeth. In 1567 he was accused, on a statement made under confession, of plotting his father's murder, though it is more probable that the intended victim, who had not been named, was the Duke of Alva. The death of Don Carlos in the following year was attributed by William of Orange to his father's orders. The true cause is uncertain, but the version of the story given in Schiller's famous tragedy *Don Carlos* must be rejected as fiction. In addition to Schiller, Chénier, Alfieri, and Otway have all made him the subject of dramas. See Gachard's *Don Carlos et Philippe II.* (1863).

Carlovingians, more correctly CAROLINGS, the second reigning dynasty of France. The family dates from ARNULPH, bishop of Metz, in the 7th century. Arnulph's grandson, PEPIN, or PIPPIN, Duke of Austrasia, became mayor of the palace under the Merovingian kings. On Pepin's death (714) CHARLES MARTEL (d. 741), natural son of Pepin, usurped the position, and by the victory of Poitiers (732) over the Saracens, which saved France from the fate of Spain, and by wise administration, strengthened his position so much that he became actual ruler, though content with the title of Duke of France. Charles's son, Pepin (le Bref), in league with Pope Zachary, deposed Childeric, last of the Merovingians, and was crowned in 752. He was succeeded in 768 by his son, Charlemagne, who widely extended the empire. On the death of Charlemagne's son, Louis (814–840), the empire was divided among his three sons—viz. Louis (Germany), Lothaire (Italy, Lorraine, and Burgundy), and Charles II., the Bald (France). Charles and his successors, Louis II. (877–879), Louis III. (879–882), and Carloman, were weak rulers, and the empire was reunited under Charles III., the Fat (884–887), who was deposed by Odo, Count of Paris. Charles the Simple (898–923), son of Louis II., succeeded Odo, but was deposed by the nobles. Louis IV. (936–954), son of Charles, Lothaire (954–986), and Louis V. (d. 987) were the last members of the family to reign, and they were succeeded by the Capets. See Warnköning and Gerard's *Hist. des Carolingiens* (2 vols. 1862); and for the copious literature of the period, Monod's *Bibliographie de l'Histoire de France* (1888).

Carlovitz. See Karlocza.

Carlow. (1.) Inland co., prov. of Leinster, Ireland. The Leinster (2,604 ft.) and other mountains border it on the S.E., but the greater part of the surface is level or undulating. The principal rivers are the Barrow and the Slaney. The soil is generally fertile, and agriculture is the chief industry. The county returns one member to Parliament. Area, 346 sq. m. Pop. 38,000. (2.) Munic. bor., chief tn. of above county, on the Barrow, 45 m. S.W. of Dublin. St. Patrick's College was founded in 1795. Slight vestiges remain of the ancient castle, which dates from 1180. Pop. 6,500.

Carloway, Doon of, a ruined specimen of the ancient round tower or 'broch' situated at Carloway, 15 m. W.N.W. of Stornoway, on the island of Lewis, in the Outer Hebrides, Scotland.

Carlsbad, Carlsburg, Carlsruhe, etc. See Karlsbad, Karlsburg, etc.

Carlson, Karl Fredrik Ernst (1854), Swedish historian, was born at Stockholm, and became professor of history and geography at the Gothenburg High School in 1890–3, before and after that teaching history and geography in the same city, which he represented in the Second Chamber (1897–1905). In the latter year he was appointed director of the national teachers' board. Chief works: *Karl XII.'s Vistelse i Sachsen, 1706–7* (1879), *Sverige og Preussen, 1701–9* (1880), *Sverige og Kongressen i Wien, 1814–15* (1883), and other papers.

Carlson, Fredrik Ferdinand (1811–87), Swedish historian and statesman, born in Upland, was successively royal tutor, professor of history at Upsala University (1849), and minister of public worship (1863–70, 1875–8). His energies were chiefly directed to the reorganization of education. As a historian he was one of the earliest to adopt modern critical methods, and his work is remarkable for lucidity and dignity of style, and for impartiality of treatment. Principal works: *Sveriges Historia under Konungarne af Pfalziska Huset* (7 vols. 1855–85), *Karl XII.'s Tåg mot Ryssland* (1885), and *Minne af G. O. Stenbock* (1873).

Carlstadt, Andreas Rudolf Bodenstein af (1483–1541), German theologian, born at Karlstadt in Franconia; studied theology at Wittenberg, where he became pastor (1508) and professor (1515). He was a reformer of the most extreme stamp. Compelled to fly (1528) from Saxony during the

Peasants' war, he found shelter in Switzerland, being appointed (1534) professor of theology at Basel.

Carlton, par. and tn., England, co. of and 3 m. N.E. of Nottingham. Manufactures hosiery and lace. Pop. 10,000.

Carlton Club, a London political club founded by the Duke of Wellington in 1832. The present edifice at 94 Pall Mall was designed by Sir Robert Smirke, and is an adaptation of Sansovino's Library of St. Mark at Venice. The number of members of this exclusive Conservative club is limited to 1,800, the entrance fee is £40, and the annual subscription 10 and 11 guineas.

Carluke, par. and tn., Lanarkshire, Scotland, 19 m. S.E. of Glasgow by rail. It is the centre of an important fruit-growing district, and manufactures boots and shoes. In the neighbourhood are coal and iron mines and engineering works. Pop. of par. 9,000; of tn. 4,800.

Carlyle, ALEXANDER (1722–1805), Scottish minister, born at Prestonpans, Haddingtonshire; was minister of Inveresk from 1748 till his death. Among his intimates he numbered John Home, author of *Douglas*, Adam Smith, and David Hume. Carlyle is described by Sir Walter Scott as 'the grandest demigod I ever saw,' and was known by the name of 'Jupiter Carlyle.' Smollett refers to him in *Humphrey Clinker*. See his *Autobiography*, edited by Hill Burton (1860; new ed. with additional notes, 1910); also Mathieson's *Awakening of Scotland* (1911).

Carlyle, JANE BAILLIE WELSH (1801-66), wife of Thomas Carlyle, was born at Haddington (July 14), and claimed descent from John Knox and Sir William Wallace. Her earliest teacher was Edward Irving, by whom she was introduced to Carlyle in 1821; and the friendship with the new acquaintance ripened gradually into affection. The marriage took place on Oct. 17, 1826. The Carlyles first resided at Comely Bank, Edinburgh, removing in 1829 to Craigenputtock, and in 1834 to Chelsea. (See CARLYLE, THOMAS.) Much has been made of the unhappiness of her married life. Part of it was due to jealousy of Lady Ashburton's friendship with her husband (from about 1847 to 1857). But it is difficult to see how two people of such exaggerated nervous sensibility could ever have been happy in the ordinary sense; and the later letters of the two show the warmest affection on both sides. From about 1842 (the year of her mother's death) Mrs. Carlyle was really a perpetual invalid, being tortured with unceasing attacks of neuralgia. In 1863 she had a bad fall in saving herself from being run over by a cab in the street, and was seriously injured. She rallied, however, and the pain of her disease even lessened; but on April 21, 1866, she was found dead in her carriage as she was driving in Hyde Park. Mrs. Carlyle wrote some poetry of more than ordinary merit, and her posthumously-published letters mark her out as among the first letter-writers in the language. See *Letters and Memorials of Jane Welsh Carlyle*, ed. by J. A. Froude (1883); *Early Letters of Jane Welsh Carlyle*, ed. by D. G. Ritchie (1889); *Life of Jane Welsh Carlyle*, by Mrs. Alexander Ireland (1891). The recently re-opened Carlyle controversy may be sufficiently studied in the *New Letters and Memorials of Jane Welsh Carlyle*, ed. by Alexander Carlyle, with an introduction by Sir James Crichton-Browne (1903); *My Relations with Carlyle*, by J. A. Froude (1903); and *Love Letters of Thomas Carlyle and Jane Welsh* (1909).

Carlyle, JOHN AITKEN (1801–79), younger brother of Thomas Carlyle, was born at Ecclefechan, Dumfriesshire, Scotland. Failing to build up a medical practice in London, he became travelling physician to the Countess of Clare (1831), subsequently occupying a similar post with the Duke of Buccleuch (1838–43). He thereafter resided at Chelsea for several years with his brother, executing an admirable translation of Dante's *Divine Comedy*, published in 1849 (2nd ed. 1867). In 1861 he edited Dr. Irving's *Hist. of Scottish Poetry*, and gave, in 1878, £600 for two medical bursaries in Edinburgh University. He died at Dumfries. See Carlyle's *Reminiscences* (1881), and *Letters, etc., of Jane Welsh Carlyle* (1883).

Carlyle, THOMAS (1795–1881), Scottish historian and philosopher, was born (Dec. 4) at Ecclefechan, Dumfriesshire. His father, James Carlyle (1757–1832), a stonemason, was twice married, and Thomas was the first-born of his second wife, Janet Aitken (1769–1853). From Annan Academy he proceeded to Edinburgh University, where he matriculated in November 1809. Carlyle had been intended for the ministry of the Church of Scotland, but after much hesitation he finally abandoned the purpose in March 1817. Previous to this he had become (1814) mathematical master at Annan Academy, and had removed in 1816 to Kirkcaldy. His opponent here was Edward Irving, but the intercourse between the two was, thanks mainly to Irving's frankness, of the most cordial description; and through him Carlyle made the acquaintance of Margaret Gordon (the Blumine of *Sartor Resartus*), who afterwards became Lady Bannerman. He left Kirkcaldy in November 1818, and removed to Edinburgh, where he subsisted by private teaching, translating scientific articles, and doing biographical and geographical work for Brewster's *Edinburgh Encyclopædia*. Life was made miserable to him by his lifelong foe dyspepsia, and also by doubt in religious matters. From this latter trouble he was relieved by his sudden 'spiritual new birth' (the 'Baphometic Fire-baptism' of *Sartor*), which, he tells us, happened in June 1821, as he was passing down Leith Walk; and an engagement as tutor to the sons of Mr. Buller, a retired Anglo-Indian, relieved him from pecuniary cares.

