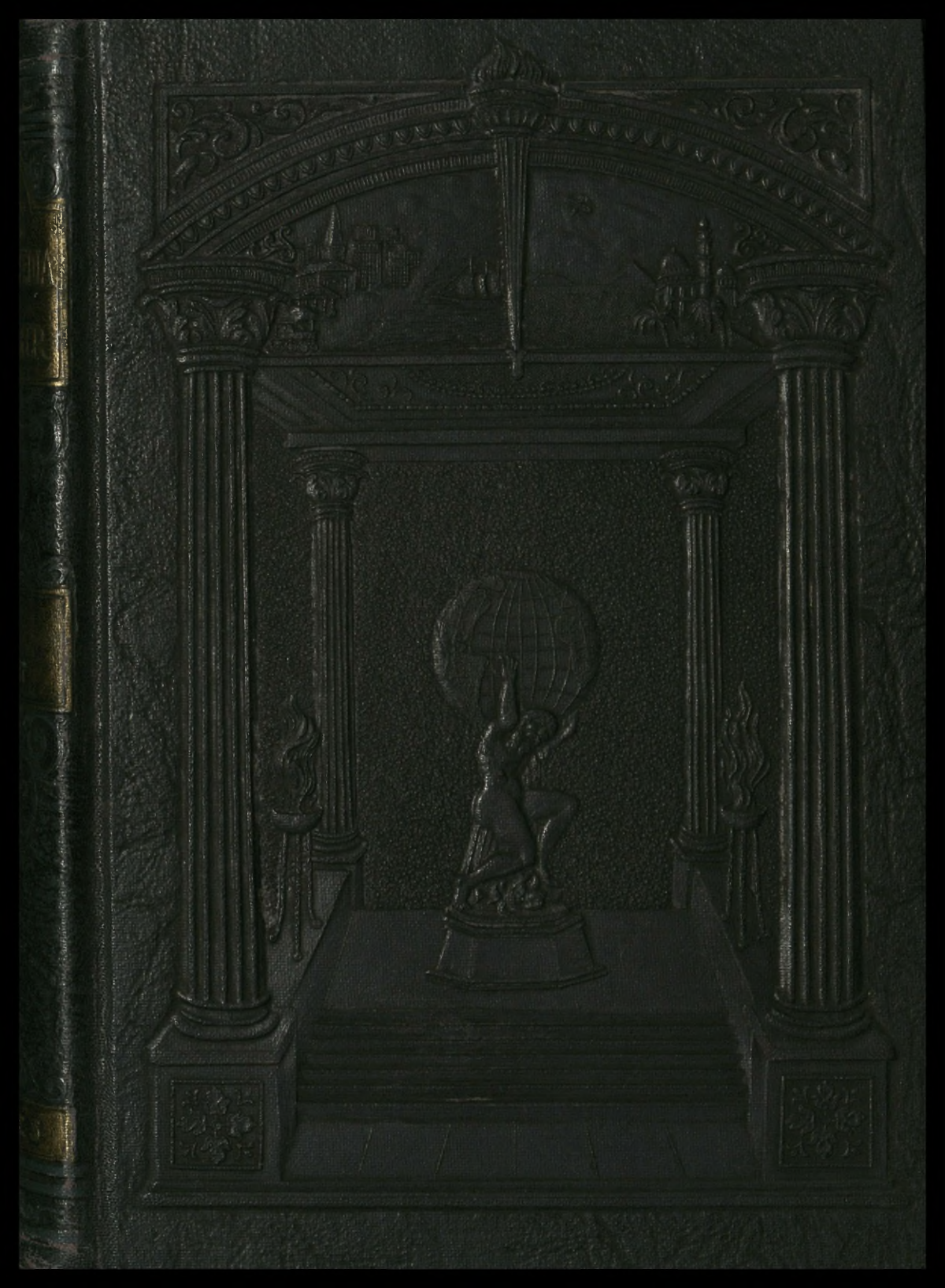
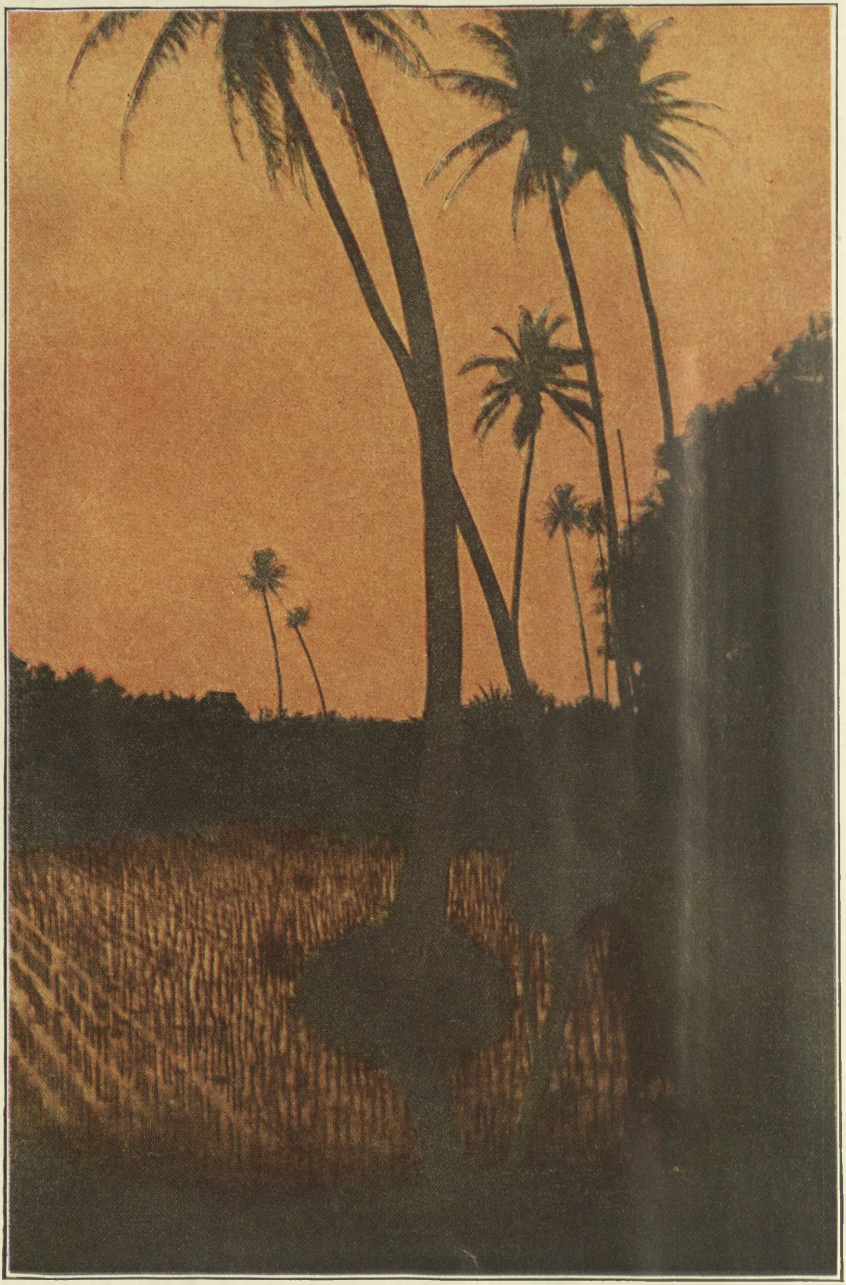
R G B WH GR BL
Grey Scale #13
C M Y K
DANES PICTA .COM
A 1 2 3 4 5 6 M 8 9 10 11 12 13 14 15 B 17 18 19
Colour Chart #13
Blue
Cyan
Green
Yellow
Red
Magenta
White
3/Color
Black
Inches
Centimetres
DANES PICTA .COM





RICE FIELDS—OAHU—HAWAIIAN ISLANDS

TIMES ENCYCLOPEDIA AND GAZETTEER

Superbly and Profusely Illustrated with Hundreds of Subjects in Full Color, Monotone and Text Cuts

AUGMENTED BY

A Fine Collection of Colored Maps of the Principal Countries

AND

A Valuable Appendix

Of often-sought-for facts in almost every department of human knowledge

INCLUDING

A Chronological History of the World

Showing the most important events in history from 7000 B. C. to the present date.

A Most Comprehensive Narrative of the World War Briefly Noted Day by Day

Editor-in-Chief
FRANCIS J. REYNOLDS
Editor-in-Chief International Research Cyclopedia, Author Reading Course Nelson's Cyclopedia, Editor Reynold's Atlas and Gazetteer of the World, Editor Hawthorn's History of the United States, Editor History of the United States Navy, Editor-in-Chief Story of the Great War, Revising Editor History of Nations.

Compiler
GEORGE J. HAGAR
Editor of Harper's Cyclopedia of United States History, Compiler of the Chronology of the World in the New Standard Dictionary, Reviser of Appleton's New Practical Standard American, New International, Columbian, Imperial and other Cyclopedias.

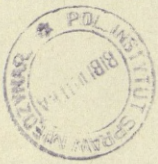
Selling rights reserved by

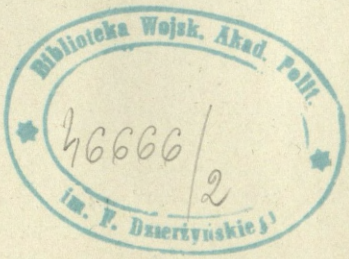
TIMES SALES COMPANY
431 So. Dearborn St., CHICAGO

Made in U. S. A.
1920

II 7120/3

Copyright, 1929,
By
CONSOLIDATED BOOK PUBLISHERS, Inc.





1950 D. 519

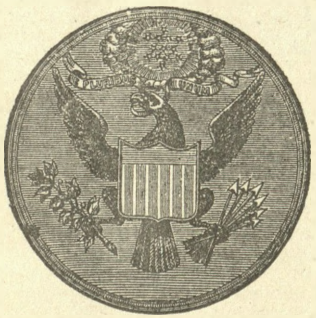
eagles are absent only in South America. The fishing eagle or fishing-hawk is an almost cosmopolitan bird. It is remarkable among eagles for the backward grasping adaptation of the outermost toe. The harpy eagle of South America seems to be a buzzard. There are several eagles in Australia.

Eagle, an emblem in heraldry, war, and legend. The eagle, borne upon a spear, was used by the Persians as a standard in the battle of Cunaxa, B. C. 401. The Romans used eagles of silver, or more rarely of gold, carried in the same way as standards.

GERMAN EAGLE.

FRENCH EAGLE.

The Napoleon dynasty of France also adopted the eagle as their symbol. A double-headed eagle is the emblem of Russia, Austria, and Prussia.



EAGLE ON SEAL OF UNITED STATES.

Eagle, a gold coin of the United States, value $10; half-eagle, $5; quarter-eagle, $2.50; double eagle, the largest gold coin of this country, $20.

Eagle, in astronomy, a constellation in the Northern Hemisphere. The constellation comprises stars of the first, second, and third magnitudes. The most important of these is Altair, a star of the first magnitude, from which the moon's distance was once computed.

Eagle Hawk, a name applied to several eagles of comparatively small size, natives of warm climates.

Eagle Owl, a widely spread genus of large owls, typified in the United States by the Virginian horned owl.

Eagre, Egyre, or **Eger,** a local English name for the "bore" (q. v.), or tidal wave that ascends the narrower rivers twice daily, to the peril of navigation. Ægir was the god of the rushing waters to the Danish pagan invaders of England, and their cry of "Ware Ægir," still in vogue upon the Trent, heralded the roar of the advancing "bore" upon their ships.

Ear, the organ of hearing; is composed of three parts, the external ear, the middle ear, or tympanum, and the internal ear or labyrinth.

Earl, a degree of the British nobility between marquis and viscount, the title of highest antiquity in England. An earl's wife is called a countess.

Earle, Mrs. Alice Morse, an American writer; born in Worcester, Mass., April 27, 1853. She wrote extensively upon the life of the colonial period in New England and New York. She died Feb. 16, 1911.

Earlham College, a co-educational institution in Richmond, Ind., founded in 1847.

Earl Marshal, a great officer of England, who had, anciently, several courts under his jurisdiction. He is the head of the College of Arms (Heralds' College), grants armorial bearings, and determines all claims in connection with them.

Early, Jubal Anderson, an American military officer; born in Franklin co., Va., Nov. 3, 1816; graduated at West Point, and served in the Florida and Mexican wars. During most of the years 1838–1861, he practised law in his native State. On the outbreak of the Civil War he entered the Confederate service as a colonel. In 1864, after some successes, he was de-

feated by Sheridan in several battles; and, Custer having also routed him at Waynesboro, in March, 1865, he was relieved of his command a few days later. He subsequently returned to the practice of law. He died March 2, 1894.

Early English, properly employed to designate the period between 1250 A. D. and 1350 A. D., but commonly used to express any period between 1250 and the close of the 15th century. In architecture, the first of the pointed or Gothic styles of architecture used in England.

Earnest, something given by a buyer to a seller as a token or pledge to bind the bargain; a part or portion of goods delivered into the possession of the buyer at the time of the sale as a pledge or security for the complete fulfillment of the contract.

Ear of Dionysius, a famous cavern near Neapolis, in which the slightest whisper was audible at a great distance; also an acoustic instrument with a large mouthpiece to collect the sound, which a flexible tube conducts to the ear of the person.

Earth, the name of the planet which we inhabit.

Earth Currents. Telegraph lines and particularly long submarine lines, are constantly troubled by violent electrical disturbances of the nature of transient currents which rush in one direction or the other through the line. The name earth currents is given to these movements of electricity. They are frequently so powerful and so changeable as to render the use of the telegraphic instruments for the time impossible, the earth currents passing so rapidly as to confuse the speaking signals completely. The nature of these disturbances is not thoroughly understood.

Earthenware, a general expression which covers all ceramic work, such as stoneware, delft, porcelain, etc.

Earthquake, the term applied to any tremor or vibration of the ground produced by subterranean causes. Many earthquakes are so gentle as to pass almost unrecognized, others excite general alarm without causing damage, while some spread destruction over wide areas. Earthquakes are felt either as vertical shocks, from below upward, as horizontal or lateral shocks, or as undulatory movements. At the time of the great earthquake of Riobamba, Ecuador, the bodies of many of the inhabitants were projected across the river and fell upon La Culla, a hill more than 300 feet high. At New Madrid, Mo., during the earthquake of 1811–1812, the trees bent as the earth-waves passed under them, immediately afterward recovering their position. Observations of this kind have led physicists to the belief that an earthquake is a wave or true undulation of the crust.

Earthquakes are propagated not infrequently in lines or zones parallel to the trend of some great valley or considerable mountain range. In the case of South American earthquakes, the vibrations are confined to the long narrow strip of low ground between the Andes and the Pacific Ocean and are not felt on the E. side of the mountains. Similarly the earthquakes that shake the coast lands of Venezuela and the United States of Colombia are rarely transmitted inland across the coast ranges.

The velocity of an earthquake is variable. Thus in the case of the earthquake of Lisbon in 1755, it seems to have considerably exceeded 1,000 feet per second, while in the Lisbon earthquake of 1761 the rate was three times greater. At Tokyo, in 1881, the velocities varied between 4,000 and 9,000 feet per second. The area disturbed by an earthquake is generally proportionate to the intensity of the shock. The great earthquake of Lisbon disturbed an area four times as great as the whole of Europe. In the form of tremors and pulsations it may have shaken the whole globe.

Earthquakes are not confined to the land. The larger number seem to originate under the sea, particularly along lines parallel to the shores of continents and islands that rise abruptly from great depths. In a violent submarine earthquake, the ordinary earth-wave and sound-wave are accompanied by sea-waves. These waves may be 20, 60, or even 80 feet higher than the highest tide and are usually more dreaded than the earthquake shock itself. The greatest sea-wave on record is that which, on Oct.

6, 1737, is said to have broken near Cape Lopatka, at the S. end of Kamchatka, 210 feet in height. Earthquakes are of most common occurrence in volcanic and mountainous regions.

Most earthquakes occur during the cold months or in winter, at which time barometric fluctuations are most numerous. Among memorable earthquakes may be noted that of Lisbon, Nov. 1, 1755, destroying 35,000 lives, which left the city in a heap of ruins, and that which destroyed Messina, Sicily, and Reggio, Italy, in Dec., 1908, with a loss of more than 150,000 lives.

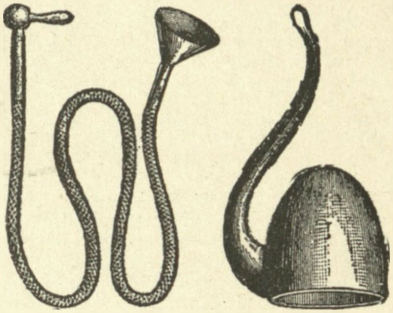
Within the United States only five great earthquakes are known to have occurred since the first settlement. The first was in 1755, in Massachusetts, which though very forcible, was much less so than the other three. The second, the most energetic of all, was that of New Madrid, Mo., in 1811. The third was in the Inyo Valley of California, in 1868, the fourth at Charleston in 1886, and the fifth along the California coast in 1906, when San Francisco and nearby towns were almost totally destroyed. The last two afforded good time data concerning the rate of transmission. The observations then made gave a speed of about 17,000 feet a second. The countries which have suffered most are those washed by the Mediterranean, the Andean regions, Central America, and Mexico. In Japan there was a tremendous earthquake beginning Sept. 1, 1923, and lasting through, with more or less disturbances, to Sept. 13. Large areas of the cities of Tokio and Yokohama were practically wiped out. Total casualties, over 1,500,000.

Earth Tremors, slight vibrations of portions of the earth's surface that may be noted by means of special instruments, their cause not being known.

Earthworks (in fortification), military works formed chiefly of earth and designed either as permanent or temporary defenses.

Earthworm, a well-known annelid familiar to all. It consists of many narrow rings in contact with each other.

Ear Trumpet, an instrument designed for the collection and conduction of sounds. By increasing the size of the auricle, a much larger volume of sound is gathered than by the natural ear without such aid.



EAR TRUMPETS.

Earwig, an insect which has a habit of concealing itself in cavities, endeavoring to reach their innermost recesses, and in rare cases may have sought a hiding place in the ear, but its passage into the internal ear would be stopped by the waxy secretions or the tympanic membrane. The common earwig is found throughout North America, Europe, North Africa, and Asia Minor. Earwigs shun light as far as possible and in the daytime may be found in various situations, such as beneath the bark of trees, under stones, in the soil, or in any suitable hole. They feed on fruits, seeds, leaves, and flowers, and at times on animal refuse.

Easement, in law, a right or privilege which one proprietor may have to use the land of another in connection with the needs of his own land, as the use of a roadway, a water-course, etc.

East, one of the four cardinal points, being the point in the heavens where the sun is seen to rise, or the corresponding point on the earth; that point of the horizon on the right hand when one's face is turned toward the North Pole. By the East, in an indefinite sense, is often meant Asia Minor, India, China, etc.

East Africa Protectorate, one of the five protectorates in BRITISH EAST AFRICA (q. v.). It extends about 400 miles along the coast N.

from Umba, at the mouth of the Umba river, and inland to the border of the Uganda Protectorate; adjoins the Italian and Abyssinian spheres on the N., and the former German East Africa on the S.; and consists of seven provinces and a tract of unorganized territory; area, 246,822 square miles; pop. estimated at 4,038,000, including 25,000 Asiatics and 2,000 Europeans and Eurasians; capital, Nairobi; other chief ports: Lamu, Vanga, and Kismayu. The religious beliefs are Pagan, but there are many Christian missions.

East Africa, German, former name of a possession acquired by Germany in 1885–90 and lost to the Entente Allies, Sept. 4, 1916. It is directly S. of British East Africa, and has an area of 384,180 square miles and estimated pop. of 10,032,000. The chief ports are Dar-es-Salaam, Bagamoyo, Kiloa, and Tanga. Railways extend from Tanga to Pongwe, Karagwe, and Mombo, and from Dar-es-Salaam to Mrogoro. Attempts to colonize the region with Germans failed. See APPENDIX: *World War.*

East Africa, Portuguese, possessions of Portugal comprising the two districts of Lourenco Marques and Mozambique, and four smaller districts. Its area is about 300,000 square miles; population about 3,000,000. The colony is administered by a governor-general and council. The chief ports are Mozambique, Quilimane, Beira, Chinde, and Lourenco Marques.

East Cape, the name of the S. E. extremity of New Guinea, in Goschen Strait.

East Chicago, a city in Lake county, Ind.; on several railroads; 20 miles E. of Chicago; is chiefly engaged in manufacturing. Pop. (1920) 19,098.

Easter, the appellation given to the festival kept in commemoration of our Saviour's resurrection.

Easter Island, a lonely Pacific islet discovered by Roggeveen on Easter day, 1722; visited in 1773 by Captain Cook; is 47 square miles in area; entirely volcanic, with extinct craters rising more than 1,000 feet. It is remarkable for the picturesque remains that have made the island famous. These include over 500 rude stone statues or busts, possibly portraits of famous persons, not idols, varying from 3 feet high to 70. There are besides 100 stone houses, with painted interiors and (undeciphered) incised tablets. The island has been, since 1888, a Chilean convict station.

Eastern Empire, the empire which had its metropolis at Constantinople, as distinguished from the Western one which had its capital at Rome.

Eastern Question, The, the term applied to the issues presented by political, racial and religious conditions existing in the Turkish empire, and in the regions recently severed from that empire.

Eastern Star, Order of the, a secret society composed exclusively of Freemasons in good standing, and their wives, mothers, sisters, and daughters, and the widows of Freemasons. The order originated in the city of New York in 1868, and rapidly extended over the country. A five-pointed star, between whose points the word "Fatal" is inscribed, is the badge of the order.

East India Company, in its original form "The Governor and Company of Merchants of London trading to the East Indies"; so the company is described in its charter, dated Dec. 31, 1600. Afterward, on July 22, 1702, "The United Company of Merchants trading to the East Indies." In 1749 the company plunged into the native wars of the Carnatic, and commenced a career of conquest which placed nearly the whole of India under the British rule.

The rise of such power excited in the home government a desire to reduce it under their control; and when as early as 1769 the company wished the loan of two ships of the line and some frigates, the ministry in granting their request intimated their intention of vesting in the admiral powers to treat independently on all maritime affairs. In 1773 the home government claimed that the territorial acquisitions of the company should be transferred after six years' grace to the crown, and change made in the constitution of the company, a Supreme Court of Judicature being also appointed in India. Pitt's Act (1784)

established a board of control over the directors. The company's charter was renewed with a few changes in 1793; subsequently at intervals of 20 years. In 1813 they lost the monopoly of the Indian trade, retaining that of China. This last was taken away in 1833. The next renewal, that of 1853, was the last that took place. The Indian mutinies of 1857 and 1858, having discredited the company's administration, its political government was brought to an end on Aug. 13, 1858.

On Nov. 1, 1858, a proclamation announced that Queen Victoria assumed the government of India. Finally the East India Stock Redemption Act, passed on May 13, 1873, but not operative till June 1, 1874, dissolved the company itself.

East Indies, the name given to India, the Malay Peninsula and the islands of the adjacent archipelago.

Eastlake, Sir Charles Lock, an English artist, and critic and historian of art; born in Plymouth, Nov. 17, 1793. He died in Pisa, Italy, Dec. 14, 1865.

East Liverpool, a city in Columbiana county, O.; on the Ohio river and the Pennsylvania railroad; 45 miles W. of Pittsburg; is in a coal and pottery clay section; has steam packet connection with all river ports; and manufactures earthenware, pottery, sewer-pipe, and terra cotta. Pop. (1920) 21,411.

East Main, a region of Canada, consisting of the greater part of the peninsula of Labrador.

Eastman, Charles Rochester, an American palæontologist; born in Cedar Rapids, Ia., June 5, 1868; was graduated at Harvard University. Subsequently he served on the United States and Iowa State Geological Surveys; and took charge of the department of vertebrate palæontology in the Agassiz Museum at Harvard. In 1901 he was tried on the charge of having killed his brother-in-law, and acquitted.

Eastman, John Robie, an American astronomer; born in Andover, N. H., July 29, 1836; was graduated at Dartmouth College; became assistant in the U. S. Naval Observatory and Professor of Mathematics in the navy. He died Sept. 26, 1913.

Easton, city and capital of Northampton county, Pa.; on the Delaware and Lehigh rivers, the Delaware, Lehigh, and Morris canals, and several railroads; 65 miles N. of Philadelphia; has important manufactures and large railroad shops; and is widely-known as the seat of Lafayette College (Presb.). Pop. (1920) 33,813.

Easton, Morton William, an American philologist; born in Hartford, Conn., Aug. 18, 1841; became Professor of Comparative Philology in the University of Pennsylvania; wrote much on Sanskrit, Iranian, and English subjects.

East Orange, a city in Essex county, N. J.; on the Lackawanna and Erie railroads and trolley from Newark, which it adjoins; has manufactures of electrical appliances; is chiefly a residential place of New York business men. Pop. (1920) 50,710.

East River, the strait between Long Island Sound and New York harbor, separating the boroughs of Manhattan and Bronx, from Brooklyn and Queens. It is about 15 miles long and varies in width from ¾ ths of a mile to 3½ miles. It is spanned by bridges and underlaid by tunnels.

East St. Louis, a city in St. Clair county, Ill.; on the Mississippi river, and about a dozen trunk line railroads; opposite St. Louis, with which it is connected by a costly steel bridge. It contains one of the largest stock-yards in the country; has an extensive river trade; and has manufactures of an annual value of over $37,500,000. Pop. (1920) 58,547.

Eaton, Dorman Bridgman, an American lawyer; born in Hardwick, Vt., June 27, 1823; became widely known by his advocacy of civil service reform. He died Dec. 24, 1899.

Eaton, John, an American educator; born in Sutton, N. H., Dec. 5, 1829; in 1871–1886 was United States Commissioner of Education; and in 1898 a special commissioner to establish the American system of education in Porto Rico. He died Feb. 9, 1906.

Eaton, Wyatt, an American artist, born in Phillipsburg, Quebec, May 6, 1849. He settled in New

York city; was a founder of the Society of American Artists; chief works, portraits; died June 7, 1896.

Eau Claire, city and capital of Eau Claire county, Wis.; on the Eau Claire and Chippewa rivers, and the Wisconsin Central and other railroads; 84 miles E. of St. Paul, Minn.; is in an extensive hard-wood timber, farming, and live-stock section; is one of the most important lumbering points in the Northwest; and is chiefly engaged in shipping lumber. Pop. (1920) 20,880.

Eau de Vie, brandy; the best being called cognac.

Ebbsfleet, a hamlet in the Isle of Thanet, County Kent, England; memorable as the place where the first Anglo-Saxon invaders landed.

Ebelians (named after Ebel, a Prussian archdeacon, one of the founders), a revivalist sect which arose in Konigsberg, Prussia, about 1836, the Archdeacon Ebel and Dr. Diestel being its leaders. They believed in spirtual marriage.

Ebeling, Christoph Daniel, a German scholar and historian; born in Hildesheim about 1741. His chief work is a "Geography and History of North America," for which he received a vote of thanks from Congress. He died in Hamburg, June 30, 1817.

Eberhard, Christian August Gottlob, a German poet and descriptive writer; born Belzig, Jan. 12, 1769. He died in Dresden, May 13, 1845.

Eberhard, Johann August, a German philosophical writer; born in Halberstadt, Aug. 31, 1739; died there, Jan. 6, 1809.

Ebers, Georg Moritz, a German Egyptologist and novelist; born in Berlin, March 1, 1837; was educated at Froebel's school, and studied law at Gottingen. He afterward devoted himself to the study of Egyptology, at Berlin. His visit to Egypt resulted in the discovery of the celebrated hieratic medical "Papyrus Ebers." He died near Munich, Bavaria, Aug. 8, 1898.

Ebert, Frederich, born 1872. The first President of the German Republic. Died, 1925.

Eblis, in Arabian mythology, the ruler of the evil genii or fallen angels.

Ebner-Eschenbach, Baroness Marie von, an Austrian author; born (Countess Dubsky), in Castle Zdislavic, Moravia, Sept. 13, 1830.

Ebonite, Goodyear's name for what is generally known as hard rubber. It is also called vulcanite.

Ebro, a river in Spain, which has its source in the Province of Santander, about 25 miles S. of the Bay of Biscay, and after a S. E. course of about 500 miles enters the Mediterranean. Its navigation is much interrupted by rapids and shoals, to avoid which a canal about 100 miles long has been constructed nearly parallel to its course.

Ecbatana, the chief city or ancient metropolis of Media, the summer residence of the Median, Persian and Parthian kings. It was a place of great splendor at an early period. Its site can no longer be fixed with certainty.

Ecce Homo ("Behold the man!"), a name often given to crucifixes and pictures which represent Christ bound and crowned with thorns.

Eccentric, a term in mechanics applied to contrivances for converting circular into reciprocating (backward and forward) rectilinear motion, consisting of variously-shaped disks attached to a revolving shaft not in their center. An eccentric wheel is a wheel fixed on an axis that does not pass through the center.

Eccles, Robert Gibson, chemist; born in Scotland, Jan. 1, 1848; was educated in Long Island College; became chemist in the United States Bureau of Indian affairs; and dean in the Brooklyn College of Pharmacy. He has made several valuable chemical discoveries, and has written many scientific treatises.

Ecclesia (convocation), a popular assembly, especially that of Athens where the people exercised full sovereignty, and at which every citizen of 20 years of age was entitled to vote. The term was applied by the Septuagint translators to the Jewish commonwealth, and so was naturally adopted by New Testament writers to designate the Church.

Ecclesiastes, the title by which the Septuagint translators rendered

the Hebrew Coheleth (the preacher or caller of assemblies), one of the canonical books of the Old Testament. According to its opening words, and to Jewish tradition, it was written by Solomon. Modern criticism, however, from an analysis of its language and style, believe it to have been written about B. C. 350. It is a study of the philosophy of life, in which the author tries to discover its chief good.

Ecclesiasticus, the title of a book placed by Protestants and Jews among the apocryphal writings. The author calls himself Jesus the son of Sirach.

Eccleston, Samuel, an American clergyman; born in Kent co., Md., in 1801; was educated in St. Mary's College, Baltimore, and was ordained to the priesthood of the Roman Catholic Church, 1825. He subsequently served St. Mary's College as vice-president and president; became Archbishop of Baltimore in 1834; and established the College of St. Charles in 1850; died in Georgetown, D. C., 1851.

Echegaray, Jose, a Spanish dramatist; born in Madrid in 1832. He is author of several treatises on mechanics and civil engineering, and was for a time minister of commerce and of public instruction. Since 1874 he has given himself wholly to the drama.

Echelon, the position of an army when its different positions are somewhat in the form of steps, or with one division more advanced than another, being parallel and none of them in line.

Echinus, Sea-urchin, or **Sea-egg,** a marine animal inhabiting the seas of most countries, and subject to great variety in the species. Echini are said to retreat to deep water on the approach of a storm, and preserve themselves from injury by attaching themselves to submarine bodies.

Echo, the repetition of a sound by the reflection of sound waves at some moderately even surface, as the wall of a building. The waves of sound on meeting the surface are turned back in their course according to the same laws that hold for reflection of light.

Eck, Johann, Maier von, the celebrated opponent of Luther; born in 1486. He went to Rome in 1520 and returned with a papal bull against Luther, in attempting to publish which he met with violent popular opposition. In 1530, while at the diet of Augsburg, he made the remarkable admission that he could confute the Augsburg Confession by the fathers but not by the Scriptures. He died in 1543.

Eckermann, Johann Peter, a German poet; born in Winsen, Hanover, in 1792. He has a permanent place in literature through his deeply affectionate record of "Conversations with Goethe in the Last Years of his Life"; it has been translated into nearly all the languages of Europe. Died in 1854.

Eckert, Thomas Thompson, an American telegrapher; born in St. Clairsville, O., April 23, 1825. In 1852–1859 he was superintendent of the telegraph line between Pittsburg and Chicago; was appointed superintendent of the Military Telegraph Department of the Potomac, and later general superintendent of the military telegraph of the army. In 1864–1866 he was Assistant Secretary of War; in 1875–1881 president of the American Union Telegraph Company, and in 1892 became president and manager of the Western Union Telegraph Company. He died Oct. 20, 1910.

Eckford, Henry, an American naval architect; born in Irvine, Scotland, March 12, 1775. He became a shipbuilder in New York, in 1796; designed and constructed a fleet of war vessels for the United States government in 1812–1814; built the "Robert Fulton," which made the first voyage by steam to New Orleans and Havana; became naval constructor at the Brooklyn navy-yard. He died in Constantinople, Nov. 12, 1832.

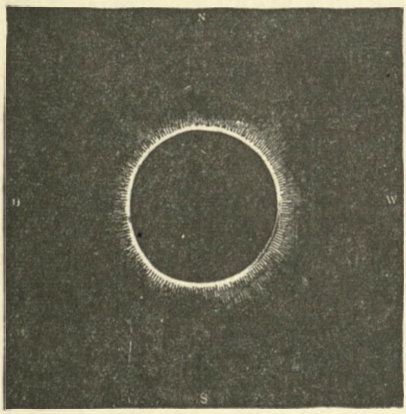
Eckhart, Meister, one of the profoundest speculative thinkers among the German mystics. Of his personal history very little is known. He was born in Strasburg or Saxony about the end of the 13th century, and died in 1327 at Cologne.

Eckmuhl, a village of Bavaria, circle of Lower Bavaria, on the Gross Leben, 13 miles S. S. E. of Ratisbon, the scene of a sanguinary battle between the French and Austrians on April 22, 1809, in which the latter were defeated.

Eckstein, Ernst, a German author; born in Giessen, Feb. 6, 1845. He was a very prolific writer and wrote many stories of ancient classic life. He died in 1901.

Eclectic, selecting; relating to the Eclectics, philosophers of antiquity, who, without attaching themselves to any particular system, or forming one of their own, professed to select from the various existing systems what they believed to be true, and thus to construct a new and complete whole. Modern eclecticism is considered to have taken its rise in the 17th century with Bacon and Descartes; but in the 19th century it received a fresh impetus through the labors of the German philosopher Hegel, and of Victor Cousin.

Eclipse, an interception or obscuration of the light of the sun, moon or



ECLIPSE.

other heavenly body by the intervention of another and non-luminous heavenly body or by its shadow.

Ecliptic, the sun's path, the great circle of the celestial sphere, in which the sun appears to describe his annual course from West to East — really corresponding to the path which the earth describes. The Greeks observed that eclipses of the sun and moon took place near this circle; whence they called it the ecliptic.

Ecole des Beaux Arts (School of Fine Arts), the French government school in Paris, founded by Mazarin in 1648, and provided with an extensive staff of teachers.

Ecole Normale Superieure (Superior Normal School), a school in Paris for the training of those teachers who have the charge of the secondary education in France.

Ecole Polytechnique (Polytechnic School), a school in Paris established with the purpose of giving instruction in matters connected with the various branches of the public service, such as mines, roads, and bridges, engineering, the army and the navy, government manufactures, etc.

Ecthyma, a pustular disease of the skin, in which the pustules often reach the size of a pea, and have a red, slightly elevated, hardish base. In the course of two or three days after the appearance of the pustule it is replaced by a scab, which adheres firmly to the base, and is somewhat concave. On its removal, a deep red mark, a new scab, an ulcer, or a healed scar remains. The disease may be acute or chronic.

Ecuador, a republic of South America, situated under the equator, whence it takes its name, between Peru and Colombia. It is of triangular shape; area, about 116,000 square miles, including the Galapagos Islands of 2,400 square miles. Between Ecuador, Peru, and Colombia there have been for some time boundary disputes, at present unsettled. The chief towns are Quito, the capital (pop). 70,000); Riobamba (18,000) and Cuenca (50,000), all situated at a height of 9,000 feet or more above the sea. The chief port of Ecuador is Guayaquil (pop. 100,000). The most considerable rivers, the Tigre, Napo, Pastaza, etc., belong to the basin of the Amazon; and some of them, notably the Napo, are navigable for long distances. On the W. slope of the Andes the chief rivers are the Esmeraldas and the Guayaquil.

In the higher regions it is rough and cold, but in great part the elevated valleys, as that of Quito, have a delightful climate. Here the chief productions are potatoes, barley, wheat, and fruits. In the lower regions are grown all the food products

of tropical climates, cacao, coffee, sugar, etc. Ecuador is comparatively poor in mammalia, though various kinds of deer as well as tapirs and peccaries are found in the forests. Parrots and humming-birds are also numerous, but perhaps the most remarkable of the birds is the condor, which dwells on the slopes of the Andes. Reptiles, including serpents, are numerous. The forests yield cinchona bark, caoutchouc, sarsaparilla, vegetable ivory, etc.

Very little has been attempted in modern times in the direction of mining industry in Ecuador. In the province of Esmeraldas hydraulic washing of gravel beds is being carried on by an American company, and quartz crushing is also in progress at Zuruma, in the province of Oro. The Indians do some washing in the beds of streams and rivers; a small supply of gold is obtained from this source. The existence of petroleum has been proved in various localities, but nothing has yet been done to develop an industry in this product. Deposits of copper, lead, iron, and coal also occur, but are not worked. In the province of Cuenca valuable lodes of silver-bearing ore are known, but are not exploited. Quicksilver is said to exist in the province of Loja. Careful prospecting of the mineral resources of Ecuador would doubtless disclose much natural wealth, but the difficulties and cost of transport have hitherto proved insurmountable obstacles to the practical development of the mining industry.

The Roman Catholic, under the constitution, is the only form of religion tolerated. The government has made education free and compulsory. Commercial and technical schools have been started at Guayaquil and Quito.

The executive government is vested in a President, elected for four years, who is assisted by a Council of State of five members. The Congress is the legislative body, and consists of two Houses, one formed of Senators, two for each province, the other of Deputies, one for every 30,000 inhabitants, both elected by universal suffrage. The Congress has extensive privileges and cannot be dissolved by the President. The seat of government is at Quito.

Ecuador at the time of the conquest of Peru by the Spaniards formed part of the great empire of the Incas. It was erected first into a viceroyalty of Peru, then (from 1564 to 1718) into an independent presidency. In 1718 it became part of the presidency of New Granada. In the revolutionary war against Spain, Ecuador, along with the neighboring territories, secured its independence in 1822, and was ultimately erected into a separate republic in 1831. Of the present population, the aboriginal red race forms more than half; the rest are negro and Indian blood, and Spanish Creoles or whites. The latter are the chief land owners. Pop. (1921) 1,500,000.

Ecumenical Council, a general ecclesiastical council, to which delegates are summoned from all churches holding the same creed, in all countries in the world.

Eczema, one of the commonest of all diseases of the skin, and also the most variable in its manifestations. It may be acute or extremely chronic, may affect any portion of the skin, and may occur at any age from infancy to old age.

Edda, a name given by Bishop Brynjulf Sveinsson to a volume containing the system of old Scandinavian mythology, as being the mother or source of all Scandinavian poetry. It was originally compiled by Sæmund, a Christian priest in Iceland, who died in 1133, and contained poems and chants of a mythic, prophetic, and religious character.

Eddy, Clarence, an American organist; born in Greenfield, Mass., June 23, 1851; studied with Haupt in Berlin, 1871. He made successful tours through Europe, and in 1895 removed to Paris. In 1899 he was appointed director of music at the Paris Exposition of 1900.

Eddy, Mary Baker Glover, an American reformer; born in Bow, N. H.; received a public school education, and was connected with the Congregational Church till 1866, when she discovered what are known as the principles of Christian Science. In 1867 she began to teach them, and in 1879 founded the Church of Christ (Christian Scientist) in Boston, Mass. In 1881 she was ordained to the ministry, in the same year established the Massachusetts Metaphysical College in Boston; and in 1883 started the

"Christian Science Journal." She was author of "Science and Health, With Key to the Scriptures"; and numerous other works on the subject. She died Dec. 3, 1910.

Eddy, Henry Turner, an American educator; born in Stoughton, Mass., June 9, 1844; was graduated at Yale College. He was Assistant Professor of Mathematics and Civil Engineering in Cornell University; Professor of Mathematics, Astronomy and Civil Engineering in the University of Cincinnati; president of the Rose Polytechnic Institute, Terre Haute, Ind., and then accepted the chair of Engineering and Mechanics in the University of Minnesota.

Eddy, Thomas, philanthropist; born in Philadelphia, Pa., Sept. 5, 1758; received but little education, being apprenticed to a tanner when 13 years old. For the purpose of becoming a merchant he removed to New York in 1779. He was totally ignorant of business and his possessions amounted to less than $100. He failed in 1780, and entered the insurance business in 1790, in which he made a large fortune. With Philip Schuyler and Ambrose Spencer he presented a bill for establishing a penitentiary system in 1796, which was passed. In 1793 he was appointed by the Society of Friends, to visit the Indians in New York State; was one of the governors of the New York Hospital; and was one of the founders of the Bloomingdale Insane Asylum. He was also one of the originators of the New York Savings bank and the New York Bible Society, and a conspicuous promoter of the Erie canal. He died in New York city, Sept. 16, 1827.

Eddystone, a group of gneiss rocks, daily submerged by the tide, in the English Channel, 9 miles off the Cornish coast, and 14 S. S. W. of Plymouth Breakwater. The frequent shipwrecks on these rocks led to the erection of a lighthouse on them in 1669–1700; but the great storm of Nov. 20, 1703, completely washed it away. Another lighthouse was built in 1706–1709. This was burned in 1755. The next, noted for its strength and the engineering skill displayed in it, was constructed in 1757–1759. The granite was dovetailed into the solid rock, and each block into its neighbors. As the rock on which this tower was built became undermined and greatly weakened by the action of the waves, the foundation of another was laid on a different part of the reef in 1879. Its light is visible in clear weather at a distance of 17½ miles.

Edelweiss (German, meaning "noble white"), a composite plant inhabiting the Alps, and often growing in the most inaccessible places.

Eden, the garden of paradise.

Eden of America, a name bestowed on the island of Aquidneck, off the coast of Rhode Island, on account of its great fertility.

Edentata, an order of mammals quite or nearly destitute of teeth.

Edfu, a town of Upper Egypt; situated on the left bank of the Nile. It contains the remains of two temples, the larger of which is the best preserved monument of its kind in Egypt.

Edgeworth, Maria, an English novelist; born in Hare Hatch, Berkshire, Jan. 1, 1767. She died May 21, 1849.

Edgren, August Hjalmar, a Swedish author; born in Wermland, Sweden, in October, 1840. He came to the United States in 1860; joined the 99th New York Regiment in 1862, and in 1863 entered the engineer corps of the army. He was connected with Yale University from 1874 to 1880; Professor of Modern Languages and Sanskrit in Nebraska University from 1880 to 1884; and Professor of Romance Languages at the last institution since 1893.

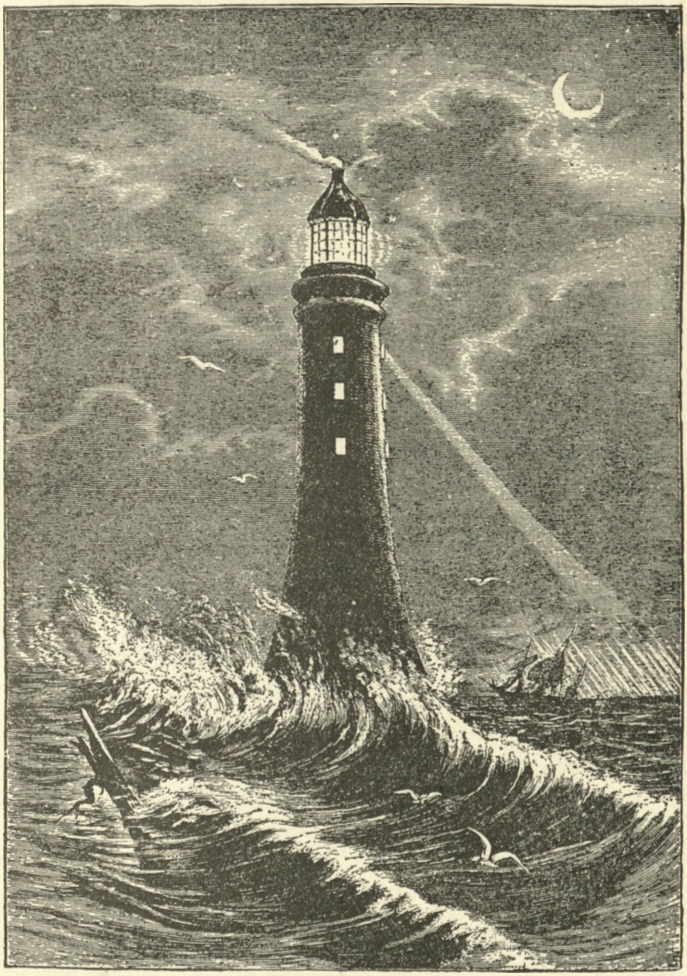
Edhem Pasha, a Turkish soldier and statesman; born in 1851. He commanded the Turkish forces in the Greco-Turkish War; died in 1910.

Edible Bird's Nest. See BIRD'S NEST; SALANGANE.

Edict, a proclamation or decree issued generally by royal or ecclesiastical authority; an order promulgated by a sovereign or the ruling authorities to the subjects, as a rule or law.

Edict of Nantes, an edict by which, on April 13, 1598, Henry IV. of France granted toleration to his Protestant subjects. It was revoked on Oct. 22, 1685, by Louis XIV., the unwise act causing the expatriation of about 50,000 Protestant families, who

carried their industry to England and other lands. The loss to France was great, as was the gain to those countries which were wise and hospitable enough to afford an asylum to the refugees.



EDDYSTONE LIGHTHOUSE.

Edinburgh, the metropolis of Scotland, and one of the finest as well as most ancient cities in the British empire; lies within 2 miles of the S. shore of the Firth of Forth. It is picturesquely situated, being built on three eminences which run in a direction from E. to W., and surrounded

on all sides by lofty hills except on the N., where the ground slopes gently toward the Firth of Forth. The central ridge, which constituted the site of the ancient city, is terminated by the castle on the W., situated on a high rock, and by Holyrood House on the E., not far from which rise the lofty elevations of Salisbury Crags, Arthur's Seat (822 feet high), and the Calton Hill overlooking the city. The valley to the N., once the North Loch, but now drained and traversed by the North British railway, leads to the New Town on the rising ground beyond, a splendid assemblage of streets, squares, and gardens. The houses here, all built of a beautiful white freestone found in the neighborhood, are comparatively modern and remarkably handsome.

The palace of Holyrood, or Holyrood House, as it is more generally called, stands at the lower or E. extremity of the street leading to the castle. No part of the present palace is older than the time of James V. (1528), while the greater portion of it dates only from the time of Charles II. In the N. W. angle of the building are the apartments which were occupied by Queen Mary, nearly in the same state in which they were left by that unfortunate princess. Adjoining the palace are the ruins of the chapel belonging to the Abbey of Holyrood, founded in 1128 by David I. The Advocates' Library, the largest library in Scotland, contains upward of 250,000 printed volumes and 2,000 MSS.

The origin of Edinburgh is uncertain. Its name is thought to be derived from Eadwinsburh, the Burh of Edwin, a powerful Northumbrian king who absorbed the Lothians in his rule. The town was made a royal burgh in the time of David I.; but it was not till the 15th century that it became the recognized capital of Scotland. Pop. (1921) 420,281.

Edinburgh, Duke of, Prince Alfred Ernest Albert, Duke of Saxony and of Saxe-Coburg-Gotha, the second son of Queen Victoria; born in Windsor Castle, Aug. 6, 1844. In 1874 he married the Grand Duchess Marie, only daughter of Alexander II. of Russia. In 1882 he was made vice-admiral, and in 1893 he succeeded his uncle as Reigning Duke of Saxe-Coburg and Gotha. He died in Coburg, July 30, 1900.

Edinburgh University, the latest of the Scottish universities; was founded in 1582 by a charter granted by James VI. The government, as in the other Scottish universities, is vested in the Senatus Academicus, the university court, and the general council. The chancellor of the university is elected for life by the general council. The library of the university contains over 200,000 printed volumes, and 7,000 manuscripts. There is also a separate theological library containing about 10,000 volumes. There are various bursaries, scholarships, and fellowships, amounting annually to about $50,000.

Edison, Thomas Alva, an American inventor; born in Milan, O., Feb. 11, 1847. In early life he was denied the privileges of continuous schooling, but being of an eager and inquiring disposition he acquired a large and varied stock of knowledge by his own industry. Before he was 12 years of age he became a train boy on the Detroit and Port Huron branch of the Grand Trunk railroad, and learned to operate the telegraph. The subject of telegraphy at once interested him, and he began to study batteries, wires and instruments, wherever he could find them. His first invention to be patented was a commercial stock indicator, and the proceeds of this invention, which at once came into wide use, enabled him to establish a laboratory at Newark, N. J., afterward removed to Menlo Park, and then to its present location at West Orange, N. J. From this beginning he became known to all the world as one of the greatest inventors of the 19th century. More than 300 patents have been issued on his inventions, and he has besides produced hundreds of minor contrivances and improvements not covered by patents. Among his more important inventions may be named the phonograph, a telephone for long distance transmission, a system of duplex telegraphy (which he subsequently developed into quadruplex and sextuplex transmission), the carbon telephone transmitter, the microtasimeter, the aerophone, megaphone, the incandescent electric lamp,

the kinetoscope, and a storage battery for street cars and automobiles. When the United States entered the World War he promptly tendered the President the services of himself and his great laboratory, and at once engaged in constructive work for the government of a character that for prudential reasons was kept secret.

Edmonton, city and capital of Edmonton District and of the Province of Alberta, Canada; on the North Saskatchewan river and the Canadian Northern and Canadian Pacific railways; 175 miles N. E. of Calgary; is chiefly engaged in lumbering and the fur trade. Pop. (1921) 58,627.

Edmunds, George Franklin, an American lawyer; born in Richmond, Vt., Feb. 1, 1828. In 1866 he was elected to the United States Senate, and was thrice reëlected. He was the author of the act of March 22, 1882, known as the "Edmunds Act," which provided for the suppression of polygamy in Utah and the disfranchisement of any person convicted of practising it. He was also the author of the "Anti-trust Law" of 1890.

Edom, in the New Testament Idumæa, in ancient times a country lying to the S. of Palestine. The Edomites are said in Genesis to be the descendants of Esau, who was also called Edom

Edsall, Samuel Cook, clergyman; born in Dixon, Ill., March 4, 1860. After several years of successful work as a pastor in Chicago he was elected Missionary Bishop of North Dakota in 1898, and was consecrated Jan. 25, 1899.

Edson, Cyrus, an American bacteriologist; born in Albany, N. Y., Sept. 8, 1857. Dr. Edson discovered a new treatment for consumption, malaria, and other germ diseases, in 1896, which he named aseptolin. His publications include about 80 papers on medical and sanitary subjects. He is also the inventor of many surgical instruments. He died Dec. 2, 1903.

Education, the art of drawing out or developing the faculties, the training of human beings for the functions for which they are destined. Education means the imparting or gaining of knowledge of every kind, good as well as evil; but specifically it signifies all that broadens a man's mind, disciplines his temper, develops his tastes, corrects his manners, and molds his habits. In a more limited sense, while meaning any method of training the young, its highest form is PEDAGOGICS (q. v.), the developed science of teaching.

Edward the Confessor, son of Ethelred, succeeded Hardicanute in 1041. Having been reared in Normandy, he brought over many of the natives of that country, whom he preferred at his court, which gave great disgust to his Saxon subjects. Notwithstanding this, he kept possession of his throne, and framed a code which is supposed to be the origin of the common law of England. He abolished the tax of danegelt, was the first who pretended to cure the king's evil by touch, and restored Malcolm to the throne of Scotland, which had been usurped by Macbeth. He consulted William of Normandy about the choice of a successor, and this afterward furnished that prince with a plea for invading the kingdom after the death of Edward, in 1066.

Edward I. (Norman line), surnamed Longshanks; born in 1239, succeeded his father, Henry III., in 1272. At the time of his father's death he was in Palestine, fighting against the Saracens for the recovery of Jerusalem, and when he returned, completed the conquest of Wales and subdued Scotland. To preserve Wales, he caused his son, who was born in Cærnarvon, to be called the "Prince of Wales," which ever since has continued to be the title of the eldest son of the King of England. His efforts to subdue Scotland were successful, for a time, and he did not survive to witness the great defeat of the English at Bannockburn, which assured the independence of Scotland. He died in 1307.

Edward II., son of the above, was created Prince of Wales in 1284, and after his accession to the throne suffered himself to be governed by his favorites, Gaveston and the Spencers, which occasioned the barons to rise against him. In his reign the battle of Bannockburn was fought near Stirling, in Scotland, which restored to

that country whatever she had lost in the previous reign, of her independence. In 1327, he was deposed by his subjects, and his crown conferred on his son, when he was confined in Berkeley Castle, Gloucestershire, where he was murdered in 1327.

Edward III., eldest son of Edward II. and Isabella of France; born in 1312, succeeded to the throne on the deposition of his father, 1327. Though a regency was appointed, the chief power was held by the queen and her paramour, Roger Mortimer, Earl of March. In 1330, Edward assumed the government, had Mortimer seized and hanged, and imprisoned Queen Isabella. The chief events of his reign were the wars with Scotland, and the wars with France, the latter marked by, among others, the victory at Crécy, and that at Poitiers, when the Black Prince captured the French king and his sons. The commerce and manufacture of England grew with her foreign military prestige, and much of her religious and social reform dates from this reign. Edward died June 21, 1377.

Edward IV., King of England; born in 1441; died 1483; claimed the throne by descent from the fourth son of Edward III., while the House of Gaunt laid claim by descent from the third son. Edward defeated Henry VI. and was declared king in 1461. See WARWICK.

Edward V., King of England, the eldest son of Edward IV., was in his thirteenth year when he succeeded his father in 1483. He fell into the hands of his uncle, the Duke of Gloucester, who made himself king as Richard III., and caused the young king and his brother to be sent to the Tower, where, it was learned later, they were smothered by hired ruffians.

Edward VI., King of England, son of Henry VIII. by Jane Seymour, born 1537; died 1553. At his father's death he was only ten years of age. His education was intrusted to men of the first character for learning, under whose training he made great progress and grew up with a rooted zeal for the doctrines of the Reformation. His reign was, on the whole, tumultuous and unsettled. In October 1551 the Protector Somerset, who had hitherto governed the kingdom with energy and ability, was deposed by the intrigues of Dudley, duke of Northumberland, who became all-powerful and induced the dying Edward to set aside the succession of his sisters, Mary and Elizabeth, and settle the crown upon Lady Jane Grey, to whom he had married his son Lord Guildford Dudley.

Edward VII., King of the United Kingdom of Great Britain and Ireland, and Emperor of India, the Colonies, Protectorates, and Dependencies; the name and title assumed by Albert Edward, Prince of Wales, son of Victoria, queen and empress, and of Albert, Prince Consort, on his accession to the throne on the death of his mother, Jan. 22, 1901.

Edward VII. was born Nov. 9, 1841. He was in his 60th year when he came to the throne. His birth was the signal for a tremendous celebration. The queen was very popular from the beginning of her reign. The birth of her heir brought out expressions of congratulation from the poorest of her subjects as well as from the most aristocratic. He was created Prince of Wales before he was four weeks old. Soon after reaching his independence the prince made a tour of Continental Europe, with Mr. Tarver, who had been appointed his chaplain and director of studies. The queen's subjects had become much exercised meanwhile, lest the Prince of Wales should be made a dull boy by over much study. At the end of the European tour the Prince of Wales went to Edinburgh and was seriously immersed in study for several months. He went from Edinburgh to Oxford, where he attended Christ Church College. It is recorded that as an undergraduate his Royal Highness took life easily and joined freely in the social life of the university. He also matriculated at Trinity College, Cambridge.

While Prince of Wales he visited the United States with the Duke of Newcastle in 1860. He distinguished himself on this side of the ocean by the greatest good nature and tact and by his willingness to enjoy any diversion which was offered to him. On this trip the Prince of Wales visited Detroit, Chicago, St. Louis, Washington, Richmond, Philadelphia and New

York. The prince's visit to Mount Vernon was notable for the reverence which the future king manifested to the memory of George Washington. It was one of the marked incidents of the trip. A ball was given in New York in his honor, at which 3,000 guests were present. The floor of the Academy of Music, where the ball was held, caved in during the entertainment and there was some disorder. The prince also attended a literary entertainment in Boston, at which Longfellow, Holmes, Emerson, Thoreau and other Americans of distinction were presented to him.

In the autumn of 1861 the Prince of Wales met Alexandra, Princess of Schleswig-Holstein, daughter of Prince Christian, heir designate of the throne of Denmark. They were married on March 10, 1863, 10 months before Prince Christian reached the throne of Denmark. Their early married life was taken up by a series of Continental tours. Immediately after a visit to Egypt and Greece in 1870 the Prince of Wales was attacked by typhoid fever. For a long time it was believed that he could not recover, but it was announced early in 1871 that he would surely be restored to the nation. A special thanksgiving service was held in St. Paul's at which 13,000 persons were present.

In 1875 the prince visited India. There was very serious opposition to this trip, but before it was over it was demonstrated that a great deal had been accomplished in the direction of maintaining the peace of the empire, and there were celebrations of his return that nearly surpassed those which were brought about by his recovery from the typhoid fever. After the Indian visit the life of Edward was marked by his lively interest in public charities and exhibitions of whatever character, so long as they were of a sort to interest any great number of the people, and he was in no small part responsible for the success of the Colonial and Indian Exhibition of 1886.

King Edward has always been noted for the warmth of his cordiality to Americans. He has been attacked again and again by the opponents of his own reign and that of his mother for this trait.

The king is known above all things for his painstaking courtesy in small matters. There are many instances of his having stopped his carriage in the streets to apologize to one who had been endangered by his coachman's haste or carelessness. Once or twice he was the target of an assassin's bullet. The best remembered incident of the sort occurred in Brussels in 1898, when he was shot at by a half-witted youth.

Elaborate national and international preparations for the coronation ceremonies in Westminster Abbey were made for June 26, 1902; but on June 24 all festivities were suspended in consequence of an illness requiring a surgical operation. He fully recovered and the coronation was accomplished August 9th, the same year. He died May 6, 1910, and was succeeded by his son, who assumed the title of George V.

Edward. See WALES, PRINCE OF.

Edward, Prince of Wales, surnamed the Black Prince; eldest son of Edward III.; was born in 1330. In 1345 he accompanied his father in his expedition to France, and displayed unusual heroism at the battle of Crecy. In 1356 he gained the battle of Poitiers, and brought the French king and his son prisoners to England. He died before his father, in 1376, leaving two sons, the elder of whom, Richard, was the successor of Edward III.

Edwards, Amelia Blandford, an English Egyptologist and writer; born in London in 1831. She died in Weston-super-Mare, Somersetshire, April 15, 1892.

Edwards, George Wharton, an American artist and author; born in Fair Haven, Conn., in 1859. Most of his stories have appeared in the "Century Magazine."

Edwards, Harry Stillwell, an American journalist; born in Macon, Ga., April 23, 1854. He is well known as a writer of dialect stories.

Edwards, Jonathan, an American theologian; born in East Windsor, Conn., Oct. 5, 1703. Jonathan entered Yale College in September, 1716, and after taking his degree in 1720, remained nearly two years at Yale, preparing for the ministry. In September, 1723, he was elected a tutor in Yale, and in the following year began to act in that capacity, but re-

Biblioteka Wojsk. Akad. Polit.

signed the post in 1726, in order to become minister at Northampton, Mass., where he was ordained Feb. 15, 1727. His various sermons and disquisitions procured for him a wide reputation. His "Treatise on Religious Affections" was republished in England and Scotland, and won a place for him among the first writers of his sect.

After more than 23 years in Northampton he accepted a call to serve as a missionary among the Indians at Stockbridge, Mass. Here he remained six years, exerting himself with an apostolic spirit, and here he composed his famous works on the "Freedom of the Will," and on "Original Sin." In 1757 he was chosen president of the College of New Jersey (now Princeton University), and accepted with reluctance owing to his desire to accomplish two great literary enterprises which he had begun long before—a "History of the Work of Redemption," and a "View of the Harmony of the Old and New Testaments." In January, 1758, he went to Princeton, where he died March, 1758.

Edwards, Jonathan, the younger, the second son of the preceding; was born at Northampton, Mass., in 1745. He graduated at Princeton in 1765, and after serving as pastor in several Connecticut churches, became president of Union College, Schenectady, N. Y. He was the founder of the "New England theory of the Atonement." He died in 1801.

Edwards, Oliver, an American soldier; born in Springfield, Mass., Jan. 30, 1835; entered the Union army at the beginning of the Civil War, and rose, gaining almost every step by acts of personal gallantry, to the rank of Brigadier-General in 1865. His services were most conspicuous during the second day of the battle of the Wilderness; at Spottsylvania (1864), where he held the "bloody angle" for 11 hours with his own brigade, and, at the head of 20 regiments, faced the Confederates for 13 hours thereafter; and at Sailor's Creek, where he captured Generals Custis Lee and Ewell. He died April 28, 1904.

Eekhoud, Georges, a Belgian novelist; born in Antwerp, May 27, 1854. His first considerable novel, "The Militia of St. Francis," is a masterly portrayal of Flemish peasant life, especially its naive mystic religiousness. In poetry he has developed from romanticism to pronounced realism.

Eel, the general name of a family of fishes. They belong to various genera. The smoothness of the body — the scales being inconspicuous — and the serpentine movements of eels are proverbial. Eels avoid cold, and frequently migrate in winter to the mud or brackish water of estuaries where the temperature is higher. They have even been met with in large numbers performing migrations on land, mostly intervening necks of soil covered with damp grass. Some eels spawn in the estuaries of rivers, and immense numbers of the young eels pass up the streams in spring. Eels are considered excellent food.

Effendi, a title of respect among the Turks, bestowed on civil officials, and on educated persons generally, in contradistinction to the military title of Aga. It is nearly equivalent to the French Monsieur, but is suffixed to the personal name.

Efflorescence, in botany, the time of flowering; the season when a plant shows its blossoms.

Egan, Maurice Francis, an American author; born in Philadelphia, May 24, 1852; Professor of English Language and Literature in the Catholic University of America in 1895–1907; then Minister to Denmark.

Egbert, considered the first king of all England, was of the royal family of Wessex. On the death of Brithric he succeeded him as king of Wessex in 800, reduced the other kingdoms, and rendered them dependent on him in 827. He died in 838.

Egbert, Harry C., an American military officer; born in Pennsylvania, Jan. 3, 1839; entered the army as first lieutenant of the 12th United States Infantry in September, 1861. In October, 1898, he was commissioned Brigadier-General of volunteers. When the war with Spain broke out he commanded the 6th Infantry, of which he was lieutenant-colonel. In the Santiago campaign, while leading a charge at El Caney, July 1, 1898, he was shot through the body. For his gallantry in this action he

was promoted colonel. He had scarcely recovered from his wound when he applied for service in the Philippines. He arrived at Manila with his regiment, March 4, 1899, and while storming Malinta, on the 26th, was wounded and died within an hour.

Egede, Hans, the apostle of Greenland; was born in 1686 in Norway. In 1721 he set sail for Greenland with the intention of converting the natives to Christianity, and for 15 years performed the most arduous duties as missionary, winning by his persevering kindness the confidence of the natives. In 1736 he returned to Copenhagen, where he was made a bishop and director of the Greenland missions. He died in 1758. His son, PAUL EGEDE, born in 1708, followed in his father's footsteps, became Bishop of Greenland, and died in 1789.

Egg, a mass or speck of protoplasm developed in the females of all but the lowest animals and when impregnated with the corresponding substance of the opposite sex capable of producing organisms like the parents.

Under the term egg is included the ovum of every kind of mammal; but in general the English term egg is used only of those animals that do not produce their young alive. All animals differentiated by sex lay eggs. Those in which the egg passes out of the body and is hatched outside are called oviparous; those in which the egg remains inside the body to hatch are called ovoviviparous; those whose eggs are retained in connection with the parent by means of a placenta and an umbilical cord so that the young are brought forth alive are called viviparous. All birds lay eggs and so also do most reptiles, amphibians, and fishes; insects, crustaceans, and mollusks are oviparous. In this class are included the ornithorhynchus and echidna. The eggs of amphibians are usually found in floating glutinous masses. The eggs of fishes are popularly known as roe or spawn. Eggs vary vastly in size. The largest known egg is that of the extinct elephant bird of Madagascar, the shell of which had a capacity of about two gallons and was six times the size of the egg of the ostrich. The eggs of birds, especially of fowls and some reptiles, as turtles, are commonly used for food. Besides their use as a food hen's eggs are used in the technical arts, the albumen in which they are so rich serving in dyeing, manufacture of leather, and various other purposes. Many of the eggs of birds are beautifully colored.

Eggleston, Edward, an American author; born in Vevay, Ind., Dec. 10, 1837. In fiction he achieved celebrity with stories of life in Southern Indiana in pioneer days, while as a historian he made a specialty of American subjects. Died Sept. 3, 1902.

Eggleston, George Cary, an American author; brother of Edward; born in Vevay, Ind., Nov. 26, 1839. He was long connected in an editorial capacity with one or another New York newspaper, including the "World," the "Evening Post," and the "Commercial Advertiser." He died April 14, 1911.

Eggplant, an herbaceous plant, from 1 foot to 18 inches high, with large white or purplish flowers. The fruit is generally dark red or purple, and when boiled, stewed, or fried in slices is used as an article of food. It is cultivated in the United States, etc., and in European hothouses. There are several species of eggplants.

Eginhard, or **Einhard,** a German historian; born in Maingau about 770. He was educated by Alcuin, and afterward became Charlemagne's private secretary and superintendent of public buildings. He married Imma — a noble lady, legendarily confounded with Emma, Charlemagne's daughter. He died in Seligenstadt, March 14, 840.

Eglantine, one of the names of the sweetbrier, a kind of wild rose. The name has sometimes been erroneously used for other species of the rose and for the honeysuckle.

Egleston, Thomas, an American mineralogist; born in New York city, Dec. 9, 1832; was graduated at Yale College in 1854, and at the School of Mines in Paris in 1860; returned to the United States in 1861; and soon afterward was appointed director of the mineralogical collection and laboratory of the Smithsonian Institution in Washington. He established the School of Mines as a department of Columbia College, New York city;

and was Professor of Mineralogy and Metallurgy there in 1864–1897. He was one of the founders of the American Institute of Mining Engineers, the American Meteorological Society and the societies of Mechanical and Electrical Engineers. He died in New York city, Jan. 15, 1900.

Egmont, Lamoral, Count, a Dutch statesman; born in 1522, of an illustrious family of Holland. He entered the military service, accompanied Charles V. in his African expeditions, and distinguished himself under Philip II. In 1567 the Duke of Alva was sent with an army to the Netherlands to reduce the insurgents. One of his first measures was to seize Count Egmont and Count Horn. After a trial before a tribunal instituted by Alva himself, they were executed at Brussels, June 5, 1568. A well-known drama of Goethe's is founded on the story of Egmont.

Egotism, the fault or practice of too frequently using the word I in writing; hence a too frequent mention of one's self in writing or conversation; self-glorification, egoism, self-conceit.

Egret, a name given to those species of white herons which have the feathers of the lower part of the back elongated and their webs disunited, reaching to the tail or beyond it at certain seasons of the year. Their forms are more graceful than those of common herons. The American egret is about 37 inches long to the end of the tail; plumage soft and blended; head not crested; wings moderate; the tail short, of 12 weak feathers.

Egypt, a slang term, supposed to be descriptive of the people or of the soil of Southern Illinois. The soil of the locality in question is of unsurpassed fertility, as was the case with that of the land of the Nile.

Egypt, a country of Northeastern Africa, forming a British protectorate since Dec. 18, 1914. It is bounded on the N. by the Mediterranean Sea, on the E. by Arabia Petræa and the Red Sea, on the S. by Nubia, and on the W. by the Libyan desert; cultivated area, 12,226 square miles; total area, 363,000. Nubia is now attached to Egypt, and the sultan, or political administrator of Egypt, has authority over Egyptian Sudan, which includes the Bahrel-Ghazal valley, Kordofan, and Darfur. Egypt is connected with Asia by the Isthmus of Suez, across which runs the great canal, about 100 miles long. The inhabited portion of Egypt is mainly confined to the valley and delta of the Nile, which where widest does not exceed 120 miles, while in many parts the valley is only from 10 to 15 miles wide, at the S. frontier of Egypt only two miles. The Delta is traversed by a network of primary and secondary channels, and is also intersected by numerous canals. Seven principal channels or mouths were usually recognized in ancient times.

The most remarkable phenomenon connected with the Nile is its annual regular increase, arising from the periodical rains which fall within the equatorial regions and the Abyssinian mountains. As rain rarely falls in Egypt, the prosperity of the country entirely depends on this overflowing of the river. On the subsiding of the water the land is found to be covered with a brown slimy deposit, which so enriches the soil that with a sufficiency of water it produces two crops a year, while beyond the limits of the inundation and irrigation there is no cultivation whatever. The Nile begins to rise in June, and continues to increase until about the end of September, overflowing the low lands along its course, the water being conveyed to the fields by artificial courses where natural channels fail. After remaining stationary for a short time the river rises again still further, but subsequently begins to subside, showing a markedly lower level in January, February, and March, and reaching its lowest in April, May, and early June. The overflow water is now to a great extent managed artificially by means of an extensive system of reservoirs and canals, so that after the river subsides it may be used as required. A certain proportion of the fields, after receiving the overflow and being sown, can ripen the crop without further moisture; but many others always require artificial irrigation. Steam pumps are now largely used in Northern Egypt. Latterly the government has tried to make the farmers less and less direct-

ly dependent on the inundation, and the great barrage of the Nile below Cairo, the largest weir in the world, is one means to this end, the great dam or barrage at Assouan being another.

Of the inhabitants of Egypt those of the peasant class, or Fellahs, as they are called, are undoubtedly indigenous, and may be regarded as descendants of the ancient Egyptians. They have mostly embraced Mohammedanism. The Copts are the descendants of the ancient Egyptians who embraced and still cling to the Christian religion. Though comparatively few in number (say 600,000), their education and useful talents enable them to hold a respectable position in society. The Fellahs are generally peasants and laborers; the Copts fill the posts of clerks, accountants, etc. With these aboriginal inhabitants are mingled, in various proportions, Turks, Arabs (partly Bedouins), Armenians, Berbers, negroes, and a considerable number of Europeans. The Turks hold many of the principal offices under the government. The great bulk of the people are Mohammedans, the Christians being only about 7.5 per cent. The Egyptians in the mass are quite illiterate, but under the supervision of the Ministry of Public Instruction progress is being made. King Furd I, born March 26, 1868, son of the late Khedive Ismail Pasha, was proclaimed King of Egypt on March 16, 1922, on termination of the British protectorate and recognition of the independence of Egypt. The estimated population of Egypt was placed at 13,551,000 in 1922. The chief cities are: Cairo, pop. 790,930; Alexandria, pop. 444,617; Port Said and Ismallia, pop. 91,000; Suez, pop. 30,946; Damietta, pop. 30,984; Tanta, pop. 74,165, and Assiut, pop. 51,427.

Egypt has 2,335 miles of railroads owned and operated by the State. Approximately 2,125,000 acres were under cotton cultivation in 1923-24. In 1921 the amount of sugar exported was 37,548 metric tons. The imports in 1923 were 45,276,941 Egyptian pounds, and exports, 58,387,327 pounds. The value of an Egyptian pound being $4.94.

The last few years have seen wonderful discoveries in Egypt, for the tombs of the kings at Abydos have been opened and the treasures which have been found place us face to face with the beginnings of history. The oldest record of human history is the statement that 10 kings reigned at Abydos in Upper Egypt during a period of 350 years before Mena, who has usually been considered as the founder of the first dynasty. In reality these earlier kings were the real founders of the Egyptian State, and we now know not only their names, but are able to obtain some idea of their mode of life and the culture which they attained. The date which Dr. Flinders-Petrie assigns to the predynastic kings is from 4900 to 4800 B. C., and the names of the four whose tombs have been examined recently are given as Ka, Zeser, Narmer and Sam. Among the remarkable finds were a carved slate slab showing King Narmer smiting his enemy, an ebony tablet, a bar of gold, gold jewelry, including bracelets, and a royal scepter. The oldest group of jewelry in the world is undoubtedly the four bracelets of the queen of King Zer (4715 B. C.), which was discovered with a portion of the mummy in a hole in a wall. This is 2,000 years earlier than any other jewelry thus far identified. The world was startled by the discovery by Henry Carter in Nov., 1922, of the tomb of Tutankhamen, a ruler of Egypt of the 18th dynasty or about 1300 B. C. When the tomb was opened countless ornaments, articles of clothing, chariots, jewels, in fact specimens of a hundred varied articles buried with the King were found, the most valuable collection ever unearthed.

In studying the temples of Egypt we are studying the earliest monuments that exist devoted to religion and erected by what was the most civilized nation of the ancient world.

There is evidence to show that most of the religions of the ancient world were derived from a common origin, and had for their main idea either the worship of the powers of nature or as regarding nature as a theater descriptive of divine things. In Egypt it is certain from the monuments themselves and the representations on them that their early worship was derived from the phenomena of nature, and fortunately we have from Egyptian hieroglyphics a full description of what took place in each room of the

temples, where staircases are provided leading up to the flat roofs, so that certain ceremonies might take place in full view of the heavenly bodies in honor of which the services are held.

When the Greeks and Romans successively conquered Egypt and made it a province of their empires no attempt was made to disturb their worship and religion, so similar in some respects to their own; in fact, the Egyptian deities were at once adopted as part of the State religion, and vast sums were spent in the restoration of the ancient temples, evidently under the direction of the Egyptian priesthood, and judging from the inscriptions with the most scrupulous conservatism of the ancient plan and purpose.

Abydos has been called the cradle of Egypt, but the seat of the first settled monarchy appears to have been the great city of Memphis, just S. of modern Cairo, and said to have been founded by Menes, the first historic king, about 4000 B. C. This city must have been one of the largest of the ancient world, and the ruins of an immense place remained as late as the 12th century A. D.; but owing to the inundations of the Nile nothing remains of it at the present day but a few earth mounds and two colossal statues, which stood in front of the great Temple of Ptah, and the Pyramids and innumerable tombs built on the uplands W. of the Nile, which formed the great cemetery of the city, and among which the famed Pyramids of Gizeh formed the chief. These are surrounded by whole streets of tombs.

It is at ancient Thebes that an idea of the magnificence of ancient Egypt can be obtained. The ruins of temples and buildings there exceed those left in the remainder of Egypt altogether, if we except the Pyramids, and are far more extensive than anything remaining either at Rome or Athens. The site of the ancient city, being mostly above the level of the inundation, has escaped the destruction that has fallen on other cities. Thebes dates from a high antiquity, and a few of the more ancient parts of its temples are from the time of the 11th dynasty, about 2500 B. C.; but under Pharaohs of the 19th dynasty (about 1400 B. C.), Seti I. and Rameses II., etc. the chief seat of government was transferred from Memphis to Thebes, and the city was embellished with the magnificent temples of which the ruins now remain. The great group of Karnac alone is nearly a mile long and one-third of a mile wide, and comprises a whole assemblage of temples connected together by avenues of sphinxes. These buildings are mostly far too complicated and elaborate to describe in the limits of a single paper. Moreover, they show in many instances a departure from the original and simple plan of the early temples dedicated to the gods; the monarchs of this period would seem to have been almost intoxicated by the grandeur of the empire and the extent of its foreign conquests and the temples are covered with inscriptions of their own glorious doings, and though the credit of them is all ascribed to the gods, the prevailing sentiment seems their own glorification.

Egyptology, the science which treats of the monuments, language, writing, literature, and history of Ancient Egypt to nearly six centuries after Christ, and of the discoveries made and in progress in that land.

Ehrenbreitstein, a Prussian fortress of great strength situated opposite the confluence of the Moselle with the Rhine, on a precipitous rock 387 feet high and inacessible on three sides. The fortifications, erected in 1816–1826 at a cost of $6,000,000, can accommodate a garrison of 14,000 men and possess room for stores to last an army of 60,000 a year.

Eichberg, Julius, a German-American composer; born in Dusseldorf, June 13, 1824. After being professor in the Conservatoire at Geneva, he removed to New York in 1857, and in 1859 went to Boston, where he was director of the orchestra at the Boston Museum for seven years. In 1867 he established the Boston Conservatory of Music, of which he was at the head till his death, Jan. 19, 1893.

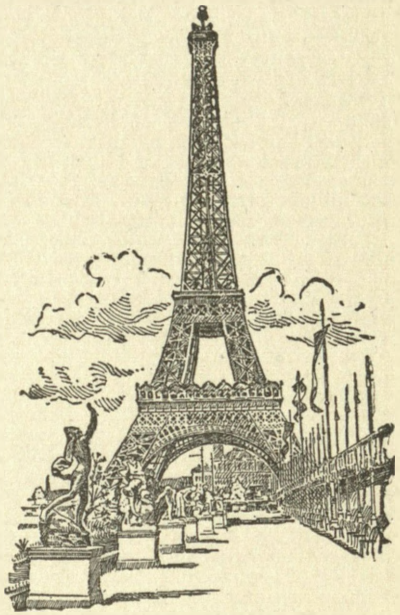
Eichendorff, Baron Joseph von, a German poet; born in the castle of Lubowitz in Silesia, March 10, 1788; was the most gifted and original romantic lyrist of Germany, and the last great one. He was a high Prussian official till 1845, when he retired. He died in Neisse Nov. 26, 1857.

Eider, a river of Prussia, which rises in Holstein, and forms the boundary between Schleswig and Holstein, falling into the North Sea at Tonning after a course of 92 miles. By its junction with the Schleswig-Holstein Canal it gives communication between the North Sea and the Baltic.

Eider Duck, a valuable swimming bird found in N. and Arctic regions, both in Europe and America. Its favorite haunts are solitary rocky shores and islands. In particular spots their nests are so abundant that a person can scarcely walk without treading on them. Their nests are usually formed of grass, dry seaweed, etc., lined with a large quantity of down, which the female plucks from her own breast. In this soft bed she lays five eggs which she covers over with a layer of down; then the natives who watch her operations take away both the eggs and the down; the duck lays a second time, and again has recourse to the feathers of her own body to protect her offspring; even this with the eggs is generally taken away; and it is said that in this extremity, her own stock being exhausted, the drake furnishes the third quantity of down; but some of the most competent authorities deny this statement. One female generally furnishes a few ounces of down. This down, from its superior warmth, lightness, and elasticity, is preferred by the luxurious to every other article for beds and coverlets; and from the great demand for it those districts of Norway, Greenland, and Iceland where these birds abound are regarded as most valuable property, and are guarded with the greatest vigilance. The eggs are also highly prized.

Eiffel, Gustave, a French engineer; born in Dijon in 1832. In 1858 he was intrusted with the construction of the large iron bridge over the Garonne at Bordeaux, and was one of the first to introduce caissons worked with compressed air. In the huge framework erected for Bartholdi's "Statue of Liberty" may be seen the germ of the idea which afterward assumed the form of the colossal iron structure (1887–1889) on the Champ-de-Mars in Paris, with which his name is identified.

Eiffel Tower, The, a notable structure in Paris, France. The plans for the Paris exposition of 1889 included a monstrous iron tower, to be raised on the Champs-de-Mars, 1,000 feet high. The designer, Gustave Eiffel, constructed it of iron lattice-work, with three sets of elevators giving access to the summit. The uses of this stupendous tower are many, and it became one of the chief permanent ornaments of the city. Its importance from a meteorological point of view cannot



EIFFEL TOWER.

be overestimated, the tower enabling meteorologists to study the decrease of temperature at different heights, to observe the variations of winds, and to find out the quantity of rain that falls at different heights, and the density of the clouds. The French Government contributed $292,000 to the cost of the tower which was over $1,000,000. M. Eiffel & Co. supplied the rest for a 20 years' lease of the tower. The fees for 1889 repaid the outlay.

Eight-hour Law, an act adopted in 1868 by the United States Congress, providing that in all government employment eight hours shall constitute a day's work.