In 1824 he published a translation of Goethe's *Wilhelm Meister*; and this, with his *Life of Schiller*, which first appeared (1823-4) in the *London Magazine*, and was published in book form in 1825, led to his long correspondence with Goethe. His tutorship with the Bullers was resigned in 1824 during a visit to London. In 1826 he married Jane Baillie Welsh (see CARLYLE, JANE BAILLIE WELSH), and settled down at 21 Comely Bank, Edinburgh. Next year he published four volumes of translations entitled *German Romance;* and he began to write for the *Edinburgh Review*, having obtained an introduction to Jeffrey through Barry Cornwall. His connection with the *Edinburgh* led to the production of that great series of essays beginning with the one on Richter—essays more marked by psychological than by critical insight. At the same time Carlyle also wrote in the newly-established *Foreign Review*, and a connection with *Fraser's Magazine* followed in 1830. He now formed a new plan of removing to his wife's property at Craigenputtock, which his brother Alexander was to farm; and this plan was carried out in 1829, much to Mrs Carlyle's discomfort. In the solitude of Craigenputtock Carlyle first found himself. Here his most characteristic work, *Sartor Resartus*, was written, and the *French Revolution* planned. A *History of German Literature* was also embarked on, but never completed. But in 1830, his brother's farming of Craigenputtock having proved a failure, the little household was in sore financial straits. *Sartor* was now at length (1833–34) appearing in *Fraser's*, and in June 1834 the Carlyle household moved to London, establishing themselves at No. 5 (later 24) Cheyne Row, Chelsea. By May 1836 the first volume of the *French Revolution* was complete in MS.; but having been lent to John Stuart Mill it was burnt by his housemaid. However, the volume was recreated by September; and the complete work appeared in 1837, being received with enthusiasm. On the suggestion of Miss Martineau, Carlyle delivered a course of lectures on German Literature at Willis's Rooms (May 1837), followed by courses on European Culture, Revolutions of Modern Europe, and Heroes and Hero-worship (1838–40). *Sartor* appeared in book form in America (1836), under the protection of Emerson (who had visited Carlyle at Craigenputtock), and now reappeared in England (1838). New works also were produced in fairly rapid succession. *Critical and Miscellaneous Essays* and the pamphlet *Chartism* came out in 1839, followed by the printed lectures on *Hero-worship* (1841), *Past and Present* (1843), *The Letters and Speeches of Oliver Cromwell* (1845; new ed. by S. C. Lomas, 1904, 3 vols.), *Latter-day Pamphlets* (1850), and the life of his friend *John Sterling* (1851), a work which contains much of his most vivid descriptions of men and scenes. His last great work, the *History of Frederick the Great*, was begun in 1852, and occupied him for thirteen years, during which he made two visits to Germany (1852 and 1858). It appeared in instalments of two volumes in 1858, 1862, and 1865. One of the most regrettable incidents of his life was the writing in 1863 of the paper entitled *The American Iliad in a Nutshell*, a violent attack on the anti-slavery side in the American civil war; and the bequest to Harvard University after his death of the books used in the composition of *Frederick* and *Cromwell* was undoubtedly designed as a reparation for the wrong done on this occasion. On the 21st of April 1866 his wife died; and his whole after-life was saddened by the discovery, from her letters and journals, how unhappy her life had been. He visited Mentone in 1867, and began the writing of his *Reminiscences* (published by his literary executor, Froude, in 1881). The franchise legislation of 1867 produced his *Shooting Niagara*, which appeared (August 1867) in *Macmillan's Magazine*. His latest works of any length, *Early Kings of Norway* and *Portraits of John Knox*, appeared in *Fraser's Magazine* in 1875. He was buried at Ecclefechan.

Carlyle was in perpetual opposition to the main tendencies of his own age. He preached the benefits of benevolent despotism to a generation whose main political work was the development of democratic principles; and to an age of easy optimism, bred of unparalleled commercial activity, he proclaimed the doctrine that wealth is not prosperity, and only brings new dangers instead of removing the old. This perpetual opposition, which made him such a healthy stimulus to his first readers, however, is apt to militate against him with their successors. The defects of his method—his habitual exaggeration, his exaltation of the individual at the expense of the people, and the great preponderance of destructive criticism in his works—rather repel readers of to-day. But his outstanding principles, his doctrine of the sacredness of work and the sacredness of truth, have already passed into the current thought of our time. As a literary artist, as a painter of individuals and individual scenes in biography and history, he is unrivalled among the prose writers of the world. The style of his earliest works is little different from that of ordinary compositions of the preceding generation; but as his genius developed he forged for himself a new style, unfettered by any of the ordinary conventions, and, for the most part, running counter to them. In Carlyle's hands it became the most perfect example literature offers of the unconscious self-revelation of a great personality.

See J. A. Froude's *Thomas Carlyle: a History of the First Forty Years of his Life* (1882), and his *Thomas Carlyle: a History of his Life in London* (1884); also *Carlyle's Reminiscences*, edited by Froude (1881) and by Professor Norton (1887). Norton has also edited *The Correspondence of Thomas Carlyle and Ralph Waldo Emerson* (1883; revised edition, 1886), *Early Letters of Thomas Carlyle* (1886), and *Correspondence between Goethe and Carlyle* (1887). See also *Love Letters of Thomas Carlyle and Jane Welsh* (1909). Of other books dealing with Carlyle's life, we may mention Moncure D. Conway's *Thomas Carlyle* (1881); R. H. Shepherd's *Memoirs of the Life and Writings of Thomas Carlyle* (1881), and *The Bibliography of Carlyle* (1881); W. H. Wyllie's *Thomas Carlyle, the Man and his Books* (1881); Professor Masson's *Carlyle Personally and in his Works* (1885); H. Larkin's *Carlyle and the Open Secret of his Life* (1886); and *Lives* by R. Garnett (1887), Paxton Hood (1875), and H. J. Nicoll (new ed. 1885). Interesting critical notices may also be found in Morley's *Critical Miscellanies*, vol. i.; W. Minto's *Manual of English Prose Literature* (3rd ed. 1886); *The Life and Writings of Joseph Mazzini* (1864–70; see vol. iv.); Matthew Arnold's *Discourses in America* (new ed. 1896); and Augustine Birrell's *Obiter Dicta* (new ed. 1896).

Carlyle, THOMAS (1803-55), the 'apostle of North Germany,' born at King's Grange, Kirkcudbrightshire, Scotland. In 1835 he was elected ninth apostle of the Catholic Apostolic Church, and travelled much in Prussia and North Germany, which had been allotted him as a sphere of labour. He died at Albury, Surrey. His chief work is *The Moral Phenomena of Germany* (1845).

Carmagnola, tn., prov. Turin, Italy, 18 m. by rail S. of Turin; has silk industries. Pop. (comm.) 12,000.

Carmagnola, FRANCESCO DI BARTOLOMMEO BUSSONE (*c.* 1390-1432), Italian condottiere, was the son of a peasant of Carmagnola (Piedmont), whence his surname. He entered in 1412 the service of Visconti, Duke of Milan, and not only established him in Milan, but also conquered Bergamo, Brescia, Parma, Novara, Piacenza, Genoa, etc. Losing the confidence of his prince through court intrigues, he transferred his services (1425) to Venice, and was entrusted with the command of an expedition against the Duke of Milan. Having vanquished successively the two illustrious condottieri, Niccolo Piccinino and Carlo Malatesta (the latter at Maclodio in 1427), and having conquered (1428) Bergamo and a part of Cremona, he forced Visconti to make an unfavourable peace. Being suspected of treachery by the Venetian senate, he was enticed into the Doge's palace, tortured, and executed in the Piazza, in 1432. The fate of Carmagnola, a typical mercenary leader of the 15th century, forms the subject of several dramas and novels, the best being Manzoni's tragedy *Il Conte di Carmagnola* (1820). See Daru's *Histoire de Venise* (1821); Battistella's *Il Conte Carmagnola* (1889).

Carmagnole. (1.) A vest adorned with several rows of buttons, popular in the south of France, and much worn by ardent revolutionists during the troublous times. (2.) A revolutionary song and dance which was the rage in Paris in 1792 and following years. Each verse ended with this refrain—

> 'Dansons la Carmagnole, vive le son,
> vive le son,—
> Dansons la Carmagnole, vive le son
> du canon!'

Carman, WILLIAM BLISS (1861), Canadian poet, born at Fredericton, New Brunswick, Canada. A journalist, he has published poems, including *Low Tide on Grand Pré* (1893), *Behind the Arras* (1895), *Ballads of Lost Haven* (1897), *By the Aurelian Wall* (1897), *The Green Book of the Bards* (1898), *The Vengeance of Noel Brassard* (1899), *Ballads and Lyrics* (1902), *Friendship of Art* (1905), *Song from a Northern Garden* (1905), and, with Richard Hovey, *Songs from Vagabondia* 3 vols. (1894–1900).

Carmania, the anc. name of the Persian prov. of KIRMAN.

Carmania, turbine steamer built for the Cunard Company, and launched Feb. 21, 1905, at Clydebank. She is 678 ft. long, has a gross tonnage of 19,524, and will accommodate 2,656 passengers. Her normal speed is twenty-one knots.

Carmarthen, co. tn. and bor. on the G.W.R., and on the river Towy, 8 m. from the sea, Carmarthenshire, Wales; has important fairs, and iron-founding, woollen manufacture, tanning, and rope-making industries. It has a theological college and a training college for teachers. Pop. 10,000.

Carmarthen Bay, on the S. coast of Carmarthenshire, Wales; has a coast line of 35 m., and is 10 m. wide.

Carmarthenshire, a maritime co. of S. Wales, on the Bristol Channel. Length, E. and W., on line of Llandilo, 44 m.; breadth, N. and S., from the Teifi to Burry Inlet, 32 m. The surface is generally hilly, intersected by narrow valleys, mountainous in the N. and on the Brecknockshire border, where it attains its greatest height in Carmarthen Van (2,596 ft.). The principal level tract is that of the Vale of Towy, extending inland for about 30 m. The soil is generally fertile in the valleys, more particularly those of the three chief rivers, the Towy, the Taf, and the Teifi, but throughout a great part of the hilly and mountainous districts it is poor. Sheep are reared in considerable numbers, besides cattle and horses. The mineral resources are important: coal takes the lead, with an annual output exceeding 1,000,000 tons; limestone and sandstone are extensively quarried; fire and other clays, slate, and lead are also worked. The county sends two members to the House of Commons. Chief town, Carmarthen. Near Llandilo was fought, about 1277, one of the last battles in which Edward I. destroyed the independence of Wales. In 1843 the inhabitants took a very active share in the Rebecca riots. The county is very rich in antiquarian remains. Area of county (ancient and admin.), 726 sq. m. Pop. 130,000.