Eimeo, one of the French Society Islands, in the Pacific Ocean, about 10 miles W. N. W. of Tahiti, the principal member of the group. Area, 51 square miles; population, about 1,500. It consists of deep valleys and abrupt hills — the former well cultivated, and the latter heavily timbered. Here Christianity was first introduced in Polynesia; and here the South Sea College of the London Missionary Society was established. Most of the natives are Protestants.

Einsiedeln, a town of Switzerland, in the Canton of Schwyz, 27 miles S. E. of Zurich by rail. In Einsiedeln great numbers of prayer-books, sacred images, wax candles, rosaries, medallions, etc., are made. The town is, however, chiefly celebrated for its Benedictine abbey, to which some 200,000 pilgrims resort annually to worship at the shrine of a black image of the Virgin, Sept. 14 being the principal day in the year. The abbey itself was founded in the 10th century, and after being repeatedly destroyed by fire was rebuilt as a quadrangle in the Italian style in 1704–1719. Near the town the Austrians under Jellachich were defeated by the French under Massena on Aug. 14, 1799. Pop. 8,500.

Eisenach, a town of Germany, Saxe-Weimar, 45 miles W. from Weimar. In its neighborhood is the castle of Wartburg, formerly the residence of the landgraves of Thuringia. Between 1521 and 1522 Luther passed 10 months' imprisonment in this abode, under the friendly arrest of the Elector of Saxony, and the reformer called it his "Patmos." Pop. 31,500.

Eisleben, a town of Prussian Saxony, 24 miles from Merseburg. Here Martin Luther was born in 1483, and here he died in 1546. The pulpit in which he preached is still preserved in the church of St. Andrew. Pop. 23,900.

Eisteddfod, a congress or session for the election of chief bards, called together for the first time at Caerwys, by virtue of a commission granted by Queen Elizabeth, May 26, 1568. Eisteddvodau have since been held in various places at uncertain intervals, but of late years have been held annually at certain places publicly notified previously. The most notable one of recent years was held in Chicago during the Columbian Exposition. Several have also been held in Pittsburg, Pa. The object is the encouragement of native poetry and music.

Ejectment, in law, the act or process of ejecting or dispossessing a tenant of his tenancy.

Ekaterinoslav, a town of Southern Russia, capital of a government of the same name, on the right bank of the Dnieper, 250 miles N. E. of Odessa. It was founded in 1787 by Prince Potemkin, and consists of a number of long, broad streets. Pop. 220,446. The government, which is intersected by the Dnieper and at one point reaches the Sea of Azov, mostly consists of steppes; area, 24,478 square miles; pop. (1914) 3,455,500.

Ekron, the northernmost of the five great cities of the Philistines, on the borders of Judah and Dan. Beelzebub was its god.

Elæagnus, oleaster, or wild olive-tree; a genus of plants, the typical one of the order Elæagnaceæ.

Elagabalus, or **Heliogabalus,** a Roman emperor; born in Emesa, in 204 A. D. His reign which lasted rather more than three years and nine months, was infamous for the nearly unparalleled debaucheries of every kind in which he indulged. He instituted ceremonies in honor of the god Elagabol, and it is believed made human sacrifices to him. He was murdered in an insurrection of the Prætorians in A. D. 222, and was succeeded by his son, Alexander Severus.

Elam, a district mentioned in Scripture, lying S. of Assyria and E. of Persia proper, apparently the same as the Susiana of Strabo. Its chief city, Susa (Shushan), early attained great importance in Mesopotamia. It appears that the primitive Semitic Elamites were overcome at an early period by a Hamitic or Cushite race from Babylon, called by the Greeks Cossæans.

Eland, the Cape elk, a large antelope about the size of a horse and of heavy make, like that of an ox, but with long, nearly straight, erect horns.

It is slower in movement than most of its congeners. It is susceptible of domestication. It is found in South Africa, where its flesh is highly esteemed.

Elaterium, a drug obtained from the fruit of the squirting cucumber, a native of the S. of Europe, common on rubbish in the villages of Greece and the Archipelago.

Elba, a small island belonging to the Kingdom of Italy, in the Mediterranean Sea, off the coast of Tuscany, and with several much smaller isles, lying at the mouth of the Gulf of Piombino. The island of Elba is 18 miles from E. to W., with a width varying from 2½ to 12 miles in its widest part. The mountainous districts of the island yield large quantities of superior iron, marble, loadstones, and alum, besides wines and fruits. On the first abdication of Napoleon in 1814, Elba was assigned to him as a residence and empire. Elba was a place of celebrity in the time of the Romans, and famed then, as now, for its yield of iron. Pop. 24,200.

Elbe, a river of Germany, one of the largest in Europe. It rises on the S. W. slopes of the Schneekoppe or Snowcap, one of the Riesengebirge, between Bohemia and Silesia. From this point it flows nearly due S. into Bohemia for about 50 miles, when it turns to the W., and after about 40 miles takes a general N. N. W. direction till it falls into the North Sea, intersecting Saxony, a considerable portion of Prussia, and in the latter part of its course separating Holstein on its right from Hanover on the left. The length, including windings, is upward of 780 miles. Its navigation is free to ships of all nations.

Elberfeld, a town of Rhenish Prussia, a large manufacturing centre; pop. (1910) 170,195. Its municipal life dates from 1610; it is noted for its economic activity and for the "Elberfeld System" of poor-relief. The city is divided into districts each with an honorary visitor who can supply immediate needs. Fortnightly reports are acted upon, and relief afforded for two weeks, the self-support of the recipients being aimed at. The number thus aided decreased from 17 to 7 per 1,000 in 50 years. The system has been adopted by many foreign municipalities.

Elbing, a town of West Prussia, 35 miles S. E. of Danzig, founded in the 13th century. Steamships and torpedo-boats are built here; and there are large iron and brass rolling-mills. Pop. (1910) 58,636.

Elburz, a mountain range of Persia, running for 50 miles along the S. border of the Caspian Sea. Elburz is also the name of the loftiest summit of the Caucasus.

El Caney, a fortified town of Cuba; on the main road, 4 miles N. E. of Santiago. During the Spanish-American war it was the scene of a decided American victory. At 6 A. M. on July 1, 1898, Captain Capron's battery of four guns opened fire on El Caney from an elevation about a mile and a half distant. The guns were not heavy enough to destroy the enemy's works, and at 8 o'clock General Lawton's infantry of Chaffee's brigade, consisting of the 7th, 12th, and 17th United States Infantry, assaulted and captured the hill with many prisoners. In 1901 the United States government purchased the battlefield and approaches for a public reservation.

Elchingen, a village of Bavaria, near the Danube, 5 miles N. E. of Ulm, where on Oct. 14, 1805, Ney defeated the Austrians under Laudon, winning thereby the title of Duke of Elchingen.

Elder, among Calvinistic churches, a body of men elected by the communicants from among their number to aid the minister in portions of his spiritual work. With the minister, they constitute the executive of the congregation. Among the Jews the elders are the rulers or magistrates of the people.

Elder, the common elder. It has corky bark, two to four pairs of serrate leaflets, flowers in cymes, 4 to 6 inches in diameter, very small globose, black, or rarely green. The berries are used for the manufacture of wine; the flowers for making perfumes.

Elder, Susan Blanchard, an American writer; born in Fort Jessup, La., about 1835. Her contributions to Roman Catholic publications are numerous, and her devotional poems are popular. Her dramas are meant for representation in Roman Catholic colleges.

Elder, William Henry, clergyman; born in Baltimore, Md., March 22, 1819; was educated at Mount St. Mary's College, Emmetsburg, and at the College of the Propaganda at Rome; and was ordained to the Roman Catholic priesthood in 1846. During the Civil War he gave much of his time to the care of the wounded. During the yellow fever epidemic of 1878 in Mississippi he was in constant attendance on the sick till he was stricken with the disease himself. He was appointed coadjutor archbishop of Cincinnati in 1880; presided over the Fourth Provincial Council of Cincinnati in 1882, and on the death of Archbishop Purcell, July 4, 1882, became Archbishop of Cincinnati. He died Oct. 31, 1904.

Eldon, John Scott, Earl of, an English jurist — lord chancellor for many years; born in Newcastle, June 4, 1751. In 1821 he was created an earl by George IV. He died in London, Jan. 13, 1838. As a lawyer he was a master of English jurisprudence; as a politician he was opposed to reform.

El Dorado, a country which Orellana, the lieutenant of Pizarro, pretended he had discovered between the rivers Orinoco and Amazon, in South America, and which he declared to be a veritable "land of gold." Sir Walter Raleigh identified it with Guiana, and published a highly-colored account of its fabulous wealth of the precious metals.

Eldridge, Shaler W., an American abolitionist; born in West Springfield, Mass., in 1817; removed to Kansas in 1855, and became proprietor of the American House in Kansas City. This hotel was soon recognized as the headquarters of Freesoilers. It was here that Governor Reeder was concealed for three weeks in 1856. Later he became a member of the National Republican Committee and agent to promote immigration into Kansas. Under the last authority he led a large number of settlers to Kansas. He was instrumental in giving much aid to the Free-State cause by smuggling large amounts of ammunition and provisions into Kansas Territory. During the Civil War he served in the Union army. He died in Lawrence, Kan., Jan. 17, 1899.

Eleazar, (help of God), the third son of Aaron, and high priest after him (Ex. vi: 23; Num. xx: 25-28). The high priesthood continued in his family through seven generations, till the time of Eli, when we find it transferred to the line of Ithamar. In the reigns of Saul and David it was restored to the line of Eleazar, and so continued till after the captivity.

Election. In theology, the word (singular) is applied to the act of God in selecting some persons from the race of man to be regenerated by His spirit; to be justified, to be sanctified, and to receive other spiritual gifts in this world, with eternal life in the next. The strongest adherents of this view are in the Presbyterian churches, though there is a tendency to soften the harsher features of the system. Many Baptists hold the same doctrine, as do the Calvinistic Methodists.

Election, in politics, the selection by voting of a person or persons to occupy some post or office.

Elector, the title of certain princes of the old German empire who had the right of electing the emperors. There were 10 in 1806, when the old empire was dissolved.

Electoral College, in the United States, the body of men elected in each State to cast the vote of the people of the State for presidential candidates. The State conventions of the various parties nominate the electors, one for each Representative, and one for each Senator in Congress. These persons are voted for on the general election day. The 12th amendment to the Federal Constitution orders the electors to meet in their respective States and vote by ballot for President and Vice-President separately. They are to make distinct lists of all persons voted for by themselves for the two offices, and send those lists, sealed, to the president of the Senate at Washington. Sections 131 to 151 of the Federal Revised Statutes prescribe generally the proceedings of the electors. They are to meet on the first Wednesday in December in the year in which they are elected, in such place as the Legislature of each State may direct. The governor is to give them three certified lists of those chosen to be electors; the electors are to make three lists of the persons balloted for by

them for the presidency and vice-presidency, and to the certified lists annex the certificates furnished by the governor. They are to appoint one of their number to carry one of the certificates to the president of the Senate before the first Wednesday in January, and to send to the president of the Senate, by mail, another copy of the certificates; and the third they are to give to the judge of the district wherein they assemble.

Electoral Commission, an American commission provided for by act of Congress, Jan. 29, 1877, to settle disputed questions in regard to the electoral votes of several States in the presidential election of 1876. It was composed of 5 Senators, chosen by the Senate; 5 members of the House of Representatives, chosen by the House; and 5 Associate Justices of the Supreme Court, 4 of whom were designated by the act of Congress and the fifth selected by the 4. It was found, on counting the electoral votes in the presence of the two Houses of Congress, there were conflicting certificates from 4 States — Louisiana, Florida, Oregon, and South Carolina. These certificates were referred to the commission, which by a vote of 8 to 7 — following the line of party division in the commission — decided that the certificate of electoral votes cast for Hayes and Wheeler was the legal certificate.

The decision of the commission, according to the terms of the statute, became irrevocable; the disputed votes were counted accordingly; and Hayes and Wheeler were found duly elected by a majority of one electoral vote. The important question before the commission was whether an electoral certificate being in form confessedly according to law, it was competent for Congress or the commission to go behind the same and take evidence aliunde in support of alleged irregularities committed before such certificate was issued. The majority of the commission took the negative view.

The commission was composed as follows: Senators, George F. Edmunds, Oliver P. Morton, Frederick T. Frelinghuysen, Allan G. Thurman, and Thomas F. Bayard; Representatives, Henry B. Payne, Eppa Huntoon, Josiah Abbott, James A. Garfield, and George F. Hoar; Associate Justices of the Supreme Court, Nathan Clifford, William Strong, Samuel F. Miller, Stephen J. Field, and Joseph P. Bradley. Justice Clifford was the law president of the commission.

Electric Balance, an instrument for measuring the attractive or repulsive forces of electrified bodies.

Electric Bath, in electro-plating, the solution used for depositing metal as contained in a vat or tank. In electro-therapeutics, a bath with suitable arrangements, electrodes, and connections, for treating patients with electricity.

Electric Battery. (1) Primary or voltaic: Two dissimilar substances, or metallic surfaces, both conductors of electricity, immersed in a jar of acidulated water or other exciting fluid, that will act more energetically on one than on the other, the two conductors being connected on the outside by a wire; the substance or surface less acted upon is the negative, and that more acted upon the positive pole, the current flowing from the positive to the negative. The electrodes, or poles, are most commonly made of carbon or zinc; platinum, gold, silver, copper, iron, tin, and lead, may be, but are not used, because of cost or high resistance of the metals. The common excitants are sulphuric or nitric acid, bicarbonate of potash, sulphate of copper solution, or salammoniac solution.

(2) Secondary or storage; also called accumulator: A series of metallic or other conducting plates, usually lead, divided from each other by a non-conducting substance, the whole being immersed in a water solution; through this solution a primary current is sent from the negative to the positive, decomposing the water, its oxygen forming with the lead on the positive pole a peroxide of lead, and leaving a deposit of metallic lead on the negative plate, the oxide then being destroyed by the hydrogen. When the primary discharge from the negative to the positive pole is stopped, the chemical affinity of the oxygen in the peroxide of lead for the metallic lead causes it to leave the positive for the negative pole, thereby causing a current from the positive to the negative pole, which is utilized as a primary current.

Electric Bell. (1) Magnetic or dynamic; two electro-magnets, parallel and in series, having at their extremity a vibrating armature in close proximity pivoted between them; fixed to this armature is a clapper vibrating between two gongs. The current passes through the fields, magnetizing the cores, and in generating an alternating current vibrates the armature and rings the bell.

(2) Battery-bell: A single coil or bobbin of wire, wound around an iron core; a vibratory armature, pivoted at one end, and passing at a right angle by the core of the bobbin; at the other end of the armature is a clapper, a gong situated close to the clapper. A delicate spring is attached to the vibratory armature near the clapper, which, while the current is passing, operates against a set-screw placed for the purpose. The current passing through the bobbin to the set-screw magnetizing the core, attracts the armature which in turn is repelled, the spring working against the screw. These alternate attractions and repulsions of the armature vibrate the clapper and ring the bell.

Electric Boat, a boat propelled by electricity. The electricity drives a motor, which actuates a screw propeller. The current is generally supplied by a storage battery. From their noiselessness electric boats are peculiarly available for nocturnal torpedo operations, and the universal equipment of modern warships with electric lighting and power plants makes their use possible at all points. This type is often termed an electric launch, and most or all electric boats fall under this category.

Electric Current. When electricity is passing along a wire, or along any conductor, solid or liquid, an electric current is said to be flowing along the conductor. For example, we might speak of an electric current flowing from the prime conductor of an electric machine, along a wire connecting the prime conductor and the earth. The term is, however, confined in common language to the currents kept up by a galvanic battery, or by a thermo-electric arrangement, and to induced currents.

Electric Death, death resulting from electricity discharged through the animal system. The exact conditions requisite for fatal results have not been determined. High electromotive force is absolutely essential; a changing current, pulsatory or alternating, is most fatal. As applied to the execution of criminals, the victim is seated in a chair and strapped thereto. One electrode with wet padded surface is placed against his head or some adjacent part. Another electrode is placed against some of the lower parts, and a current from an alternating dynamo passed for 15 seconds or more. The potential difference of the electrodes is given at 1,500 to 2,000 volts, but, of course, the maximum may be two or three times the measured amount, owing to the character of the current.

Electric Drill, a drill for metals or rock worked by an electromagnetic motor.

Electric Eel, a great eel, inhabiting the marshy water of the llanos in South America. It can discharge electricity sufficient to kill an animal of considerable size.

Electric Egg, an ellipsoidal glass vessel, with metallic caps at each end, which may be filled with a feeble violet light by means of an electric machine acting on it after a vacuum has been made inside the glass.

Electricity, from the Greek elektron (amber), the name applied originally to the unknown cause of the attractions, repulsions, sparklings, etc., which attend the friction of amber and similar substances. The same cause is now recognized as giving rise, under various circumstances, to many phenomena.

Many attempts have been made to ascertain the true nature of electricity, but it cannot be said that we have yet any sure knowledge of what this subtle agent really is. Electricity behaves as if it were an incompressible fluid substance, but it differs from all known fluids in so many particulars that it may be asserted that whatever else it may be, it is not a fluid in the ordinary sense of the word. Neither is it a form of energy, though electrification as distinguished from electricity certainly is such. Many scientific men hold the view that electricity is the ether itself (the elastic, incompressible medium pervading all space and con-

veying luminous and other vibrations), and that the phenomena of positive and negative electrifications are due to displacement of the ether at the surfaces of bodies. The researches of Hertz, who, by direct experiment, verified James Clerk Maxwell's brilliant theory that electrical action is propagated through space by wave motion in the ether, differing only in respect of wave length and period from the vibrations which constitute light, have been of the utmost value in helping to arrive at a solution of this question. Investigations into the phenomena of electric discharges in high vacua, followed by the discovery of Roentgen of the X-rays, have also thrown great light on the subject.

The applications of electricity are extremely varied. Its employment for telegraphy and electro-metallurgy, for chemical and for medical and physiological purposes, for the production of light to illuminate streets and buildings, for driving vehicles and machinery of various kinds, may be mentioned as examples.

Electricity, Medicinal Applications of. The chief diseases in which electricity appears of service are cases of mild nervous lesions, rheumatic affections, neuralgia, etc. Electro-puncture and electro-cautery have also been successfully used in medicine, the former in the treatment of aneurism, the latter for the removal of tumors, etc.

The electric shock produced by the discharge of electricity through a living animal is a violent disturbance of the muscles. Such a shock is often powerful enough to destroy life, and in the United States electricity is used in some States in the execution of criminals. Death from lightning is simply death from an electric shock. It takes a powerful battery to give what would be called a shock on opening or closing the circuit, but a small battery connected with a Ruhmkorff's coil gives a succession of currents producing decided physiological effects. The fingers close on the handles which are at the ends of the wires from the secondary coil, and it is impossible for the victim to let them go till he is relieved by the operator.

Electric Lighting. The brilliant and dazzling light obtained by transmitting a powerful electric current between two sticks of carbon was first discovered by Sir Humphry Davy, who exhibited it in 1813 at the Royal Institution, employing for the purpose a voltaic battery of 2,000 cells.

One of the chief obstacles to the earlier introduction of the light was the cost and trouble of maintaining a sufficiently strong current by means of a voltaic battery. Faraday's discovery of magneto-electric induction furnished a new source of electricity, and machines founded on this principle were successively improved till a larger pattern, commenced by Nollet in 1850, was so far improved by Holmes in 1853 and following years, as to be adopted by the Trinity Board in 1857 for lightouse purposes. Modern dynamos consist essentially of two principal parts, viz., the electro-magnet or magnets, usually fixed, and the armature which revolves. The electro-magnet when excited by the current through its coils creates a magnetic field of intense power. The armature, a coil or collection of coils mounted on a spindle, is revolved in this magnetic field. Powerful currents of electricity are thus obtained, which are collected and directed by various devices.

When a number of electric lamps are supplied from the same source they may either be connected in series or in parallel circuit. The former term is applied when the same current goes through all the lamps in succession; the latter when the current is divided into branches, one branch going through each lamp. The series arrangement requires a device so that if one lamp be extinguished it does not put out all the others in the same circuit. In the parallel circuit arrangement, the extinction of one or more of the lamps does not affect the brightness in the rest. The Edison system of electric lighting is based on this plan. The Brush system lies at the opposite extreme and is adapted for supplying a number of arc lamps in series.

A system of distribution known as the three wire system has been found very effective in allowing the use of higher electric pressures, whereby at a slight extra cost many additional lamps can be lit from the main leads. For this purpose two dynamos coupled

in series are employed, the mains consisting of two heavy leads — one from the free terminal of each dynamo — with a lighter middle wire running from the coupling of the dynamos. The lamps are arranged in parallel between each of the outer leads and the middle wire, the function of which is to render the sets of lamps on each side of it independent of each other. Should the number of lamps lit be the same on each side there is no current in the middle wire, but should there be an excess in the number on one side, then a current equal to the difference of the current in the outer leads flows along it.

It is estimated that with incandescent lamps of about 20 candle power each, the light obtained is at the rate of from 200 to 250 candles per horse power in the driving engine, and that in the largest useful size of arc lights the light is at the rate of about 2,000 candles. The incandescent light is steady, while the arc is fluttering.

Electric Machine. All dynamo-electric machines or generators are based upon discoveries of Faraday, and Henry contemporaneously in 1832, that if a closed wire or conducting ring is moved across a magnetic space, a current of electricity is generated in the wire. A dynamo-electric generator is the best apparatus devised for the application of this principle to the production of an electric current. A magnetic space is provided between the poles of two or more powerful magnets, and coils of wire are caused to traverse this magnetic space in such a way as to excite a current in them. The stronger the magnetism of the space, the longer the wire and the quicker it is moved, the stronger will be the current excited. The aim of inventors, therefore, is to construct their machines with powerful magnets and coils of wire having many turns, and to rapidly rotate these coils through the magnetic "field" by mounting them on an axle driven by a steam engine or other mechanical motor. As each coil or bobbin of wire passes between the poles of the magnet a transient current is generated in it; but as there are a number of bobbins rapidly following each other, each with its transient current, the joint effect of the whole is a practically continuous current.

Electric Motor, a machine by which electrical energy supplied from an external source is converted into mechanical energy. The general principle underlying the action of the motor is embodied in the statement, that when two separate magnetic fields are brought within the sphere of each other's action, each is distorted from its original configuration on account of a tendency for as many as possible of the lines of force to coincide in direction. Accordingly if the material source from which one field is derived be fixed, while that from which the other is derived be free to move, motion of the latter ensues as the result of the mutual stresses set up between the two fields. The motor may thus be regarded as the converse of the dynamo, and any well-constructed dynamo may be used as a motor. In general structure the two are practically identical, but modifications in certain parts are usually made in order to adapt the machine for the purpose for which it is intended. For example, a motor is liable to be subjected to sudden stresses, and in the construction of the armature care must be taken that it is rendered able to resist such stresses without running risk of damage. When a motor has been started a counter electro-motive force is produced which tends to diminish the current passing through the armature, and since a greater expenditure of energy is required to start a machine than to maintain it in motion after it has been started, this counter electro-motive force may be regarded as for many purposes furnishing a convenient automatic regulation of the current which results in the greatest supply being forthcoming at the time when it is most required. The conditions which aid in making a motor to a great extent self regulating may be attained if the resistance of the armature be very low, that of the shunt coils high, and the field developed by the field magnets much higher than that developed by the armature. It is not so easy to attain these conditions in a motor as it is in a dynamo, and it is frequently necessary to use an auxiliary coil whose effect is to weaken the field when the current in the armature is at a maximum.

Electric Repulsion, the mutual tendency of similarly electrified bodies,

or similar electric charges, to repel one another.

Electric Telegraph, in a general sense an apparatus by which signals may be transmitted to considerable distances by means of voltaic currents propagated on metallic wires.

Morse is the father of the present commercial system of telegraphy. He constructed the first line over which an intelligible message was sent for any distance, the line being built from Baltimore to Washington. The first message, "What hath God wrought," was sent in 1843, by Professor Morse, to his assistant, Alfred Vail. The United States government appropriated $30,000 to further the invention.

Recently many experiments have been made to discover a successful mode of telegraphing without wires, and early in 1897 Guglielmo Marconi, a young Italian electrician, submitted to the British Postoffice Department a system of wireless telegraphy depending not on electro-magnetic, but on electro-static effects. The great difference between the earlier systems and Mr. Marconi's is that in the former a wire on each side was required, while in Marconi's vibrations are simply set up by one apparatus and received by the other. See Marconi.

Electric Torpedo, a torpedo operated by electricity. There are various kinds of electric torpedoes. The Sims-Edison torpedo is driven by an electric motor, and its motions are controlled from the shore by electricity. The torpedo proper is carried some distance below the surface of the water by a vessel immediately above it, from which it is suspended by two rigid bars. In the torpedo is a cable reel on which the conducting cable is disposed. An electric motor and controlling gear are also contained within the torpedo. In its front the explosive is placed. It is driven by a screw propeller actuated by the electric motor. As it moves it pays out cable so that it has no cable to draw after it through the water, the cable lying stationary in the water behind it. This avoids frictional resistance to its motion. The maintenance of the torpedo at a proper depth is one of the advantages of the system over other methods of propelling torpedoes through the water.

Electric Traction. The first exhibition of a practicable electric railway was made at a Berlin exhibition in 1879. The first application of electric traction to commercial work was the experimental electric railway built between Berlin and Lichterfelde in 1881. Its latent possibilities were developed in the United States, where, between 1883 and 1888, several companies were actively engaged in developing electric traction. Two systems were on trial. In the one the conductors were carried in a conduit laid between the rails, electrical connection between conductors and motors being maintained by means of a contact "plow" hung from the car which passed through a slot at the street surface, and rubbed against the positive and negative conductors, which were placed on insulated supports on either side of the conduit. In the other the current was conveyed by an overhead wire along the line, and thence brought to the car through a trolley pole supporting a wheel which pressed against the under surface of the overhead wire, the current returning to the generating station through the rails. Owing to the great cost of the conduit system, the energy of inventors was for many years directed to the overhead system. The first considerable installation of electric traction was made in Boston in 1889.

The electric railways in the United States in 1922 had a total trackage of 43,933 miles, which was about 1,000 less than they had in 1917. Principal states in number of miles of road were: New York, Pennsylvania, Ohio, Illinois, California, Massachusetts, Indiana and Michigan, which had each from 2 to over 4 millions of miles of roadway.

Electric power is now largely used in the United States, to operate by means of the third-rail system in action, similar to the conduit system, many lines of railways hitherto operated by steam, especially where the distances traversed are comparatively short, the stops frequent and the traffic heavy. In New York, Boston, Philadelphia, Chicago and other American cities, in London, Berlin, Paris, etc., electricity now operates all the elevated and subway railroads. The keen competition of suburban lines has forced several railways to electrify

certain branches of their systems. On Dec. 11, 1906, the N. Y. Central and Hudson River R. R. inaugurated its first regular service of electric trains, besides the ordinary motor car and third rail system, using for heavy express trains powerful electric locomotives. The New York, Pittsburgh and Chicago Air Line to be built in 3 years at a cost of $150,000,000, and the New York, Boston, Cleveland and Chicago line, are among the ambitious electric railroad projects of the day.

Electric Transmission of Energy, is largely effected by utilizing heads of water for the purpose of generating electric energy to furnish light and power, not only to the towns near which they are situated, but by electric transmission to towns at a distance. The most important of the numerous electric plants thus operated in the United States, are those of the various power companies around Niagara Falls, Lake Superior, and of railroad companies.

Among the important advantages of electric transmission of power are, first, the high efficiency of transmission, which seldom falls below 90 per cent; the high efficiency of all forms of electric motors, even at small loads; the great flexibility of the system which allows of a change in the position of the motor without involving large expense. The two great uses for electric energy are for lighting and for power. To make a power station successful it is essential to develop both uses.

Electric Units, the standards by which the manifestations of electricity are measured. The unit of current is the ampere; of resistance, the ohm; of electro-motive force, the volt; of quantity, the coulomb; of capacity, the farad; of work, the joule; of power, the watt; of induction, the henry.

Electrocution, capital punishment by means of electricity, as adopted in New York State; death by electrification. See ELECTRIC DEATH.

Electrode, a term introduced by Faraday to denote the wires or other terminals by which electricity either enters or leaves a body which is undergoing electrolytic decomposition, in order to avoid an implied theory connected with the use of the older terms pole, positive pole, negative pole. He called the electrode at which the current enters, the anode, and the one at which the current leaves the kathode. These two terms have now been introduced in metallurgic practice, and the term electrode has become common in the more extended sense of the way by which electricity enters or leaves an instrument.

Electro-dynamics, that branch of electrical science which treats of the attractions and repulsions exhibited between wires or other conductors along which currents are passing. The whole science of electro-dynamics is due to Ampere, who discovered its main facts and reduced them by ingenious experiments, combined with very abstruse reasoning, to a single mathematical formula which includes them all.

Electro-magnetic Clock, a clock of which electricity is the motive power. The term is also applied to a clock the pendulum of which is designed to have an electric connection with that of another, so as to make them beat synchronously. Dr. Locke, of Cincinnati, carried out such a principle about 1860. By it all the clocks in a city may be made to keep the same time.

Electro-magnetic Engine, a machine in which the motive power is derived from electro-magnets excited by an ordinary voltaic battery, or by the more modern secondary battery. They are more commonly known as electric motors.

Electro-magnetic Force, the induction current in an electro-magnetic machine; the magnetism which it excites; the attractive force; and the lifting power which it possesses.

Electro-magnetic Telegraph, a signaling, writing, printing, or recording apparatus, in which the impulses proceed from a magnetic force developed by voltaic electricity. The principle is that a mass of soft iron is rendered temporarily magnetic by the passage of a current of electricity through a surrounding coil of wire. It differs from the electric telegraph properly considered, and also specifically from the magneto-electric telegraph. The earlier electric telegraphs were all what their name implies, and not electro-magnetic. The pioneers in its discovery were Sommering in 1808, and Professor Coxe, of Pennsylvania,

about the same year. Then followed Oersted in 1820. In 1832 Professor Morse began to devote his attention to the subject of telegraphy, and in that year, while on his passage home from Europe, invented the form of telegraph since so well known as "Morse's." A short line worked on his plan was set up in 1835, though it was not until June 20, 1840, that he obtained his first patent. His first idea was to employ chemical agencies for recording the signals, but he subsequently abandoned this for an apparatus which simply marked on strips of paper the dots and dashes composing his alphabet. The paper itself is now generally dispensed with, and the signals read by sound — a practice which conduces to accuracy in transmission, as the ear is found less liable to mistake the duration and succession of sounds than the eye to read a series of marks on paper. In 1840 Wheatstone, whose attention seems to have been drawn to telegraphy about 1834, patented a dial instrument, on which, he later adopted several modifications.

Electro-magnetic Theory of Light, a theory propounded by J. Clerk Maxwell, that light is an electro-magnetic phenomenon. Though the theory has found able advocates, it has not received general acceptance among physicists. The discovery of the Roentgen rays tends to establish the correctness of the theory. Certain phosphorescent light has, like the X-rays, the power of penetrating bodies opaque to ordinary light, which seems to furnish a connecting link between ordinary light and the Roentgen rays, and the discovery by Mr. Marconi, an Italian electrician (in February, 1897), that electric vbrations can be projected through space in straight lines, and be reflected and refracted like light — indeed, made to conform to all of the manifestations characteristic of light — seems to leave little room to doubt that electricity and light have a common origin.

Electrons. Electrons are units of negative electricity. They are the ultimate particles of matter which is considered to be built up of atoms consisting of electrons revolving about a nucleus of positive electricity. They travel at a speed of light or almost 186,000 miles per second.

Electroplating, a means of covering a metal or a metallic surface by exposure in a bath of a solution of a metallic salt, which is decomposed by electrolytic action.

Electrotype, a copy, usually in copper, of a form of type. A page of the type is covered with wax, which is driven into the interstices by powerful pressure. The face of the wax mold is covered with plumbago to give it a conducting surface to which the metal will adhere. The positive pole of a battery is attached to the mold, and the negative to a copper plate, and both are plunged into a bath of sulphate of copper in solution. The copper is deposited on the face of the mold in a thin film, which increases in thickness as the process continues. The shell having attained the thickness of a stout sheet of paper, the mold is removed from the bath, the shell detached and strengthened by a backing of type-metal. This process is called backing-up. As type-metal will not readily adhere to copper, the back of the shell is coated with tin, and the shell is then placed face downward on a plate, by which it is suspended over a bath of molten type-metal. When it has attained the requisite heat, a quantity of the metal is dipped up and floated over the back of the shell. When cold, the plate is reduced to an even thickness by a planing-machine. For printing, it is mounted on a wooden backing. Another mode of obtaining electrotype plates from a letter-press form is by a mold of gutta-percha, brushed with graphite and immersed in the electro-plating bath. Gutta-percha is also used for obtaining intaglio molds and then cameo impressions from woodcuts, for printing.

Elephant, a well-known and sagacious animal, the largest of living quadrupeds. There are at least two distinct living species, the Asiatic elephant and the African; and a third species, the Sumatran, is recognized by some zoölogists. The Asiatic is readily domesticated, and is thus the best known; while the African, not now domesticated, is considerably the larger. There are also several extinct species, whose remains are met with in almost every part of the world. Few quadrupeds have attracted more attention from mankind than the elephant.

Formed, as it were, for the service of man in warm climates, it possesses every attribute that can render it useful. It is strong, active, and persevering, and so docile and sagacious as to be trained to almost any service. It is not easy to convey in words a distinct idea of the form of any animal, and this difficulty is peculiarly felt in attempting to describe the elephant, whose appearance, however, is well known. His eyes are extremely small, his ears very large and pendulous. The whole form is awkward, the head being large, the body massive, and the neck short; the legs are very clumsy and shapeless, the feet slightly divided into, or, more properly, edged with, small rounded hoofs, the tail is somewhat like that of a hog, and fringed at the extremity by a few very thick, long black hairs. The skin is thick, sparsely covered with hair, and generally of a deep ash-brown, approaching to black, though it is sometimes white or cream-colored. Elephants of this last sort (which are really albinos) are highly prized in Siam, being one of the attributes of royalty, and one of the titles of the king is "lord of the white elephant."

The tusks of the elephant are not visible in young animals, but in a more advanced stage of growth they are eminently conspicuous, and in a state of maturity they project in some instances, 7 or 8 feet, if not more. These tusks are enormously developed upper incisor teeth. The largest on record (possibly that of an extinct species) weighed 350 pounds; 60 pounds is a common weight. Elephants sometimes attain the height of 15 feet, but their general height is about 9 or 10. Their weight is sometimes enormous, being from 4,000 to 9,000 pounds. The female is gravid 20 months, and seldom produces more than one at a birth; this when first born is about 3 feet high, and continues to grow till it is 16 or 18 years of age. They are said to live to the age of 100 years and upward. They feed on vegetables, the young shoots of trees, grain, and fruit. The most singular part of the structure of the elephant is his trunk, which is peculiar to this animal, though the long and flexible snout of the tapir bears some resemblance to it. It is produced by the combination and great development of the nose and upper lip, is formed of muscular and membranous tissue, and is composed of numerous rings. It is of such strength as to be capable of breaking off large branches from trees, while at the same time, it is endowed with such exquisite sensibility that it can grasp the smallest object. The natural disposition of the elephant is gentle, and his habits social; hence they are commonly seen in herds or families, one individual of which acts as leader.

The elephant is found wild in certain localities in Hindustan, in mountainous and forest regions; in the districts lying N. E. of the peninsula and in all Southeastern Asia it is plentiful; it occurs also in Sumatra and in Borneo, but in the latter is scarce. In Africa it is widely spread, but is becoming less numerous year by year, on account of the eagerness with which it is pursued for its valuable tusks. In no one locality, probably, is the elephant so abundant as in Ceylon, especially the elevated forest regions of the island. In India elephants now form a government monopoly. The shooting of them is prohibited except when they become dangerous to man or too destructive to crops; and the right of taking them is only granted by special lease. Any person capturing, killing, or injuring an elephant renders himself liable to a considerable fine.

Elephants are employed in carrying burdens on their backs, and even with their mouths by means of a rope, the end of which they hold with their teeth. They load a boat with great rapidity and skill. In propelling wheel carriages on a declivity they push them forward with their forehead, and support them with their knees. In dragging beams of wood along the ground they remove obstacles or elevate the ends of the beams so as to clear them. Before the invention of firearms they were used in war by many nations of antiquity; they are still employed in the East in dragging or carrying artillery. The tusks of the elephant have long been applied under the denomination of ivory to a variety of important uses in the arts. From the fossil remains which have been discovered it is apparent that they must have been abundantly distributed over the earth in former times.

Elephanta, an island over 4 miles in circuit, in the harbor of Bombay, 6 miles E. of the city and 4 miles from the mainland. It owed its European name to a large figure of an elephant which stood near its former landing-place, but which after 1814 gradually sank into a shapeless mass. Of the island's far-famed Brahmanic rock-caves, four are complete, or nearly so; the most important is the Great Temple, still used by the Hindus on Sivaite festivals. The word is also used to designate the thunder storm that marks the end of the rainy season in the region around Bombay, India.

Elephantiasis, a cutaneous disease, especially prevalent in Egypt, is so called from the enlargement of the limbs and the likeness to an elephant's hide.

Elephant Seal, the proboscis seal, or sea-elephant, the largest of the seal family. There are probably two species, one found only on the coast of California and Western Mexico, the other found in Patagonia, Kerguelen Island, Heard's Island, and other parts of the Southern Seas. They vary in length from 12 to 30 feet, and in girth at the chest from 8 to 12 feet. The proboscis of the male is about 15 inches long, but elongates under excitement. The females have no proboscis, and are considerably smaller than the male. Both species are becoming rare from their continual slaughter.

Elephant's Foot, the popular name of a plant distinguished by the shape of its root-stock, which forms a nearly hemispherical mass rising a little above the ground, covered with a thick corky bark. It has a slender climbing stem growing to a length of 30 or 40 feet, with small heart-shaped leaves and greenish-yellow flowers.

Eleusinian Mysteries, festivals held annually at Eleusis, a town of Attica, in honor of the goddess Demeter. Great secrecy was observed in their celebration. They existed about 18 centuries, and ceased during the invasion of Alaric I., in 396.

Eleuthera, one of the largest of the Bahama Islands. It is of very irregular shape, its length being about 70 miles, and its breadth in general from 2 to 4 miles, though in one part 10. Pop. over 5,000.

Elevator, a machine for transferring grain by raising it from the car, a bin, or the hold of a ship, to an elevated hopper, whence it is discharged by any one of a series of spouts directed to a bin for storage or to the hold of a boat, or to a car. Elevators are also used in many machines for raising small objects or materials. They are also used in elevating bricks, mortar, etc., in building. The word is also applied to a platform or cage in a warehouse, hotel, mine, or elsewhere, for raising or lowering persons, goods or material to or from different floors or levels.

In the grain trade an elevator is a building specially constructed for elevating, storing, and loading grain into cars or vessels. These structures are very capacious, both as to the capacity for handling and storing, but the construction is very simple. An elevator-leg, so called, reaches into the bin or cellar into which the contents of the wagons or cars are discharged. A strong belt, carrying a series of buckets, travels over a drum at the lower end and also over one at the upper end, where the buckets tip over and discharge into the upper bin. This has valved spouts, which direct the contents into either of the deep bins.

Elgar, Edward William, an English composer; born at Broadheath, Worcestershire, in 1857. His oratorios "The Dream of Gerontius," and "The Apostles," are marked departures from Handelian traditions.

Elgin, a city in Kane county, Ill.; bisected by the Fox river, and on the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul railroads; 35 miles N. W. of Chicago; is in an uncommonly rich grazing and dairying section; has an extensive trade in dairy products; is widely-noted for its manufacture of watches; and is the seat of the Illinois Northern Hospital for the Insane, Sherman Hospital, and Gail Borden Library. Pop. (1920) 27,431.

Elgin, James Bruce, 8th Earl of, and 12th Earl of Kincardine; born in 1811; appointed governor-general of Jamaica in 1842, and in 1846 of Canada. In 1857 as special ambassador to China, he concluded the Treaty of Tientsin in 1858. In 1860 was sent on special mission to

Peking, and afterward appointed to succeed Canning as governor-general of India. He died in 1863 while inspecting the Himalayan passes.

Elgin Marbles, the collection of antique sculptures brought chiefly from the Parthenon of Athens to England by the 7th Earl of Elgin in 1814, and afterward purchased by Parliament for the British Museum at a cost of $175,000. They consist of figures in low and high relief and in the round, representing gods, goddesses, and heroes; the combats of the Centaurs and Lapithæ; the Panathenaic procession, etc. They exhibit Greek sculpture at its highest stage and were partly the work of Phidias.

Eli, a high priest of Israel, descended from Ithamar, fourth son of Aaron. He combined with his office the functions of judge and is stated (I Sam. iv. 18) to have ruled Israel forty years. In his old age, his two sons brought his administration into disgrace. The tragical end of his life is related by Samuel, who succeeded him.

Elias, Ney, an English explorer; went to China early in life and engaged in business there. In 1871 he made an overland journey across Asia. Passed through Siberia in the depth of winter and reached St. Petersburg. Later he traveled the entire length of the Pamirs and Badkshan and Afghan Turkestan. He died in London, May 31, 1897.

Elias, Saint, a lofty mountain on the N. W. coast of America. It rises about 18,000 feet above the sea, being visible to mariners at a distance of 50 leagues. Physically it marks pretty nearly the point where the shore, after trending in a N. W. direction, turns due W.; politically it divides itself between the Territory of Alaska and the Dominion of Canada.

Elie de Beaumont, Jean Baptiste Armand Louis Leonce, a French geologist; born in Canon, France, 1798. He died in 1874.

Elijah, the most distinguished of the prophets of Israel, flourished in the 9th century B. C., during the reigns of Ahab and Ahaziah, and until the beginning of the reign of Jehoram, his special function being to denounce vengeance on the kings of Israel for their apostasy. He incurred the anger of Jezebel, wife of Ahab, for slaying the prophets of Baal, but escaped to Horeb, afterward returning to Samaria to denounce Ahab for the murder of Naboth. Elijah at length ascended to heaven in a chariot of fire, Elisha, his successor, being witness. See I Kings xvii. to xxi. and II Kings i. and ii.

Eliot, Charles William, an American educator; born in Boston, Mass., March 20, 1834; was president of Harvard University in 1869–1909. He published "Manual of Qualitative Chemical Analysis"; "Manual of Inorganic Chemistry" (with Storer); etc. He was a constant writer on education and other prominent questions of the day.

Eliot, George, the assumed literary name of Mary Ann, or, as she preferred to write the name in later years, Marian Evans, an English novelist; born near Nuneaton Nov. 22, 1820. Her first literary undertaking was the continuation of a translation of Strauss's "Life of Jesus," commenced by her friend Mrs. Hennell, and completed by Miss Evans in 1846. In 1849 she went abroad, returning to England next year, and in 1851 she took up her abode as a boarder in the house of John Chapman, editor of the "Westminster Review." It was not, however, till January, 1857, that she came prominently into public notice, when the first of a series of tales entitled "Scenes from Clerical Life" appeared in "Blackwood's Magazine." These tales immediately arrested attention, and obtained the praise of the editor who was informed that he was to know the author as George Eliot. John Blackwood was as ignorant of the author's identity for a considerable time as was all the world except George H. Lewes and one or two others. The "Scenes" came to an end in November, 1857, and in the February following the first chapters of "Adam Bede" were in the publisher's hands, the whole work being completed and sent in by October.

The success which attended the publication of this powerful story of English rural life was unmistakable, and public curiosity was greatly excited as to the personality of the author. The credit of authorship was openly ascribed to various persons of

more or less note and was claimed by others of more or less modesty and honesty. The secret soon began to leak out. Months before her second novel, "The Mill on the Floss," was published (1860), it was well known, among literary circles at least, that George Eliot was none other than Marian Evans, the Westminster reviewer. By this time was established that close association and literary fellowship with the talented philosophical writer, George H. Lewes, which terminated only with the death of the latter but a little more than two years before her own. In May, 1880, she married John Cross, but died rather suddenly at Chelsea on Dec. 22 of that year. Her life was published by her husband in 1885.

Eliot, Samuel, an American educator and historian; born in Boston, Mass., Dec. 22, 1821. He filled the chair of history and political science in Trinity College, Hartford, Conn. (1856–1864); was president of Trinity College (1860–1864); and overseer of Harvard (1866–1872). He died in Beverly, Mass., Sept. 14, 1898.

Elisha, a Hebrew prophet, the disciple and successor of Elijah. Many miracles of prediction and cure, and even of raising the dead, are ascribed to him, but his figure is less original and heroic than that of his master. He held the office of prophet for fully 65 years, from the reign of Ahab to that of Joash (latter half of 9th century B. C.).

Elixir, a word of Arabic origin, applied by the alchemists to a number of solutions employed in attempting the transmutation of metals into gold, and also to a potion, the elixir of life, supposed to confer immortality. It is still used for various popular remedies, for the most part composed of various aromatic and stimulative substances held in solution by alcohol.

Elizabeth, a city and county-seat of Union co., N. J. It was settled as Elizabethtown in 1665, and was the capital of New Jersey from 1755 to 1757. It contains an old tavern where Washington stopped on his way to New York for his first inauguration. Gen. Winfield Scott's home, the Boudinot House, and the old Livingston Mansion. Pop. (1890) 37,764; (1920) 95,682.

Elizabeth, Empress of Austria; born in Possenhofen, Bavaria, Dec. 24, 1837; daughter of Duke Maximilian Josef of Bavaria; married her cousin, the Emperor Franz Josef on April 24, 1854. Together they were crowned with the insignia of St. Stephen when the inauguration of the dual system was solemnized. She was greatly admired by Austrians and Hungarians alike. On Sept. 10, 1898, while visiting Geneva, Switzerland, she was instantly killed by an Italian anarchist.

Elizabeth, Queen of England; the daughter of Henry VIII. and of Anne Boleyn; born in Greenwich Sept. 7, 1553, and almost immediately declared heiress to the crown. After her mother had been beheaded (1536) both she and her sister Mary were declared bastards (28 Henry VIII. cap. vii.); finally she was placed after Prince Edward and the Lady Mary in the order of succession (35 Henry VIII. cap. i.). Thus, while the first two marriages of King Henry were both still held to be illegal, the children of both were legitimatized. Upon the death of Mary, November 17, 1558, Elizabeth ascended the throne. She restored, or may be said to have established the Protestant religion, assisted projects for English colonization of America, repulsed the Spanish Armada, encouraged literature and made England respected abroad. Personally she had serious faults, and her execution of Mary, Queen of Scots, is a blot on her name, but her reign was an oasis of glory compared with the rule of the sovereigns who immediately preceded her, and those who followed her up to William and Mary. She died March 24, 1603.

Elizabeth, Queen of Bohemia; born in Scotland, Aug. 19, 1596. She forms the connecting link between the ancient royal families of England and Scotland and the present reigning dynasty. Daughter of James VI. of Scotland and I. of England, she married in 1613 Frederick V., Elector Palatine, who in 1619 was chosen King of Bohemia. Through her daughter Sophia, Electress of Hanover, she became the grandmother of George I. of Great Britain. She died in England, Feb. 13, 1662.

Elizabeth, the wife of Zacharias and mother of John the Baptist. An

angel foretold to her husband the birth of a son to her old age; and it was also foretold by the angel Gabriel to the Virgin Mary, as an assurance of the birth of the Messiah.

Elizabethan Architecture, a style of architecture which prevailed in England during the reigns of Elizabeth and James I.

Elizabeth Islands, a group of 16 American islands S. of Cape Cod, with a permanent population of about 100.

Elizabeth, Madame (Philippine Marie Helene Elizabeth), sister of Louis XVI.; born in 1764. She was the faithful friend and companion of the royal family in their flight to Varennes, and during their imprisonment she was executed, on the pretense of corresponding with her other brothers, afterward Louis XVIII. and Charles X., May 10, 1794.

Elk, Moose, or **Moose Deer,** the largest of the deer family, a native of Northern Europe, Asia, and America. The American form (to which the name moose is usually given), is sometimes separated from the European, but most naturalists find no specific difference between them. The elk or moose has a short, compact body, standing about 6 feet in height at the shoulders, a thick neck, large, clumsy head, and horns which flatten out almost from the base into a broad, palmate form with numerous snags. In color the elk is grayish brown, the limbs, sides of head, and coarse mane being, however, of a lighter hue. Their flesh resembles beef rather than venison. For the most part they are inoffensive, and so exceedingly wary that they are approached only with difficulty. In America the Indians and half-breeds are the most skillful moose-hunters. The moose has a wide range in Canada, extending from the Arctic Ocean, and British Columbia, to New Brunswick and Nova Scotia; it is found also in Maine. It feeds largely on the shoots of trees or shrubs, such as the willow and maple, and on bark, etc. In Sweden its destruction is illegal, and in Norway there are many restrictions.

Elk, Irish, a large deer found in the Pleistocene strata, and distinguished by its enormous antlers, the tips of which are sometimes 11 feet apart. Though a true deer, its antlers differ from those of living species in that the beam is flattened into a palm. To sustain the great weight, unusually large and strong limbs and neck vertebræ were required. Its remains are found in Ireland, in Scotland, in England, and on the Continent, where they occur in lacustrine deposits, brick-clay, and ossiferous caves.

Elkhart, a city in Elkhart county, Ind.; at junction of the St. Joseph and Elkhart rivers and on the Big Four and other railroads; 100 miles E. of Chicago; manufactures carriages, go-carts, paper, flour, printing machinery, and brass musical instruments. Pop. (1920) 24,277.

Elkin, William Lewis, an American astronomer; born in New Orleans, April 29, 1855. He was educated at the Royal Polytechnic School in Stuttgart, and at the University of Strasburg, and in 1881–1883 was at the Cape of Good Hope studying stellar parallaxes. He was astronomer at the Yale observatory in 1884–1896 and director in 1896–1910, continuing his work in st llar parallax.

Elkins, Stephen Benton, an American statesman; born in Perry co., O., Sept. 26, 1841; removed to Missouri when a child; was graduated at the University of Missouri in 1860; and admitted to the bar n 1863. During the latter year he moved to New Mexico, where he was a member of the Territorial Legislature in 1864–1865; and the Territorial Delegate in Congress in 1873–1877. Subsequently he removed to West Virginia, and became interested in railroads and coal mining. In 1891–1893 was Secretary of War, and in 1894, 1901 and 1907 elected U. S. Senator. D. Jan. 5. 1911.

Elks, Benevolent and Protective Order of, a convivial, charitable, and benevolent organization founded by members of the theatrical profession in New York city in 1868, but now admitting to membership men in other professions and occupations. Though not a beneficial order, it is claimed that it expends more in unostentatious charity than any other organization in the world. Its membership in United States is over 453,500.

Ellenborough, Edward, Law, Lord, an English lawyer Lord Chief-Justice of the King's Bench; born in

1750 in Great Salkeld, Cumberland. He was educated at the Charter House and at Cambridge, and called to the bar in 1780. At the trial of Warren Hastings, in 1785, he acted as leading counsel. The defense did not come on till the fifth year of the trial, but after eight years Hastings was acquitted and Law's success assured. In 1801 he was made attorney-general, and in 1802 became Lord Chief-Justice of the King's Bench, and was created baron. He held the office of chief-justice for 15 years, resigning in 1818, in which year he died.

Ellery, William, an American patriot; born in Newport, R. I., Dec. 22, 1727; sat in the Congress of 1776, and was one of the signers of the Declaration of Independence. From 1790 till his death, Feb. 15, 1820, he retained the office of collector in his native place.

Ellet, Elizabeth Lummis Fries, prose-writer; born in Sodus Point, N. Y., in 1818; died June 3, 1877.

Ellicott, Andrew, a civil engineer; born in Bucks County, Pa., in 1754. He made the first accurate measurements of Niagara Falls and River; in 1792 was appointed government Surveyor-General; and in 1796 was a member of the Spanish-American Boundary Commission. Died, 1820.

Ellicott, Charles John, an English clergyman; born in 1819. He was educated at Cambridge. After being Professor of Divinity in King's College, London, Hulsean lecturer and Hulsean Professor of Divinity at Cambridge, and dean of Exeter, he was appointed Bishop of Gloucester and Bristol in 1863. He was for 11 years chairman of the scholars engaged on the revision of the New Testament translation, and published commentaries on the Old and New Testaments, numerous sermons, addresses, lectures, etc. He died Oct. 15, 1905.

Ellicott, Henry J., an American sculptor; born near Ellicott City, Md., in 1848; was educated at Washington, D. C., and at the Academy of Design in New York. His best known works include bronze statues for the 1st and 2d Pennsylvania Volunteers on the battlefield at Gettysburg, the equestrian statues of General Hancock in Washington and General McClellan in Philadelphia; and memorial monuments in various parts of the United States. He died in Washington, D. C., Feb. 12, 1901.

Ellinwood, Frank Fields, an American clergyman and author; born in Clinton, N. Y., June 20, 1826. He graduated at Hamilton College in 1849; was ordained a minister in the Presbyterian Church in 1853; and became secretary of foreign missions for that denomination in 1871. His chief works are: "The Great Conquest" (1876); "Oriental Religions and Christianity" (1892). Died in 1908.

Elliot, Daniel Giraud, an American zoölogist; born in New York, March 7, 1835; received an academic education; made zoölogy a special study from his youth; traveled in Europe, Africa, and parts of Asia in 1856–1878; subsequently in Canada, Alaska, South America, and the greater part of the United States. He afterward became curator of zoölogy in the Field Columbian Museum. He was decorated 10 times by various European governments for his researches. He died Dec. 22, 1915.

Elliott, Henry Rutherford, an American journalist and story-writer; born in 1849. Died April 18, 1906.

Elliott, Charles Wyllys, an American novelist and historian; born in Guilford, Conn., May 27, 1817. Settling in New York, he was one of the founders and trustees of the Children's Aid Society in 1853, and in 1857 was one of the commissioners for laying out Central Park. He wrote a number of valuable works. He died Aug. 23, 1883.

Elliott, Charlotte, an English hymn-writer; born March 17, 1789. Her sacred songs were exceedingly popular, "Just as I Am" (1834), being universally adopted. She died in Brighton, Sept. 22, 1871.

Elliott, Ebenezer, an English popular poet; born in Masborough, near Sheffield, March 17, 1781. At first a foundry hand, his poetic gift was used in denouncing the exploitation of the proletariat by a capitalistic oligarchy; yet the bitterness and exaggerated rhetoric one would expect are wholly absent from "Corn Law Rhymes" (1831), and "More Prose and Verse" (1850). He died in Great Houghton, near Barnsley, Dec. 1, 1849.

Elliott, Henry Wood, an American naturalist and artist; born in Cleveland, O., Nov. 13, 1846; received a public school education. In 1862–1878 he was private secretary to Joseph Henry, secretary of the Smithsonian Institution; in 1869–1871 was artist of the United States Geological Survey; and in 1872–1874 and 1890 was a special commissioner for the investigation of the Seal Islands of Alaska.

Elliott, Maud (Howe), an American novelist, daughter of Julia Ward Howe; born in Boston, Mass., Nov. 9, 1855.

Elliott, Sarah Barnwell, an American novelist, granddaughter of Stephen Elliott of South Carolina.

Elliott, William, a miscellaneous writer; born in Beaufort, N. C., April 27, 1788. He was educated at Yale, and devoted himself mainly to agriculture and rural sports. His contributions to the "Southern Review" were numerous. He died in Beaufort, February, 1863.

Ellipse, a plane curve of such a form that, if from any point in it two straight lines be drawn to two given fixed points, the sum of these straight lines will always be the same; a geometrical term used in conic sections. These two fixed points are called the *foci*.

Ellipsis, a term used in grammar and rhetoric to signify the omission of a word necessary to complete the expression or sentence in its usual form. The object of ellipsis is shortness and impressiveness; accordingly it prevails in proverbs. Ellipses are used in all languages, but the same form of ellipses is not common to all.

Ellis, Edward Sylvester, an American writer of school text-books and juvenile literature; born in Geneva, O., April 11, 1840. He died June 20, 1916.

Ellis, George Edward, an American clergyman, biographer, and historical writer; born in Boston, Mass., Aug. 8, 1814. He was pastor of the Harvard (Unitarian) Church, Charlestown, Mass. (1840–1869); and held the Professorship of Systematic Theology in the Cambridge Divinity School (1857–1863). As president of the Massachusetts Historical Society he made valuable contributions to early colonial history. He died in Boston, Dec. 20, 1894.

Ellis, William, an English missionary; born in 1794. He was sent out to the South Sea Islands in 1816 by the London Missionary Society, and returned in 1825, one result of his labors being "Polynesian Researches" (1829). In 1830–1844 he was secretary of the society and afterward on its behalf made several visits to Madagascar, the longest being in 1861–1865. He died in 1872. His wife, Sarah Stickney Ellis, also a popular writer, was born in London in 1812. She died in Hoddesdon, Herts, June 16, 1872.

Ellora, Elora, or **Eluru,** a village in Hindustan, Province of Aurungabad; celebrated for some remarkable cave temples, excavated in the solid rock, which in magnitude and perfection surpass all other constructions of the kind in India.

Ells, Robert Wheelock, a Canadian geologist; born in Cornwallis, N. S., July 26, 1845; was graduated at McGill University in 1872, and in May of that year joined the staff of the Canadian Geological Survey, of which he later became senior geologist. He was a fellow of the Royal Society of Canada and also of the American Geographical Society. In 1895 he was elected president of the Ottawa Literary and Scientific Society. He was the author of numerous reports on geology and mineral researches, published in the annual volumes of the Canadian Geographical Survey since 1872. He died in 1911.

Ellsworth, Ephraim Elmer, an American military officer; born in Mechanicsville, N. Y., April 23, 1837. He removed to Chicago before he was of age, and studied law. He organized about 1859 a zouave corps which became noted for the excellence of its discipline. In March, 1861, he accompanied President Lincoln to Washington, and in April he went to New York city, where he organized a zouave regiment of firemen, of which he became colonel. Ordered to Alexandria, he lowered a Confederate flag floating over a hotel, for which act the hotelkeeper fatally shot him, May 24, 1861.

Ellsworth, Oliver, an American jurist; born in Windsor, Conn., April

29, 1745. He was educated at Yale and Princeton, graduating from the latter in 1766; admitted to the bar in 1711; sent as delegate from Connecticut to the first Continental Congress; made judge of the Connecticut Superior Court in 1784. He was a member of the convention that framed the Federal Constitution, and influential in organizing Congress and the judiciary. In 1796 he was appointed chief-justice, and in 1799 made member of a diplomatic commission to France, with Patrick Henry and William R. Davie. On account of ill health he sent home his resignation as chief justice, but in 1807 was reappointed. He died in Windsor, Conn., Nov. 26, 1807.

Elm. The species of elm (Ulmus), the type of the natural order Ulmaceæ, are trees or shrubs, with alternate serrated and simple leaves, and fascicles of small, inconspicuous flowers which appear before the foliage. There are several varieties, the most ornamental and picturesque of which is the weeping elm, of which there are also several varieties. The American or white elm is found from the 49th to the 30th parallel of latitude, is abundant in the Western States, and extends beyond the Mississippi but attains its loftiest stature between lat. 42° and 46°; here it reaches the height of 100 feet, with a trunk 4 or 5 feet in diameter, rising sometimes 60 or 70 feet, when it separates into a few primary limbs which are at first approximate, or cross each other, but gradually diverge, diffusing on all sides long, arched, pendulous branches, which float in the air. It has been pronounced by Michaux the most magnificent tree of the temperate zone. The red or slippery elm is found over a great extent of country in North America as far S. as lat. 31°; it attains the height of 50 or 60 feet, with a trunk 15 or 20 inches in diameter; the wood is stronger and of a better quality than that of the white elm. The leaves and bark yield an abundant mucilage, to which it owes one of its names, and which is used as a remedy in coughs, and in dysentery and other bowel complaints.

The wahoo inhabits from lat. 37° to Florida, Louisiana, and Arkansas, and is a small tree, sometimes 30 feet high, remarkable from the branches being furnished on two opposite sides, with wings of cork ⅛ to ¼ inches wide.

Elms, City of, a popular name given to New Haven, Conn.

Elmer, Horace, an American naval officer; born in Bridgeton, N. J., in 1847; entered the navy as acting midshipman in September, 1861; was promoted midshipman in July, 1862; ensign in November, 1866; master in December, 1866; lieutenant in March, 1868; lieutenant-commander, in April, 1869; and commander in March, 1885. During the winter of 1897–1898 he superintended the construction of naval vessels at Cramp's shipyard in Philadelphia. When it became evident that war with Spain would break out, he was ordered to organize the naval force afterward known as the "mosquito fleet" for coast patrol duty. He died in Brooklyn, N. Y., April 27, 1898.

Elmira, city and capital of Chemung county, N. Y., on the Chemung river and canal and the Erie and other railroads; 46 miles S. W. of Ithaca; is in a coal, building-stone, tobacco, grain, and dairying section; contains a noted State Reformatory, college, industrial school, free academy, Steele Memorial Library, and Arnot-Ogden Hospital; and has railroad repair shops and manufactories of fire and steam engines, glass, and silk, cotton, and woolen goods. Pop. (1920) 45,305.

Elohim, the ordinary name of God in the Hebrew Scriptures. There is the grammatical anomaly that this plural stands as the nominative to a singular verb. This has been held to imply that in the Divine nature there is a certain plurality and a certain unity. The plural has been called also the plural of majesty. It is generally used of the true God, but Jehovah is deemed by far the more sacred name.

Elohist, a Biblical writer, hypothetically assumed to have written part of the Pentateuch, who habitually, if not exclusively, used the Hebrew name Elohim for God.

Elopement, the act of eloping; private or unlicensed departure from the place or station to which one is assigned by duty or law, particularly

of a wife from her husband, or of a daughter or ward with a gallant. In almost every one of the States, the male principal in an elopement is held guilty of an abduction provided his associate in the act is under age.

El Paso, city, port of entry, and capital of El Paso county, Tex.; on the Rio Grande river and several trunk line railroads; 712 miles N. W. of Austin. It is opposite Ciudad Juarez, the N. terminus of the Mexican Central railroad in Mexico, and near El Paso Del Norte, the principal mountain pass between Mexico and New Mexico; is in a gold, silver, lead, and iron section; has large smelting works, vineyards, and manufactures of machinery, wine, and tanned leather. Pop. (1920) 77,543.

Elphinstone, Mountstuart, an Indian administrator, son of the 11th Lord Elphinstone; born in Scotland, in 1778; was ambassador to the Afghan court in 1808; resident at the court of Poonah from 1810 to 1817; British commissioner to that province in 1817–1819; and governor of Bombay in 1819–1827. A native college was named after him. Died in 1859.

Elsinore, a seaport of Denmark on the island of Seeland, at the narrowest part of the Sound (here only 3½ miles broad), 24 miles N. by E. of Copenhagen, and opposite Helsingborg in Sweden. Saxo Grammaticus, a famous writer of the 12th century, was born in Elsinore, and here too Shakespeare lays the scene of "Hamlet." Elsinore was raised to the rank of a town in 1416; it was several times destroyed by the Hanseatic League, and in 1658 was taken by the Swedes, but it was restored to Denmark two years later.

Elson, Louis Charles, an American musical critic; born at Boston, Mass., in 1848. His erudite writings on his art include "Curiosities of Music"; "German Song and Song Writers"; "The Great Composers"; "Our National Music"; and "Shakespeare in Music."

Elswick, a township on the W. outskirts of Newcastle, England. Here are located the gun-founding works of the firm of Sir W. G. Armstrong, Mitchell & Co., which are among the largest of the kind in Europe. The frontage toward the river is about one mile, the entire area occupied is about 125 acres, and in busy times about 14,000 work-people are employed. Elswick Park, including Elswick Hall, was opened as a recreation ground in 1878. Now part of the city.

Elvas, the strongest fortified city of Portugal, in the Province of Alemtejo, near the Spanish frontier; 10 miles W. of Badajoz. Standing on a hill, it is defended by seven large bastions and two forts. Pop. 14,000.

Elwell, Frank Edwin, an American sculptor; born in Concord, Mass., June 15, 1858; received a public school education; studied sculpture at the Ecole des Beaux Arts, Paris. He was the first American sculptor to model a statue in the United States for a European country. He received a medal at the World's Columbian Exposition; two gold medals from the Art Club of Philadelphia; and a medal from the King of Belgium.

Elwell, James William, an American philanthropist; born in Bath, Me., Aug. 27, 1820; received an academical education; became a partner in his father's commission house in New York in 1838; and after the death of his father he founded the firm of James W. Elwell & Co. in 1852. The firm owned three lines of vessels to the principal European, Southern, West Indian and South American ports. His philanthropic gifts aggregated $3,000,000, and he bequeathed $25,000 to his favorite charities. He originated the Helping Hand Society and was one of the founders of the Brooklyn Orphan Asylum. He was also identified as trustee or director with many other charitable institutions. He died in Brooklyn borough, Sept. 2, 1899.

Elysium, or Elysian Fields, the name of a fabulous region which the ancients supposed to be the residence of the blessed after death. Elysium is supposed by Homer to have been at the extremities of the earth; other poets placed it in the Fortunate Islands (the Canaries). It had a serene and cloudless sky, while a soft celestial light shed a magical brilliancy over every object. The favored heroes here lived happily under the rule of the just Rhadamanthus and exercised themselves in wrestling and other contests, danced to the sound of the lyre

from which Orpheus drew enchanting tones, or wandered through groves, on the smiling banks of the Eridanus.

Elzevirs, highly prized elegant 16th to 18th century books, published by the Elzevirs, a family of famous Dutch printers.

Emancipation, the act by which in the Roman law, the paternal authority was dissolved in the lifetime of the father. It took place in the form of a sale by the father of the son to a third party, who manumitted him. The Twelve Tables, the foundation of Roman law, required that this ceremony should be gone through three times. In general, the son was at last re-sold to the father, who manumitted him, and thus acquired the rights of a patron which would otherwise have belonged to the alien purchaser who finally manumitted him. In the case of daughters and grandchildren one sale was sufficient.

Emancipation Proclamation, a proclamation providing for the emancipation of the slaves in certain parts of the Confederate States issued as a war measure by President Lincoln, Jan. 1, 1863. The number of slaves emancipated by this proclamation was, taking the census of 1860 as a basis, as follows:

Alabama	435,080
Arkansas	111,115
Florida	61,745
Georgia	462,198
Louisiana	247,715
Mississippi	436,631
North Carolina	331,059
South Carolina	402,046
Texas	182,566
Virginia	450,000
Total	3,120,155

The number of slaves not affected by its provisions was about 832,000. The full text of the proclamation is as follows:

"Whereas, on the twenty-second day of September, one thousand eight hundred and sixty-two, a proclamation was issued by the President of the United States, containing, among other things, the following, to-wit:

That, on the first day of January, in the year of our Lord one thousand eight hundred and sixty-three, all persons held as slaves within any State, or designated part of State, the people whereof shall be in rebellion against the United States, shall be then, thenceforth and forever free, and the Executive Government of the United States, including the military and naval officers thereof, will recognize and maintain the freedom of such persons, and will do no act or acts to repress such persons, or any of them, in any efforts they may make for their actual freedom.

That the Executive will, on the first day of January aforesaid, by proclamation, designate the States and parts of States, if any, in which the people thereof shall be in rebellion against the United States, and the fact that any State, or the people thereof, shall, on that day, be, in good faith, represented in the Congress of the United States by members chosen thereto at elections wherein a majority of the qualified voters of such State shall have participated, shall, in the absence of strong countervailing testimony be deemed conclusive evidence that such State and the people thereof are not then in rebellion against the United States.

Now, therefore, I, Abraham Lincoln, President of the United States, by virtue of the power in me vested as Commander-in-chief of the Army and Navy of the United States in time of actual armed rebellion against the authority and Government of the United States, and as a fit and necessary war measure for suppressing said rebellion, do on this first day of January, in the year of our Lord one thousand eight hundred and sixty-three, and in accordance with my purpose so to do, publicly proclaim for the full period of one hundred days from the day of the first above-mentioned order, and designate, as the States and parts of States wherein the people thereof respectively are this day in rebellion against the United States, the following, to wit: Arkansas, Texas, Louisiana (except the parishes of St. Barnard, Plaquemines, Jefferson, St. John, St. Charles, St. James, Ascension, Assumption, Terre Bonne, Lafourche, St. Mary, St. Martin, and Orleans, including the City of New Orleans), Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia (except the forty-eight counties designated as West Virginia, and also the counties of Berkeley, Accomac, Northampton, Elizabeth City, York, Princess Ann, and Norfolk, including the cities of Norfolk and Portsmouth), and which excepted parts are, for the present, left precisely as if this proclamation were not issued.

And by virtue of the power and for the purpose aforesaid, I do order and declare that all persons held as slaves within said designated States and parts of States are, and henceforward shall be, free; and that the Executive Government of the United States including the military and naval authorities thereof, will recognize and maintain the freedom of said persons.

And I hereby enjoin upon the people so declared to be free to abstain from all vio-

lence, unless in necessary self-defense, and I recommend to them that, in all cases, when allowed, they labor faithfully for reasonable wages.

And I further declare and make known, that such persons, of suitable condition, will be received into the armed service of the United States, to garrison forts, positions, stations, and other places, and to man vessels of all sorts in said service.

And upon this act, sincerely believed to be an act of justice, warranted by the Constitution, upon military necessity, I invoke the considerate judgment of mankind and the gracious favor of Almighty God.

In testimony whereof, I have hereunto set my name, and caused the seal of the United States to be affixed.

[L. S.] Done at the City of Washington, this first day of January, in the year of our Lord one thousand eight hundred and sixty-three, and of the Independence of the United States the eighty-seventh.

By the President ABRAHAM LINCOLN.
WILLIAM H. SEWARD,
Secretary of State.

Emanuel the Great, King of Portugal; born May 3, 1469. He succeeded his cousin John II. in 1495; and aided the expeditions of Vasco de Gama, Cabral, Cortereal, and Albuquerque; died in Lisbon, Dec. 13, 1521.

Embalming, the act of preserving the body after death. It was probably invented by the Egyptians, whose bodies thus prepared for preservation are known as mummies. The custom seems to have originated in the idea that the preservation of the body was necessary for the return of the soul to the human form. It is as old as 4000 B. C.

Embargo, in commerce, an arrest on ships or merchandise by public authority; or a prohibition of state, commonly on foreign ships, in time of war, to prevent their going out of or coming into port. A breach of embargo, under knowledge of the insured, discharges the underwriters of all liability.

Such an act was passed by the American Congress, Dec. 22, 1807, prohibiting exportations from the United States. The act was a measure of retaliation against England and France for their interference with American commerce in 1806–1807, and aimed at forcing them to recede from their position by showing the importance of our commercial relations. It had some effect on these nations, but a far more ruinous result on our own commerce. It was a measure of the Democratic party, and was approved by the agricultural portions of the United States. The New England States, deeply interested in foreign commerce, and the Federalists loudly condemned it. Its opponents, spelling the name backward, called it the "O grab me" Act, and threats of secession were heard from New England. As a result, Congress fixed March 4, 1809, for the termination of the embargo. The first embargo in our history was laid in 1794 for a period of 60 days, and other minor acts of a similar nature were passed during the War of 1812.

For a considerable period prior to the entrance of the United States into the World War it was evident to its Government that large quantities of foodstuffs and other important supplies that were being shipped to certain neutral ports were thence being transhipped into Germany. A thorough investigation produced such astounding results that on July 8, 1917, President Wilson proclaimed a qualified embargo on the exportation of food-grains, meats, fuel, and important war materials to all nations, neutral or belligerent. This action led to strong protests from the Scandinavian countries, but, in view of the ascertained facts, it was otherwise considered a master stroke against German autocracy.

Embassy, a mission presided over by an ambassador, as distinguished from a legation or mission intrusted to an envoy. An ambassador, as the representative of the person of his sovereign, can demand a private audience of the sovereign to whom he is accredited, while an envoy must communicate with the minister for foreign affairs.

Ember Days, certain days set apart for prayer and fasting.

Emblem, anything which, by association of ideas, appears to be a visible and suitable representation of some abstract quality; it has a meaning similar to that of the word device. Thus the dog is the emblem of fidelity; the eagle of imperial power; the gridiron is the emblem of St. Lawrence, as the instrument of his martyrdom. An angel bear a pen is the emblem of St. Matthew; a lion, that of St. Mark; a bull, of St. Luke; and an eagle, of St. John. Flowers are supposed to be

emblematic of various qualities, and are, in consequence, sometimes used in the East as a means of communication.

Emblements, the crops actually growing at any time on land; they are considered in law as personal property, and pass as such to the executor or administrator of the occupier, if the latter die before he has actually cut, or reaped, or gathered the same.

Embolism, the blocking up of a blood-vessel by a clot of blood that comes from some distance till it reaches a vessel too small to permit its onward progress, often the cause of sudden paralysis and death, or of gangrene and pyæmia.

Embossing, the act or art of ornamenting by raised work or figures in relief, applied to many objects. Crests or initials are embossed on paper, envelopes, etc. Ornaments are embossed on book-covers, especially on those of cloth. Leather is embossed for binding and many ornamental uses. Textile fabrics are embossed for various purposes. Glass is said to be embossed when it is molded with raised figures.

Embrasures, openings in the parapets, flanks of bastions, and other parts of defense-works, through which cannon are pointed.

Embroidery, the art of producing ornamentation by means of needlework on textile fabrics, leather and other materials.

Embryo, an unborn young animal, or the rudimentary young plant, especially when within the seed. The term fœtus is equivalent to embryo, but is restricted to mammalian development. The term larva is also applied to a young animal which is more or less markedly different from the adult form.

Embryology, that department of biology which traces the development of the individual organism before birth.

Emerald, a well-known gem of pure green color, often very rich and beautiful. In value the emerald is rated next to the ruby, and when of good color, it is set without foil, and on a black ground, like brilliant diamonds. Emeralds of inferior luster are generally set upon a green gold foil. The Oriental emerald is a variety of the ruby, and an extremely rare gem.

Emerald Isle, an epithet applied to Ireland, from the freshness and bright color of the verdure, produced by the abundant heat and moisture continually reaching it from the Atlantic. This epithet was first used by Dr. W. Drennan (1754–1820), in his poem entitled "Erin."

Emeritus, a name given to Roman soldiers who had fulfilled the legal term of military service. It is now applied in colleges to professors who after meritorious services, are relieved on account of age or infirmity from active service, but retained in an honorary position. Applied also to pastors.

Emerson, Luther Orlando, an American composer; born in Parsonsfield, Me., Aug. 3, 1820; received an academic education; studied music and later taught for eight years in Salem, Mass. He then served as organist and musical director in various churches in Massachusetts. He was the director of about 300 musical festivals and conventions. Composed music for the war song, "We are coming, Father Abraham." He died Sept. 29, 1915.

Emerson, Ralph Waldo, an American philosopher; born in Boston, May 25, 1803. He graduated at Harvard College in 1821, and was ordained minister of the Second Unitarian Church of Boston; but soon after formed peculiar views with regard to forms of worship, abandoned his profession and, retiring to the quiet village of Concord, devoted himself to the study of the nature of man and his relation to the universe. He was one of the most eminent modern philosophers of the Pantheistic school, and one of the most remarkable personifications of American genius. He died in Concord, Mass., April 27, 1882.

Emery, a variety of corundum. It is granular in texture, and black or grayish-black in color. It is found at Chester, Mass., and elsewhere in this country, England, the Greek Archipelago, and Asia Minor. In the state of powder it is extensively used for polishing hard substances.

Emery Wheel, a leaden wheel in which emery is embedded by pressure, or, more commonly, a wooden wheel covered with leather and with a surface of emery. It is sometimes called a corundum wheel.

Emetic, a substance which, when taken internally, causes vomiting, by producing an inverted action of the stomach and œsophagus, and the emptying of the stomach of its contents.

Emigration, the departure of people of one country to settle as immigrants in another. The Pilgrim Fathers were the first emigrants to America; they were followed by Germans and others, who settled in Pennsylvania and along the eastern sea-board. American records date from 1820. In 20 years less than 750,000 immigrants arrived; in 1822-1924, 35,974,703. See IMMIGRATION.

Emigré, a name given to those persons who left France at the commencement of the first French revolution. At the head of these emigrants stood the royal princes of Condé, Provence, and Artois, the first of whom collected a part of the fugitives to coöperate with the allied armies in Germany for the restoration of the monarchy. Their desertion of France, and plotting with her enemies, is said to have caused "The Reign of Terror," by the suspicion raised among the Republicans.

Emine, Nikita Ossipovich, an Armenian historian; born near Ispahan, Persia, about 1815. He was educated at the Lazareff Institute for Oriental Tongues and at the University, Moscow. His monumental work, a "History of Armenia," was translated into French. He died in Moscow, Jan. 7, 1891.

Eminence, a title given by Urban VIII., in 1631, to cardinals, who up to the period of his pontificate had been called Most Illustrious.

Eminent Domain, the power to take private property for public use. It is well settled that such power exists only in cases where the public exigency demands its exercise. Whether the exercise of the right is justifiable in cases where the statute does not provide compensation is unsettled.

Eminescu, Michael, the great lyric poet of Rumania; born in Bucharest, in 1849. He was for a time editor of "The Times," a strong Conservative journal, and the fierceness of political strife spoilt his poetical genius. He died insane in 1889.

Emin Pasha. See SCHNITZER.

Emir, or **Amir,** a sovereign, a prince. The title was instituted in A. D. 650 by Fatima, the daughter of Mohammed, and was applied to the descendants of the "Prophet." They alone were permitted to wear the green turban.

Emmanuel, or **Immanuel** ("God with us"), the symbolical name of the child announced by Isaiah to Ahaz and the nation (Isa. vii: 14), and applied by St. Matthew to the Messiah born of the Virgin (Matt. i: 23).

Emmaus, a village of Judea about 7 miles from Jerusalem, famous for the visit of Christ, with his two disciples on the day of his resurrection.

Emmet, Robert, an Irish patriot; born in Cork in 1780. He was expelled from Trinity College, Dublin, in 1798, on the ground of exciting disaffection and rebellion, and having become an object of suspicion to the government, quitted Ireland. He returned there on the repeal of the suspension of the Habeas Corpus Act, and became a member of the Society of United Irishmen for the establishment of the independence of Ireland. In July, 1803, he was the ringleader in the rebellion in which Lord Kilwarden and others perished. He was arrested a few days afterward, tried, and executed. His fate excited special interest from his attachment to Miss Sarah Curran, daughter of the celebrated barrister.

Emmet, Thomas Addis, an American lawyer; born in Cork, Ireland, April 24, 1764. A brother of Robert Emmet, being tried for the crime of treason, he was sentenced to exile. He came to the United States and became a noted lawyer in New York city. In 1812 he was elected Attorney-General of the State. He died in New York city, Nov. 14, 1827.

Emmet, Thomas Addis, an American gynecologist; born at Charlottesville, Va., May 29, 1828. He was a grandnephew of Robert Emmet. He graduated at Jefferson Medical College in 1850. He is the author of "Principles and Practice of Gynæcology."

Emmons, George Foster, an American naval officer; born in Clarendon, Vt., Aug. 23, 1811; entered the navy as midshipman in 1828, and became passed midshipman in 1831. He was promoted lieutenant in 1841, commander, 1856; captain, 1863; commodore, 1868; and rear-admiral, 1872;

and was retired Aug. 23, 1873. He raised the American flag over Alaska in 1868. Died in Princeton, N. J., July 2, 1884.

Emmich, Otto von, a German military officer; born in 1848, entered the army as a volunteer in 1866; took part in the Franco-Prussian War of 1870–1; became a Major-General in 1901; and at the outbreak of the World War was made a General and given command of the 10th Army Corps. In 1914 he had charge of the operations around Liege, Belgium, and it was said that he committed suicide (August) because his confidence in his army and its style of fighting had been shattered by the events of the Liege campaign.