Carmaux, tn., dep. Tarn, France, 9 m. by rail N. of Albi, is the centre of a coal-mining district. There are glass works and brick works. Pop. 11,000.

Carmel. (**1.**) A town of Palestine, in Judah, 10 m. S.E. of Hebron; now Kurmul. (**2.**) Mt. Carmel, a long hill (1,700 ft.) in N.W. Palestine, terminating in a bold headland (500 ft.) on the Mediterranean; now Jebel Mar Elyas (*i.e.* Elijah) or Kurmul. Mt. Carmel is immemorially famous as a place of great sacredness, and here Elijah triumphed over the priests of Baal (1 Kings 18: 17 *f.*); the Druses also have a sanctuary on the supposed site of his altar. In Roman times it was noted as the place of an oracle; and the Carmelite Friars, who derive their name from it, have a convent upon the promontory. At its foot is the prosperous German Templar colony of Haifa.

Carmelites, ORDER OF, or FRIARS OF OUR LADY OF MOUNT CARMEL, popularly known in former times as 'White Friars.' Although this order was practically founded in 1156 by an Italian monk and ex-crusader, Berthold, on Mt. Carmel, it was nevertheless believed by many that a succession of holy men had lived the anchoritic life there from the time of Elijah; and these conflicting beliefs culminated in the 17th century in a bitter controversy, eventually silenced by a papal edict of 1698. In 1238 the Carmelites quitted Mt. Carmel, and settled in various European countries. The ascetic rule prescribed to the 12th-century hermits of Mt. Carmel underwent much modification after the migration to Europe, notably under Innocent IV. (1247) and Eugenius IV. (1431), and the Carmelites became altered from hermits into mendicant friars. At the same time they flourished greatly, possessing no less than fifty-two houses in England alone at the date of the dissolution of the monasteries. A notable reform was effected in the order by St. Theresa at Avila in Spain in 1562-5. To-day England has seven Carmelite houses, and Ireland eight. There are many in Spain. For some centuries there have been friaries of Discalced (unshod) Carmelites, as distinguished from the Calced (shod) section.

Carmen. (**1.**) Seapt., Campeche State, Mexico, cap. of the dist., on isl. of Carmen, 100 m. N.E. of San Juan Bautista; exports dyewood. Pop. 6,000. (**2.**) Town, Colombia, 60 m. S.E. of Cartagena; noted for its tobacco. Pop. 9,000.

Carmen Sylva. See ELIZABETH, QUEEN OF ROUMANIA.

Carmichael, JAMES WILSON (1800-68), English marine painter, born at Newcastle-on-Tyne. He first exhibited in 1838, and for thirty years his works, chiefly on marine subjects, have been in evidence at the Royal Academy and elsewhere. He went to London in 1845, but retired to Scarborough in 1862, where he died. He is the author of two important volumes—*The Art of Marine Painting in Water Colours* (1859), and *The Art of Marine Painting in Oil Colours* (1864).

Carmignano, mrkt. tn., Tuscany, Italy, 13 m. N.W. of Florence; exports wines (Montalbiolo) and manufactures straw hats. Pop. comm. 12,000.

Carmina Burana, songs, mostly Latin, some also German, written in the 12th and 13th centuries by wandering students (Goliards). They are similar in form to the church hymns, and their subjects, though mostly of a religious character, sometimes turn also on profane and even immoral matters. A complete collection was edited by Schmeller (2nd ed. 1883). See J. Addington Symonds's *Wine, Women, and Song* (1884); and Hubatsch's *Die Lateinischen Vagantenlieder* *des Mittelalters* (1870). (Compare also MACARONIC VERSE.)

Carminatives, a class of remedies used in medicine for the relief of gastric and intestinal discomfort, caused by the collection of gases formed during imperfect digestion. Carminatives also stimulate the nervous system generally, and through it the heart and circulation. Alcohols, ethers, and aromatic oils (*e.g.* oils of peppermint, cloves, caraway) are examples of commoner carminatives.

Carmine, a beautiful red colouring substance obtained from the cochineal insect. The powdered cochineal is boiled with water (as pure as possible) in the proportion of four to eight gallons of water per pound of powder. To the solution is added alum, which precipitates the colouring matter as a lake. See COCHINEAL, DYEING.

Carmona, tn., prov. Seville, Spain, 18 m. N.E. of Seville. Very ancient Iberian, Roman, and Moorish town; has many Roman remains, with Moorish alcazar. Pop. 17,000.

Carnac, a Breton village, dep. of Morbihan, France, 17 m. S.E. of Lorient, on the Quiberon peninsula; famous for its megalithic remains. In 1837 James Miln (1818-81) of Woodhill, Forfarshire, began his systematic excavation of the mounds of Cæsar's Camp at Bossenno, the result of three years' work showing conclusively that this site had been occupied by the Romans. His excavations during 1877-80 around the celebrated 'alignments' at Kermario further proved that this district had been settled by a savage race antecedent to the Romans; and other indications pointed to a barbaric 'restoration' in post-Roman times. The alignments of Carnac consist of ten or eleven lines of menhirs (of which 1,991 remain) over one mile in length. At Erdeven, three miles from Carnac, there are alignments of 1,030 menhirs. There is also a Mont Saint Michel close to Carnac, which has been fully investigated by Miln. See Miln's *Excavations at Carnac* (1877 and 1881).

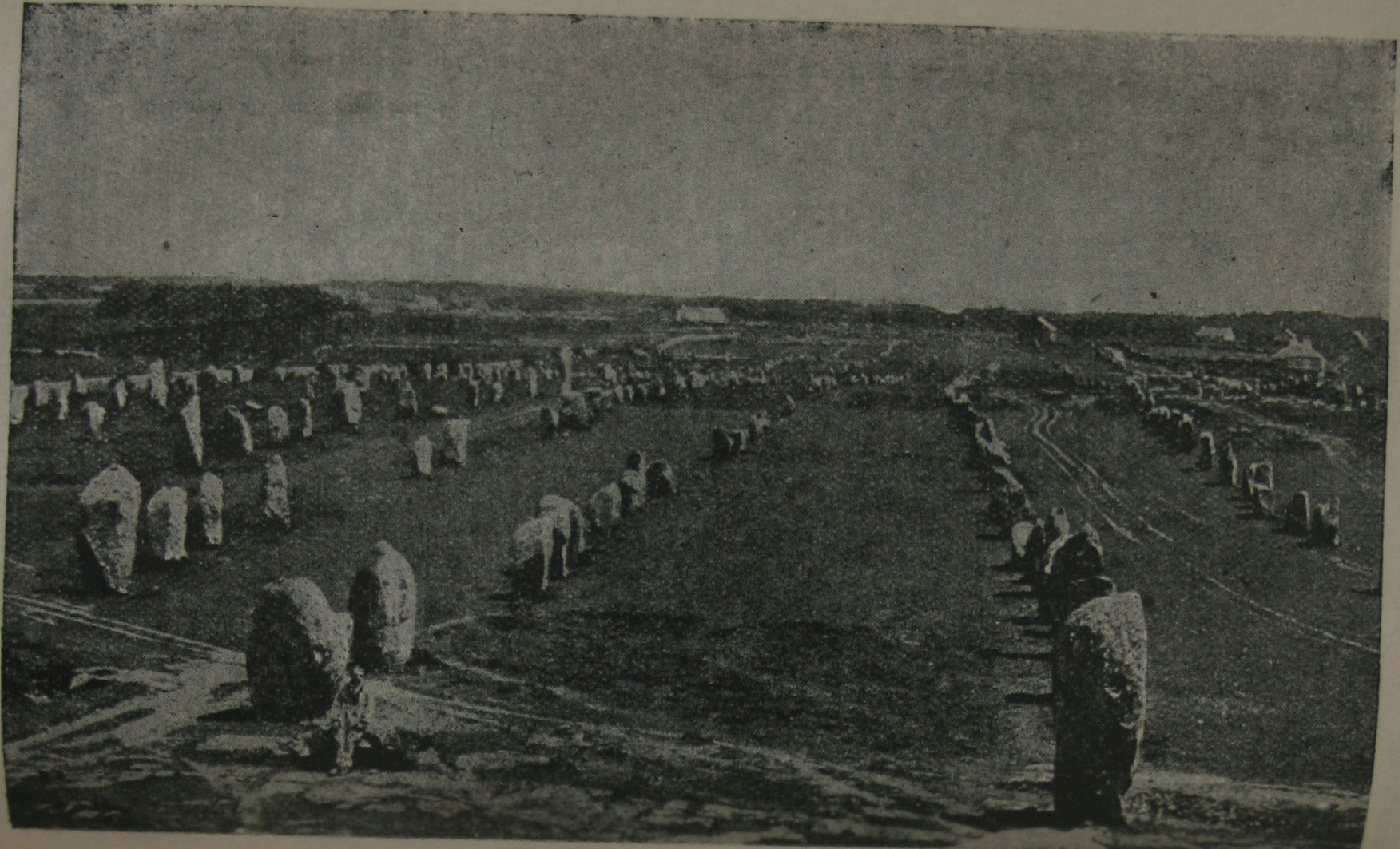
Carnahuba, a Brazilian palm, the under surface of the leaves of which yields a wax used in the manufacture of candles, etc. The timber is used for veneering and other purposes.

Carnallite ($KCl2MgCl_{2}6H_{2}O$) is a double chloride of potassium and magnesium, forming a valuable source of these metals, and found in considerable quantities at Stassfurt in Prussia.

Carnarvon, British armoured cruiser, 10,850 tons, 22¼ knots launched in 1903.

Carnarvon, co. tn., seapt., and parl. and munic. bor., on the Menai Strait, Carnarvonshire, N. Wales. Its industries are shipbuilding, fishing, tanning, and iron and brass founding; it exports slate and copper ore. Carnarvon was an old Roman station, and a residence of early Welsh princes; its castle and walls, still in repair, were built by Edward I., who granted its charter. Edward II., the first Prince of Wales, was born in the castle (April 25, 1284). Owen Glendower besieged it unsuccessfully (1402). Carnarvon, along with its neighbouring boroughs, sends one member to Parliament. Pop. 10,000.