Emory, Robert, an educator; born in Philadelphia, Pa., July 29, 1814; graduated at Columbia College in 1831; and studied law. He was appointed Professor of Ancient Languages in Dickinson College in 1834; resigned in 1839; and entered the Baltimore Annual Conference of the Methodist Episcopal Church. He was recalled to the college and made president pro tempore in 1842, and was president from the retirement of Dr. Durbin till his death, in Baltimore, May, 1848.

Emory, William Hemsley, a military officer; born in Queen Anne co., Md., Sept. 9, 1811; was graduated at the United States Military Academy and appointed second lieutenant of artillery in July, 1831; served for five years in garrisons at Fort McHenry and Fort Severn and in Charleston Harbor during the nullification troubles; and resigned his commission Sept. 30, 1836, to engage in civil engineering. In 1855 he was appointed major of the 2d Cavalry; afterward transferred to the 1st Cavalry; and was employed on frontier duty till the Civil War broke out. He was appointed lieutenant-colonel of the 6th Cavalry in 1861; made Brigadier-General of volunteers in 1862; and took part in the siege of Yorktown, the battle of Williamsburg, and the action at Hanover Court House, for which he was brevetted colonel. He had command of the 19th Army Corps in the Red River campaign in 1863; and for his services in the Shenandoah campaign was brevetted Brigadier-General U. S. A., and Major-General for services at Cedar Creek. He was mustered out of the volunteer service in January, 1866. After the war he was in command of the Department of Washington, and a member and president of the Retiring Board till 1876, when he was retired with the rank of Brigadier-General U. S. A. He died in Washington, D. C., Dec. 1, 1887.

Emory College, an educational institution in Oxford, Ga., founded in 1836 under the auspices of the Methodist Episcopal Church.

Empalement, a mode of executing criminals, mentioned by Juvenal, often inflicted in Rome, and still used in Turkey and Arabia. In England the dead bodies of murderers were formerly staked in this manner, previous to being buried.

Empanel, to enter the names of the jurors in a schedule, roll, or page of a book, called the panel.

Emparan, Diego de, a Mexican writer; born in Puebla, April 5, 1718. His book "The Jesuits and the Pope" (1746), published soon after entering the priesthood, gained him five years' imprisonment. The year after his release he issued a bitter criticism of the Church dignitaries, for which he was deposed from the priesthood and imprisoned in the castle of Sant' Angelo, but released later. His work was burned by the executioner. He died in Ravenna, Italy, about 1807.

Emperor, a title first used by the Romans to designate the commander of an army, the command itself being called imperium. In the process of time it was found necessary to confer the imperium permanently on the governors of provinces. Julius Cæsar bore it as being commander-in-chief of the Roman armies, and from him it passed to his successors, the emperors. The title bore with it also the supreme judicial and the administrative power; under the empire the office was free from the temporal and local limitations which had accompanied its enjoyment during the republic. From the Emperors of the West the title passed to Charlemagne, the founder of the Holy Roman Empire. When the Carlovingian family

expired in the German branch, the imperial crown became elective, and continued to be so till, in 1806, Francis II. resigned the title and withdrew to the government of his hereditary dominions, under the title assumed in 1805 of Emperor of Austria. The title was frequently assumed in England by the Anglo-Saxon monarchs in imitation of their Roman and Byzantine contemporaries.

Since the deposition of Nicholas II. of Russia, in 1917, the abdication of Karl I. of Austria and William I. of Germany, this title has become defunct in Europe. George V. of Great Britain is Emperor of India. The First and Second Empires in France were established in 1804 and 1852; in America there have been Haitian and Mexican emperors, and the Empire of Brazil existed from 1822 to 1889. Modern usage applies the title to sundry semi-civilized monarchs, such as the rulers of Morocco, China, and Japan; and the Turkish sultans assumed it on the fall of the Eastern Empire in 1453.

EMPEROR MOTH, WITH CATERPILLAR, PUPA AND COCOON.

Emperor Moth, the general color greyish, with white hairs and purple tinges; wings with a hinder white band. Two white-purplish and dark-brown transverse stripes and an ocellus on each wing. Expansion of wings in the female occasionally three inches, but in the male only two and a half. The caterpillar feeds on the common ling or heath, on the blackthorn, the bramble, etc.

Empire State, name given to New York State because of its predominant wealth and commerce. The name "Empire City" is bestowed on its commercial metropolis for the same reason.

Empiric, one who practices medicine without a regular professional education, relying solely on his experience and observation. It was originally a respectful designation applied to an ancient medical sect who sought to derive their knowledge from observations or experiment, and considered these the only true methods of acquiring knowledge.

Employers' Liability, the responsibility of the master for the safety of his workmen which the law implies in certain contracts between capital and labor. In most of the United States this liability is not statutory, but is determined by a suit for damages under the law of negligence; in others it has recently been established by legislative action, and in England by act of Parliament. If the employer can show contributory negligence on the part of the workmen, he is exempt from liability in a damage suit.

Emporia, city and capital of Lyon county, Kan.; on the Neosha and Cottonwood rivers and several railroads; 60 miles S. W. of Topeka; is in a grain, flax, fruit, and livestock section; contains the State Normal School and the College of Emporia (Presb.); and is principally engaged in flour milling. Pop. (1920) 11,273.

Empyrean, a word used by the old metaphysical natural philosophers to designate the highest region of light where the purest and most rarefied elements of fire exist; and by mediæval and modern poets to indicate heaven, the source of light and the home of the blessed.

Empyreuma, the burned smell and acrid taste which result when vegetable or animal substances are decomposed by a strong heat. The cause of the smell and taste resides in an oil called empyreumatic, which does not

exist naturally in the substance, but is formed by its decomposition.

Ems, a watering-place in the Prussian Province of Hesse-Nassau, on the river Lahn, not far from its confluence with the Rhine. Pop. 6,500.

Emu, a large bird, native of Australia. Its color is a dull brown, mottled with dingy gray; the young are striped with black. When assailed it strikes backward and obliquely with its feet, and it is so powerful that a stroke of its foot is said to be sufficient to break a man's leg. Well-trained dogs run in before it and spring at its neck. It cannot fly, but runs very fleetly. It is timid and peaceful, and trusts to its speed for safety, unless hard pressed. In a wild state it sometimes occurs in small flocks; but it has now become rare in and around the settled parts of Australia. The eggs are highly esteemed as food. As much as six or seven quarts of oil have been obtained from the skin of a single bird, and on this account it has been much hunted in Australia. The food of the emu consists chiefly of roots, fruit and herbage. Its only note is a drumming sound, which it frequently emits.

Emulsion, the term applied to those preparations in pharmacy in which oleaginous substances are suspended in water by means of gum, sugar, carrageen, yolk of egg, etc.

Enamel, the name given to vitrified substances of various composition applied to the surface of metals.

The enamel of teeth is the very hard translucent white layer covering the working surfaces of the dentine, or ivory of the teeth.

Enarea, a former kingdom now a district in Abyssinia, S. W. of Shoa; area of over 1,100 square miles, and about 40,000 inhabitants. It is a land of forest-clad hills, rising beyond 8,000 feet, with their slopes covered with the wild coffee plant. Its people, belonging to a stem of the Gallas, are mostly Mohammedans. The chief town is Saka, near the Gibbe river.

Encalada, Manuel Blanco, a Chilean patriot; born in Buenos Ayres, in 1790. He studied at Madrid and in the naval academy at Leon, and after deserting from the Spanish ranks, joined the Chilian revolutionary party, serving with distinction in the artillery and the navy. Appointed second to Lord Cochrane, he became Rear-Admiral in 1819 and Major-General of infantry in 1820; in 1825 he was appointed head of the army of Chile. He was for two months president of the republic in 1826, governor of Valparaiso in 1847–1852, and minister to France in 1853–1858. He died in Santiago, Sept. 5, 1876.

Encaustic, a mode of painting in which the colors are laid on or fixed by heat.

Encaustic Brick, a brick ornament with various colors baked and glazed. Diodorus Siculus relates that the bricks of the walls of Babylon, erected under the orders of Semiramis, "had all sorts of living creatures portrayed in various colors on the bricks before they were burnt."

Encaustic Tile, an ornamental tile having several colors.

Encke, Johann Franz, a German astronomer; born in Hamburg in 1791. He studied under the astronomer Gauss at Gottingen. During the War of Liberation (1813–1815) he served as artillerist in the German army; after the peace he became assistant in the observatory of Seeberg, near Gotha. Here he calculated the orbit of the comet observed by Mechain, Miss Herschel, and Pons, predicted its return, and detected a gradual acceleration of movement ascribed by him to the presence of a resisting medium. The comet is now known as Encke's comet. The fame of his works, "The Distance of the Sun," and "The Transit of Venus of 1769," led to his appointment as Director of the Berlin Observatory (1825), a position which he held till his death, 1865.

Encore, a French word meaning again, generally used by the audience of a theater or opera house when requesting the repetition of a performance. It is not used by the French themselves, who, in similar circumstances, exclaim bis ("twice").

Encratites, a rigid sect which rose in the 2d century. It was formed by Tatian, an Assyrian, and a follower of Justin Martyr. Agreeing in most respects with the general Church, he insisted on the essentially evil character of matter, and the consequent

necessity of mortifying the body. He lived in celibacy, fasted rigorously, and used water instead of wine in the Lord's Supper.

Encyclical, a letter addressed by the Pope to all his bishops, condemning current errors or advising the Christian people how to act in regard to great public questions. It differs from a "bull" mainly in that the latter is usually more special in its destination. The famous encyclical issued Dec. 8, 1864, by Pius IX., was accompanied by a "Syllabus" condemning specifically 80 principles in religion, philosophy, and politics.

Endemic, a name commonly applied to diseases which attack the inhabitants of a particular district or country, and have their origin in some local cause. Diseases which are endemic in one country may also appear in others, and become epidemic under influences resembling those which are the causes of the endemic in the former place.

Endicott, John, a colonial governor of Massachusetts; born in Dorchester, England, in 1589. He landed as manager of the plantation of Naumkeag (Salem) in 1628. Giving place in 1630 to John Winthrop, he headed a sanguinary expedition against the Indians in 1636, was deputy-governor in 1641–1644, 1650, and 1654, and governor in 1644, 1649, 1650–1653 and 1655–1665. Endicott was an austere Puritan, choleric, benevolent, and brave. He died in Boston, March 15, 1665.

Endicott, William Crowninshield, an American lawyer; born in Salem, Mass., Nov. 19, 1826; was a descendant of John Endicott, the Puritan governor of Massachusetts. He was graduated at Harvard College in 1847. He was an unsuccessful candidate for governor of Massachusetts, on the Democratic ticket, in 1884; was appointed Secretary of War in President Cleveland's cabinet in 1885. He died in Boston, Mass., May 6, 1900.

Endlicher, Stephen Ladislaus, an Austrian botanist; born in Presburg in 1804. He was successively court librarian in Vienna, and keeper of the Natural History Museum; in 1840 was appointed Professor of Botany in the University of Vienna, and director of the botanic garden. He took part on the popular side in the German revolution of 1848. He died in 1849.

Endocarditis, the inflammation of the endocardium or serous membrane covering the valves and internal surface of the heart.

Endogamy, a custom among savage peoples of marrying only within their own tribe.

Endor, a village of Palestine, 4 miles S. of Tabor; a poor mud hamlet. It was the place which Saul visited (I Sam. xxviii: 7), to consult the "woman with a familiar spirit" previous to his fatal engagement with the Philistines.

Endymion, a shepherd, son of Æthlius and Calyce. It is stated that he asked Jupiter to grant him to be always young, and to sleep as much as he would; whence the proverb, "to sleep the sleep of Endymion."

Enema, any liquid or gaseous form of medicine for injection into the rectum. It is most commonly administered to induce peristaltic action of the bowels, but it is often the most desirable means of conveying into the system nourishment or stimulants.

Enemy, one who is unfriendly or hostile to another; one who hates or dislikes; a hostile army or force; the great adversary of mankind, the devil.

Energetics, that branch of science which investigates the laws relating to physical or mechanical forces, as opposed to vital. It thus comprehends the consideration of the whole range of physical phenomena.

Energy, the power that a body or system possesses of doing work; a term in physics. There is no manifestation of energy apart from matter. There are two main types of energy: Energy of motion (kinetic energy), and energy of position (potential energy). Currents of air or of water possess kinetic energy; a stone resting on the brow of a cliff, and water at the edge of a fall, possess potential energy.

Enfantin, Barthelemy Prosper, one of the chief representatives of the Saint-Simon school of Socialism;

born in Paris, Feb. 8, 1796. He died Aug. 31, 1864.

Enfeoffment, the act of bestowing or conveying the fee-simple of any estate, or the instrument or deed by which the fee-simple of an estate is conveyed.

Enfield, the name of a village or small town in Middlesex, England, 10 miles N. of London, where there is a large government arms factory.

Enfield Rifle, a muzzle-loading rifle used in the British army as the infantry service-arm prior to the introduction of the breech-loading system. Large numbers of these rifles were converted into breech-loaders on the Snider principle, and transferred to the volunteers when the Martini-Henry rifle was issued to the regulars. To these converted weapons the term Snider-Enfield or simply Snider is applied.

Engadine, a famous valley in the Swiss canton of the Grisons, and one of the loftiest inhabited regions in Europe. It extends N. E. for about 65 miles along the banks of the Inn and its lakes, from the foot of Mount Maloja to the village of Martinsbruck.

Engels, Friederich, an English Socialist; born Nov. 28, 1820, the son of a Barmen manufacturer. He wrote "The Working Classes in England." He is best known as the friend, colleague, and continuator of Karl Marx, and author of works on the family and the development of Socialism. After 1869 he lived mainly in London, England, and died Aug. 5, 1895.

Enghien, Louis Antoine Henri de Bourbon, Duke of; born in Chantilly, Aug. 2, 1772; son of Louis Henry Joseph Conde, Duke of Bourbon. On the outbreak of the Revolution he quitted France, traveled through various parts of Europe, and went in 1792 to Flanders to join his grandfather, the Prince of Conde, in the campaign against France. From 1796 to 1799 he commanded the vanguard of Conde's army, which was disbanded at the Peace of Luneville (1801). He then took up residence as a private citizen at Ettenheim, in Baden, where he married the Princess Charlotte de Rohan Rochefort. He was generally looked on as the leader of the Emigres, and was suspected by the Bonapartists of complicity in the attempt of Cadoudal to assassinate the first consul. An armed force was sent to seize him in Baden in violation of all territorial rights, and he was brought to Vincennes, March 20, 1804. A mock trial was held the same night; and on the following morning he was shot in the ditch outside the walls. It was this event which drew from Fouche the comment since become proverbial: "It is worse than a crime! it is a blunder."

Engine, a machine of complicated parts which acts automatically both as to power and operation. It is distinct from a machine, the motor of which is distinct from the operator; and from a tool, which is propelled and operated by one person.

Engine Dynamo, an invention for generating electricity. Up to 1894 the most economical method of producing electricity was through the dynamo, a steam engine to drive it, a boiler to supply the engine with steam, and the furnace to heat the boiler. Nicola Tesla, the inventor of the engine dynamo, retained the furnace and the boiler, but constructed an apparatus which combined an engine and dynamo. This engine dynamo has hardly one of the features which distinguish an engine. There are no fly wheels, piston, crank shaft, belts, or the heavy iron frame visible. In fact, the machine has the appearance of a dynamo with a steam pipe directly connected to it. Tesla's own explanation of this device is that the steam is used to create a vibrating motion of certain mechanism (in a cylinder) which separates so as to cut the lines of magnet force of the large field magnets in the apparatus, thus creating electricity. It is pointed out that by this method important advantages are gained, viz., the absence of a costly engine; and what is of much higher importance, the generation of electricity at about one-half the cost of former methods. These claims have been verified by the operation of machines that have been made and tested.

Engineer Corps, United States, a technical military body in the War Department under the direct com-

mand of the chief of engineers. The corps is charged with all duties relating to construction and repair of fortifications, whether permanent or temporary: with torpedoes for coast defense; with all works of defense; with all military roads and bridges, and with such surveys as may be required for these objects, or the movement of armies in the field. It is also charged with the river and harbor improvements with military and geographical explorations and surveys, with the survey of the lakes, and with any other engineer work specially assigned to the corps by acts of Congress or order of the Secretary of War.

Engineering, the branch of science dealing with the design, construction and operation of various machines, structures, and engines used in the arts, trades, and everyday life. Engineering is divided into many branches, the more important being civil, mechanical, electrical, mining, military, marine, and sanitary engineering.

Civil engineering is the most extensive and embraces the arts of architecture, surveying, bridge, railroad, harbor, and canal construction, and the building trades. The civil engineer should have a knowledge of the fundamental principles of mathematics, mechanics, draughting, geodesy, surveying, and various forms of construction. Civil engineering covers so wide a field that it has become of late necessary to specialize in the individual branches.

Mechanical Engineering comprises the design, construction, and operation of machinery, the design of manufacturing plants, and all branches of industrial production. The mechanical engineer's education should be similar to that of the civil engineer, with the addition of a knowledge of the theory and practice of machine construction.

Electrical Engineering is a branch of mechanical engineering and includes the application of electricity to mechanical and industrial pursuits, as derived from some other source of energy.

Mining Engineering is a combination of the three preceding branches as applied to the discovery and operation of mines, the building of mineral working plants, and treatment of ores.

Military Engineering deals entirely with the arts of war, the design, construction and maintenance of fortifications, machines of defense and attack, ordnance, and the surveying of country in preparation for military operations.

Marine Engineering is partly military and partly civil, embracing naval architecture, building and operating of ships and naval accessories. In the military sense, it comprises the construction of war vessels and the construction and placing of torpedoes, submarine mines, etc.

Sanitary Engineering consists of the construction of sewers and drains, providing for the cleaning of city streets and the disposal of garbage and sewage, reclaiming of swamps, and overcoming of all conditions tending to interfere with public health.

The education and training of the engineer in modern times have called for the establishment of technical schools and courses in engineering in the large colleges and universities. These schools provide the student with the theories of mathematics, mechanics, and engineering and by means of extensive laboratory and outside work provide him with practice in the design, construction, and use of modern engineering appliances.

Engineers, Royal, a corps in the British army intrusted with the construction of all military works, plans, surveys, etc. In 1772 the first company of "sappers and miners" was organized at Gibraltar. In 1783 the engineers were raised to be a royal corps, and in 1812 several companies of artificers were converted into "sappers and miners." This name was abolished and that of royal engineers substituted in 1857. The corps usually numbers from 5,000 to 6,000 officers and men. The privates, who are generally skilled artisans, receive a much higher rate of pay than ordinary infantry soldiers.

England, including **Wales,** the S. and larger portion of the island of Great Britain. On the N. it is bounded by Scotland; on all other sides it is washed by the sea; on the

E. by the North Sea or German Ocean; on the S. by the English Channel; and on the W. by St. George's Channel and the Irish Sea. Its figure is, roughly speaking, triangular, but with many windings and indentations, the coast-line measuring not less than 2,765 miles. The length of the country, measured on a meridian from Berwick nearly to St. Alban's Head, is 365 miles. Its breadth, measured on a parallel of latitude, attains its maximum between St. David's Head, in South Wales, and the Naze, in Essex, where it amounts to 280 miles. See various titles dealing with English historical personages, events, institutions, and conditions.

England, Church of, the official name of that body of Christians who have a formal head in the person of the hereditary ruler of England. This designation is used in two senses: first, a general one signifying the Church regarded as continuous, which, from the first triumph of Christianity till now, has been that of the English people; secondly, in a more specific sense, the Protestant Church now established in England as distinguished from the Church of Rome.

In England and Wales, at present, there are two archbishops and 33 bishops, both of the former and 24 of the latter having seats in the House of Lords; subordinate to these are 22 suffragan and 5 assistant bishops, 31 deans, 91 archdeacons, 810 rural deans, and about 13,500 beneficed clergy. Including infants, the Church is estimated to have above 13,000,000 adherents in England and Wales. Previous to 1871, the English Church and the Established Church of Ireland constituted but a single body called the United Church of England and Ireland. It is powerful also in the colonies, and by means of the Society for the Propagation of the Gospel, and the Church Missionary Society, it conducts extensive missionary operations. It is practically identical with the Protestant Episcopal Church.

Englis, John, an American shipbuilder; born in 1808. He built his first steamers on Lake Erie in 1837. In 1861 he built the "Unadilla," the first gunboat built for the United States government. Afterward he built the steamboats "St. John," "Dean Richmond," "Drew," "Newport," "Old Colony," "Grand Republic," and "Columbia," etc. Many improvements in shipbuilding were due to him. He died in 1888.

English, Earl, an American naval officer; born in Crosswicks, N. J., Feb. 18, 1824. Entered naval service, 1840; served in Mexican War; made lieutenant 1855; served in Chinese waters 1857; became lieutenant-commander 1862, and served in the Civil War; captain 1871, commodore 1880, and rear-admiral 1884; commanded European station 1884, and retired 1886. He died in Washington, D. C., July 16, 1893.

English, George Bethune, an American author; born in Cambridge, Mass., in 1787. He studied law and theology, and in 1813 published "The Grounds of Christianity Examined," a work in favor of Judaism. In 1820 he served as an officer of artillery in the army of Ismail Pasha against Sennaar, and was afterward United States agent in the Levant, returning home in 1827. He died in 1828.

English, Thomas Dunn, an American author; born in Philadelphia, Pa., June 29, 1819; was graduated in medicine at the University of Pennsylvania in 1839; admitted to the bar in 1842; engaged in journalism in New York in 1844–1859; then resumed medical practice in Newark, N. J. He was a member of the state assembly in 1863–1864, and of Congress in 1891–1895. He was the author of "Ben Bolt," an exceedingly popular ballad; "Old Glory," etc. He died April 1, 1902.

English, William Hayden, an American capitalist; born in Lexington, Ind., Aug. 27, 1822; received a college education and became a lawyer; was elected to Congress in 1852 and served there through four consecutive terms. As a member of the Committee on Territories, in opposition to his own party, he worked against the admission of Kansas to the Union. He reported from the Committee of Conference what was known as the "English bill," in which it was urged that the question of admission be referred back to the people of Kansas according to the provision of the Lecompton constitution.

This bill was adopted and the people voted against admission. He strongly opposed secession, and warned Southern congressmen that the North would never countenance such a policy. In 1861 he retired to private life; was president of the First National bank of Indianapolis in 1863–1877, and was also interested in railroads. In 1880 he was the Democratic nominee for Vice-President on the ticket with General Hancock. He published a historical and biographical work on the constitution and lawmakers of his State and furnished money to the Indiana Historical Society to complete and issue the "History of Indiana," which he had begun. He died in Indianapolis, Ind., Feb. 7, 1896.

English Art, a term under which are usually classed English architecture, painting and sculpture.

English Channel, the arm of sea which separates England from France, extending, on the English side, from Dover to Land's End; and on the French from Calais to the island of Ushant. On the E. it communicates with the German Ocean by the Strait of Dover, 21 miles wide; and on the W. it opens into the Atlantic by an entrance about 100 miles wide. At its greatest breadth it is about 150 miles.

The advantages of a railway tunnel across the Channel at its narrowest part have been frequently urged; and an English company formed for the purpose of constructing a tunnel half way across from Dover to meet a similar tunnel starting from near Calais, pushed an excavation under the sea for over 2,000 yards, but was interdicted by the British government for military reasons. This tunnel would have a total length of 23 miles.

English Language, a member of the Teutonic family of languages, which form three groups: (1) Low German, (2) Scandinavian, and (3) High German. The English language belongs to the first of these groups. The Teutonic languages themselves form a subdivision of the European division of that great family of languages called Indo-European. The English language is closely related to dialects still spoken on the N. shores and lowlands of Germany. The original inhabitants of England were Celts, and but few words of their language survive.

At the Norman Conquest in 1066, two languages were in use in England. In the North, the people spoke the language of the Danish settlers, while in the South, the common language was that of the Teuton settlers. The Normans introduced their own tongue, and the monks contributed a Latin element. The founding of the two Universities in the midlands, and the invention of printing, combined to fuse these elements into English.

Engraving, in the primitive sense of the term, the art of representing objects and depicting characters on metal, wood, precious stones, etc., by means of incisions made with instruments variously adapted to the substances operated upon, and the description of work executed. The different inventions, however, which superseded graving or incising, led to the word being used in a wider sense; and though yet applicable, in its original meaning, to seal or gem engraving, to die cutting and wood engraving, it now comprehends all works of art executed on plates intended for printing, by whatever means they are produced. Impressions from metal plates are named engravings, prints, or plates; those printed from wood being called indifferently wood engravings or wood cuts.

Engraving in recent times has suffered much from the rivalry of photographic and mechanical substitutes. The most important of these is known as photogravure or heliogravure. The beauty of the work produced by means of this process in the reproduction of paintings, of drawings in monochrome made for the purpose, and of photographs direct from nature, has raised it to a position of great importance. A photomechanical process which is much used in the reproduction of the plates of the older engravers and etchers, and in the production of plate-reproductions from pen drawings has been carried to great perfection, some of the work produced by Amand-Durand of Paris being almost equal to the finest original etchings. A positive photograph is taken of the drawing or en-

graving to be reproduced; this is placed over a copper plate coated with a bituminous varnish, and exposed to the light. Where the lines of the photograph have protected the varnish from the light it remains soluble, but where the light has affected it through the glass it becomes insoluble. The varnish may then be dissolved from the lines and the copper exposed exactly as if the etching point had been used to make the drawing on an etching ground. The plate is then bitten in the usual manner, and finally touched up and improved with the graver.

Enid, city and capital of Garfield county, Okl.; on Skeleton creek and the Chicago, Rock Island & Pacific railroad; 36 miles N. E. of Kingfisher; is in a fertile farming section; has flour mills, grain elevators, creameries, and brick, ice, and artificial stone plants; and is a trade distributing point for N. W. Oklahoma. Pop. (1920) 16,576.

Ennemoser, Joseph, a medico-philosophic writer; born in the Tyrol, 1787. He studied at Innsbruck 1806; fought in the rising of the Tyrolese against the French 1809; and in 1819 became Professor of Medicine at the new University of Bonn. In 1841 he went to Munich, where he obtained great reputation by the application of magnetism as a curative power. He died in 1854.

Ennery, Adolphe Philippe D', a French dramatist; born in Paris in 1811; began life as a clerk, but later turned to the drama; studied scenic effects, the quick change from the tragic to the comic, and the contrast between the serious and ludicrous characters. He subsequently became the master of modern melodrama. During the 50 years of his active life he accumulated a fortune of $1,200,000. He died in Paris, Jan. 26, 1899.

Enniskillen, a borough in Ireland, 87 miles W. S. W. of Belfast; famous for the victory, in 1689, of the troops of William III., under Lord Hamilton, over a superior force of James II., under Lord Galmoy. The banners taken in the battle of the Boyne hang in the town hall.

Enoch, the eldest son of Cain, who called the city which he built after his name (Gen. iv: 17). Also one of the patriarchs, the father of Methuselah. He "walked with God; and he was not; for God took him" (Gen. v: 24) at the age of 365 years. The words quoted are generally understood to mean that Enoch did not die, but was translated to heaven, like Elijah, without dying.

Enoch, Book of, an apocryphal book of an assumedly prophetic character, to which considerable importance has been attached on account of its supposed quotation by St. Jude in the 14th and 15th verses of his epistle. It is referred to by many of the early fathers; is of unknown authorship, but was probably written by a Palestinian Hebrew. Its date is also uncertain, critical conjecture ranging from 144 B. C. to 132 A. D. Until the close of the 18th century it was known in Europe only by the references of early writers, and by the passage of St. Jude supposed to be founded on it. On his return from Egypt Bruce brought with him from Abyssinia three manuscripts containing a complete Ethiopic translation of it. It has since been repeatedly published, translated, and criticized in Europe.

Ensign, the flag or colors of a regiment. Also a former rank of commissioned officers in a regiment of infantry, by the senior of whom the regimental ensigns or colors are carried. The name is now abolished, the title of 2d lieutenant being substituted for it. In the navy, the national ensign consists of a red-and-white striped flag, 13 stripes, with blue field in upper inside corner containing a silver star for each State of the Union. Carried by all American vessels except yachts, which have an ensign of their own. Also the title of the lowest grade of commissioned officers in the United States navy.

Ensilage, the name given to a method of preserving green fodder in an air-and-water-tight pit, or other receptacle, called a silo, and also to the fodder thus preserved. The system was invented by Auguste Goffart, of France, and introduced into the United States by Francis Morris, of Baltimore. An "Ensilage Congress" was held in New York, Jan. 25–26, 1882, and the subject has since

received much attention from farmers. The most approved mode of procedure is as follows: Any green crop may be treated, but must be sown so as to be in blossom before frost. The silo is a pit or cellar of any convenient size, with solid walls and floor of stone or cement. The fodder is reaped, subjected to the action of a cutter while green, and dumped into the silo. A little salt, in the proportion of a bushel to every 10 or 15 tons, will render it even more palatable to the cattle. A heavy covering board must be placed over all when the silo is full, well weighted with a pressure of 150 pounds to the square foot. For this purpose rocks, sandbags, or grain-bags may be used. When opened, which should not be earlier than November or December, cattle will eat the ensilage with avidity. It should be cut with a hay-knife, entrance being had by means of a door in the end of the silo.

Entablature, in architecture, the horizontal, continuous work which rests upon a row of columns, and belongs especially to classical architecture. It consists of three principal divisions, the architrave immediately above the abacus of the column, next the frieze, and then the cornice. In large buildings projections similar to and known also as entablatures are often carried round the whole edifice, or along one front of it.

Entail, in law, the settlement of an estate by which a freehold is limited to a person and the heirs of his body, with such particular restrictions as the donor may specify. Entailed estates are divided into general and special, the former when the estate is given to the donee and his heirs without exception, the latter when the estate is limited to certain heirs to the exclusion of others.

Entellus Monkey, or **Hanuman,** the most sacred monkey of the Hindus, worshiped as half divine, and regarded as the host of ancestral souls. The body is 4½ feet in length, from ashy-gray to dirty yellow in color; the face is dark, with bushy grayish-white whiskers; and the tail is longer than the body. Entellus monkeys live in troops, are noisy and quarrelsome, and do much mischief near towns and plantations, but are nevertheless reverenced and petted. Their home is in the "hot tropical plains of the northwestern Gangetic provinces," but they have been introduced elsewhere.

Entente Allies, at the beginning of the World War, England, France, and Russia; by November, 1917, this number had been increased to twenty-two by formal declarations of war, and nine other nations had severed diplomatic relations with the Central Powers—by this time Austro-Hungary, Bulgaria, Germany, and Turkey, Italy having withdrawn because the war was not a defensive one.

Enteric Fever, the correct designation of what is called typhoid.

Entomology, the branch of zoölogy which treats of insects. Insects exceed in number all other animals taken together. Over 80,000 species of beetles or coleoptera and about 15,000 moths and butterflies have been recorded; and Speyer estimates the total census at 200,000, while M'Lachlan concludes that future entomological industry will raise the sum total of insect species to a million.

As far as insects are concerned, the struggle between man and animals is by no means finished. Strong in numbers many of them are directly or indirectly injurious to man and his property to an extent which frequently affects the prosperity of a nation. Direct injuries to man's person are familiarly illustrated in the parasitism of fleas, lice, etc., but these are less important than the share the mosquito seems to have in the loathsome disease Elephantiasis arabum. Personal injuries are dwarfed when we think of those done to property, and especially to crops and herds, by voracious or parasitic insects. Clothes-moth and furniture-borer, vine-insects and Colorado beetle, the botflies which attack sheep, cattle, and horses are familiar illustrations of formidable pests. It should also be noted how the hostile insects which infest forest trees and vegetation generally may occasion changes which have far-off effects on the fauna, scenery, and even climate of a countryside. The majority of plants are dependent on insects, as the uncon-

scious bearers of the pollen essential to the normal cross-fertilization of flowers.

Many insects injure plants without any compensating benefit, and in this connection there are numerous cases in which plants and insects (especially ants) form a mutual partnership. Such plants are saved by their bodyguard of ants from unwelcome visitors, and the benefit is sometimes returned by the growth of special shelters, tennated by the partner-insects.

Entozoa, a term which should, according to its literal meaning, include all animals which pass any period of their lives within the bodies of others not belonging to the same species. Thus the ichneumon, whose larva lives in that of the butterfly, the bot of the horse's stomach, are Entozoa, like the tapeworm. But the term is now restricted to those members of the annuloid group which are commonly known as worms.

The transfer from one animal to another seems essential to the process which the preference for one organ or tissue also subserves. The transfer from mice to cats, from dogs to sheep, from dogs to man, and the converse, are easily understood, both vegetable and animal food helping to carry the minute eggs or larvæ. The species of Entozoa are enormous. The conditions on which their multiplication depend are want of attention in the cleansing of food, contamination of water by the droppings of animals or the decay of their bodies; and, as regards the individuals an acid state of the secretions, such as accompanies strumous diseases, is essential for their speedy multiplication.

Entrecasteaux, Joseph Antoine Bruni, a French navigator; born at Aix in 1739. He became a colonial governor; explored New Caledonia, and discovered several islands. His name is perpetuated in the Entrecasteaux Archipelago, and by an Australian cape, and strait. He died in 1793.

Entre Douro e Minho, Portugal, a maritime province between the Douro and Minho rivers; capital, Oporto. Area, 2,790 square miles; pop. (1911) 1,289,859, showing a density of 419.5 per square mile.

Entre Rios, a province of Argentina, between the Uruguay and Parana rivers. Area, 29,241 square miles; pop. (1915, est.) 423,100.

Enver Pasha, Turkish Minister of War, who had made himself the leader of the Young Turks party, had studied German methods of war and had served as military attache in Berlin. When the World War broke out he made himself practically the master of Turkey, and exerted all his influence in favor of an alliance with Germany, overthrowing the Kiamil Pasha Cabinet and giving the war party full control of the Government.

Eolus, in Roman mythology, god of the winds.

Eon de Beaumont, Charles Genevieve Timothee d', or Chevalier d'Eon, a French diplomatist; born in Tonnerre, Oct. 5, 1728. Introduced by the Prince de Conti in 1755 to Louis XV. the latter employed him in diplomatic missions to Russia and Austria. He was sent to London in 1762 as secretary of embassy, and shortly after was made minister plenipotentiary. On the death of Louis XV., the French ministry deemed it prudent to recall him, as they were afraid he might betray their secrets to the English government, which made him brilliant offers. After much negotiation Eon consented to surrender certain compromising papers. He was noted for his success in disguising himself as a woman. He died in London, England, May 21, 1810.

Eophone, a device for intensifying and locating sounds at sea. Its primary purpose is to prevent collisions between vessels in time of fog and at night by warning them of each other's presence and in like manner to prevent shipwreck by warning vessels of the proximity of a dangerous shore.

Eos, among the ancient Greeks the goddess of the dawn.

Eotovos, Baron Jozsef, a Hungarian novelist; born in Buda in September, 1813; died February 2 or 3, 1871.

Eozoon, a supposed gigantic fossil found in the limestone of the Laurentian rocks of Canada; and in the

Archæan rocks of Germany; supposed to be the oldest form of life traceable in the past history of the globe. There is doubt as to their being true fossils, many geologists now regarding them as of mineral origin.

Epact, in chronology, the excess of the solar month above the lunar synodical month, and of the solar year above the lunar year of 12 synodical months. The epacts are annual or monthly.

Epaminondas, an ancient Greek hero, who for a time raised his country, Thebes, to the summit of power and prosperity. He was born about 418 B. C. He took the leading part in the struggle during which Spartan supremacy in Greece was destroyed, and the supremacy of Thebes temporarily secured. Four times he successfully invaded the Peloponnesus at the head of the Thebans, but after his death Thebes soon sank to her former secondary condition. Throughout life he was distinguished for the friendship subsisting between him and Pelopidas, with whom he served in the Spartan campaign 385 B. C. His character is one of the finest recorded in Greek history, and his virtues have been praised by both Xenophon and Plutarch. He was killed at the battle of Mantineia 362 B. C.

Epaulet, or **Epaulette,** an ornamental shoulder-piece belonging to a military, naval, or other dress. Epaulets are made of various forms and material according to the rank of the wearer.

Epee, Charles Michel Abbe de l', instructor of the deaf and dumb; born in Versailles, France, Nov. 25, 1712. Taking orders, he became a preacher and canon at Troyes, but later lived in retirement in Paris. In 1765 he first began to occupy himself with the education of two deaf and dumb sisters; invented a language of signs, by which persons thus afflicted might be enabled to hold intercourse with their fellow-creatures. He determined to devote his life to the subject. At his own expense he founded an institution for the deaf and dumb, which received an annual subsidy. It was not converted into a public institution till two years after his death, Dec. 23, 1789.

Epeus, the maker of the wooden horse used in the siege of Troy.

Ephah, or **Bath,** a Hebrew measure of capacity, containing, according to one estimate or calculation, 8.6696 gallons; according to another only 4.4286 gallons.

Ephemera, so named from the extreme shortness of their lives in the perfect state. They are known as Mayflies or day-flies. In the state of larvæ and pupæ they are aquatic and exist for years. When ready for their final change they creep out of the water, generally toward sunset of a fine summer evening, beginning to be seen generally in May. They shed their whole skin shortly after leaving the water, propagate their species, and die, taking no food in the perfect state. The May-fly is well known to anglers.

Ephesians, The Epistle to the, one of the books of the New Testament. It seems to have been sent forth by St. Paul about A. D. 62, while he was a prisoner in Rome. He sent it to its destination by the hand of Tychicus (Eph. vi: 21). The Church at Ephesus had been founded by Paul himself, or at least he had raised it from the feebleness in point of numbers and knowledge in which it had been when he commenced his missionary work in that city. For two years he preached Christ, not merely to the permanent residents in Ephesus, but to the multitudes who resorted thither as pilgrims to visit the celebrated Temple of Diana (Acts xix: 10). When driven from the city, owing to a riot raised by one whose craft would have been in danger had idolatry fallen, he retained a deep interest in his converts; and, dispatching Tychicus to inquire after their welfare (Eph. vi: 21), gave him the canonical "Epistle to the Ephesians," for the Church just named, with another to the Church at Colosse (Col. iv: 7). It is evident from the "Epistle to the Ephesians" that the converts at Ephesus were mainly Gentiles (Eph. ii: 11, iii: 1), and prominent in the didactic part of the letter is the doctrine that Christ had broken down the wall which severs Jew and Gentile, putting both on the same level of privilege within His Church (Eph. ii. 11–22, iii; 1–6). The Epistle concludes with a series of practical exhortations.

Ephesus, a famous city of Asia Minor, now in ruins, about 38 miles S. S. E. of Smyrna. It was the ancient capital of Ionia, and had one of the seven Christian Churches founded by the apostles. Its temple, dedicated to Diana, was considered one of the seven wonders of the world. Its dimensions were 425 feet long and 200 broad. The roof was supported by 127 columns, 60 feet high, which had been placed there by as many kings. Of these, 36 were carved in the most beautiful manner, one of which was the work of the famous Scopas. This celebrated building was not completed till 220 years after its foundation. Ctesiphon was its principal architect. The riches which were in the temple were immense, and the goddess who presided over it was worshiped with the most awful solemnity. It was burnt on the night that Alexander was born, but soon after it rose from its ruins with greater splendor and magnificence.

Ephesus, Councils of, two ecclesiastical assemblies held at Ephesus. The first was the third ecumenical council, summoned by Emperor Theodosius II., in 431, to settle a complicated controversy, involving among other things the fate of Nestorius, Bishop of Constantinople. The second was the so-called "robber synod," convened by Theodosius (449), to consider again the case of Nestorius. In the proceedings of this council no opposition to the will of the president, Dioscuros, Bishop of Alexandria, was allowed; the bishops were compelled to sign blank papers, to be filled up as the leaders chose. These lawless methods, as well as the violent measures carried through by their aid, hastened a crisis in the Eastern Church, and greatly furthered the advancing power of the Bishop of Rome, by compelling an appeal to him against oppression and wrong.

Ephod, a costly vestment worn by the Jewish high-priest. It consisted of two shoulder-pieces, one covering the back, the other the breast and upper part of the body. Two onyx stones set in gold fastened it on the shoulders. Just above the girdle, in the middle of the ephod, and joined to it by little gold chains, rings, and strings, rested the square oracular breast-plate with the mysterious "Urim and Thummim." Originally intended to be worn by the high-priest exclusively ephods of an inferior material seem to have been in common use in later times by the ordinary priests. King David, when bringing the ark back to Jerusalem, appeared in one.

Ephors, or **Ephori,** magistrates common to many Dorian communities of ancient Greece. The most celebrated were the ephori of Sparta. They were five in number, elected annually, and both the judicial authority and the executive power were almost entirely in their hands. Their power became an intolerable burden, especially to the kings, and in 225 B. C. Cleomenes murdered the whole college and abolished the office.

Ephraim, the younger son of Joseph and the founder of one of the 12 tribes of Israel. When the Israelites left Egypt the Ephraimites numbered 40,500, and their possessions in the very center of Palestine included most of what was afterward called Samaria.

Epic, a poem of the narrative kind. This is all that is properly signified by the word, although we generally understand by it a poem of an elevated character, describing the exploits of heroes. As action is the object of the drama, so narration is that of the epic. But as the event related is something already past, the epic is less stirring than the drama which represents an action as just happening.

Epictetus, a celebrated Stoic; born in Hierapolis, Phrygia, about A. D. 60, and lived at Rome, where he was a slave of Epaphroditus, a brutal freedman of Nero, whose abuse and maltreatment he bore with fortitude. Epictetus himself did not leave any written account of his doctrines, which appear to have been of the most elevated kind. In his discourses he aimed to impress his hearers with the love of practical goodness. He did not despise knowledge, but considered it as a means to an end. His doctrines approach more nearly to Christianity than those of any of the earlier Stoics, and although there is no trace in what is recorded of them of his hav-

ing been directly acquainted with Christianity, it is at least probable that the ideas diffused by Christian teachers may have indirectly influenced them.

Epicurus, the founder of a celebrated philosophy; son of Neocles and Charestrata of Gargettus; born in the island of Samos, 342 B. C., and spent there the first 18 years of his life. He then repaired to Athens (323 B. C.). His mode of life appears to have been simple and temperate. He abstained, as a principle, from politics, and took no part in public affairs. During the latter part of his life he was afflicted with severe physical suffering. For many years he was unable to walk, and about a fortnight before his death his maladies were aggravated by the formation of stone in his bladder, which brought his life to a close amid acute suffering at the age of 72, 270 B. C.

Epidaurus, one of the most important towns and commercial seaports of ancient Greece, situated in Argolis, in the Peloponnesus, particularly celebrated for its magnificent temple of Æsculapius, which stood on an eminence not far from the town. An inscription over the entrance declared it to be open only to pure souls. Crowds of invalids resorted to the place in hopes of obtaining a cure from the beneficent divinity, in whose honor festivals were celebrated yearly. It received its name from Epidaurus, a son of Argus and Evadne. It is now called Pidavro, or Epidairo, and is the place where in 1821 the first Greek Congress assembled.

Epidemic, a disease which attacks many persons at the same time at different places, spreading with great rapidity, extremely virulent and fatal at the first onset, gradually becoming spent and feeble, so that the early cases are usually the worst. The plague, cholera, smallpox, influenza, etc., are epidemics. The lower animals are also subject to epidemic influences. Epidemics have a great tendency to alternate, such as smallpox, then measles, then scarlet fever, and so on, seldom markedly running simultaneously.

Epidermis, in human anatomy, the cuticle or scarf-skin, constituting the external layer of the skin, and protecting the inner ones. It is thickest in the palms of the hands and the soles of the feet, where the skin is much exposed to pressure. In comparative anatomy, a somewhat similar cuticle in several animals; also a layer of animal matter covering the shells of mollusks. In botany, the true skin of a plant below the cuticle; also the general integument as a whole, divided into cuticle and derma.

Epidote, a monoclinic subtransparent brittle mineral. It is found in many crystalline rocks, and more especially in those containing hornblende.

Epigastrium, the upper fore part of the abdomen, reaching from the pit of the stomach to an imaginary line above the umbilicus (navel) supposed to be drawn from the one extremity of the last false rib, on one side, to the corresponding point on the other.

Epiglottis, a cartilaginous valve which partly closes the aperture of the larynx during the process of swallowing. When respiration takes place the epiglottis is vertical but falls back and covers the larynx on the approach of food.

Epigram, a short poem of a pointed or antithetical character, or any short composition expressed neatly and happily. Epigram was the name given by the Greeks to a poetic inscription on a public monument. Of the Roman poets, Catullus and Martial are most celebrated for their epigrams.

Epilepsy, falling sickness. It derives its name, epilepsia, from the suddenness of the attack. The leading symptoms are a temporary suspension of consciousness, with a recurring spasm.

Epilogue, the closing speech or short poem addressed to the audience at the end of a play. The epilogue is the opposite of the prologue, or opening address.

Epiphanius, a Greek father of the Church; born in Palestine early in the 4th century; educated among the Gnostics in Egypt; after which he returned to Palestine and became the disciple of the monk Hilarion. He was chosen bishop of Salamis, in the isle of Cyprus, 367. Epiphanius was a man of some learning but little judgment, and was a vehement opponent of Origen. He wrote a book entitled

" Panarium " against all heresies. He died in 403.

Epiphany, a Church festival, observed on Jan. 6 in honor of the adoration of our Saviour by the three magi, or wise men, who came to adore Him and bring Him presents, led by the star. As a separate festival it dates from 813.

Epirus, a province of ancient Greece, now forming the S. part of Albania. It was separated from Grecian Illyria by the Ceraunian mountains, and by the famous river Pindus from Thessaly. The river Acheron, also famous in mythological story, flowed through the limits of this province and here were also the celebrated temple and sacred oak grove of Dodona, famous for its oracles. Pyrrhus, King of Macedon, was a native of Epirus, which country passed successively into the hands of the Romans and the Turks. It was ceded to Greece by the Turks in 1881.

Episcopacy, that form of Church government in which one order of the clergy is superior to another; as bishops to priests and deacons. Much discussion has taken place on the subject of episcopacy. Nothing conclusive can be gathered concerning it in the New Testament; but there can be no doubt that it existed from the earliest historic ages down to the time of the Reformation. Presbyterians and Independents argue, on the other hand, that, as there is nothing definite concerning it in Scripture, Christians are left a discretionary power of modeling the government of their Church in such a manner as may seem to them most meet; and that every Christian society has a right to make laws for itself, provided these laws are consistent with charity and peace, and with the fundamental doctrines and principles of Christianity. The power vested in the bishops or higher clergy differs very much among the different episcopal bodies. The Roman Catholic and the Greek Churches as also the Church of England and the Methodist Church, are episcopalian.

Episode, an incidental narrative, or digression in a poem, which the poet has connected with the main plot, but which is not essential to it.

Epistaxis, a medical term for nose-bleed. Its exciting causes are anything that will induce local congestion, as running, coughing, blowing the nose, etc., provided there is a disposition to it.

Epitaph, an inscription on a tomb or monument, in honor or memory of the dead. Epitaphs were in use both among the Greeks and Romans. The Greeks distinguished by epitaphs only their illustrious men. Among the Romans they became a family institution and private names were regularly recorded on tombstones. The same practice has generally prevailed in Christian countries. On Christian tombstones epitaphs usually give brief facts of the deceased's life, sometimes also the pious hopes of survivors in reference to the resurrection or other doctrines of the Christian faith, etc. Many so-called epitaphs are mere witticisms, which might be described as epigrams, and which were never intended seriously for monumental inscriptions. The literature of the subject is very large.

Epithalamium, a nuptial song or poem in praise of a bride and bridegroom. Among the Greeks and Romans it was sung by young men and maids at the door of the bridal chamber of a new-married couple.

Epithelium, a term introduced by Ruysch to designate the cuticular covering on the red part of the lips, for which he considered epidermis an inappropriate name. Now extended to the thin membrane which covers the mucous membranes wherever they exist.

Epizootic, or **Epizootic Disease,** a disease that at some particular time and place attacks great numbers of the lower animals, just as an epidemic attacks man. Pleuro-pneumonia is often an epizootic, as was also the rinderpest.

Epoch, or **Era,** in history, a fixed point of time, commonly selected on account of some remarkable event by which it has been distinguished, and which is made the beginning or determining point of a particular year from which all other years, whether preceding or ensuing, are computed. Some writers distinguish between the terms epoch and era. According to them, both mark important events, but an era is an epoch which is chron-

ologically dated from; an epoch is not marked in this way. The birth of Christ was thus both an epoch and an era from this point of view.

The natives of America, previous to its discovery by Europeans, particularly the Peruvians and Mexicans, appear to have had a considerable acquaintance with astronomy and to have reckoned their time with great care. The Mexican year consisted of 365 days, composed of 18 months of 20 days, and 5 added days. At the end of a cycle of 52 years 12 and 13 days were added alternately, making the mean year very near the truth.

Epsom, a town in the County of Surrey, England, 15 miles S. W. of London, formerly celebrated for a mineral spring, from the water of which the well-known Epsom salts were manufactured. The principal attraction Epsom can now boast of is the grand race meeting held on the Downs, the chief races being the Derby and Oaks.

Epsom Salt, sulphate of magnesium, a cathartic salt which appears in capillary fibers or acicular crystals. It is found covering crevices of rocks, in mineral springs, etc.; but is commonly prepared by artificial processes from magnesian limestone by treating it with sulphuric acid, or by dissolving the mineral kieserite in boiling water, allowing the insoluble matter to settle, and crystallizing out the Epsom salt from the clear solution. It is employed in medicine as a purgative, and in the arts.

Epworth League, a society of young people of the Methodist Episcopal Church; formed May 15, 1889, in Cleveland, O., by the union of five societies affiliated with the Methodist Church. It adopted as its motto: "Look up, Lift up," and its declared object is to "promote intelligent and loyal piety in the young members and friends of the Church; to aid them in the attainment of purity of heart and constant growth in grace, and to train them in works of mercy and help." The following pledge is required of its members: "I will earnestly seek for myself, and do what I can to help others to attain, the highest New Testament standard of experience and life. I will abstain from all forms of worldly amusement forbidden by the Discipline of the Methodist Episcopal Church, and I will attend, as far as possible, the religious meetings of the chapter and the Church, and take some active part in them." The league is governed by a board of control, partly appointed by the bishops and partly elected by the General Conference districts, one member for each district; represented by an executive cabinet, consisting of a president, four vice-presidents, general secretary, general treasurer, and a German assistant treasurer. The league has grown rapidly, extending to foreign lands, and there are chapters in India, Mexico, South America, Italy, Norway, Sweden, Denmark, Finland, China, Japan, and Hawaii. There were in 1917 a senior and a junior branch, with a joint membership of 1,500,000. Its official organ is the "Epworth Herald," published in Chicago, where also the central office is located.

Equator, an imaginary great circle of the celestial vault or on the surface of the earth.

In Astronomy.— A great circle of the celestial vault at right angles to its axis, and dividing it into a northern and a southern hemisphere. It is constituted by the plane of the earth's equator, produced in every direction till it reaches the concave of the celestial sphere. In his progress north and south, and vice versa, the sun is twice a year in the celestial equator — viz., at the Equinoxes. The point in the equator which touches the meridian is raised above the true horizon by an arc which is the complement of the latitude. The sun and planets all have equators. They rotate around their several axes, and the plane at right angles in each case is the equator of the heavenly body.

In Geography.— A great circle on the surface of the earth equidistant from its poles, and dividing it into two hemispheres. Its latitude is zero; it is therefore marked on maps as 0. Other parallels of latitude are counted from it, augmenting in their numerical designation as their distance from it north or south increases, the poles being 90°. The plane of the equator is a plane perpendicular to the earth's axis and passing through its center.

In Magnetism.— A somewhat irregular line, nearly but not quite a great

circle of the earth, in which there is no dip of the magnetic needle. It is hence called also the aclinic line. It is inclined to the horizon at an angle of 12°, and cuts it at two points almost exactly opposite to each other, the one in the Atlantic and the other in the Pacific. It is not far from the geographical equator, but its situation slowly alters year by year, there being a slow oscillation of the magnetic poles, while the geographical equator and poles are fixed. The two points in which the magnetic equator cuts the horizon seem traveling at present from E. to W.

Equatorial, an astronomical instrument designed to note the course of the stars as they move through the sky.

Equatorial Current, a current in the ocean which crosses the Atlantic from Africa to Brazil, having a breadth varying from 160 to 450 nautical miles. Its waters are cooler by 3° or 4° than those of the ocean under the line. Its effect, therefore, is to diminish the heat of the tropics.

Equestrian Order, the order of knights in ancient Rome. The equites or knights originally formed the cavalry of the army. They are said by Livy to have been instituted by Romulus, who selected 300 of them from the three principal tribes. About the time of the Gracchi (123 B. C.) the equites became a distinct order in the State, and the judges and the farmers of the revenue were selected from their ranks. They held their position in virtue of a certain property qualification, and toward the end of the republic they possessed much influence in the State. They had particular seats assigned to them in the circus and theater, and the insignia of their rank, in addition to a horse, were a gold ring and a robe with a narrow purple border. Under the later emperors the order disappeared from the stage of political life.

Equilibrium, a state of equipoise, produced by the mutual counteraction of two or more forces; as the state of the two ends of a lever or balance, when both are charged with equal weight. When a body, being slightly moved out of any position, always tends to return to its position, that position is said to be one of stable equilibrium; when the body will not thus return to its previous position, its position is said to be one of unstable equilibrium.

Equinia, a disease produced in man when he is infected by a glandered horse.

Equinoctial, the same as the celestial equator. The equinoctial points are those in which the equinoctial and the ecliptic intersect. Equinoctial time is time reckoned from the moment in each year when the sun passes the vernal equinox. This instant is selected as a convenient starting-point of a uniform reckoning of time for the purposes of astronomical observers.

Equinoctial Gale, a gale popularly supposed to occur at the time of the spring or autumn equinox. Long-continued observations, however, are decisive against this popular belief.

Equinox, in astronomy, either one of the two points at which the sun, in its annual apparent course among the stars, crosses the equator; so called because the days and nights are nearly equal when the sun is at these points. The vernal equinox occurs about March 20. When but one equinox is referred to, vernal equinox is meant. The autumnal equinox occurs about Sept. 23. It takes the sun seven or eight days longer to go from vernal to autumnal equinox than from autumnal to vernal. The term equinox is often used to denote the time or epoch at which the sun is at the equinoctial point, as well as the point itself.

Equinoxes, Precession of the, the motion of the equinoxes along the ecliptic due to the change in the direction of the earth's axis of rotation, caused by the attraction of the moon and sun on the protuberant equatorial ring of the earth.

Equity, in law, the system of supplemental law administered in certain courts, founded on defined rules, recorded precedents, and established principles, the judges, however, liberally expounding and developing them to meet new exigencies. While it aims to assist the defects of the common law, by extending relief to those rights of property which the strict law does not recognize, and by giving more

ample and distributive redress than the ordinary tribunals afford, equity by no means either controls, mitigates, or supersedes the common law, but rather guides itself by its analogies, and does not assume any power to subvert its doctrines. Courts of equity grant redress to all parties where they have rights, and modify and fashion that redress according to circumstances.

Equity of Redemption, in law, the advantage allowed to a mortgagor of a reasonable time to redeem an estate mortgaged, when it is of greater value than the sum for which it is mortgaged.

Era of Good Feeling, the period from 1817 to 1824 when the Democratic-Republican was virtually the only party in the United States. President Monroe was re-elected in 1821 by 231 electoral votes out of 232 and some writers restrict the term to his second administration. Internal improvements and tariff questions broke up the harmony after 1824.

Erard, Sebastien, a French musical instrument-maker; born in Strassburg, April 5, 1752. He is famous for his improvements and inventions in connection with the pianoforte and harp. He died near Passy, Aug. 5, 1831.

Erasistratus, an ancient Greek physician, said to have been grandson of Aristotle; he lived in the 3d century B. C. He was court physician of Seleucus Nicator, King of Syria, and was the first who systematically dissected the human body; his description of the brain and nerves is much more exact than any given by his predecessors. He classified the nerves into nerves of sensation and of locomotion, and it is said had almost stumbled on the discovery of the circulation of the blood. Of his works only the titles and some fragments remain.

Erasmus, Desiderius, a Dutch scholar; born Rotterdam in 1467. His original name was Gerard. In 1492 he traveled to Paris to perfect himself in theology and polite literature. A rich Englishman there, one of several whom he was instructing, Lord Montjoy, pensioned him for life. He accompanied these pupils to England and was graciously received by the king. He died in 1536. His tomb may be seen at Basel, in the Calvinistic cathedral.

To profound and extensive learning Erasmus joined a refined taste and a delicate wit. Naturally fond of tranquillity and independence, he preferred the pleasure of literary ease and retirement to the pomp of high life. He did great and lasting service to the cause of the revival of learning. Though he took no direct part in the Reformation, was reproached by Luther for lukewarmness, and acknowledged implicitly his lack of courage, he attacked the disorders of monasticism and the prevalent superstitions, and everywhere promoted the cause of truth. He wished for a general ecclesiastical council, to be composed of the most learned and enlightened men, but had not the satisfaction of seeing his wish accomplished.

Erato, in Greek mythology, one of the Muses, whose name signifies loving or lovely. She presided over lyric and especially amatory poetry, and is generally represented crowned with roses and myrtle, and with the lyre in the left hand and the plectrum in the right in the act of playing.

Eratosthenes, a Greek astronomer; born in Cyrene, Africa, B. C. 276. He was librarian at Alexandria, and gained his greatest renown by his investigation of the size of the earth. He rendered much service to the science of astronomy, and first observed the obliquity of the ecliptic. Of the writings attributed to him, one only, treating of the constellations, remains complete. He died about B. C. 194.

Erben, Henry, an American naval officer; born in New York in September, 1832; was graduated at the United States Naval Academy in 1854; promoted master, Sept. 16, 1855; lieutenant, April 2, 1856; lieutenant-commander, July 16, 1862; commander, May 6, 1868; captain, Nov. 1, 1879; commodore, April 3, 1892; rear-admiral in 1894; and was retired in the latter year. During the Civil War he served with Admiral Farragut in the Gulf of Mexico, and on the Mississippi river with Admiral Dupont, etc. In 1863-1869 he was on duty in South America; later, when in command of the "Tuscarora," he made

deep-sea soundings in the Pacific; afterward commanded the "Pensacola" in a trip round the world; and in 1891–1892 was commandant of the New York Navy Yard. Died in 1909.

Ercildoune, Thomas of, (called the Rhymer, and Learmont), a Scotch poet and seer, who flourished probably between 1220 and 1297, and wrote a poem called "Sir Tristrem." He occupies a very conspicuous position in the annals of Anglo-Saxon literature.

Ercilla y Zuniga, Alonso de, a Spanish poet; born in Bermeo, Aug. 7, 1533. He served against the Araucanian natives of Chile, and wrote a historico-epical poem, "The Araucanian Woman," ranked by Cervantes in "Don Quixote" with the finest of the Italian epics. He died in 1595.

Erckmann-Chatrian, or **Emile Erckmann** (born 1822, died 1899) and **Alexandre Chatrian** (born 1826; died 1890), French novelists who under their joint names, between 1859 and 1876, produced a series of popular domestic novels rich in the local coloring of Alsace and Lorraine.

Erdmann, Johann Eduard, a German philosopher; born in Wolmar, Livonia (Russia), in 1805. He studied at Dorpat and Berlin, coming, at this last university, under the influence of Hegel, and became Professor of Philosophy at Halle in 1839. He died in 1892.

Erebus, one of the sons of Chaos. The name signifies darkness, and is used specially to denote the dark and gloomy cavern beneath the earth, through which the shades pass in going to Hades.

Erebus, Mount, an active volcano on Victoria Land, rising 12,367 feet above the sea. It was discovered in 1841 by Ross, who named it after one of his vessels, and whose further progress S. was barred by a wall of ice.

Erechtheus, or **Erichthonius,** an Attic hero, who was the chief means of establishing the worship of Athena in Attica. He instituted the Panathenæa, and a temple, the Erechtheum, was erected in his own honor. This original Erechtheum was burned by the Persians, but a new and magnificent Ionic temple was raised on the same site. He was said to have been the son of Hephæstus and Atthis.

Erfurt, an important town in the Prussian Province of Saxony, on the river Gera, formerly a fortress with two citadels, now given up as such. It has a fine cathedral dating from the 13th century and several handsome Gothic churches. The university, founded in 1378 and suppressed in 1816, was long an important institution. There are still a Royal Academy of Science and a Royal Library with 60,000 volumes. The monastery (now an orphanage) was the residence of Luther from 1501 to 1508. Pop. (1910) 111,463.

Ergot, the altered seed of rye and other grasses caused by the attack of a fungus. The seed is replaced by a dense homogeneous tissue largely charged with an oily fluid. In its perfect state this germinates and produces the claviceps. When diseased rye of this kind is eaten in food for some time, it sometimes causes death by a kind of mortification called dry gangrene.

Ergotism, an affection produced by the use of spurred rye.

Eric, the name of several Danish and Swedish kings. Eric VIII., the Saint, became King of Sweden in 1155, did much to extend Christianity in his dominions, and to improve the laws, and fell in battle with the Danes in 1160. Eric XIV., the last of the name who reigned in Sweden, succeeded in 1560 to the throne of his father, the great Gustavus Vasa, and at once began to exhibit the folly that disgraced his reign. His flighty matrimonial schemes reached even Elizabeth of England and Mary of Scotland, till at length (1567) his roving fancy found rest in the love of a Swedish peasant-girl, who acquired an influence over him which was ascribed by the superstitious to witchcraft; she alone was able to control him in the violent paroxysms of blind fury to which he was subject. His capricious cruelties and the disastrous wars that followed on his follies at length alienated the minds of his subjects, who threw off their allegiance in 1568 and elected his brother John to the throne. In 1577 he ended his miserable life half voluntarily by a cup of poison. This crazy madman had a genuine love of letters, and solaced his captivity with music and the composition of psalms.

Erichsen, Sir John Eric, a British surgeon; born July 19, 1818, his father being a Copenhagen merchant. In 1887 he was appointed president of University College. In 1875 he served on the Royal Commission on Vivisection, and later he was chief surgeon-extraordinary to the queen. He died Sept. 23, 1896.

Ericsson, John, an American inventor; born in Sweden, July 31, 1803; entered the Swedish army in 1820; was promoted captain; resigned in 1827. He soon became known as an inventor. In 1828 he made the first application to navigation of the principle of condensing steam and returning the water to the boiler; later he brought out a self-acting gunlock by means of which naval cannon could be automatically discharged at any elevation without regard to the rolling of the ship. In 1833 he designed a caloric engine; and in 1836 invented the screw propeller, which revolutionized navigation. Ericsson came to the United States in 1839 and two years later built the screw-propelling warship "Princeton" for the government. This vessel was the pioneer of modern naval construction and the foundation of the steam marine of the world. The achievement, however, which made him most famous in the United States was the construction in 1861 of the ironclad "Monitor," which was launched 100 days after its keel was laid, and which arrived in Hampton Roads just in time to defeat, on March 9, 1862, the Confederate ironclad "Merrimac," which had destroyed several wooden warships. But for this signal victory the result of the war might have been changed and European interference attempted. A fleet of monitors was soon built and did important service during the remainder of the war. Ericsson died in New York city, March 8, 1889. After his remains had been paid marked honor, they were sent back to Sweden on the new cruiser "Baltimore." A statue was erected to Ericsson with imposing ceremonies in Battery Park, New York, in 1903, and a torpedo boat is named after him.

Erie, city, port of entry, and county-seat of Erie co., Pa., on Lake Erie, and on the Lake Shore, the Pennsylvania, the Erie, and several other railroads; 85 miles S. W. of Buffalo; 100 miles N. E. of Cleveland. Erie occupies the site of a French fort, called Fort de la Presque, built in 1749; was laid out as a town in 1795; had a portion incorporated as a borough in 1805; and the whole was given a city charter in 1851. It was the headquarters of Commodore Perry in the War of 1812; the fleet with which he defeated the British in the battle of Put-in-Bay was built and equipped here. Natural gas was discovered in 1889. Pop. (1890) 40,634; (1920) 93,372.

Erie Canal, the largest artificial waterway in the United States, serving to connect the great lakes with the sea. It begins at Buffalo on Lake Erie, and extends to the Hudson at Albany. It is 387 miles long; is carried over several large streams on stone aqueducts; and was opened in 1825. By 1901 it had cost for construction and maintenance $52,540,800. In 1917 the work of enlarging the Erie, Oswego, and Champlain canals to a depth of 12 feet, and providing locks large enough to pass barges of 2,000 net tons, was completed, under a special act of the legislature, at a total cost of $128,000,000. The improvement includes 440 miles of construction and 350 miles of canalized rivers and lakes.

Erie, Lake, one of the great chain of North American lakes, between Lakes Huron and Ontario, about 265 miles long, 63½ miles broad at its center, from 200 to 270 feet deep at the deepest part; area, 9,600 square miles. The whole of its S. shore is within the territory of the United States, and its N. within that of Canada. It receives the waters of the upper lakes by the Detroit river and discharges into Lake Ontario by the Niagara river.

Erie, Lake, Battle of. In the War of 1812, between the United States and Great Britain, each party tried to gain possession of Lakes Erie and Ontario as a theater for warlike operations. The chief command of the naval forces on Lake Ontario was held by Commodore Chauncey, and that on Lake Erie by Master-Commandant Oliver Hazard Perry, of Rhode Island, then only 27 years old. Perry fitted out a squadron of seven vessels at

Erie, and succeeded in running the British blockade early in August, 1813. On Sept. 10 following he engaged in a fight in Put-in-Bay, near the W. extremity of the lake, with the British squadron of 6 vessels, mounting 63 guns. A fierce battle was waged for several hours, in the early part of which Perry's flagship, the "Lawrence," was completely disabled and struck her flag. He immediately shifted his flag to the "Niagara," and continued in action, finally defeating the British and establishing American supremacy on the lakes.

Erigena, Joannes Scotus, an eminent scholar and metaphysician; probably born in Ireland about 800–810. He spent a great part of his life at the court of Charles the Bald of France, and was placed at the head of the school of the palace. He died in France about 875.

Erin, an old name for Ireland. Now used only in poetry.

Erlangen, a town of Bavaria, on the Regnitz, 12 miles N. of Nuremberg. As old as the 10th century, it owes its prosperity to the settlement here of French Huguenots after the revocation of the Edict of Nantes (1685), and to its university (1743), celebrated as a school of Protestant theology, and attended by from 600 to 900 students. Pop. (1910) 24,877.

Ermine, the name given to the greater weasel or stoat, when it has changed to a white winter dress, in harmony with its snowy surroundings. The animal is found in Northern Europe, Asia, and America, is very abundant in some parts of Canada, and occurs even in the Middle United States. In summer it is of a light ferruginous or chestnut-brown color over the head, back, sides, and upper half of the tail; the under part is nearly pure white; the lower portion of the tail becomes gradually darker, till at the extremity it is quite black. Its fur is short, soft, and silky. In its winter coat it is of a pure white over the whole head, body, and limbs, the lower half of the tail alone retaining its dark hue. The fur at this time is much longer, thicker, and finer than in summer. The fur of the ermine is in great request; it was formerly one of the insignia of royalty, and is still worn by judges. When used in this way the black tuft from the tail is commonly sewed to the skin at irregular distances. This animal is not readily tamed; when caught, and kept in a cage, it exhibits every mark of its fierce and savage character.

Erne, one of the "bare-legged" eagles. The genus includes some seven species, represented apparently in all parts of the world except South America. A notable species is the

COMMON ERNE.

white-headed or bald eagle, the emblem of the United States. This erne is common in North America, both by the coasts and by inland lakes, and also occurs in Northern Europe. The general color is brown, but the head and neck of the adults are milky-white, and the same is true of the rounded tail.

Ernesti, Johann August, a celebrated classical and Biblical critic; born in Tennstadt, Thuringia, Aug. 4, 1707. He was the founder of a true exegesis of Scripture by the laws of grammar and history, independent of dogmatic prepossessions. He died Sept. 11, 1781.

Ernst, August Frederic, an American educator; born in Hanover, Germany, June 25, 1841; was grad-

uated at the gymnasium, Celle, Hanover, in 1859; later studied at the University of Gottingen; came to the United States in 1863; and was pastor of Lutheran congregations till 1869, when he became a professor in the Northwestern University. He was chosen president of the university in 1870; and was president of the Joint Lutheran Synod of Wisconsin, Minnesota, and Michigan, in 1892, 1895, 1897, and 1899.

Ernst, Harold Clarence, an American educator; born in Cincinnati, O., July 31, 1856. He was graduated at Harvard University in 1876 and at its Medical School in 1880; and later became Professor of Bacteriology at that place.

Ernst, Henry, an American educator; born in Anspach-Uringen, Germany, May 17, 1842; educated in Germany and in the United States; was graduated at Concordia Seminary, St. Louis, Mo., and at the Capital University, Columbus, O. He entered the Lutheran ministry in 1865, and remained actively in it till 1885, when he became president and Professor of Theology in the Lutheran Theological Seminary, St. Paul, Minn.

Ernst, Oswald Herbert, an American military officer; born near Cincinnati, O., June 27, 1842; was graduated at the United States Military Academy and appointed a first lieutenant in the Corps of Engineers in 1864; promoted to lieutenant-colonel, U. S. A., in 1895; and commissioned a Brigadier-General of volunteers May 27, 1898. In 1893–1898 he was superintendent of the United States Military Academy. In the war with Spain he went with General Miles to Porto Rico in July, 1898, and on Aug. 9 led the troops in the action at Coamo.

Erosion Theory, a theory or hypothesis which attributes the excavation of lakes chiefly to the erosive power of water in the form of glaciers, instead of regarding them as due to the existence in the spots where they occur of cracks or fissures in the strata.

Erostratus, or **Herostratus,** a Greek enthusiast; born about 376 B. C., whose longing for fame prompted him to set fire to the temple of Diana at Ephesus. The deed was done on the night Alexander the Great was born. Erostratus has been spoken of as "the youth who fired the Ephesian dome."

Erratics, or **Erratic Blocks,** boulders or large masses of angular rock which have been transported to a distance from their original mountains by the action of ice during the glacial period. In New England they are frequently prominent features in the landscape. At Nottingham, N. H., one weighs 6,000 tons. At New Haven, Conn., the Judge's Cave is formed from erratic blocks.

Error, a wandering or deviation from what is true or right. In astronomy, the difference between the positions of any of the heavenly bodies as determined by calculation and by observation; in law, a mistake in the proceedings of the court of record on matters of law, entitling the party grieved to have the case reviewed; in mathematics, the difference between the result arrived at by any operation and the true result; in horology the difference between the time to which a clock really points and that which it was intended to indicate. Writ of error, in law, an appeal from an inferior court of record assigning error in the proceedings; it lies only upon matter of law arising upon the face of the proceedings, so that no evidence is required to substantiate or support it.

Ersch, John Samuel, a German bibliographer; born in 1766. He was principal librarian and Professor of Geography and Statistics at Halle. He died in 1828.

Erskine, Ebenezer, the founder of the Secession Church in Scotland; born in 1680. His attitude toward patronage and other abuses in the Church led to his being deposed, when, in conjunction with his brother and others, he founded the Secession Church. He is the author of several volumes of sermons. He died in 1756.

Erskine, Thomas, a Scotch baron; born in Edinburgh, Jan. 21, 1750; became a noted forensic orator and jurist, attaining most of his renown as a pleader in support of the accusations of corruption made against Lord Sandwich. He was a member

of the House of Commons in 1790–1806. About the latter date he was created Baron Erskine of Restormel, on becoming lord-chancellor. He died near Edinburgh, Jan. 21, 1823.

Erysipelas, a peculiar inflammation of the skin spreading with great rapidity; the parts affected are of a deep red color, with a diffused swelling of the underlying cutaneous tissue and cellular membrane, and an indisposition to take on healthy action. It is called by John Hunter the adhesive inflammation. Erysipelas is divided into: (1) Simple, where the skin only is affected; (2) Phlegmonous, where the cutaneous and areolar tissue are both attacked at the same time, going on to vesication, then yellowness, and death of the skin; death of the areolar tissue may follow, constituting malignant or gangrenous erysipelas; (3) Œdematous, or sub-cutaneous, of a yellowish, dark brown, or red color, occurring about the eyelids, scrotum, or legs, usually in broken-down dropsical constitutions. The first is superficial and sthenic, the other forms more deep-seated and asthenic, and require vigorously active treatment by free incisions before the formation of pus, as it is too late to wait till pus has actually formed.

Erythema, uniform redness, with puffiness of the skin, seldom accompanied by general febrile disturbance, and not extending to the areolar tissue. The redness and bumps gradually subside. It is commonest in young females, but is also seen in feeble boys. It is often a symptom of some other disease, as in measles or scarlatina.

Erythræan Sea, in ancient geography, a name given to what is now called the Indian Ocean, but including the Persian and Arabian gulfs. The name was latterly restricted to the Arabian Gulf.

Eryx, an ancient city and a mountain in the W. of Sicily, about 2 miles from the sea-coast. The mountain, now Monte San Giuliano, rises direct from the plain to a height of 2,184 feet. On the summit anciently stood a celebrated temple of Venus. All traces of the ancient town of Eryx have now disappeared, and its site is occupied by the modern town of San Giuliano.

Erzerum, an important fortified town in Turkish Armenia, near the W. source of the Euphrates. It is situated on a high but tolerably well cultivated plain, 6,200 feet above the level of the sea, surrounded by mountains. The climate is cold in winter, but hot and dry in summer. Erzerum is the residence of English, Russian, German, and French consular agents; and its population is estimated at 80,000, consisting of Turks, Armenians, and Persians, who carry on a brisk trade, and have attained unusual prosperity. A bulwark of Armenia in various Russian wars, the town was captured by the Russians, Feb. 16, and April 17, 1916. See APPENDIX: *World War.*

Esau, the eldest son of Isaac, and twin brother of Jacob. His name was due to his singular appearance at birth, being "red, all over like an hairy garment." The story of his marriage and loss of birthright through the craft of Rebekah and Jacob, is found in Genesis.

Escadrille (Fr., literally a small squadron), a term applied to a unit or group of aviators by the French. The Lafayette Escadrille was a body of airmen from the United States who executed marvelous and important feats in 1916–17 as a part of the World War operations.

Escalator. See TRAVELING SIDEWALKS.

Escanaba, a city of N. Michigan, on Green Bay. It is an important iron ore shipping point. Pop. (1910) 13,194.

Escapement, a device intervening between the power and the time measurer in a clock or watch, to convert a continuous rotary into an oscillating isochronous movement. It is acted on by each. The power, through the escapement, imparts to the pendulum or balance wheel an impulse sufficient to overcome the friction of the latter and the resistance of the atmosphere, and thus keeps up the vibrations. The time-measurer (pendulum or balance wheel) acts through the escapement to cause the motion of the train to be intermittent. Clocks and watches are generally named according to the form of their escapement: as, chronometer, crown wheel, cylinder, deadbeat, detached, duplex, horizontal, and lever escapement, etc.

Eschar, a slough or portion of dead or disorganized tissue. The name is commonly applied to the crust or seal occasioned on the skin by burns or caustic applications.

Escheat, in law, a species of reversion arising from default of heirs or by forfeiture. That which falls or lapses to the original proprietor, or to the State, as lands or other property. By modern legislation there can be no escheat on failure of the whole blood wherever there are persons of the half-blood capable of inheriting.

Eschenbach, Wolfram von, a German mediæval poet; born of a noble family in Eschenbach, near Ansbach, Bavaria, in the second half of the 12th century. He was one of the most prominent minstrels at the court of Hermann, Landgraf of Thuringia; and his epics rank among the greatest German imaginative works. He died between 1218 and 1225.

Escurial, a royal palace of Spain, distant from Madrid about 24 miles, N. W. on the acclivity of the Sierra Guadarrama, the range of mountains which divides New from Old Castile. The Escurial is not a mere palace, but a memorial building, and combines a monastery, a church, and a mausoleum with a royal palace. Everything about the Escurial — situation, plan, and purposes — bears the stamp of the singular and unpractical mind of its originator, Philip II. Not the least remarkable of its peculiarities is its site. Away from cities, amid the seclusion of mountain scenery, it stands at a height of 2,700 feet above the level of the sea.

It was built by Philip II. in commemoration of the battle of St. Quentin. This battle was fought on the festival of St. Lawrence, Aug. 10, 1557, and the Escurial was built in honor of the saint, in consequence, it is said, of a vow made by Philip previous to the battle. In carrying out his vow Philip had the whimsical notion of making the Escurial resemble the instrument of torture wherewith, according to legend, St. Lawrence was martyred — a gridiron. The building is a rectangular parallelogram measuring 744 feet in length by 580 in breadth. The interior is divided into courts which represent the intersections of the bars of the gridiron; while a projection 460 feet in length, representing, as has been said, the handle, contains the chapel and the royal palace. The building was begun in 1563 by Juan Bautista de Toledo, a Toledan architect, and finished in 1584 by his pupil, Juan de Herrera. It is irregular in its proportions, and thus loses much of the effect which from its great magnitude it ought to have. "The height," says Roscoe, "is 51 feet 8 inches to the cornice by exact measurement (less than a 14th of its length), which gives it the appearance rather of the side of a street than of the facade of a palace." At the extremities are towers 200 feet high, supposed to represent the feet of the gridiron, and the cupola of the church has a height of 320 feet. It is to these features that the building owes an imposing architectural appearance. The innumerable windows (said to be 11,000 in honor of the Cologne virgins) give it the aspect of a large mill or barrack. The doors are also numerous. The material of the building is gray granite found in the neighborhood, which preserves its fresh and clean appearance. The church, situated immediately in front of the palace, is 320 feet long and 230 broad; and under it is the Pantheon or burying place of the Kings of Spain. Its interior is lined with dark marble beautifully veined. The monasterial part of the building contains a valuable library, especially rich in Greek and Arabic manuscripts, and there is a superb collection of pictures scattered through various parts of the building. Raphael, Titian, Rubens, Velasquez, Guido, and other great masters are here represented. During the French occupation the books, 30,000 in number, were removed to Madrid, but were sent back by Ferdinand minus 10,000 volumes. The Escurial was partly burned in 1671, when many MSS. were destroyed. It was pillaged by the French in 1808 (when the books were removed) and in 1813. It was restored by Ferdinand VII., but the monks, with their revenues which supported it, have long since disappeared, and the building, which from its situation requires to be kept in repair at considerable expense, has fallen into

some decay, though repairs are executed from time to time. On Oct. 2, 1872, it was struck by lightning, and was in consequence seriously injured by fire. The monastery portion of it is now a seminary.

Escutcheon, in heraldry, the shield whereon coats of arms are represented.

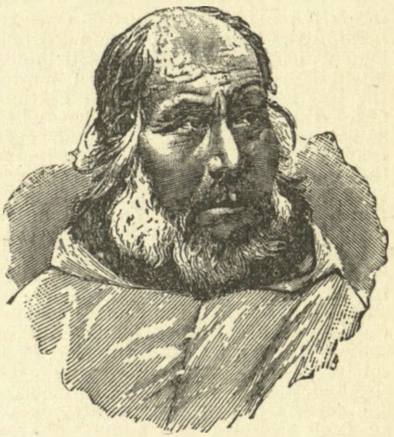
Esdraelon, Plain of, a plain extending across Palestine from the Mediterranean to the Jordan, and drained by the river Kishon. This plain is celebrated for many important events in Old Testament history.

Esdras, Books of, two apocryphal books which, in the Vulgate and other editions, are incorporated with the canonical books of Scripture. In the Vulgate the canonical books of Ezra and Nehemiah are called the first and second, and the apocryphal books the third and fourth books of Esdras. The Geneva Bible (1560) first adopted the present nomenclature, calling the two apocryphal books first and second Esdras. The subject of the first book of Esdras is the same as that of Ezra and Nehemiah, and in general it appears to be copied from the canonical Scriptures. The second book of Esdras is supposed to have been either of much later date, or to have been interpolated by Christian writers.

Esk, (Celtic for water), the name of two small rivers in England, one in Cumberland and one in Yorkshire; and of several in Scotland, the chief being the Esk in Dumfriesshire; the North Esk and South Esk in Forfarshire; and the North Esk and South Esk in Edinburghshire.