Carnarvon, dist. and tn., N.W. prov. of Cape of Good Hope, S. Africa, 75 m. N.W. of Victoria West Road, from which there is a branch railway. Although a waterless district generally, it is famed for the vast reservoir known as Van Wyk's Vlee, used for irrigation. Centre of a sheep-rearing and corn-growing district. Pop. of dist. 6,000; of tn. 1,000.



The 'Alignments' at Carnac.

(Photo by Z. le Rouzic.)

Carnarvon, Henry Howard Molyneux Herbert, Fourth Earl of (1831-90), English politician, became colonial secretary in the Conservative cabinet of 1866, but resigned over the Reform Bill of 1867. In Disraeli's government (1874) he resumed the portfolio of colonial secretary, which he held till 1878. In 1885 he became lord-lieutenant of Ireland. His conference with Parnell led to a serious controversy as to the purport of the conversation. In March 1887 he suggested the special commission for investigating the *Times* charges against Parnell. His *Essays, Addresses, and Translations* have been collected in 3 vols. (1896).

Carnarvon Bay, inlet extending between Holyhead, Anglesey, and Briach-y-Pwll, Carnarvonshire, Wales. It is 36 m. wide, and penetrates 19 m. inland.

Carnarvonshire, the most north-westerly county in the mainland of Wales, is separated from Anglesey by the Menai Strait. Length, 55 m.; breadth, 27 m. It comprises two natural divisions, the N. mountainous region, or Snowdonia, and the S. peninsula, or Lleyn promontory, mostly level or undulating, but having on the W. side a range of hills between Clynnog and Nevin (highest, Yr Eifl, 1,887 ft.), with other detached hills in the S. The coast of the N. forms the fine rocky headlands of Great Orme's Head and Penmaenmawr; on the Menai Strait it is rugged, and in the S. generally low. Off the S. point is Bardsey I., and S.E. are the Tudwil or St. Tudwall Is. Snowdon proper, with Yr Wyddfa or the Peak, 3,560 ft., is the highest summit of England and Wales. The group stretching N. and E. of Llanberis, with the Glyder, Y Tryfan, and other summits, rises to over 3,000 ft. The large group lying N. of the Llugwy, with Carnedd Llewelyn and Dafydd, respectively 3,484 and 3,426 ft., comes next in height to the Snowdon Peak. The principal rivers are the Conway, with its tributary the Llugwy; Ogwen, with Nant Francon and Seiont, and Glaslyn. Much of the surface is unfit for cultivation. The rearing of sheep and other stock and dairying are the principal branches of farming industry. Of minerals, slate is the most valuable, drawn mostly from the quarries of Penrhyn; copper is worked at Beddgelert. The railways belong mainly to the L. & N.W. company, but a branch of the Cambrian runs along the south coast to Pwllheli. The county is represented in the House of Commons by two members.

This territory in ancient times was inhabited by the Ordovices. After the Norman conquest the county suffered greatly from the tyranny of the Earl of Chester. In the reigns of Edward I. and Henry IV. there were protracted revolts. Two important Roman roads crossed the territory, and the Romans had stations at Segontium (Carnarvon) and Caerhun. There are several ancient British forts and camps, stone circles, and cromlechs. Area: 504 sq. m. Pop. 150,000.

Carnassial or Sectorial Teeth are peculiar to the terrestrial carnivora. In the typical carnivores there is one carnassial tooth at each side in each jaw. The teeth in front of it are more or less sharp-edged and compressed, those behind it broad and tuberculated. In the upper jaw it is the last premolar which forms the carnassial; in the lower, the first molar. In shape the upper and lower carnassials differ from one another, but they always have compressed blades, divided into sharp-edged cusps, and are large relatively to the other teeth. Their function is to act as scissor-blades, paring off the flesh from the bones of the prey. A tiger's skull shows these sharp-edged and conspicuous teeth well.

Carnatic. See KARNATIK.

Carnation (*Dianthus caryophyllus*) is an almost hardy herbaceous perennial plant, a native of S. Europe. Theophrastus tells us that it was cultivated by the ancient Greeks, who gave it the name Dianthus, 'the flower of the gods.' They and the Romans used it for making chaplets, whence it was called coronation, the name by which Spenser and other early English writers knew it. The old variety was flesh-coloured, but several other colours became common at an early date. Carnations were formerly much used medicinally, and for the flavouring of liquors, whence they obtained their name of sops-in-wine. The old name, used by Shakespeare along with carnation, of gilofre, gillyflower, or July flower, was merely a corruption of caryophyllus, the nut-leaved clove tree, a name given to it because of its delicious spicy scent. Carnations are among the plants which can be grown in the atmosphere of cities, but they are intolerant of shade. They like a deeply dug, moderately rich, though somewhat light soil, which should be prepared in August. It is a good thing to grow a crop of mustard on the soil, and dig it in, together with some soot and lime, shortly before planting. This is for the purpose of keeping at bay the wire-worm, which is an especial enemy of carnations. Rank manure is most injurious. The plants may be planted either in September or in March, preferably the former. Propagation is usually effected by the process of layering, but cuttings, seeds, and divisions are also employed. The tree or perpetual-blooming carnations are a most useful race for providing flowers in the depth of winter. Cuttings or layers are taken in August, potted, and wintered under glass. They are not allowed to flower during the following summer, but are gradually moved on into bigger pots. In September they are placed under glass, and kept at a temperature of about 50°. Malmaison carnations may be grown in somewhat the same way. There is a new race of carnations, known as Marguerite carnations, which are easily raised from seed, and may be treated as annuals. They are very vigorous, and, being somewhat dwarf, do not require to be staked. The greatest care must be taken with the watering, especially of Malmaison carnations, when they are grown under glass. See also PINK.

Carneades (*c.* 213–129 B.C.) of Cyrene, in Africa, Greek philosopher. In early life he went to Athens, and was a pupil of the Stoic Diogenes; but his study of Stoicism led him to be its most thorough opponent. He was leader of the school of the New Academy; his doctrine is practically pure scepticism. He left no writings. In 155 B.C. he was a member of an embassy to Rome, and his lectures caused a great sensation in Rome.

Carnedd Dafydd, CARNEDD LLEWELYN, and MOEL SIABOD. See SNOWDON.

Carnegie, bor. (formed in 1894) in Alleghany co., Pennsylvania, U.S.A., 8 m. S.W. of Pittsburg; has great steel and iron works, and manufactures of tin, lead, and agricultural implements. It was named after Andrew Carnegie. Pop. 7,500.

Carnegie, ANDREW (1835), American steelmaster and philanthropist, was born in Dunfermline, Scotland. In May 1848 his parents left Dunfermline for America, settling in Pittsburg. His prosperity began with the formation of the Pullman Palace

Car Company and his becoming manager of the Pittsburg division of the Pennsylvania Railroad (1860).

In 1868 he founded the Union Mills, Pittsburg, for the manufacture of steel rails. He also acquired the Edgar Thomson Steel Works, and in 1875 all the concerns in which he was interested were amalgamated under the title of 'Carnegie Brothers and Co.' In 1883 the Homestead Steel Works were acquired, and, along with several other works, were formed into one concern under the title, 'The Carnegie Steel Company Limited;' capital (paid up), five millions sterling. In 1892 the Frick Coke Company was amalgamated with it, and the company's capital raised to twelve millions, to be still further increased to twenty-eight millions in 1900; while in 1901 the whole of the Carnegie enterprise was taken over by 'The American Steel Trust.'

Mr. Carnegie has spent throughout the world a sum of over 10 millions sterling, on libraries alone. To the Scottish universities, for the payment of class fees for the students, he in 1901 gave a sum of two millions sterling; to Birmingham University, £50,000; and he also presented a technical school and large public park to Dunfermline, and has been a generous helper of the University of Pennsylvania, the Pittsburg polytechnic school, the mechanical school of New York, the Cooper Union technical classes, and other smaller institutions. He then gave £200,000 for founding the Carnegie Institute at Pittsburg, and a similar sum to establish the Carnegie Institution at Washington, D.C. In 1902 he presented Lord Morley with Lord Acton's library (60,000 to 80,000 vols.), who in turn presented it to Cambridge University. In 1903 Mr. Carnegie founded the Dunfermline Trust, with an annual income of £25,000, 'to be used in attempts to bring into the monotonous lives of the toiling masses of Dunfermline more of sweetness and light,' and in 1911 he gifted to the Trust another sum of £250,000. He has arranged to build the palace of peace at the Hague at a cost of £300,000. In April 1905 he announced a gift of two millions sterling for providing teachers in American universities and colleges with pensions. A fund for rewarding and providing for the families of those who perform any heroic act (The Hero Fund) is one of the latest of his donations, and its operations have recently been extended to France, Denmark, and other countries. Mr. Carnegie's writings include *Triumphant Democracy* (1886), *The Gospel of Wealth* (1900), *The Empire of Business* (1902), *Life of James Watt* (1905), and *Problems of To-day* (1908). See Alderson's *Andrew Carnegie: the Man and his Work* (1903).

Carnelian, or CORNELIAN, in mineralogy, a variety of chalcedony of a bright red colour, which takes on a fine polish and is used as a ring stone, also for brooches, seals, and ornaments. An oxide of iron is the colouring matter. Carnelians are well known and much valued in the East; the ancients also esteemed them highly. It is the most precious of all the forms of chalcedony, and is found, like agate and other secondary forms of silica, in nodular masses occupying cavities in rocks, from which it may be set free when the surrounding rock decomposes into earth. Fine specimens are obtained in India, S. America, Queensland, and elsewhere.

Carnforth, par. and tn., N. Lancashire, England, 7 m. N.E. of Lancaster; has extensive iron-works and is an important railway centre. Pop. 3,000.

Carnic Alps. See SOUTH-EASTERN ALPS.

Carnières, comm., Hainaut prov., Belgium, 8 m. W.N.W. of Charleroi; manufactures furniture and oil. Pop. 7,000.