Eskimo, the name of the inhabitants of the N. coast of the American continent down to lat. 60° N. on the W., and 55° on the E., and of the Arctic Islands, Greenland, and about 400 miles of the nearest Asiatic coast. Their tracks have been met with as far as Arctic discoverers have hitherto advanced toward the pole. They prefer the vicinity of the seashore, from which they rarely withdraw more than 20, and hardly ever 80 miles. Their number scarcely amounts to 40,000. Nevertheless they are scattered as the sole native occupants of regions stretching from E. to W. as far as 3,200 miles in a straight line, to travel between the extreme points of which would necessitate a journey of no less than 5,000 miles. This distance, taken in connection with their homogeneous nature and manners, makes their small bands the most thinly scattered people of the globe. Their extraordinary persistency in maintaining their language and habits must be due to the difficulties they have had to face in procuring subsistence where no other nation can live.

They used to be classed among nations of the Mongolian stock; but now



ESKIMO MAN.

they are considered as akin to the American Indians. Their height nearly equals the average of the N. W. Indians. They appear comparatively taller sitting than standing. Their hands and feet are small, their faces oval, but rather broad in the lower part; their skin is only slightly brown; they have coarse black hair and very little beard. Their skull is high.

The Eskimos get their subsistence mostly from hunting by sea, using for this purpose skin boats where the sea is open, and dog sledges on the ice. From the skin, blubber, and flesh of the seal and the cetaceous animals, they procure clothes, fuel, light, and food. Their most interesting as well

as important invention for hunting is the well-known small skin boat for one man, called a kayak. It is formed of a frame-work covered with skin, and, together with his waterproof jacket, it completely protects the man against the waves, so that he is able to rise unhurt by means of his paddle, even should he capsize. A Greenlander's kayak is almost 18 feet long and 2 feet broad, and can carry 200 pounds besides the man. The special weapon of the kayak is the large harpoon, connected by a line with an inflated bladder. The hunter throws it when but 25 feet from the seal, and at once drops the bladder overboard, thus retarding the speed of the wounded animal, which runs off with it till finally killed by a lance-thrust. In winter the Eskimos are undoubtedly stationary. But during the summer, when sufficient open water is found, they roam about in their large skin boats, the umiaks. Their winter dwellings vary with regard to the materials of which they are built, as well as in their form. In the farthest W. they are constructed mostly of planks, covered only with a layer of turf or sod; in Greenland the walls consist of stones and sod; in the central regions the houses are formed merely out of snow. In Alaska the interior is a square room, surrounded by the sleeping places, with the entrance on one side, while a hearth with wood as fuel occupies the middle of the floor. In Greenland the room is heated only by lamps, and the sleeping places or family stalls are arranged in a row occupying one of its sides. The house for this reason is lengthened proportionally to the number of its inhabitants. Nowadays, however, the houses are not made so long as formerly — a curious fact corresponding to the disuse of the Indian "long houses," and like it a result of contact with civilization. The number of inhabitants at an Eskimo station is generally under 40, but in rare cases more than 200 are found. A funnel-shaped, half-underground passage forms the entrance of the narrow dwellings.

The dress of the Eskimos is almost the same for the women as for the men, consisting of trousers or breeches and a tunic or coat fitting close to the body, and covering also the head by a prolongation that forms the hood. For women with children to carry, this hood is widened so as to make it an excellent cradle, the amaut. Tattooing has been general among all the tribes. The ordinary materials of which clothes are made are the skins of seals, land animals, and birds.

The language is characterized by the power of expressing in one word a whole sentence in which are embodied a number of ideas which in other languages require separate words. The Greenland dictionary contains 1,370 radicals and about 200 affixes. A radical may be made the foundation of thousands of derivatives, and a word can be composed which expresses with perfect distinctness what in our civilized languages might require 20 words. In Greenland and Labrador the missionaries have adapted the Roman letters for reducing the native language to writing. The printed Greenland literature, including what has been published by the Moravian Brethren, amounts, with pamphlets and the like, to what might make 70 to 80 ordinary volumes. The Labrador literature contains about 10 books.

It is doubtful whether an organization like that of the Indian "families" has been discovered among the Eskimos. But a division into tribes, each with their separate territories, actually exists. The tribe again is divided into groups constituting the inhabitants of the different wintering places. Finally, in the same station, the inhabitants of the same house are closely united with regard to common housekeeping. In this, and perhaps similar ways, their general communism in living, characteristic of their stage of culture, is governed by rules for partnership in householding, for distribution of the daily game during mates, and the placefellows. One of the individual, the family, the housemates, and the placefellows. One of the oldest and most respectable men, called in Greenland itok, in Labrador angajorkak, is obeyed as chief of a house or wintering place, though his authority perhaps, may rest on tacit agreement only. In a similar way, more or less public assemblies constitute councils, and may be considered the courts of justice. Social organiza-

tion has been more highly developed in Alaska than in Greenland.

The inhabitants of Danish West Greenland, numbering about 10,000, the greater part of the Labradorians, and the Southern Alaska Eskimos are Christianized. As for the rest, the religion of the Eskimos is what is generally designated as Shamanism.

The name Eskimo is said to be formed by corruption out of an Indian word signifying "eaters of raw meat." They call themselves Inuit, in Greenland partly Kaladlit. Their origin generally has been derived from Asia, but now they are believed by some to have come from the interior of America, and, following the river courses, to have arrived at the Arctic sea, where they have developed their abilities as an Arctic coast people. The Eskimos may be divided into the following groups: (1) The Western Eskimos, inhabiting the Alaska territory and the Asiatic side of Bering Strait; (2) the Mackenzie Eskimos, or Tchiglits, from Barter Island to Cape Bathhurst; (3) the inhabitants of the central regions, including the Arctic Archipelago; (4) the Labradorians; (5) the Greenlanders. A side branch inhabits the Aleutian Islands.

Eskimo Dog, a species of dog used in the Arctic regions by the natives and by explorers as a beast of burden. It is a hardy and powerful animal, in form resembling the shepherd's dog, and has long hair, black and white, brown or dingy white. It retains much of the wildness of its wolf ancestors, but is invaluable to the inhabitants of the frozen North.

Esmarch, Johannes Friedrich August, a German military surgeon; born in Tonning, Schleswig-Holstein, in 1823. He received his medical and surgical education in the Universities of Kiel and Gottingen, was attached to the Kiel hospital in 1846, served through the Schleswig-Holstein War as army surgeon, and was taken prisoner with the greater part of the army, April 6, 1848. After being exchanged he was appointed surgeon to the hospital of Flensbourg, and in 1857 succeeded Stromeyer as director of clinical surgery; in 1860 he was appointed professor and director of the Kiel Hospital. In 1870 he was a member of the hospital commission of the Prussian army and introduced a system of bloodless operations. After the war he returned to his duties at Kiel University. In the autumn of 1888 he made a trip to the United States. He was an authority especially on gunshot wounds.

Esna, a town of Upper Egypt, on the left bank of the Nile, 28 miles S. S. W. of Thebes, capital of a province of the same name, on the site of the ancient Latopolis. Among the ruins there is a beautiful portico of 24 lofty and massive columns belonging to a temple of Kneph (the only portion of the temple cleared out), and erected in the Ptolemaic and Roman period, with a zodiac on the ceiling. Esna is the entrepot of the Senaar caravans; has manufactures of cottons, pottery, etc., and is reckoned the healthiest place in Egypt. Pop. 7,000.

Espartero, Baldomero, Duke of Vittoria, a Spanish statesman; born in 1792. The son of a wheelwright, he was educated for the priesthood, but joined the army as a volunteer in 1808 and fought against the Carlists. He was regent of Spain, 1841-43, 1854-56. He died in 1879.

Esperanto, "The Hopeful," a universal language invented by Dr. Zamenhoff. The vocabulary is made up of words or roots current in all civilized languages, and easily convertible from one part of speech to another. It is phonetic, each letter having one sound, and that sound always represented by the same letter. The language is easily learned.

Espiritu-Santo, the name of several islands. (1) In the Pacific, the largest of the New Hebrides, with about 20,000 inhabitants. (2) A small island in the Gulf of California. (3) A group of the Bahama islands.

Esplanade, in fortification, the wide open space left between a citadel and the nearest houses of the city. The term is also frequently applied to a kind of terrace, especially along the seaside, for public walks or drives.

Esquimalt, a seaport and harbor of British Columbia, on the S. E. coast of Vancouver Island, and on the Strait of San Juan de Fuca; 4 miles from Victoria. The harbor is extensive and capable of receiving vessels of the greatest size, and is the British

naval station for this part of the Pacific coast. It has a navy yard, marine hospital, a large dry dock built by the Dominion government in 1888, and a meteorological station. In 1894 the British government started work on the defenses of Esquimalt, consisting of earthworks, with disappearing guns, and two parapet forts on the hills for protection against a possible attack by land. The harbors of both Esquimalt and Victoria could be thoroughly mined and wired, and constituted one of the best defended naval stations in the world. On July 1, 1905, the Imperial Government turned over to the Dominion authorities the manning and care of all the defensive works and property at both Halifax and Esquimalt.

Esquire, originally, a shield-bearer or armor-bearer, an attendant on a knight; hence, in modern times a title of dignity next in degree below a knight. In England this title is given properly to the younger sons of noblemen, to officers of the king's courts and of the household, to counsellors at law, justices of the peace while in commission, sheriffs, gentlemen who have held commissions in the army and navy, etc. It is usually given to all professional and literary men, and nowadays, both there and in the United States in the addresses of letters esquire may be put as a complimentary adjunct to almost any person's name. In heraldry the helmet of an esquire is represented sideways with the visor closed.

Esquiros, Henri Alphonse, a French writer; born in Paris in 1814. Died in Versailles in 1876.

Essay, a composition in which something is attempted to be proved or illustrated, usually shorter and less methodical and finished than a systematic or formal treatise. Caution or modesty has induced many writers of note to give the title of essay to their most elaborate productions.

Essen, a town of Rhenish Prussia, 18 miles N. E. of Dusseldorf, founded in the 9th century, and adorned with a fine church dating from 873. It has recently increased with great rapidity, and is celebrated for the steel and iron works of the Krupps, the most extensive in Europe, employing in all usually about 75,000 workmen. This great establishment was started in 1827, with only two workmen. The rifled steel cannon made here are supplied to most of the armies of Europe. In the suburbs are the "colonies"—cottages, churches, schools, stores, libraries, places of amusement, homes for superannuated and disabled workmen, etc., established by the Krupps for their workmen. Pop. (1910) 294,653.

Essence, in philosophy, originally the same as substance. Later, substance came to be used for the undetermined substratum of a thing, essence for the qualities expressed in the definition of a thing; or, as Locke put it, "Essence may be taken for the very being of a thing, whereby it is what it is." In chemistry, and in popular parlance, essences are solutions of the essential oils in alcohol, and may be prepared by adding rectified spirit to the odoriferous parts of plants, or to the essential oils, and distilling; or simply by adding the essential oil to the rectified spirit, and agitating till a uniform mixture is obtained. The term has, however, received a wider significance, and is applied to any liquid possessing the properties of the substance of which it professes to be the essence. Thus essences of coffee, beef, and rennet contain in a concentrated form the virtues of coffee, beef, and rennet, and in some circumstances may be substituted for them.

Essenes, or **Essæans,** a sect among the Jews, the origin of which is unknown, as well as the etymology of their name. It appears to have sprung up in the course of the century preceding the Christian era, and disappeared on the dispersion of the Jews after the siege of Jerusalem.

Essential Oils, volatile oils usually drawn from aromatic plants by subjecting them to distillation with waters, such as the oils of lavender, cloves, peppermint, etc.

Essequibo, a river of British Guiana, which flows into the Atlantic by an estuary 20 miles in width after a course of about 450 miles.

Essex, Robert Devereux, 2d Earl of, eldest son of the 1st earl; born in Netherwood, Herefordshire, Nov. 10, 1567, a favorite of Queen Elizabeth, who afterward turned against him. He was tried for trea-

son Feb. 19, and executed Feb. 26, 1601.

Estaing, Charles Hector, Comte d', a French army and navy officer; born in 1729. In 1763 he was appointed Lieutenant-General, and in 1777 vice-admiral in the French navy. In 1778, in accordance with the treaty between France and the United States, France fitted out a fleet of 12 ships of the line and 4 frigates to aid the latter in the struggle against Great Britain, and Estaing was placed in command. He sailed April 13, reached Delaware Bay in July, and then proceeded to New York, expecting to encounter the British fleet on the way. He captured some prizes off the coast of New Jersey, agreed to assist in a land and sea attack on Newport to expel the British from Rhode Island; reached the harbor late in July; and hearing of the approach of a fleet, put to sea to meet it. He was overtaken by a severe storm, which caused him to put into Boston for repairs, and the projected attack failed. Subsequently he captured St. Vincent and Grenada, West Indies, and in 1779 coöperated with General Lincoln in an ineffectual attempt to capture Savannah, Ga. He returned to France in 1780; chosen admiral of the navy in 1792; testified in favor of Marie Antoinette at her trial in 1793; and, despite his eminent military and naval services to France, was condemned as a royalist and guillotined in 1794.

Estancia, an estate or farm in Spanish South America, especially one on which cattle are reared.

Estate, the interest or quantity of interest a man has in lands, tenements, or other effects. Estates are real or personal. Real estate comprises lands, tenements, and hereditaments, held in freehold. Personal estate comprises interests for terms of years in lands, tenements, and hereditaments, and property of every other description. In ordinary language, an estate is a piece of landed property; a definite portion of land in the ownership of some one.

Este, a town in the Province of Padua, Italy, 17 miles S. W. of Padua; the ancient Adeste. Pop. about 6,000. Also one of the most ancient and illustrious families of Italy. In the 11th century the house of Este became connected by marriage with the German Welfs or Guelphs, and founded the German branch of the house of Este, the dukes of Brunswick and Hanover. The last male representative of the Estes died in 1798. His daughter married a son of the German Emperor Francis I., who founded the Austrian branch of the house of Este, of which the male line became extinct in 1875.

Esterhazy, a family of Hungarian magnates, whose authentic genealogy goes back to the first half of the 13th century. They were zealous partisans of the house of Hapsburg, to whom, during the reigns of Frederick II. and Leopold I., they lent a powerful support. Among the more prominent members of the family are: Paul IV., Prince Esterhazy, a general and literary savant, 1635-1713. His grandson, Nicholas Joseph, a great patron of arts and music, founder of the school in which Haydn and Pleyel, among others, were formed, 1714–1790. Nicholas, Prince Esterhazy, distinguished as a field marshal and foreign ambassador, 1765–1833. Prince Paul Anthony, a distinguished and able diplomatist; born 1786; was successively Austrian ambassador at Dresden, Rome, and Britain; a supporter of the National Hungarian movement. He died in 1866.

Esterhazy, Marie Charles Ferdinand Walsin, born in Austria, Dec. 16, 1847; served in a regiment of Papal Zouaves during the latter part of the French empire; was promoted lieutenant in 1878; captain in 1879, and commander, a rank equivalent to major in other armies, in 1892, in the early part of 1897 he was retired from the army and went to Italy in broken health. He became known throughout the civilized world through his connection with the trial of Capt. Alfred Dreyfus, whom he accused as being the writer of the famous "bordereau" which was alleged to have been sent to certain German military officers revealing French military secrets. In December, 1894, Dreyfus was tried by court martial and convicted as the author of the document, and on January 5, of the following year was publicly degraded and a little later sent as a prisoner to Devil's Island.

In 1896, Colonel Picquart, the head of the Intelligence Bureau of the War Office, made certain discoveries which pointed to Major Esterhazy as the author of the "bordereau." These discoveries led to further investigation and Dreyfus was brought from his prison and given a new trial in 1899, but was again convicted, although much of the evidence gathered pointed to Esterhazy as the real traitor. So strong did this opinion become that Esterhazy was compelled to leave France, and hide in London, where, reduced to extreme poverty, he committed suicide.

Esther, a Jewess who became the queen of Ahasuerus, King of Persia, a monarch usually identified with Xerxes, son of Darius Hystaspis (B. C. 485-495). Esther, whose original name was Hadassah, being an orphan, was brought up by her cousin Mordecai. The deliverance of the Jews through her influence, as described in the Book of Esther, is still commemorated by Jews at the feast of Purim.

Estienne, or **Etienne, Robert,** a French printer and scholar; born in Paris, in 1503. In 1526 he established a printing house in Paris and in 1539 was appointed royal printer to Francis I. He removed to Geneva about 1552. He published many editions of the Greek and Latin classics and compiled numerous other works. He died in Geneva, Sept. 7, 1559. His son Henri took up his father's work on the death of the latter and was also a writer of note. He died in Lyons in 1598.

Estoppel, in law, anything done by a party himself, which puts a period to an action by closing the ground of controversy.

Estotiland, the vast arctic country having no existence save in the brains of the old geographers, and placed by them on the spot now occupied by portions of Newfoundland, Labrador, and that part of British America bordering on Hudson Bay. It was said to have been discovered by two Friesland fishermen driven out of their course by a storm, two centuries before the time of Columbus, but the story is nothing more than a legend. In 1497 the Cabots set sail from England for Estotiland, but discovered instead Newfoundland.

Estuary, the wide mouth of a river opening out so as to form an arm of the sea.

Etappen, a department in continental armies the business of which is to relieve the commanders of the field army of all responsibility for their communications in the rear. The officers of this department supervise all arrangements for loading and unloading at stations, forwarding, feeding, billeting, etc.

Etching, the art of producing designs on a plate of steel or copper by means of lines drawn with an etching needle (a fine-pointed steel tool), the lines being drawn through a coating or varnish (the ground), and bitten in by some strong acid which can only affect the plate where the varnish has been removed.

Eternal City, The, Rome, the capital of Italy. The term is frequently to be met in classic literature.

Ether, a hypothetical medium of extreme tenuity and elasticity believed by scientists to be diffused not only throughout all space but among the molecules of which solid bodies are composed and to be the medium of transmission of light and heat. From magneto-optic phenomena it seems certain that something of the nature of molecular rotation is going on in the ether.

Ether, or **Ethylic Ether, Vinic Ether, Sulphuric Ether,** a colorless, transparent, volatile liquid of great mobility and high refractive power, and possessing a fragrant odor and a fiery, passing to a cooling taste. Ether is useful in the preparation of freezing mixtures, the mixture of ether and solid carbonic acid giving rise to a very low temperature. When inhaled by man and the lower animals, ether first produces stimulating and intoxicating effects, but afterward causes drowsiness, accompanied by complete insensibility. This makes it an important anæsthetic agent; for some time it was the only agent used for producing anæsthesia in operations, but on account of its dangerous qualities it was largely superseded by chloroform.

Ethics, that branch of moral philosophy, which is concerned with human character and conduct. It deals

with man as a source of action and is closely related to psychology and sociology. It seeks to determine the principles by which conduct is to be regulated, having to do not merely with what is, but with what ought to be. Modern ethics has frequently a distinctly legal or theological stamp, being presented as a system of duties prescribed by God or by conscience. Underlying this notion is the conception of certain kinds of conduct, or certain types of character, as better than others or preferable to them.

Ethiopia, or **Æthiopia,** in ancient geography, the country lying to the S. of Egypt, and comprehending modern Nubia, Kordofan, Abyssinia, and other adjacent districts. About the 8th century B. C. it imposed a dynasty on Lower Egypt, acquired a predominant influence in the valley of the Nile, and maintained its independence till it became tributary to the Romans in the reign of Augustus. Subsequently Ethiopia came to be the designation of the country now known as Abyssinia; the Abyssinian monarchs still call themselves rulers of Ethiopia.

Ethiopianism, a term of prominence since 1904, to qualify a Monroe-like doctrine of "Africa for the Africans," said to be an importation from the United States, propagated by religious teaching. It created a great deal of unrest among the Kaffirs of South Africa, and considerable apprehension among the resident white population.

Ethnology, the science which treats of the various races of mankind and their origin. With anthropology, philology, psychology, and sociology it helps to cover the complete study of man. Owing to its comparatively recent origin, much diversity of opinion prevails regarding its proper scope and limits. But it may be said to embrace a comparative study of the various races of mankind, their origin, physical and mental differences, dispersion, geographical distribution and interminglings.

The fundamental human types generally recognized are the black, frizzly-haired Ethiopic (negro); the yellow, lank-haired Mongolic; the white, smooth-haired Caucasic; the coppery, lank and long-haired American; and the brown straight-haired Malayo-Polynesian. The last is commonly rejected as evidently the outcome of a comparatively recent mixture in which the Mongolic elements predominate. Most authorities regard also the American as a remote branch of the same group; this view seems justified by the striking Mongolic features occurring in every part of the New World, as among the Utahs of the Western States and the Botocudos of Eastern Brazil. We are thus reduced to the three first-mentioned divisions, a grouping again adopted by Professor Flower (1885), who concludes that primitive man has in the course of ages become differentiated into "the three extreme types represented by the Caucasian of Europe, the Mongolian of Asia, and the Ethiopian of Africa, and that all existing members of the species can be ranged around these types, or somewhere or other between them."

Subjoined is a brief summary of the main divisions and subdivisions of these three fundamental groups

I. The Ethiopic group falls naturally into a Western or African and an Eastern or Oceanic division. The Western occupies all Africa from the Sahara S. and comprises a N. or Sudanese branch (African Negroes proper), and a S. or Bantu branch (more or less mixed Negro and Negroid populations). The Oceanic division of the Ethiopic group comprises four branches: (1) the Papuans of the Eastern Archipelago and New Guinea; (2) the closely allied Melanesians of the Solomon, New Hebrides, New Caledonia, Loyalty, and Fiji Archipelagos; (3) the now extinct Tasmanians, and (4) the Australians, the most divergent of all Negro or Negroid peoples.

II. The Mongolic group occupies the greater part of the Eastern hemisphere and till the discovery of America was in exclusive possession of the New World. Its chief branches are (1) the Mongolo-Tartars of Central and North Asia, Asia Minor, parts of Russia and the Balkan Peninsula; (2) the Tibeto-Indo-Chinese of Tibet, China proper, Japan and Indo-China: (3) the Finno-Ugrians of Finland, Lapland, Esthonia, Middle Volga, Ural Mountains, North Siberia, Hungary; (4) the Malayo-Polynesians of the Malay Peninsula, the

greater and lesser Sunda Islands, Madagascar, the Philippines, Formosa, and Eastern Polynesia; (5) the American Indians, comprising all the aborigines of the New World, except the Eskimo, who with the Ainos of Yesso, form aberrant members of the Mongolic group.

III. The Caucasic group, called also Mediterranean because its original domain is Western Asia, Europe and North Africa — i. e., the lands encircling the Mediterranean Basin — has in recent times spread over the whole of the New World, South Africa, and Australasia. The chief branches are: (1) Aryans of India, Iran, Armenia, Asia Minor, and great part of Europe, with sub-branches; (2) Semites of Mesopotamia, Syria, Arabia, and North Africa, with sub-branches; (3) Hamites of North and East Africa; (4) the Caucasians proper; (5) the Basques of the Western Pyrenees.

Etienne, Charles Guillaume, a French dramatist; born in Chamouilly, Jan. 6, 1778; died in Paris March 13, 1845.

Etienne, St., a town of Southern France, in the department of the Loire, on the Furens, 32 miles S. W. of Lyons. It has spacious streets with substantial houses, but owing to the number of public works represents a dingy appearance. The principal buildings and institutions are the cathedral, an ancient Romanesque structure; the town house, court house, exchange, communal college, mining school, gallery of arts, library and museum. The town stands in the center of one of the most valuable mineral fields of France; and in addition to the extensive collieries, blast furnaces and other ironworks in the vicinity, has manufactures of ribbons, silks, cutlery, firearms, etc. The collieries employ about 16,000 men. Pop. (1911) 148,656.

Etiolation, or **Blanching,** of plants, is a state produced by the absence of light, by which the green color is prevented from appearing. It is effected artificially, as in the case of celery, by raising up the earth about the stalks or the plants; by tying the leaves together to keep the inner ones from the light; by covering with pots, boxes, or the like, or by setting in a dark place. The green color of etiolated plants may be restored by exposure to light.

Etiquette, a collective term for the established ceremonies and usages of society. Among courts the Byzantine and Spanish courts and the French court under Louis XIV. and XV., were noted for the strictness of their etiquette. Social etiquette consists in so many minute observances that a tolerable familiarity with it can be acquired only by a considerable intercourse with polite society. It is often said that all that is necessary to constitute good social manners is common sense and good feeling; but, not to mention those formal rules of society which, though intrinsically worthless, demand a certain amount of respect, there are also many difficulties and emergencies in social intercourse which require peculiar tact and delicacy of judgment. Hence quickness of sympathy and a certain fineness of observation are more needed for proficiency in this sphere than pure power of intellect.

Etna, or **Ætna, Mount,** the greatest volcano in Europe, a mountain in the province of Catania, Sicily; height, 10,874 feet. It rises immediately from the sea, has a circumference of more than 100 miles, and dominates the whole N. E. of Sicily, having a number of towns and villages on its lower slopes. The top is covered with perpetual snow; midway down is the woody or forest region; at the foot is a region of orchards, vineyards, olive groves, etc. Etna thus presents the variety of climates common to high mountains in lower latitudes, oranges and lemons and other fruits growing at the foot, the vine rather higher up, then oaks, chestnuts, beeches, and pines, while on the loftiest or desert region vegetation is of quite a stunted character. A more or less distinct margin of cliff separates the mountain proper from the surrounding plain; and the whole mass seems formed of a series of superimposed mountains, the terminal volcano being surrounded by a number of cones, all of volcanic origin, and nearly 100 of which are of considerable size.

The eruptions of Etna have been numerous, and many of them destructive. That of 1169 overwhelmed Ca-

tania and buried 15,000 persons in the ruins. In 1669 the lava spread over the country for 40 days, and 10,000 persons are estimated to have perished. In 1693 there was an earthquake during the eruption, when over 60,000 lives were lost. One eruption was in 1755, the year of the Lisbon earthquake. Among more recent eruptions are those of 1852, 1865, 1874, 1879, 1886, 1892. An eruption is ordinarily preceded by premonitory symptoms of longer or shorter duration. The population of the district of Etna is about 300,000.

Etruria (Greek Tyrrhenia), the name anciently given to that part of Italy which corresponded nearly with the modern Tuscany, and was bounded W. by the Mediterranean, E. by the Apennines, N. by the river Magra, and S. by the Tiber.

Etruria, Kingdom of, in Italy, founded by Napoleon I. in 1801. Its capital was Florence. In 1807 Napoleon incorporated it with the French empire.

Etruscan Vases, a class of beautiful ancient painted vases made in Etruria, but not strictly speaking a product of Etruscan art, since they were really the productions of a ripe age of Greek art, the workmanship, subjects, style, and inscriptions being all Greek.

Etty, William, an English painter; born in 1787; died in 1849.

Etymology, a term applied to that part of grammar which treats of the various inflections and modifications of words and shows how they are formed from simple roots; and to that branch of philology which traces the history of words from their origin to their latest form and meaning.

Eubœa, formerly called Negropont, a Greek island, the second largest island of the Ægean Sea. It is 90 miles long, 30 in greatest breadth, reduced at one point to 4 miles. It is separated from the mainland of Greece by the narrow channels of Egripo and Talanta. It is connected with the Bœotian shore by a bridge. There are several mountain peaks over 2,000 feet, and one over 7,000 feet. The island is well-wooded and remarkably fertile. Wine is a staple product, and cotton, wool, pitch, and turpentine are exported. The chief towns are Chalcis and Karysto. The island was anciently divided among seven independent cities, the most important of which were Chalcis and Eretria, and its history is for the most part identical with that of those two cities. With some small islands it forms a Greek province with a pop. (1919) 131,000.

Eucaine, a new anæsthetic which renders the parts to which it is applied insensible, while the remainder of the body is in its normal state. Eucaine is prepared in Germany from a South American plant, and is similar in its local action to cocaine, but without any of the poisonous effects of the latter.

Eucalyptus, a genus of trees, mostly natives of Australia, and remarkable for their gigantic size, some of them attaining the height of 480 or 500 feet. In the Australian colonies they are known by the name of gum trees, from the gum which exudes from their trunks; and some of them have also such names as "stringy bark," "iron bark," etc. The wood is excellent for ship building and such purposes. The tree has been introduced in California.

Eucharist, a name for the sacrament of the Lord's Supper, in reference to the blessing and thanksgiving which accompany it.

Euchre, the most generally played parlor game after whist in the United States.

Euclid, a celebrated mathematician, who collected all the fundamental principles of pure mathematics, which had been delivered down by Thales, Pythagoras, Eudoxus, and other mathematicians before him, which he digested into regularity and order, with many others of his own, on which account he is said to have been the first who reduced arithmetic and geometry into the form of a science. He lived about 277 B. C., and taught mathematics in Alexandria.

Eudocia, or **Athenais,** a learned Athenian lady, a daughter of Leontius the philosophical sophist. After the death of her father, who left nearly all his property to his two sons, she went to Constantinople for the purpose of complaining of this injustice to the Emperor, Theodosius II. There

she embraced the Christian religion, was baptized as Eudocia and became empress in A. D. 421. She was afterward divorced and spent the remainder of her life in Jerusalem, engaged in acts of devotion. She is said to have written some Greek poems and also a life of Christ. She died in 460.

Eudoxians, followers of Eudoxius, who from A. D. 356 was Bishop of Antioch, in Syria, and from 360 to his death in 370 Bishop and Patriarch of Constantinople. He was successively an Arian, a Semi-Arian and Aetian. Respecting the Trinity, he believed the will of the Son to be differently affected from that of the Father.

Eudoxus, of Cnidos, whom Cicero calls the prince of astronomers, lived about 370 B. C.; was the scholar and friend of Plato, and traveled into Egypt, where he continued for 13 years in intimate intercourse with the priests. All his works are lost, but the poem ot "Aratus" on astronomy shows the extent of his astronomical knowledge, for the commentary on this poem by Hipparchus proves it is nothing else than a metrical version of the "Phenomena" of Eudoxus, a work written in prose. Eudoxus seems to have been the first to introduce an astronomical globe into Greece, and this may account for the great reputation which he acquired and long continued to enjoy.

Eugene, Francois, of Savoy, known as Prince Eugene, 5th son of Eugene Maurice, Duke of Savoy-Carignan, and Olympia Mancini, a niece of Cardinal Mazarin; born in Paris, Oct. 18, 1663. Among all the generals and statesmen of Austria none rendered more numerous and important services than Eugene. He was great alike in the field and the cabinet. Contrary to his own inclinations, Eugene was destined for the Church. He petitioned Louis XIV. for a company of dragoons, but was refused. Indignant at this repulse, and at the insults offered to his family, and particularly to his mother, Eugene, in 1683, entered the Austrian service, as two of his brothers had already done. Some years afterward he entered France at the head of a victorious army. He defeated the Turks at the battle of Zenta (Sept. 11, 1697), and obliged them to accede to the peace of Carlowitz (1699), which was the first symptom of their decline. In the Spanish War of Succession he coöperated with the great English general Marlborough, and the two won signal victories over the French. In the war with Turkey in 1716 Eugene defeated two superior armies, and in 1717 took Belgrade, after having gained a decisive victory over a third army that came to its relief. The treaty of Passarovitz was the result of this success. During 15 years which followed, Austria enjoyed peace, and Eugene was as active in the cabinet as he had been in the field. Eugene appeared in his old age at the head of an army on the banks of the Rhine, but returned to Vienna without effecting anything of importance. He died in Vienna April 21, 1736.

Eugenie (maiden name, Marie de Guzman), ex-empress of the French; born in Granada, Spain, in 1826. Her father, the Count de Montijo, was of a noble Spanish family; her mother was of Scotch extraction, maiden name Kirkpatrick. On Jan. 29, 1853, she became the wife of Napoleon III. and Empress of the French. On March 16, 1856, a son was born of the marriage. When the war broke out with Germany she was appointed regent (July 27. 1870) during the absence of the emperor, but on Sept. 4, the revolution forced her to flee from France. She went to England, where she was joined by the prince imperial and afterward by the emperor. Camden House, Chislehurst, became the residence of the imperial exiles. On Jan. 9, 1873, the emperor died, and six years later the prince imperial was slain while with the English army in the Zulu war. In 1881 the empress transferred her residence to Farnborough in Hampshire.

Eugenius, the name of four Popes.

Eulalia, a virgin martyr; born in Merida, in Estramadura. When she was only 12 years old, the great persecution of Diocletian was set on foot, whereupon the young girl left her home, and, in the presence of the Roman judge, cast down the idols he had set up. She was martyred by torture, Feb. 12, 308 A. D.

Eulenspiegel, Till, a name which has become associated in Germany with all sorts of wild, whimsical frol-

ics, and with many amusing stories. Some such popular hero of tradition and folklore seems to have really existed in Germany, probably in the first half of the 14th century, and a collection of popular tales of a frolicsome character, originally written in Low German, purports to contain his adventures. The work was early translated into English and almost all European tongues.

Euler, Leonard, a distinguished mathematician; born in Basel in 1707. He was educated at the University of Basel under the Bernouilli, through whose influence he procured a place in the Academy of St. Petersburg. In 1741 he accepted an invitation from Frederick the Great to become Professor of Mathematics in the Berlin Academy, but in 1766 returned to St. Petersburg, where he died in 1783, in the office of director of the mathematical class of the academy. He applied the analytic method to mechanics and greatly improved the integral and differential calculus.

Eumenes, one of the successors of Alexander the Great. He obtained the government of part of Asia Minor, and was the ally of Perdiccas; but in the year 316 B. C., he fell into the power of Antigonus and was put to death.

Euphonium, a brass bass instrument, generally introduced into military bands, and frequently met with in the orchestra as a substitute for the bass trombone, from which, however, it is very different in tone. It is tuned to C or B flat.

Euphrates, or **El Frat,** a celebrated river of Western Asia, in Asiatic Turkey, having a double source in two streams rising in the Anti-Taurus range. Its total length is about 1,750 miles, and the area of its basin 260,000 square miles. It flows mainly in a S. E. course through the great alluvial plains of Babylonia and Chaldæa till it falls into the Persian Gulf by several mouths, of which only one in Persian territory is navigable. About 100 miles from its mouth it is joined by the Tigris, when the united streams take the name of Shatt-el-Arab. It is navigable for about 1,200 miles, but navigation is somewhat impeded by rapids and shallows.

Euphrosyne, in Greek mythology, one of the three Graces.

Euphuism, an affected style of speech which distinguished the conversation and writings of many of the wits of the court of Queen Elizabeth. The name and the style were derived from the "Euphues, the Anatomy of Wit," of John Lyly, (about 1554–1606).

Eurasians (syncopated from Europ-Asians), a name sometimes given to the "half-castes" of India, the offspring of European fathers and Indian mothers. They are particularly common in the three presidential capitals — Calcutta, Madras, and Bombay. They generally receive a European education, and the young men are often engaged in government or mercantile offices. The girls, in spite of their dark tint, are generally pretty and often marry Europeans.

Eure, a river of France, which rises in the department of the Orne, and falls into the Seine after a course of 124 miles, being navigable for about half the distance. It gives its name to a department in the N. W. of France, forming part of Normandy; area, 2,330 square miles. The surface consists of an extensive plain, intersected by rivers, chief of which is the Seine. Evreux is the capital. Pop. (1911) 323,763.

Eure-et-Loir, a department in the N. W. of France, forming part of the old provinces of Orleannais and Ile-de-France; area, 2,291 square miles. The department is essentially agricultural, and has few manufactures. The capital is Chartres. Pop. (1911) 272,255.

Eureka, a Greek word meaning, "I have found it," the exclamation of Archimedes when, after long study, he discovered a method of detecting the amount of alloy in King Hiero's crown. Hence the word is used as an expression of triumph at a discovery or supposed discovery.

Eureka College, a coeducational institution in Eureka, Ill.; founded in 1855 under the auspices of the Christian Church.

Euripides, a celebrated Athenian tragedian; born in Salamis, in 480 B. C. (or 485). He studied under Prodicus and Anaxagoras, and is said

to have begun to write tragedies at the age of 18, although his first published play, the "Peliades," appeared only in 455 B. C. He was not successful in gaining the first prize till the year 441 B. C. The violence of unscrupulous enemies, who accused him of impiety and unbelief in the gods, drove Euripides to take refuge at the court of Archelaus, King of Macedonia, where he was held in the highest honor. Euripides is a master of tragic situations and pathos, and shows much knowledge of human nature and skill in grouping characters. He is said to have composed 75, or according to another authority 92 tragedies.

Euroclydon, a tempestuous wind that frequently blows in the Levant, and which was the occasion of the disastrous shipwreck of the vessel in which St. Paul sailed, as narrated in Acts xxvii: 14–44. The wind is represented as blowing from Crete, while the vessel which contained Paul was coasting under the S. shore of the island, and the course taken by the vessel is just that which would have been taken by one driven by a N. E. wind. Such a wind is described by sailors of the present day as prevalent at certain seasons in the Mediterranean.

Europe, the smallest of the great continents. The most northerly point on the mainland is Cape Nordkyn, in Lapland, the most southerly points are Punta da Tarifa, in the Strait of Gibraltar, and Cape Matapan, which terminates Greece. The most westerly point is Cape Roca in Portugal, and Ekaterinburg is the most easterly. From Cape Matapan to North Cape is a direct distance of 2,400 miles from Cape St. Vincent to Ekaterinburg, N. E. by E., 3,400 miles; area of the continent, about 3,800,000 square miles. Great Britain and Ireland, Iceland, Nova Zembla, Corsica, Sardinia, Sicily, Malta, Crete, the Ionian and the Balearic Islands are the chief islands of Europe.

Europe is occupied by several different peoples or races, in many parts now greatly intermingled. The Celts once possessed the W. of Europe from the Alps to the British Islands. But the Celtic nationalities were broken by the wave of Roman conquest, and the suceeding invasions of the Germanic tribes completed their ruin. At the present day the Celtic language is spoken only in the Scotch Highlands (Gaelic), in some parts of Ireland (Irish), in Wales (Cymric), and in Brittany (Armorican). Next to the Celtic comes the Teutonic race, comprehending the Germanic and Scandinavian branches. The former includes the Germans, the Dutch, and the English. The Scandinavians are divided into Danes, Swedes, and Norwegians. To the E., in general, of the Teutonic race, though sometimes mixed with it, come the Slavonians, that is, the Russians, the Poles, the Czechs or Bohemians, the Servians, Croatians, etc. In the S. and S. E. of Europe are the Greek and Latin peoples, the latter comprising the Italians, French, Spanish and Portuguese. All the above peoples are regarded as belonging to the Indo-European or Aryan stock. To the Mongolian stock belong the Turks, Finns, Lapps, and Magyars or Hungarians, all immigrants into Europe in comparatively recent times. The Basques at the western extremity of the Pyrenees are a people whose affinities have not yet been determined. The total population of Europe is about 330,000,000; nine-tenths speak the languages of the Indo-European family, the Teutonic group numbering about 108,000,000, the Slavonic and Latin over 95,000,000 each. The prevailing religion is the Christian, embracing the Roman Catholic Church, which is the most numerous, the various sects of Protestants, and the Greek Church. A part of the inhabitants profess the Jewish, and a part the Mohammedan religion.

Europe was probably first peopled from Asia. The first authentic history begins in Greece at about 776 B. C. Greek civilization was at its most flourishing period about 430 B. C. After Greece came Rome, which, by the early part of the Christian era, had conquered Spain, Greece, Gaul, Helvetia, Germany between the Danube and the Alps, Illyria, Dacia, etc. Improved laws and superior arts of life spread with the Roman empire throughout Europe, and the unity of government was also extremely favorable to the extension of Christianity.