Carniola (Ger. *Krain*, from Slav. *Krajina* = 'border-land;' cognate with Russ. *Ukrain*), a crown land and titular duchy of Austria; has Istria and Görz on the W., Croatia and Slavonia on the S. and S.E. The province is on the whole mountainous—the N. portion belonging to the Karawanken Mts. (6,500 to 8,400 ft.), the Stein Alps (7,700 ft.), and the Julian Alps (9,400 ft.); but the S. portion belonging to the Karst, or limestone mountains of Illyria. The province is drained by the Save, which for 32 m. forms the boundary with Styria. In these districts are the Adelsberg cave, the Magdalen grotto, and the Planina cave, also the intermittent or periodic lake of Zirknitz. Except in the valleys of the S.E. the climate is cold, especially in the higher Karst regions, which in winter are often swept by the icy north-easter known as the *bora*. The holdings are mostly small, and agriculture is backward. Wine is grown in the warmer S.E. districts. Bees are very extensively kept. The next important industry is mining, especially for quicksilver, at Idria. Besides quicksilver, lignite, iron, lead, and zinc are extracted. Beyond the working of iron into implements, hardware, etc., the manufacturing industry is very limited. Education is in a backward condition. The total area is 3,843 sq. m., and the population over 500,000. The people are almost entirely Slavonic, only about five per cent. being of German origin. The predominant religion is the Roman Catholic. The capital is Laibach. This region was settled by the Slavs about the end of the 6th century. It was added to the empire by Charlemagne, and has been an integral part of the Austrian monarchy from 1335 to the present time, except for the few years from 1809 to 1813.

Carnival, the period of rejoicing and licence observed in S. Europe, and in some parts of the United States, between the Epiphany and Shrove Tuesday. It is an observance chiefly practised in Roman Catholic countries and communities. The advent of carnival is announced on Twelfth Night by youths attired as monks and wearing masks, who perambulate the streets shouting their news to the passers-by; and during the succeeding days masks, monks, *pierrots*, harlequins, columbines, and fantastic figures of every description are seen in the light of day as well as in ballrooms. In remote corners, as in the Pyrenean valleys, the quaint and archaic *danse de l'ours* forms also a feature of this season. But King Carnival, or Le Seigneur Carnaval, is the great central attraction. 'A conspicuous feature of the carnival,' observes Dr. Frazer, 'is a burlesque figure personifying the festive season, which, after a short career of glory and dissipation, is publicly shot, burnt, or otherwise destroyed, to the feigned grief or genuine delight of the populace.' 'If the view here suggested of the carnival is correct,' he adds, 'this grotesque personage is no other than a direct successor of the old king of the Saturnalia, the master of the revels, the real man who personated Saturn, and, when the revels were over, suffered a real death in his assumed character' (*Golden Bough*, 1900).

At Nice, Cannes, and Rome the carnival is celebrated by mimic battles of flowers; at Villefranche, near Nice, by a naval battle of flowers; and at Rome and Siena by races of riderless horses. The celebrations at Venice were for centuries observed throughout Europe. In the 19th century carnival processions were organized with great success at Cologne—an example followed by Aix-la-Chapelle, Düsseldorf, Mainz, Treves, and in 1910 by Bournemouth in England.

Carnivora, an order of mammals which includes some of the most beautiful of those animals. The large majority feed upon flesh of some kind, typically upon recently-killed warm-blooded animals; but the bears, for example, are largely vegetable eaters. As common characters we have the fact that never less than four toes are present on each foot, the nature of the teeth, and certain internal characters. The teeth afford an admirable illustration of what is known as the carnivorous or flesh-eating type of dentition. The incisors are small and pointed, the canines strong, conical, and recurved, while certain of the cheek teeth in both jaws in the more typical forms are compressed, sharp-edged, and constitute scissor-blades, used to pare off the flesh from the bones, in the same way as the canines are used to transfix the prey. In the more typical representatives of the order the toes are furnished with powerful claws, which in the cats are retracted when not in use, so that they are kept permanently sharp, and are not worn down in walking.

The living carnivores are divided into two sets—the *fissiped* forms, in which the limbs are adapted for terrestrial progression; and the *pinniped* forms, which habitually live in water, and have their limbs converted into flippers. In the former, the true carnivores, there is always one cheek-tooth in each jaw with an exceptionally sharp edge, this specially modified tooth being the sectorial or carnassial, which varies in shape in the different genera, and has considerable systematic value. The classification of these true carnivores is a matter of some difficulty, but the living forms are conveniently divided into (1) the cat section (Æluroidea), (2) the dog section (Cynoidea), and (3) the bear section (Arctoidea). The last is perhaps the least natural. With the bears are included otters, badgers, raccoons, and some others.

In the pinniped carnivores there is no sectorial or carnassial tooth, and the cheek teeth are very uniform. They include the eared or fur seals, the walrus, and the true seals—all aquatic animals, but differing from whales and their allies in coming on shore for breeding purposes.

Carnivorous Plants. See INSECTIVOROUS PLANTS.

Carnmoney, par. and vil., S.E. co. Antrim, Ireland, 5 m. N. of Belfast. Industries include agriculture and flax-spinning. Pop. 8,300.

Carnot, LAZARE NICOLAS MARGUERITE (1753–1823), French republican statesman, general, and mathematician, born at Nolay in Burgundy; was elected a member of the Legislative Assembly (1791); in 1792 became a member of the National Convention. Appointed Aug. 14, 1793, to the Great Committee of public safety, he became responsible for the conduct of the war, and grimly tolerated the worst excesses of the Terror so long as he was allowed a free hand with the army. There is no doubt that France owed her military successes to his energy and organizing capacity, and he earned for himself the title of 'organizer of victory.' Although he opposed the establishment of the Directory, he was elected one of the directors in 1795, and again acted as minister of war, when he chose Bonaparte for the command of Italy, and arranged with him the plan of campaign. Proscribed (1797), he escaped to Germany, and later joined the Tribunat, when he opposed Bonaparte's assumption of imperial power. He was minister of the interior during the 'Hundred Days,' and a member of the provisional government of June 1815; but at the restoration of Louis XVIII. he was proscribed, and became an exile in Germany. He published a number of valuable mathematical works. See his *Correspondence générale* (ed. Charavay, 1892-7); L. H. Carnot's (his son) *Mémoires de Carnot* (1861-3); Col. E. M. Lloyd's *Vauban, Carnot, etc.* (1887).

Carnot, Lazare Hippolyte (1801-88), French radical politician, son of the preceding, and born at St. Omer. In 1848 he became minister of public instruction, and in 1852 was elected deputy for Paris; but, refusing to take the oath to Napoleon III., he retired. In 1875 he was elected a life member of the Assembly. He was the author of *Mémoires de Carnot* (1861-3), and *La Révolution Française* (1869-72).

Carnot, Marie François Sadi (1837-94), president of the French republic, eldest son of Lazare Hippolyte Carnot, was born at Limoges. He became minister of public works (1880) and finance (1885), and was elected president in 1887, his term of office being marked by the Paris Exhibition (1889) and the Panama crisis (1892). He was assassinated at Lyons by Caserio, an Italian anarchist.

Carnot, Nicolas Léonard Sadi (1796-1832), son of Lazare Nicolas Marguerite Carnot, was born at Paris. He is known as the founder of the science of thermo-dynamics. His *Réflexions sur la Puissance motrice du Feu* (1824) describes his cycle and reversible engine. The English translation of 1890 contains an account of Carnot's theory by Lord Kelvin.

Carnotville, tn., W. Africa, in the French colony of Dahomey, 170 m. N. of Porto Novo.

Carnoustie, pol. bor., *quoad sacra* par., and coast tn. in the pars. of Barry and Panbride, S.E. Forfarshire, Scotland, 16 m. E.N.E. of Dundee, on N.B.R. It is a popular golfing and seaside resort, and has linen and chemical manufactures. Pop. 5,000. See Malcolm's *Hist. of Carnoustie* (1910).

Carnuntum, or Carnutum, anc. tn. (extensive ruins) of Pannonia, on riv. Danube, 16 m. S.E. of modern Vienna. It was the headquarters of the Romans in their military operations against the Germans, and for three years the residence of Marcus Aurelius during his campaign against the Marcomanni. In the 9th century the town was ruined by the Magyars.

Carnutes, a tribe of Gauls who lived in the centre of ancient Gaul, between the Liger (Loire) and the Sequana (Seine); their capital was Genabum (Orleans).

Carnwath, par. and vil., E. Lanarkshire, Scotland, 26 m. S.W. of Edinburgh. The dist. is rich in coal and iron. Pop. 6,000.

Caro, Annibale (1507-66), Italian writer, was born at Civitanova (March of Ancona). In 1543 he entered the service of the Farnesi at Parma and Rome, and remained there till 1566, the year of his death. As a Petrarchist he was on the whole distinguished, though on occasion affected. His letters, apart from the interest of their contents, are admirable by reason of their style. The collection is second to none in Italian literature. Equally fine are the translations from the classics, especially the version of the *Æneid* in *versi sciolti* (Venice, 1581; new ed. by Mestica, Florence, 1890), and that of Longus's *Amori Pastorali* (Parma, 1786). The comedy *Gli Straccioni* (?1544; 1st ed. Milan, 1582) is remarkable for its vivid characterization. Collected editions of Caro's works: Venice, 1757 (in 6 vols.); Milan, 1807–12 (in 8 vols.). See *Vita* by Seghezzi, in the Paduan edition of the *Letters* (1734); and Carboni's *Ricerche sulla Vita del A. C.* (1858).

Caro, ELME MARIE (1826–87), French philosopher, born at Poitiers. After being elected professor of philosophy at the Sorbonne (1864), he was, in 1871, enrolled a member of the French Academy. Such was his popularity at the Sorbonne that, as 'philosophe des dames,' he was satirized in the comedy *Le Monde où l'on s'ennuie.* His works include *Philosophie de Goethe* (1866); *Le Matérialisme et la Science* (1868).

Carob. The carob tree, bean tree, or locust tree (*Ceratonia siliqua*) is an evergreen tree which thrives along the Mediterranean coast, and may be successfully grown against a wall in the warmer parts of England, where it was introduced in the 16th century. It belongs to the order Leguminosæ, and its pods, imported into England as locust beans, are of economic value for the feeding of pigs and cattle. By some they are thought to have been the locusts eaten by John the Baptist, and the valves to have been the husks which formed the food of the prodigal son of the parable. The pulp inside the pods also forms an article of food in the south of Europe and W. Asia. The carob tree is easily propagated by cuttings.

Caröe, WILLIAM DOUGLAS (1857), English architect, born at Liverpool. His works include the Alassio Library, Italy, and the Victoria Monument, Mentone; but his name is chiefly identified with ecclesiastical edifices, including the palace of the archbishop at Canterbury and the bishop's palace at Bristol.

Carol, a word which appears to have come into general use in W. Europe through the influence of the troubadours. At first it specially denoted a certain dance, in which the dancers, forming a ring, moved round with a peculiar rhythmic movement, singing all the while in tune. This meaning was quite common in England in the 14th century. But in course of time 'carol' was held specially applicable to the song to which the dancers kept step. The carols sung in England at the present day are nearly all religious in theme, the nativity being the chief subject. This is the outcome of the miracle plays of the middle ages. Spain, which has conserved so much that is mediæval, shows this very clearly. The last act of Lope de Vega's *Nacimiento de Cristo* ends, says Ticknor, with the appearance of the three kings preceded by dances of gypsies and negroes. The association of gypsies with the nativity occurs in several Spanish and Provençal carols. In one of these, sung at Epiphany, the gypsy girls are supposed to be dancing at the gate of Bethlehem, and singing as they welcome the three kings.

Another application of carol is that of 'choir' or 'company,' and it is in this sense that Caxton (1485) speaks of 'the carolles of virgyns.' But for many generations, the typical English carol, like the French *noël*, with its *chantons le Rédempteur*, has been a song of rejoicing at the birth of Christ. The earliest collection of carols was printed by Wynkyn de Worde in 1521. See the very full collection of *Christmas Carols* by W. Sandys (1833); Saboly's *Recueil de Noëls Provenceaux* (1699 and later editions); Wentworth Webster in *Gypsy Lore Journal*, vol. i. (1889).

Carolina, an English colony in N. America established by grant of Charles II. in 1663, afterwards divided into N. and S. Carolina. In 1776 the Carolinas constituted themselves independent states. See North Carolina and South Carolina.

Caroline, Amelia Elizabeth (1768-1821), queen of George IV. of England, was the second daughter of Charles William Ferdinand, Duke of Brunswick. After a defective education, she was in 1795 married to the Prince of Wales, who forsook her immediately after the birth of their only child, the Princess Charlotte (1796). Caroline then resided at Shooters Hill and Blackheath. Charges of grave impropriety having been brought against her, a commission of investigation was appointed in 1806, which cleared her conduct of all guilt, but could not acquit her of imprudence. After the death of George III. divorce proceedings were initiated against her; but so brilliant was the defence made by her counsel, notably Brougham and Denman, that the case was abandoned. At the king's coronation (July 19, 1821) the queen was peremptorily refused admission to Westminster, a slight she took so much to heart that it was believed to have occasioned her death about three weeks later (August 7). She was the object of much popular sympathy. See Nightingale's *Memoirs of Queen Caroline* (1820), Clerici's *A Queen of Indiscretions* (Eng. tr. 1906), and Lord E. Fitzmaurice's *Charles William Ferdinand, Duke of Brunswick* (1901).

Caroline Islands, an archipelago of 550 islets and islands in the Pacific Ocean, between 5° and 10° N. lat. and 133° and 165° E. long. It is divided into three groups, the Eastern, the middle, and the Western, with a total area of 560 sq. m. Most of the islands are only small atolls, but there are about fifty of other formation and size, the most important being Babelthouap (106 sq. m.; pop. 10,000), Ponape (134 sq. m.; pop. 2,000), Yap (70 sq. m.; pop. 2,750), Ruk (80 sq. m.; pop. 12,000), and Kusaie (45 sq. m.; pop. 400), this containing two-thirds of the total area. The climate, though rainy, is temperate and healthy. Capital, Ponape, on the island of the same name. The products include copra, bêche de mer, vegetable ivory nuts, turtle and pearl shell. Archæologically the islands are interesting on account of their cyclopean stone structures. Pop. 50,000, 'a fusion worked out for many centuries past between trader, explorer, fugitive, castaway, exile, and pirate—streams of overlapping populations following wave on wave' (Christian). The islands were discovered by the Portuguese Diego da Rocha in 1527, and they were given their present name in 1688 in honour of Charles II. of Spain. Several attempts (1710, 1731) to Christianize the inhabitants by the Jesuits from Manila were unsuccessful. In 1899, by an agreement with Spain, they became a German possession. See *Caroline Islands*, by F. W. Christian (1899) (chief source of information); *Núkuóro*, by J. Kubary (1900); *Reise zum Zwecke der Uebernahme der Karolinen*, by Bennigsen (1900).

Caroline Matilda (1751-75), daughter of Frederick, Prince of Wales, married (1766) Christian VII. of Denmark, to whom she bore the future Frederick VI. in 1768. Seduced by Struensee, she was involved in his fall (Jan. 17, 1772), was divorced from her husband after confessing her guilt, and banished to Celle, where she died. Her sad story has been made the subject of several dramas. See Wraxall's *Life and Times of Caroline-Matilde* (1869); Lagrèze's *La Reine Caroline-Mathilde et le Comte Struensee* (1887); Blangstrup's *Kristian VII. og Caroline Mathilde* (1891).

Caroline Wilhelmina OF ANSBACH (1683–1737), the queen of George II., daughter of the margrave of Ansbach (or Anspach), married in 1705. After her husband's accession (1727) she induced him to retain Sir Robert Walpole as his minister. In this way, until her death in 1737, she exercised a predominating influence on British policy. See Wilkins's *Caroline of Anspach* (1904), and Alice Greenwood's *Hanoverian Queens of England* (1909).

Carolings. See CARLOVINGIANS.

Carolus, a gold coin first struck in the reign of Charles I., originally equal to £1, but later valued at 23s. The name was also given to other coins of the period bearing 'Carolus'—*e.g.* a Carolus dollar, which in N. Africa, China, and the E. Indies preceded the Mexican dollar, the 'Charles' represented being Charles III. (1759–88) of Spain, and after him his son, Charles IV. (1788–1808).

Carolus-Duran, CHARLES AUGUSTE EMILE DURAND (1837), called the leader of the modern school of portraiture in France, born at Lille. He exhibited in the Salon of 1866 a dramatic subject of the Roman Campagna, *L'Assassiné.* He travelled in Spain, was greatly influenced in technique by Velasquez, and painted *St. Francis of Assisi* (1868). He has painted the ceiling *The Glory of Marie de Medici* for the Luxembourg in Paris, where also is his *Lady with the Glove* (1869). His reputation rests on his portraits, which are treated with great distinction of style. With him the pictorial element is secondary; the expression of vitality and an extraordinary talent in painting textures are his chief characteristics. See Stranahan's *History of Modern Painting* (1896), and Muther's *History of Modern Painting* (1896).

Caronia, tn., Sicily, on north coast, 60 m. E. by S. of Palermo. Pop. 5,500.

Carora, tn., Venezuela, 55 m. W. by S. of Barquesimeto; has trade in rubber. Pop. 8,000.

Carotid Artery. There are two carotid arteries, one on each side of the neck; they carry the blood-supply for the head and neck. In the neck the pulsation of these arteries can be felt, and it was by compression of the carotids, and the consequent anæmia of the brain and fainting, that the garroters of the suburbs of London used to incapacitate their victims. The artery is sometimes ligatured for aneurism or for hæmorrhage higher up.

Carouge, tn., part of Swiss canton of Geneva (since 1815), on l. bk. of riv. Arve and ½ m. S. of Geneva, of which it is a suburb. It manufactures watches, machinery, and pottery, and has iron works. Pop. 7,500.

Carovigno, tn., Lecce prov., S. Italy, 15 m. W. by N. of Brindisi. Pop. 6,500.

Carp (*Cyprinus carpio*), a freshwater fish, native of the East, especially China, but abundant as an introduced form throughout Europe. The mouth is furnished with four barbels, and there is a strong spine in front of both the dorsal and the anal fins. In the typical forms the scales are large; in the variety known as leather-carp these are entirely absent, and in the smooth carp these are present only along the lateral line and on the back. An average length is 12 to 17 in., but in captivity this is often exceeded, and the limit of growth is uncertain; specimens weighing 30 to 40 lbs. are not very infrequent in Germany, and even greater weights have been recorded. The diet is very varied, consisting of vegetable matter, with worms, insects, molluscs, small crustaceans, etc. In inland countries the carp is greatly relished as food, and is the object of an important culture in parts of the Continent. The females are exceedingly prolific, and the young easily bred; while the adults, when carefully protected, live to a great age—as long, it is asserted, as two hundred years. It has been to a slight extent tamed by the Chinese and in Germany, and is capable of living some time out of water. Allied is the crucian carp (*Carassius vulgaris*), widely distributed throughout Europe, and the gold-fish (*C. auratus*), all belonging to the family Cyprinidæ.

Carp, PETRE (1837), Roumanian statesman, born at Jassy (Iasi). After entering politics as a Conservative, he separated from that party on the education question, and founded the Junimist or Young Roumanian party (1876). Carp held office in 1890 and 1892–5, and became premier in 1900 in order to reduce the financial deficit by taxation reform, but was defeated, and retired from office (Feb. 1901) in favour of a Liberal ministry under Sturdza. He is a warm friend of the Roumanian court. For the east of Europe, Carp is an example of political integrity. He is the author of several useful economic measures—*e.g.* mining laws. He has translated several of Shakespeare's plays into Roumanian.

Carpaccio, VITTORE (*c.* 1450–*c.* 1522), Venetian painter, of whose life little is known. He was employed in the school of St. Girolamo with Vivarini and Giovanni Bellini, and it is surmised that he may have accompanied Gentile Bellini to Constantinople. His fine qualities as a religious painter are shown in his masterpiece, *The Presentation in the Temple* (1510, Venetian Academy)—intricate composition, graceful figures, and rich but restrained colour. His St. Ursula series of paintings (Venetian Academy), and the nine canvases in San Giorgio degli Schiavoni illustrating the lives of Saints Tryphon, Jerome, and George, show great dramatic qualities. His finest works are in Venice, but good examples are in Ferrara, Vienna, Berlin, Stuttgart; and an early *Virgin and Child* is in the National Gallery, London. For the modern appreciation of Carpaccio we are indebted to Ruskin. See *Life and Works of V. Carpaccio* by Pompeo Molmenti (Eng. trans. 1907).

Carpathians, one of the principal mountain ranges of Europe, sweeping in an irregular semicircle round the N.W., N., N.E., E., and S.E. of Hungary, which it barricades against Moravia, Galicia, and Roumania. Length from the Danube, in the W., to the Iron Gates, in the E., nearly 1,000 m., with a breadth varying from 10 to 200 m. The system consists of the following series of ranges, following one after another: Little Carpathians (2,400 to 3,200 ft.), White Mts., W. Beskids (Pilsko, 5,110 ft.; and Babia Gora, 5,660 ft.), E. Beskids, Carpathian Forest Mts. (Guimaleu, 6,100 ft.; Czerna Gora, 6,750 ft.), Transylvanian Highlands, and Alps; together with a number of semi-independent subsidiary mountain groups or spurs jutting out into the Hungarian plain. Between the E. and W. Beskids are the 'dropped links,' much farther to the S., of the (Hohe) Tatra (5,000 to 6,000 ft. above the plain; absolute elevation, 8,000 to 8,700 ft.) and the Niedrige (Nizna) Tatra, which contain the most imposing scenery of the W. Carpathians, and are much visited by tourists. Beech, pine, and fir woods are plentiful, and the fauna include bears, wolves, and lynxes. On the N. and N.E., but still more on the S. of Transylvania, are the most imposing altitudes of the system—Pietrosza (7,440 ft.), Pietroszul (6,900 ft.), Königstein (7,355 ft.), Bucsecs (8,265 ft.), Vunetara (8,255 ft.), Negoi (8,320 ft.), the culminating point. The Carpathians contain the rich petroleum stores of Galicia, salt, gold, silver, copper, coal, and other minerals, together with mineral springs. Although many of the peaks of the Carpathians rise above the snow-line and the normal limit of forest growth, yet, owing to their steepness and to the scanty precipitation (24 to 35 in. annually), there are no real glaciers in the system. Although the middle parts of the system are, generally speaking, inaccessible, there are several convenient passes, such as the Jablunka (1,810 ft.), over which runs the Cracow-Pressburg Ry.; the Jordanow (2,630 ft.), Tarnow-Kassau Ry.; and the Dukla (1,650 ft.). Farther E. the Lemberg-Munkacz line crosses by the Rodna Pass (4,128 ft.) and the Borgo Pass (3,940 ft.), both leading into Bukowina. Transylvania is connected with Moldavia by the Tolgyes (2,135 ft.), Gyimes (2,955 ft.), Oitoz (1,410 ft.), and other passes; and with Walachia by Tömös or Predeal (3,375 ft.), the famous gorge of the Rother Thurm (1,155 ft.), the Vulcan (3,095 ft.), and the defile of the Iron Gates close beside the Danube.

Carpeaux, JEAN BAPTISTE (1827-75), born at Valenciennes, was one of the most characteristic French sculptors of the second half of the 19th century. His ideal was the expression of life in all its attitudes. Among his works are *La Palombella* (1858), a bust of an Italian girl; the bronze group of *Ugolino and his Children* (1863), in the Tuileries Gardens at Paris; the bust of the *Princesse Mathilde* (1863); the bust of *Alexandre Dumas fils* (1874); the group of the *Four Parts of the World*, adorning a fountain in the Luxembourg Gardens at Paris. He executed also the bas-reliefs for the Flora pavilion of the Louvre, the principal subject being *France Shedding Light through the World and Protecting Science* (1866). But one work, *The Dance* (1869), adorning the façade of the New Opera House at Paris, created a great controversy by reason of the novelty of its naturalistic tendencies, and even led to an attempt to ruin its effect. See Chesneau's *Le Statuaire J. B. Carpeaux* (1880); W. C. Brownell's *French Art* (1902).

Carpel. The central part of a flower is the pistil or gynæcium, and its several parts or floral leaves the carpels. Each carpel consists of a swollen hollow part called the ovary, enveloping the ovule or ovules, which when fertilized become seeds; of an expanded superior surface called the stigma, to which adhere the pollen grains destined to fertilize the ovules below; and generally, also, of a stalk or column between the ovary and the stigma. When the carpels are joined so as to form a united pistil, or when the ovaries are joined, and the styles and stigmas are not united, the pistil is spoken of as syncarpous; otherwise, it is said to be apocarpous. According to the number of carpels composing the pistil, the latter is said to be monocarpellary, bicarpellary, tricarpellary, or polycarpellary.

Carpentaria, GULF OF, N. of Australia, about 300 m. from W.

to E., between Capes Arnhem and York, and 400 m. from N. to S. Into it flow the rivers Mitchell and Van Diemen on the E.; Flinders, Leichhardt, and Albert on the S.; and Roper on the W. It is deeply indented, and contains Groote Eylandt, Wellesley, and many other islands. Its E. coast was discovered by the Dutch in 1606.

Carpenter, Mary (1807-77), English philanthropist, was born at Exeter. The visit of the Hindu reformer Rammohun Roy, in 1833, stirred her sympathies in the regeneration of India, and Dr. Tuckerman, the American philanthropist, stimulated her to work for destitute children, for whom she founded a working and visiting society, also a ragged school (1846), and boys' and girls' reformatories (1852-4). At her suggestion a conference on reformatories met at Birmingham, and the passing of the Youthful Offenders Bill (1854) was largely due to her exertions. Visiting India in 1866, she instituted schools, and laboured at prison reform; also visited Germany (1872), America (1873), and in 1876 returned to India, altogether making four journeys to the East. Author of *Reformatory Schools* (1851), *Juvenile Delinquents* (1853), *Our Convicts* (1864), *Last Days in England of the Rajah Rammohun Roy* (1866), *Six Months in India* (1868), and *Reformatory Prison Discipline* (1872). See *Life* by J. E. Carpenter (1879).

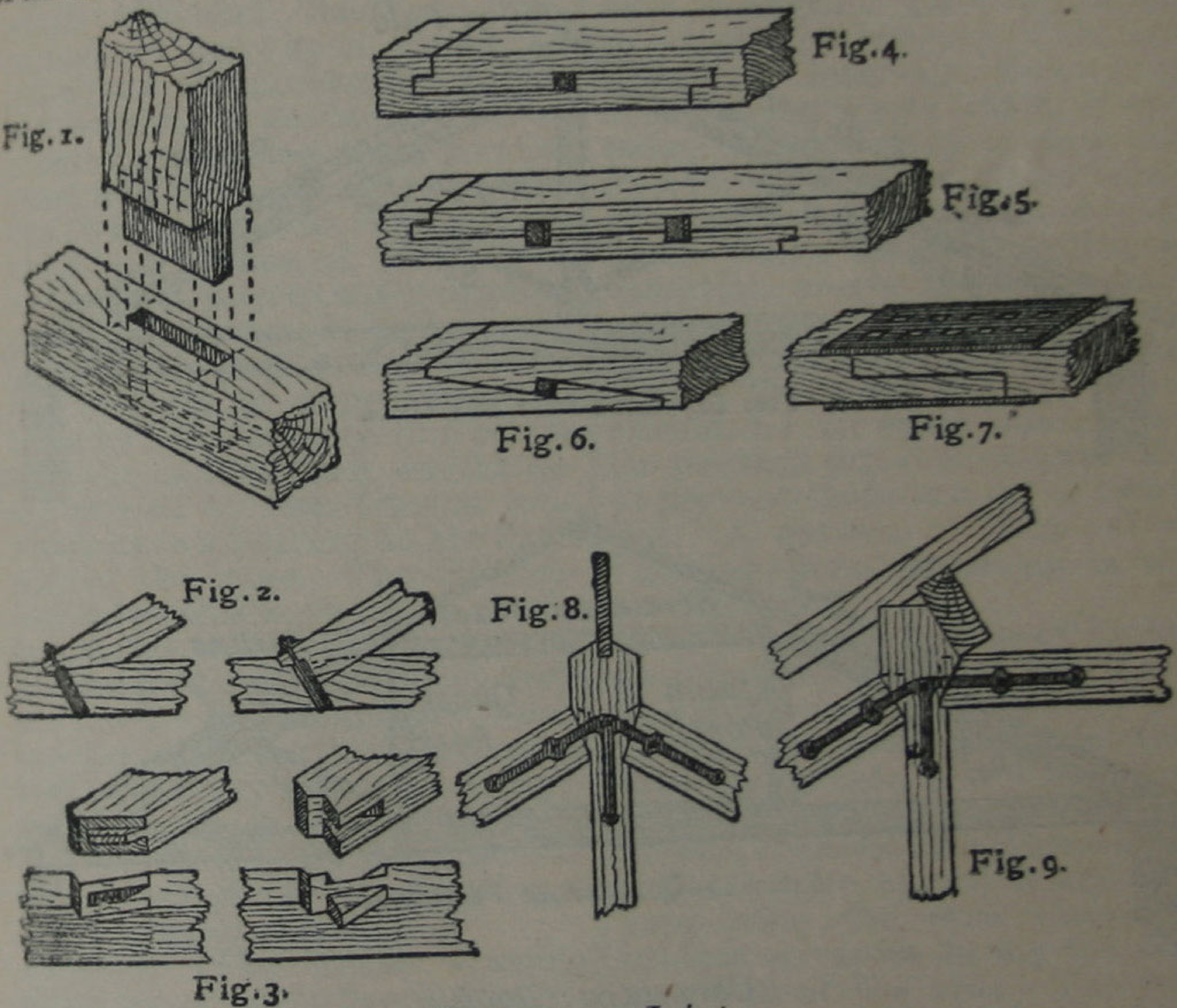
Carpenter, William Benjamin (1813-85), English naturalist and physiologist, brother of Mary Carpenter; born at Exeter; studied medicine in London and in Edinburgh. He is the author of *Principles of General and Comparative Physiology* (4th ed. 1854), *Principles of Mental Physiology* (7th ed. 1896), and *The Microscope and its Revelations* (8th ed., by Dallinger, 1901). Carpenter was lecturer on medical jurisprudence at Bristol, and Fullerian professor of physiology at the Royal Institution, London. He obtained the Royal Society medal (1861), and was president of the British Association (1872).

Carpenter Bee (*Xylocopa violacea*), a bee named on account of the habit of forming a nest in dry wood, in which it excavates parallel galleries. Within these galleries cells are formed of wood pulp moistened by salivary juice. See Bee.

Carpentras, tn., dep. Vaucluse, France, on the riv. Auzon, 17 m. N.E. of Avignon by rail. It is a walled town with four gates, the Porte d'Orange being one. There is a Gothic cathedral, and a Roman triumphal arch. From the 5th century to 1805 Carpentras was an episcopal see. There are felt-hat and silk factories, tanneries, dye-works, and flour mills. Pop. 10,700.

Carpentry is the art of working timber with cutting and other tools. A knowledge of the laws of mechanics is required in order to design successfully roofs, floors, bridges, the centering for arches, and those other structures in which a correct proportion and disposition of the component parts is essential.

Joints.—The first requisite is a knowledge of the different methods of joining pieces of timber so as to bear the strains which come upon them under varying conditions. The mortise-and-tenon joint (Fig. 1) is used in all varieties of framing, where one piece of timber meets another without crossing it. The tenon, or projecting portion left on the end of the first timber, fits tightly into the mortise, or hole, cut in the second, and is secured to it by glue or by wedges driven into it on the farther side. Modifications of this are shown in Figs. 2 and 3, and are adapted for cases where the entering timber is at an acute angle with the receiving piece, and presses against it in the direction of its length. The joints of rafters and tie-beams, also those of bridge struts and piers or longitudinals, afford examples of these and similar joints, in which great care is necessary to provide a bearing surface at right angles to the direction of the thrust. In rougher work, instead of the mortise-and-tenon joint, the plan is often adopted of 'halving' the portions of timber in contact, so that when joined they present a flush face, afterwards uniting them firmly by one or more bolts. Notching, cogging, and housing are somewhat similar operations, performed to join timbers which cross each other—no strength of union, however, being obtained without the use of bolts and straps. Dovetailing, which plays so large a part in joinery, is of but little use in carpentry, owing to the fact that the shrinkage inseparable from timber of any size renders the joint useless for purposes of strength. Scarf joints (Figs. 4, 5, 6, 7) are employed in joining longitudinal timbers so as to form a beam of greater length than a single piece of wood would naturally afford. The methods of scarfing shown in Figs. 4 and 5 are especially adapted for cases where the timber is in tension or compression. Figs. 6 and 7 exemplify patterns more useful for resisting a bending strain, when strengthened with bolts—which are also largely employed for securing the other forms of joint. Hard-wood keys are previously driven through the holes in the joint, to make the parts of it fit closely to each other; and



Carpentry: Joints.

while these must be driven in sufficiently tight to close up the joint, care must be taken to avoid any strain being put on the fibres of the wood by forcing the parts together too much. All kinds of joints may be strengthened by iron straps, forged to the exact shape required, and bolted to the wood. Figs. 8 and 9 show the rafters of a roof firmly connected to the king and queen posts respectively by straps laid on the sides of the different members.

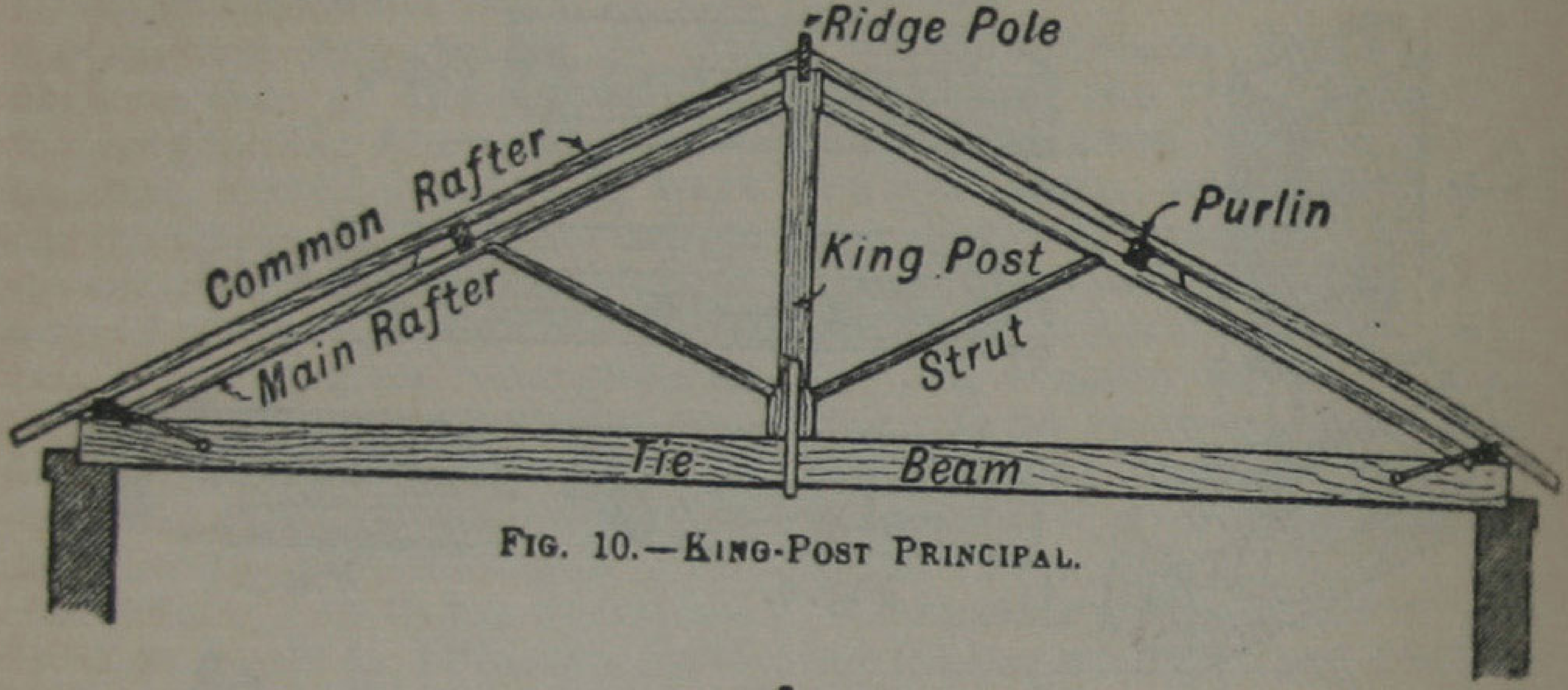


Fig. 10.—King-Post Principal.

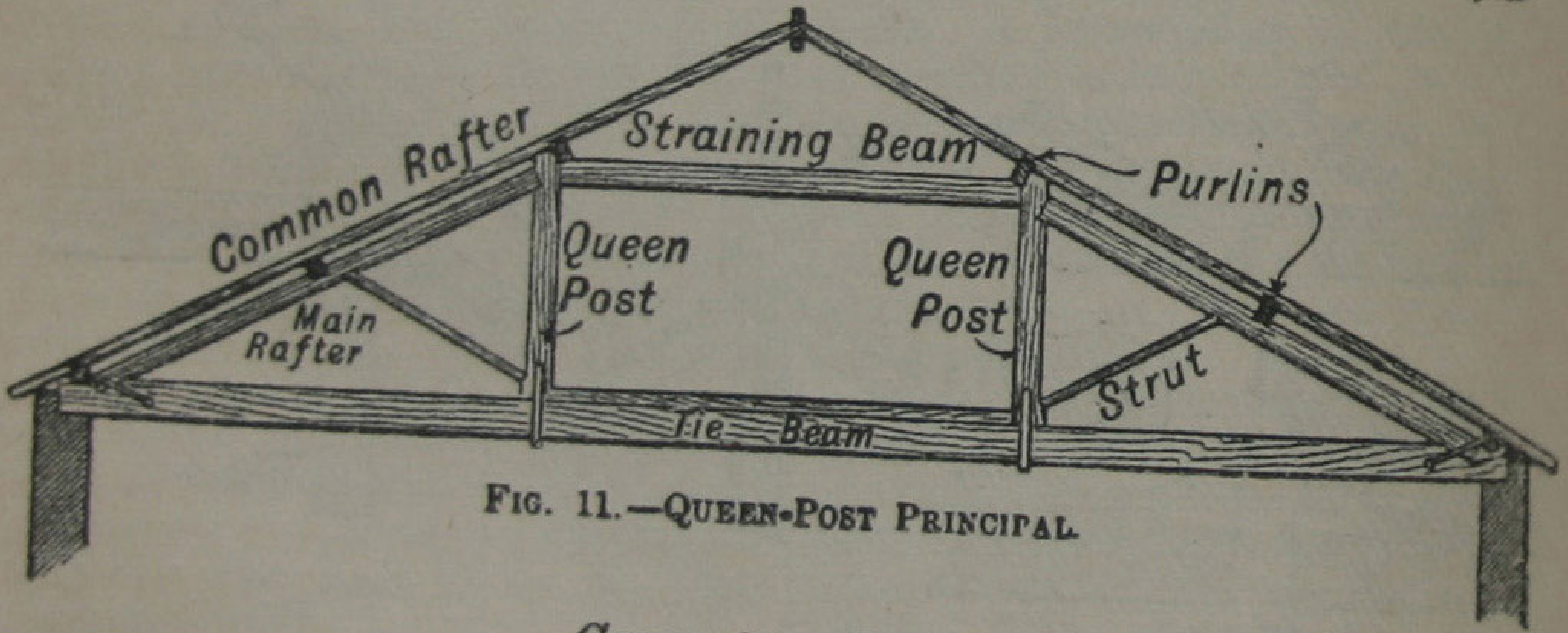


Fig. 11.—Queen-Post Principal.

Carpentry: Roofs.

Roofs.—The simplest form of roof, employed only for spans under 20 ft., consists of common rafters meeting at a ridge-pole, and held together by a light tie or 'collar-beam' at about the centre of each. The lower ends of the rafters rest on a wooden wall-plate, which they are notched to receive. For larger spans trussed 'principals' are adopted. The simplest form of these is the king-post roof truss, in which a tie-beam holds together the feet of the principal rafters. The weight of the tie-beam is held by a vertical king-post attached to the rafters at their apex, and supporting on 'shoulders' near its base two diagonal struts which stiffen the rafters. For spans over 30 ft. the king-post is usually replaced by two queen-posts, in order to avoid leaving the rafters unsupported for so much as half their length. Figs. 10 and 11 show these two types of roof principals, of which all others up to the largest spans are modifications or combinations, with the exception of those special designs for churches and public buildings in which a tie-beam is omitted for the sake of archi-