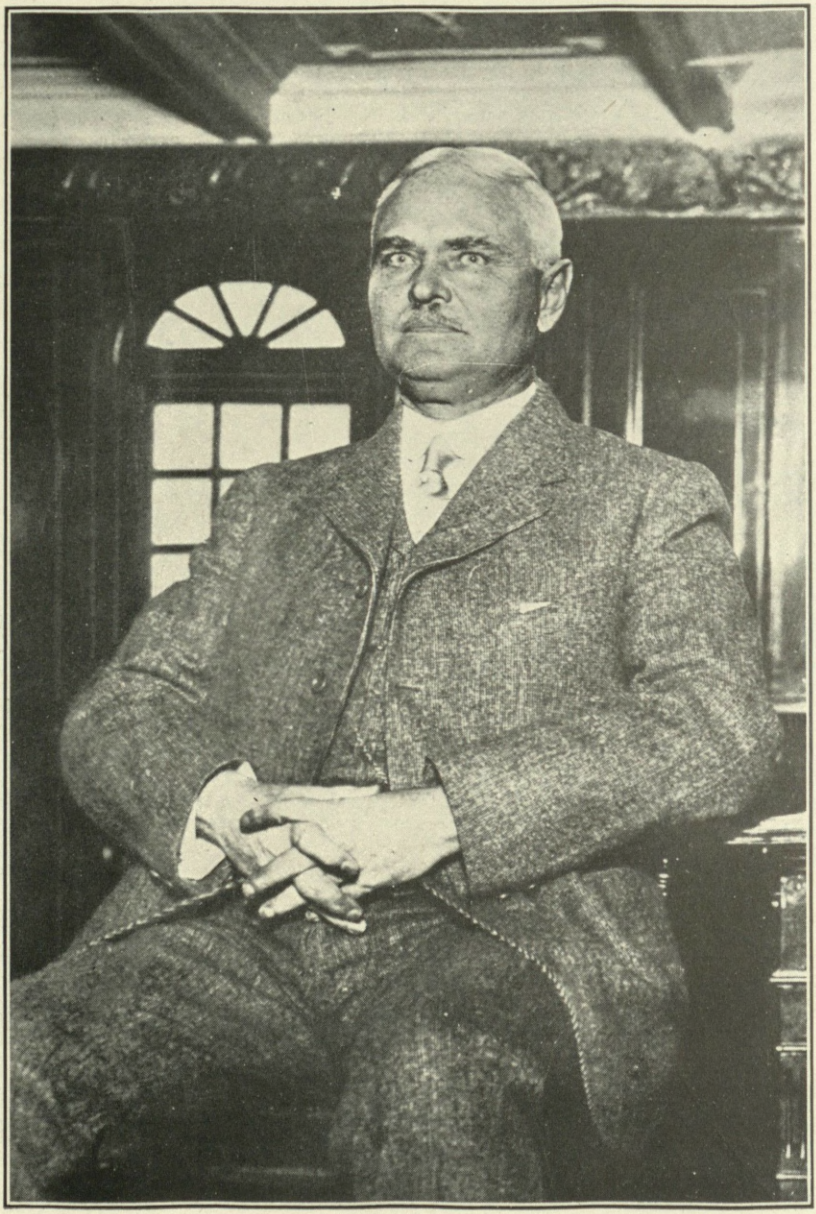
THE NEW STATES
OF
SOUTHEASTERN EUROPE
Scale of Miles
0 20 40 80 120 160
Railroads
Railroads proposed
Capitals
Size of type indicates relative importance of places
C.S. HAMMOND & CO., N.Y.
CZECHOSLOVAKIA
HUNGARY
YUGOSLAVIA
RUMANIA
BULGARIA
ALBANIA
GREECE
TURKEY
ITALY
UKRAINE
BUDAPEST
BELGRADE
BUKHAREST
SOFIA
SALONIKI
ATHENS
SMYRNA
CONSTANTINOPLE
MONTENEGRO
ADRIATIC SEA
IONIAN SEA
AEGEAN SEA
BLACK SEA
SEA OF MARMORA
SEA OF CANDIA
MEDITERRANEAN SEA
Danube R.
Adrianople
Mt. Athos
Mt. Olympus
Mt. Pelion
Mt. Ossa
Mt. Parnassus
Mt. Malta
Mt. Ida
Dardanelles
Gallipoli
Lemnos
Mitylene (Lesbos)
Skyro (Scyros)
Khios (Scios)
Samos
Andro
Tino
Mykoni
Delos
Naxos
Paros
Hermopolis
Amorgo
Kos
Patmos
Rhodes
Karpathos
Kaxos
Cerigotto
Candia
Canea
Retimo
Sphakia
Rhodes
Leda
Christiana
Thira (Santorin)
Anafi
Sirena
Karavi
Polino
Milo (Melos)
Kimolo
Siphanto
Polyvandhos
Levitha
Kulymno
Visyro
Astropalia
Tilos
Karki
Sym
Nisyro
Kalymnos
Pharmakonisi
Leros
Lipsos
Patmos
Fourni
Samos
Nikaria
Icaria
Psara
Andro
Tino
Mykoni
Syra
Thera
Hermopolis
Naxos
Paros
Amorgo
Kos
Rhodes
Karpathos
Kaxos
Cerigotto
Candia
Canea
Retimo
Sphakia
Leda
Christiana
Thira (Santorin)
Anafi
Sirena
Karavi
Polino
Milo (Melos)
Kimolo
Siphanto
Polyvandhos
Levitha
Kulymno
Visyro
Astropalia
Tilos
Karki
Sym
Nisyro
Kalymnos
Pharmakonisi
Leros
Lipsos
Patmos
Fourni
Samos
Nikaria
Icaria
Psara
Andro
Tino
Mykoni
Syra
Thera
Hermopolis
Naxos
Paros
Amorgo
Kos
Rhodes
Karpathos
Kaxos
Cerigotto
Candia
Canea
Retimo
Sphakia
Leda
Christiana
Thira (Santorin)
Anafi
Sirena
Karavi
Polino
Milo (Melos)
Kimolo
Siphanto
Polyvandhos
Levitha
Kulymno
Visyro
Astropalia
Tilos
Karki
Sym
Nisyro
Kalymnos
Pharmakonisi
Leros
Lipsos
Patmos
Fourni
Samos
Nikaria
Icaria
Psara

(C) Underwood and Underwood

KING MAHAI I, OF RUMANIA

Left medallion: Former Crown-Prince Carl. Right medallion: The late King Ferdinand I. On the King's death, July 20, 1927, Prince Mihai (Michael), his 5-year-old grandson, was named successor. But Prince Carol declared himself King July 21.

POLITICAL MAP
OF
EUROPE
SCALE OF MILES
0 100 200 300 400 500 600
ATLANTIC OCEAN
BRITISH ISLES
NORTH SEA
BALTIC SEA
BAY OF BISCAY
BLACK SEA
CASPIAN SEA
ARAL SEA
MEDITERRANEAN SEA
AEGEAN SEA
FINLAND
SWEDEN
NORWAY
RUSSIA
LATVIA
LITH
POLAND
UKRAINE
RUMANIA
BULGARIA
TURKEY
ASIA MINOR
SPAIN
PORTUGAL
FRANCE
AFRICA
Leningrad
Moscow
Kiev
Odessa
Sevastopol
Constantinople
Bukharest
Sofia
Athens
Smyrna
Konia
Ankora
Gibraltar
Str. of Gibraltar
CRETE
CYPRUS
Hammond's Political Map of Europe
Copyright by C.S. Hammond & Co. N.Y.



COL. G. W. GOETHALS

With the decline of the Roman empire a great change in the political constitution of Europe was produced by the universal migration of the Northern nations. The Ostrogoths and Lombards settled in Italy, the Franks in France, the Visigoths in Spain, and the Anglo-Saxons in South Britain, reducing the inhabitants to subjection or becoming incorporated with them. Under Charlemagne (771–814) a great Germanic empire was established, so extensive that the kingdoms of France, Germany, Italy, Burgundy, Lorraine, and Navarre were afterward formed out of it. About this time the Northern and Eastern nations of Europe began to exert an influence in the affairs of Europe. The Slavs, or Slavonians, founded kingdoms in Bohemia, Poland, Russia, and the N. of Germany; the Magyars appeared in Hungary, and the Normans agitated all Europe, founding kingdoms and principalities in England, France, Sicily, and the East. The Crusades and the growth of the Ottoman power are among the principal events which influenced Europe from the 12th to the 15th century.

The conquest of Constantinople by the Turks (1453), by driving the learned Greeks from this city, gave a new impulse to letters in Western Europe, which was carried onward by the invention of printing, and the Reformation. The discovery of America was followed by the temporary preponderance of Spain in Europe, and next of France. Subsequently Prussia and Russia gradually increased in territory and strength. The French Revolution (1789) and the Napoleonic wars had a profound effect on Europe, the dissolution of the old German empire being one of the results. Since then the most important events in European history have been the establishment of the independence of Greece; the disappearance of Poland as a separate state; the Crimean War; the unification of Italy under Victor Emmanuel; the Franco-German war, resulting in the consolidation of Germany into an empire under the leadership of Prussia; the partial dismemberment of the Turkish empire, including the loss of Crete; the loss by Spain of her colonies in 1898; the absorption by England of the Transvaal Republic and the Orange Free State in Africa in 1900; the losses sustained by Turkey in the Balkan war of 1912; the Teutonic conquering of Servia and Montenegro, the occupation of Belgium and a portion of N. France, and the practical subjection of Roumania in 1914-16. By the World War stupendous changes have been effected in every country of Europe. Some have lost their very identity, while many have been assigned to new political units. New republics of Ukrania, White Russia, Lithuania, Latvia and Taurida, made from Russian soil; Poland, Czecho-Slovakia from Bohemia, Moravia and Slovakia; Jugo Slavia, Austria and Hungary. Rumania now double in size.

Eusebius, a Greek writer, the father of ecclesiastical history; born in Palestine about A. D. 265. About 315 he was appointed Bishop of Cæsarea. He became an advocate of the Arians and condemned the doctrines of Athanasius. His ecclesiastical history extends from the birth of Christ to 324. Among his other extant works is a life of Constantine the Great. He died about 340.

Eustachian Tube, in anatomy, a canal leading from the pharynx to the tympanum of the ear.

Eustachio, Bartolomeo, an Italian physician and anatomist; born soon after 1500. He devoted himself to medical science and in particular to anatomy, which he much enriched by his researches. Among his discoveries were the Eustachian tube and the Eustachian valve of the heart. He died about 1574.

Eustatius, St., a Dutch island in the West Indies, one of the Leeward Islands, 11 miles N. W. of St. Christopher's; pyramidal in form; area 8 square miles. The climate is healthy, but earthquakes are frequent. Pop. 2,335.

Eustis, James Biddle, an American diplomatist; born in New Orleans, La., Aug. 27, 1834; was educated in Brookline, Mass., and at the Harvard Law School; was admitted to the bar in 1856 and practised in New Orleans till the Civil War broke out. He entered the Confederate army and served as judge-advocate on the staffs of Generals Magruder and J. E. Johnston till the close of the war. He then resumed practice in his

native city. He was elected United States Senator to fill a vacancy in 1876, but was not given his seat till late in 1877; was Professor of Civil Law in the University of Louisiana in 1879–1884, when he was again elected Senator. In March, 1893, he was appointed United States minister to France, and on the expiration of his term, in 1897, resumed practice in New York city. He died in Newport, R. I., Sept. 9, 1899.

Eustis, William, an American politician; born in Cambridge, Mass., June 10, 1753; became a physician; was Secretary of War in 1809–1813; and governor of Massachusetts in 1823–1825. He died in Boston, Feb. 6, 1825.

Eutaw Springs, a small tributary of the Santee river in Charleston co., S. C. It is noted for the battle fought on its banks in 1781, between about 2,000 Americans under General Greene, and about 2,300 British under Colonel Stuart. The latter were defeated and driven from their camp, but returned and Greene was compelled to retire. In the night, however, the British retreated toward Charleston, leaving 138 killed and wounded and about 500 prisoners. The Americans lost about 550 in killed, wounded and missing.

Euterpe, one of the Muses, considered as presiding over lyric poetry, the invention of the flute being ascribed to her. In botany, a genus of palms, natives of South America, sometimes nearly 100 feet in height.

Eutropius, Flavius, a Latin historian, who flourished about A. D. 360. His abridgment of the history of Rome is written in a perspicuous style.

Euxine, the ancient name for the Black Sea.

Evangelical, a term derived from the Greek word signifying Gospel or good news. It is used to characterize creed, doctrines, sermons, treatises, etc., in which special prominence is given to the expiatory nature of Christ's sufferings and death, justification by faith, and the necessity of regeneration. In the English Church, and in the Protestant Episcopal Church it is used to characterize the party opposed to ritualism and rationalism. The "Evangelical Church" is the official title of the Established Church of Prussia, formed in 1817 by the union of Lutherans and Calvinists.

Evangelical Alliance, an association of members of different sections of the Christian Church, organized in London in 1846, to lend its influence in favor of evangelical doctrines, religious union and liberty, and against superstition and unbelief. The alliance has branches throughout the world, the American branch being especially strong. A week of united prayer is held in the early part of January each year.

Evangelical Association, a body of American Christians, chiefly of German descent, established about the beginning of the 19th century. In form of government and mode of worship it generally agrees with the Methodist Episcopal Church.

Evangelical Union, the name of a religious sect, also familiarly known as the Morisonians, from the Rev. James Morison, its originator. It took rise in Scotland in 1840, and three years afterward organized itself as a separate Christian denomination.

Evangelist, a writer of the history or doctrines, precepts, actions, life, and death of Christ; in particular, the "four evangelists," Matthew, Mark, Luke, and John. The term is also applied to preachers of Christian doctrine, who go about seeking to convert sinners, and bring them to repentance, and to peace with God.

Evans, Augusta Jane (Wilson), an American novelist; born in Columbus, Ga., May 8, 1835; died in 1909.

Evans, Sir De Lacy, a British general; born in Moig, Ireland, in 1787. After some years of service in India he joined the army of Wellington in the Peninsula in 1812, where he served with distinction. In 1814 he was sent to America, and was present at the battles of Bladensburg and New Orleans, returning to Europe in time to take part in Waterloo. During the Crimean War he distinguished himself as commander of the second division of the English army. He died Jan. 9, 1870.

Evans, Edward Payson, an American author; born in Remsen, N. Y., Dec. 8, 1833; has made a special study of Oriental languages; in 1884

became connected with the "Allgemeine Zeitung" of Munich in Europe, to which he contributed many articles on the literary, artistic, and intellectual life of the United States.

Evans, Frederick William, an American lecturer and writer; born in England, June 9, 1808; removed to the United States in 1820; joined the United Society of Believers (Shakers) at Mt. Lebanon, N. Y., in 1830. His works deal with the history and doctrines of that sect. He died at Mt. Lebanon, N. Y., March 6, 1893.

Evans, Hugh Davy, an American author; born in Baltimore, Md., April 26, 1792; studied law and began practice in Baltimore in 1815; and became eminent as a jurist and editor. Died July 16, 1868.

Evans, John, an American philanthropist; born in Waynesville, O., March 9, 1814; was graduated at the medical department of Cincinnati College in 1838; began practice in Ottawa, Ill., but soon afterward removed to Attica, Ind. In 1848 he became a professor in the Rush Medical College of Chicago, in which city he accumulated a large fortune by investments in real estate. Much of this he gave to philanthropic objects. He established the Northwestern University, at Evanston, Ill. In 1862 he was appointed governor of the Colorado Territory. Later he established the University of Denver. He died in Denver, Col., July 3, 1897.

Evans, John, an American geologist; born in Portsmouth, N. H., Feb. 14, 1812; was graduated at the St. Louis Medical College; served on several State and Territorial geological surveys; and discovered remarkable fossil deposits in the Bad Lands of Nebraska. He died in Washington, D. C., April 13, 1861.

Evans, Oliver, an American inventor; born in Newport, Del., in 1755; was apprenticed to a wheelwright. In 1777 he invented a machine for making card-teeth. Among his other inventions are the automatic flour mill; the high pressure steam engine; a steam dredge; and the boiler known as the "Cornish boiler." He died in New York, April 25, 1819.

Evans, Robley Dunglison, an American naval officer; born in Floyd co., Va.; was graduated at the United States Naval Academy in 1863. During the Civil War he took part in the attack on Fort Fisher, Jan. 15, 1865, and in the land engagement was wounded four times. In 1891 he was in command of the "Yorktown" at Valparaiso, Chile, during the strained relations with the United States; commanded the "Iowa" in the action off Santiago in 1898; commissioned rear admiral in 1901; commanded the great battleship fleet from Hampton Roads to San Francisco in 1907. He died Jan. 3, 1912.

Evans, Thomas Williams, an American dentist; born in Philadelphia, Pa., Dec. 23, 1823; went to Paris, in 1848, rescued the Empress Eugenie from the mob Sept. 4, 1870; bequeathed $6,000,000 for a Museum and College in Philadelphia. D. 1896.

Evanston, a city in Cook county, Ill.; on Lake Michigan and several railroads; 12 miles N. of Chicago, with which it has many business interests in common; is best known as the seat of Northwestern University (M. E.), Garrett Biblical Institute, and the headquarters of the National Woman's Christian Temperance Union. Pop. (1920) 37,215.

Evansville, city and capital of Vanderburg county, Ind.; on the Ohio river and the Illinois Central and other railroads; 160 miles S. W. of Indianapolis; is in a tobacco and coal mining section; has a large trade in tobacco and hardwood lumber; is an important railroad and manufacturing city; and contains a United States Marine Hospital, Southern Indiana Hospital for the Insane, County Orphan Asylum, and Willard Library and Art Gallery. Pop. (1920) 85,267.

Evarts, William Maxwell, an American lawyer; born in Boston, Mass., Feb. 6, 1818; was graduated at Yale College in 1837 and studied at the Harvard Law School. In 1841 he began the practice of law in New York city; and in 1868 was the principal counsel for President Johnson in his impeachment trial. In 1868–1869 he was Attorney-General of the United States; in 1877 principal counsel for the Republican party before the Electoral Commission on the Hayes-Tilden election returns; in 1877–1881 United States Secretary of State; and

in 1885–1891 United States Senator from New York. He also represented the United States in the Alabama-claims case, and was the principal counsel for Henry Ward Beecher in his defense against the charges preferred by Theodore Tilton. He died in New York, Feb. 2, 1901.

Evelyn, John, an English writer; born in Wotton, Surrey, Oct. 31, 1620. After completing his course at Oxford he studied law at the Middle Temple, visited various parts of the Continent, and in 1659 took the royal side in the civil war. He published numerous works. By far his most important work is his memoirs, comprehending a diary and correspondence, which are interesting contributions to the history of the time. He died in Wotton, Feb. 27, 1706.

Everest, Mount, the highest known mountain in the world, in the Himalayas; 29,002 feet high.

Everett, a city in Middlesex county, Mass.; on the Boston & Maine railroad; 3 miles N. of Boston, of which it is a residential section; has one of the largest chemical plants in the country; manufactures autos, steel and structural iron, druggists' supplies, and hosiery; and contains the Whidden Hospital and the Shute and Parlin Libraries. Pop. (1910) 33,484.

Everett, city, sub-port of entry, and capital of Snohomish county, Wash.; on Possession Sound and the Northern Pacific, Great Northern, and Everett & Monte Cristo railroads; 33 miles N. E. of Seattle; is in an important mining and lumbering section; and has shipyards, iron furnaces, smelting works, and brick, paper and furniture plants. Pop. (1920) 27,614.

Everett, Charles Carroll, clergyman; born in Brunswick, Me., June 19, 1829; was graduated at Bowdoin College, and studied at the University of Berlin. He returned to Bowdoin College, where he was Professor of Modern Languages in 1855–1857. He was ordained pastor of the Independent Congregational Church in 1859; resigned in 1869 to become Professor of Theology in Harvard Divinity School, and was dean of the school from 1879 till his death. He died in Cambridge, Mass., Oct. 17, 1900.

Everett, David, an American writer; born in Princeton, Mass., March 29, 1770; studied law in Boston, and while there wrote for "Russell's Gazette" and a literary paper called the "Nightingale." He wrote the famous lines beginning —

> "You'd scarce expect one of my age
> To speak in public on the stage."

He died in Marietta, O., Dec. 21, 1813.

Everett, Edward, an American statesman; born in Dorchester, Mass., April 11, 1794. After traveling for some years in Germany and England he returned to America in 1819 to occupy the chair of Greek Literature at Harvard. He became editor of the "North American Review," and entering the political world became successively member of Congress, governor of Massachusetts, and minister plenipotentiary to England (1840). In 1845 he was appointed president of Harvard College, and in 1852 Secretary of State. Shortly after he retired to private life.

He was one of America's greatest sons, a vigorous champion of American institutions against English sneers and falsehood, and as earnest a champion of honesty in public affairs. He opposed resolutely the occupation of Indian lands without the consent of the Indians, and to him was chiefly due the preservation of a sound currency in the panic of 1837, and the establishment of the first Board of Education in the United States. A graceful and powerful orator, he was chosen to deliver the oration at Gettysburg, when his noble periods were entirely eclipsed by Lincoln's simple, immortal words. He died in Boston, Jan. 15, 1865.

Everett, William, an American author and educator; youngest son of Edward Everett; born in Watertown, Mass., Oct. 10, 1839. From 1870 to 1877 he was assistant Professor of Latin at Harvard. In 1887 he was master of Adams Academy at Quincy, Mass.; in 1893 was elected to Congress. He died Feb. 16, 1910.

Everglades, a low, marshy tract of country in Southern Florida, inundated with water and interspersed with patches or portions covered with high grass and trees. It is 160 miles long and 60 broad.

Evergreen, a plant that retains its verdure through all the seasons, as the fir, the holly, the laurel, the cedar, the cypress, the juniper, the holm-oak, and many others. Evergreens shed their old leaves in the spring or summer, after the new foliage has been formed, and consequently are verdant through all the winter season.

Eviction, the dispossession of a person from the occupancy of lands or tenements. The term occurs most commonly in connection with the proceedings by which a landlord ejects his tenant for non-payment of rent or on determination of the tenancy.

Evidence, that which makes evident, which enables the mind to see truth. It may be intuitive, i. e., resting on the direct testimony of consciousness, of perception or memory, or on fundamental principles of the human intellect; or it may be demonstrative, i. e., in a strict sense, proofs which establish with certainty as in mathematical science certain conclusions; or it may be probable, under which class are ranked moral evidence, legal evidence, and generally every kind of evidence which, though it may be sufficient to satisfy the mind, is not an absolutely certain and incontrovertible demonstration.

In jurisprudence evidence is classified into that which is direct and positive, and that which is presumptive and circumstantial. The former is that which is proved by some writing containing a positive statement of the facts and binding the party whom it affects; or that which is proved by some witness, who has, and avers himself to have, positive knowledge thereof by means of his senses. Whenever the fact is not so directly and positively established, but is deduced from other facts in evidence, it is presumptive and circumstantial only.

Evidences of Christianity may be divided broadly into two great classes, viz., external evidences, or the body of historical testimonies to the Christian revelation; and internal evidences, or arguments drawn from the nature of Christianity itself as exhibited in its teachings and effects, in favor of its divine origin.

Evil Eye, the power which, according to a superstition, exists in certain persons of exerting an evil influence or fascination on another by a glance from the eyes. Amulets of various forms — the most common are those shaped like horns, like a frog, or like a hand — were worn to counteract its effect, and such devices adopted by way of safeguard, as spitting on the ground or on the breast, showing something ridiculous to the fascinator, dissimulating good fortune, or doing something unpleasant by way of a counter-penance.

Evolution. A few years ago Charles Darwin, an English scientist, died in England. He had spent all of his life studying plants and animals with an idea that he might discover some fundamental laws that governed all the living world. In this he was successful and while some of the conclusions that he arrived at have since been proven inexact, still most of his constructive ideas have been proven true, and form the basis of further scientific progress.

The basic idea of evolution is that what is known as life started from a single cell. We don't know how the cell, this germ of life, came into being, but we know that this one cell must have divided itself into two cells, the two into four and so on up until we reach the many complicated many-celled organisms.

Through millions of years this process has been going on, but the relationship between all living things upon earth, that is, from the simplest form of plant life to that of man, has remained and is uniform enough to be described under one law, that law that we call evolution.

The divergencies among living things is caused by main laws that govern these changes. Thus we have the law of adaptation to environment. A plant or animal, in order to live, must have some means of defense against the innumerable enemies that assail it on every hand. Some means may be called active as the massive strength of the elephant, while others the ability to hide successfully. This last we call protective coloration. Thus in summer the feathers of birds and fur of rabbit are the color of the leaves and wood that hide and protect them. Often in winter, where no such protection exists, we find the color has

been changed to white to correspond with the color of the snow. Plants have the same wonderful adaptation to environment. Those living in a dry country sustain life by developing long roots that reach down far into the ground and so find moisture. The cactus grows thick leaves in order to store up what small amount of water it has been able to gather. Every living thing, with the possible exception of man, becomes thus physically suited to the particular environment in which it is placed. Plants and animals are given the power to reproduce their kind in abundance for the reason that few species of any kind survive, that is, few in comparison with the number that are developed or that are born. Plants and animals born with qualities that fit their environment live, while those that are weaklings die. The qualities that have enabled them to live must be strong ones so the next generation will be born with these attributes. The constant weeding out of weaklings by nature produces new species. There is another process of nature called unitation, which means a greater variation in an offspring. These, too, cause new species to be formed. The laws of evolution (heredity, adaptation to environment, the struggle for existence, etc.) apply as well to man as to plants, but in many instances not to such a noticeable degree.

Organic evolution means the forming of new combinations of the elements of organisms. It does not mean the making of an animal or plant out of nothing—that is a new creation. The science that Darwin started grew from his study of minor changes that take place in plants and animals. He saw how each year weak and ill-adapted plants and animals died or were rather killed off. When he reflected that the process had been going on through countless ages the idea came to him that through this very testing process that adaptability of surviving organisms took place.

Darwin put forth the idea that the theory of organic evolution by natural selection and with it the survival of the fittest. The skillful way in which Darwin enumerated facts to substantiate his theory quickly converted the scientific world and soon led to revolutionary changes in the sum of the world's store of knowledge. Darwin's concise statement of his conception is best expressed by an excerpt from his introduction to his "Origin of Species."

"As many more individuals of each species are born than can possibly survive, and as consequently there is a frequently recurring struggle for existence, it follows that any being, if it vary in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be naturally selected. From the strong principle of inheritance any selected variety will tend to propagate its new and modified form." His statement of the survival of the fittest shows how the organisms of the present moment are the descendents of victors in each separate generation reaching back into remotest time. These struggles for life ever keen, both in vegetable and in animal life, are the incentives of all progress in the natural world. The Darwinian theory is based upon the observed facts that members of any given species are not alike, while their offsprings in turn may be different in many ways from their parents. The data that has been gathered from zoology, botany, physiology and kindred sciences produce overwhelming evidence that the present species of animals and plants have arisen through the modification, from various causes, of many pre-existing species.

The idea of the evolution of organisms so far from originating with Darwin is a most ancient one. Traces of it appear in the writings of the early Greek philosophers, especially Empedocles and Aristotle. Modern philosophers from Bacon onward show an increasing grasp of its conception. In the age immediately preceding Darwin, Buffon, Erasmus Darwin and Lamarck had given it a fairly concrete expression. The Order of the Primates was established by Linnaeus long before the days of Darwin on obvious facts of body likeness. The grading of the primates from bottom to top is, first, the lemurs in several groups, then the New World monkeys, then the Old World monkeys, then the apes, and finally man. At one time the hypothesis of multiple creations was used to explain the observed circumstances.

Agassiz even held that there were eight regions of the earth in which man had been independently created.

But Darwin owed little to these authors who had partly anticipated some of the deductions that he was able to draw in his study of evolution.

He says in his notes, "I happened to read matters on population and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favorable variations would tend to be preserved and unfavorable ones to be destroyed. The result of this would be the formation of a new species. Here then I had at last got a theory by which to work."

According to the evolutionist, man takes his place in the evolutionary scheme just as truly as do the Protozoa, the Amphibia, the reptiles, birds and lower mammals. And it is just here that the evolutionist and the believer in special creation find their widest point of divergence. The evolutionist declares that man belongs to the animal division of life known as the vertebrates and with certain definite characteristics further place him in the subdivision mammalia. It would still be possible that man constituted a separate order and had attributes that he shared with no other animal. But he is unmistakably linked by certain peculiarities of structure and habit to a group of animals called Primates. These include the placental attachments of the unborn young within the parent; the prehensile limbs; the number and structure of the teeth; the number of digits; the superior developemnt of the clavicles; the structure of the eye socket and the possession of two mammary glands for the suckling of the young. As against this are set man's erect carriage; greater brain power; powers of speech and reason. Man's superiority over other Primates rests also upon two things: First, his use of tools and, secondly, upon the expansion of his mental faculties. Anti-evolutionists point to the fact that the theory of evolution fails completely to account for the origin of life. Furthermore, that it is at variance with the Biblical account of creation which declares that God made man in His own image, and constitutes, therefore, a direct attack upon the Bible as an inspired book. In short they claim that the theory of evolution would substitute a man-made theory for the revelation of God replacing the spiritual by the material. The battle over theories that are called evolutionary concerns the substitution of the old idea of special creations by the new idea of progressive changes attached to a geneological succession of individuals. The evolutionary doctrine explains likeness and differences in animal and plant life by various kinds of selection and by various laws of inheritance. In its broadest sense all subscribe to these deductions, none venture to deny the onward march of life from lower to higher forms.

The evolutionist points out that if such gradual steps show clearly the present status of other objects of nature and of animal life, why is it not also true of the development of man, since the progress in The Order of Primates as clearly to them, shows that man, too, is the end of a process.

Ewald, Georg Heinrich August von, a German Orientalist and Biblical critic; born in Gottingen, Nov. 16, 1803. After studying at the university there, in 1827 he became extraordinary, in 1831 ordinary Professor of Theology, and in 1835 Professor of Oriental Languages. In 1837 he lost his chair at Gottingen on account of his protest against the king's abrogation of the liberal constitution, became Professor of Theology at Tubingen, but in 1848 returned to his old chair at Gottingen. When Hanover was annexed by Prussia in 1866 he became a zealous defender of the rights of the ex-king. He died in Gottingen, May 5, 1875.

Ewald, Herman Frederik, a Danish novelist; born in Copenhagen, Dec. 13, 1821.

Ewald, Johannes, a Danish poet; born in Copenhagen in 1743. After studying theology at Copenhagen University he ran away and enlisted in the Prussian service, which he soon deserted for the Austrian. On his return to Copenhagen an elegy which he wrote on the death of Frederick V. of Denmark was received with general admiration, and awoke in himself the consciousness of poetic talent. His

reputation rapidly increased with the publication of his tragedies, his odes and songs. He died in Copenhagen, March 17, 1781.

Ewbank, Thomas, an American scientist; born in Durham co., England, March 11, 1792; in 1836 retired from commercial life for literary and scientific work. He died in New York, Sept. 16, 1870.

Ewell, Benjamin Stoddert, President of William and Mary College, Williamsburg, Va., from 1854 to 1888, and President Emeritus until his death in 1894; was born in Washington, D. C., in 1810. In the Civil War he served as a Confederate colonel.

Ewell, Richard Stoddert, military officer; born in Georgetown, D. C., Feb. 8, 1817; graduated at the United States Military Academy in 1840; served in the cavalry on the frontier, and during the Mexican War with Scott from Vera Cruz to the City of Mexico. At the outbreak of the Civil War he joined the Confederates and took part in the Maryland campaign and in the battles of Bull Run, Gettysburg, and the Wilderness, attaining the rank of Lieutenant-General. He died in 1872.

Ewers, Ezra P., an American military officer; born in New York; entered the army in January, 1862; was promoted 2d lieutenant in 1863; 1st lieutenant in 1864; captain of the 37th Infantry in 1866; transferred to the 5th Infantry in 1869; promoted major of the 9th Infantry in 1893; lieutenant-colonel in 1897; commissioned Brigadier-General of volunteers in December, 1898; and placed in command of the troops in San Luis, Cuba. During the Civil War he distinguished himself at Hoover's Gap and Chattanooga. D. Jan. 18, 1912.

Ewing, Hugh Boyle, an American soldier; born in Lancaster, O., Oct. 31, 1826; son of Thomas Ewing; educated at the United States Military Academy. He served through the Civil War, became brevet Major-General, was U. S. Minister to The Hague, 1866-1870, and died June 30, 1905.

Ewing, Thomas, an American statesman; born near West Liberty, Va., Dec. 28, 1789; was graduated at the Ohio University in Athens in 1815; admitted to the bar in 1816; and practised law for 15 years. He was a United States Senator from Ohio in 1831–1837 and 1850–1851; Secretary of the Treasury under President Harrison in 1841; and Secretary of the Interior under President Taylor in 1849. In the United States Supreme Court he ranked among the foremost lawyers of the nation. He died in Lancaster, O., Oct. 26, 1871.

Excavator, an apparatus used in making docks, railway cuttings, canals, etc.

Excellency, a title given to ambassadors and plenipotentiaries, governors of colonies, the President of the United States, etc.

Excelsior Geyser, a geyser in the Yellowstone National Park, and one of the largest in the world. It has thrown a column of water to a height of 200 to 300 feet.

Exchange, the act of exchanging, or giving one thing for another; or that which is so given. In commerce, a place where merchants, brokers, etc., meet to transact business; generally contracted into 'Change. The institution of exchanges dates from the 16th century. They originated in the important trading cities of Italy, Germany, and the Netherlands, from which last-named country they were introduced into England. In some exchanges only a special class of business is transacted. Thus there are stock exchanges, corn exchanges, coal exchanges, cotton exchanges, etc.

Course of exchange, the current price of a bill of exchange at any one place as compared with what it is at another. If for $500 at one place exactly $500 at the other must be paid, then the course of exchange between the two places is at par; if more must be paid at the second place, then it is above par at the other; if less, it is below it. Arbitration of exchange, the operation of converting the currency of any country into that of a second one by means of other currencies intervening between the two. In arithmetic, a rule for ascertaining how much of the money of one country is equivalent in value to a given amount of that of another. In law, it is a mutual grant of equal interests, in consideration the one for the other.

Exchequer, in Great Britain the department which deals with the moneys received and paid on behalf of the public services of the country. The public revenues are paid into the Bank of England (or of Ireland) to account of the exchequer, and these receipts as well as the necessary payments for the public service are under the supervision of an important official called the controller and auditor-general, the payments being granted by him on receipt of the proper orders proceeding through the treasury. The public accounts are also audited in his department.

Exchequer, Court of, an ancient English court of record, established by William the Conqueror, and intended principally for the care and collection of the royal revenues. It was one of the supreme courts of common law, and is said to derive its name from the chequered cloth, resembling a chess-board, on which the sums were marked and scored with counters. The judges of this court were the chief baron and five junior or puisne barons. This court has been merged in the High Court of Justice. In Canada there is a Court of Exchequer for the Dominion.

Exchequer Bills, bills of credit issued by authority of the British Parliament as a means of raising money for temporary purposes. They are of various sums — £100 or any multiple of £100 — and bear interest (generally from 1½d. to 2½d. per diem on £100) according to a rate fixed at the beginning of each year. These bills pass from hand to hand as money, and form a principal part of the public unfunded debt of Great Britain. Exchequer bonds are similar, but they run for a definite number of years at a fixed rate of interest.

Excommunication, a word denoting exclusion, whether temporary or permanent, from fellowship in religious rites, involving also, where participation in such rites is required in the civil order, privation of the rights of citizenship. It is not peculiar to the Biblical religions, but is found in most of the systematized cults, whatever their origin.

The early Christian excommunication was primarily, as the word denotes, exclusion from communion in the eucharist and the agape, or love-feast, including also suspension from office in the case of clerical offenders; and it was distinguished as major and minor, each having various degrees of severity. Various civil disabilities attended excommunication.

Islam forms an exception to the almost universal incidence of the practice of excommunication. Under the Moslem code every religious offense carries with it a temporal penalty, such as fines, scourging, stoning, or other mode of death, and only in this last manner can an offender be cut off from the congregation.

Exegesis, the exposition or interpretation of the Scriptures. Dogmatic exegesis is based upon an accepted system of doctrine. Grammatico-historical exegesis explains the Scriptures from the original languages.

Exfoliation, in surgery, the process by which a thin layer or scale of dead bone separates from the sound part.

Exmouth, Edward Pellew, Viscount, a British naval officer; born in 1757. He went to sea at the age of 13, served as midshipman in the "Blonde" frigate during the American war, and greatly distinguished himself at Lake Champlain. In 1804 he was sent to take the chief command on the East India station, in the "Culloden," and here he remained till 1809, when he had attained the rank of vice-admiral. In 1814 he was made Baron Exmouth with a pension of £2,000 per annum. In 1816 he proceeded to Algiers in command of the combined fleet of 25 English and Dutch ships to enforce the terms of a treaty regarding the abolition of Christian slavery which the dey had violated. He bombarded the city for seven hours, and inflicted such immense damage that the dey consented to every demand. Twelve hundred Christian slaves were by this exploit restored to liberty. Lord Exmouth was raised to the dignity of a viscount for this service. In 1821 he retired to private life, and he died Jan. 23, 1833.

Exodus, a departure. The name given to the second book of the Old Testament, which is believed to contain the oldest of the Mosaic writings.

The contents of the book are partly historical, describing the departure of the Israelites from Egypt, and partly legislative, describing the promulgation of the Sinaitic law.

Exophthalmic Goiter, enlargement with turgescence of the thyroid gland. See CRETINISM; GOITER.

Exorcism, the casting out of evil spirits by certain forms of words or ceremonies. An opinion prevailed in the ancient Church that certain persons, those particularly who were afflicted with madness and epilepsy, were possessed by evil spirits. Over such persons forms of conjuration were pronounced, and this act was called exorcism. There were even certain men who made this a regular profession, and who were called exorcists. Exorcism still makes a part of the beliefs of some Churches. In the Roman Catholic Church exorcist is one of the inferior orders of the clergy.

Exotic, belonging to foreign countries; a term used especially of plants. Exotic plants are such as belong to a soil and climate entirely different from the place where they are raised. They are nearly always greenhouse or hothouse plants.

Expansion, in physics, is the enlargement or increase in the bulk of bodies, in consequence of a change in their temperature. This is one of the most general effects of heat, being common to all bodies whatever, whether solid or fluid. It varies greatly in different bodies.

Expatriation, the act or state of banishment from one's native country; also the voluntary renunciation of the rights and liabilities of citizenship in one country to become the citizen or subject of another.

Expectation, in the doctrine of chances, the value of any prospect of prize or property depending on the happening of some uncertain event. A sum of money in expectation on a certain event has a determinate value before that event happens. If the chances of receiving or not receiving $100, when an event arrives, are equal; then, before the arrival of the event the expectation is worth half the money. Expectation of life, the probable duration of the life of individuals of any given age. A rough estimate of anyone's expxectation of life is made by calculating two-thirds of the difference between his or her present age and 80.

Expectation Week, the week, or rather the nine days, which elapsed between the ascension of Jesus and the Pentecostal effusion of the Spirit, because during that interval the apostles and early Church waited in expectation that the promised Comforter would come.

Expectorants, in pharmacy, medicines which favor the discharge of mucus from the windpipe and air-passages of the lungs. Such are the stimulating gums and resins, squills, ipecacuanha, and the like.

Expert, a person eminently skilled in any particular branch or profession; specifically, a scientific or professional witness who gives evidence on matters connected with his profession, as an analytical chemist or a person skilled in handwriting.

Expilly, Jean Charles Marie, a French historian; born in Salon, Bouches-du-Rhone, Sept. 8, 1814. The years 1852–1858 he spent in South America studying the state of the country, writings on which gave him great distinction. He died in Tain, Drome, Feb. 12, 1886.

Explosion, a sudden bursting, generally due to the rapid production of gaseous matter from solids or liquids. Thus the explosion of gunpowder is due to the sudden formation and expansion of gases into which the powder is converted by chemical agency. Explosions are often caused by the elastic force of steam confined in boilers, etc.

Explosives, compounds practically available in war, for mining and in general use for the sudden development of force. The majority of explosives contain oxygen, nitrogen, or chlorine, and especially carbonic acid, which is liberated in immense quantities and in an almost inconceivably short space of time. They comprise gunpowder, nitroglycerine, dynamite, gun-cotton, etc.

Ex Post Facto Law, one that takes effect retroactively; that is, on transactions which took place before its passage. The provision in the Constitution of the United States, Article

I, section 9, clause 3, that "no . . . ex post facto law shall be passed," has been interpreted to refer only to crimes, and in that sense the words are commonly used. The following have been decided to come within the scope of the phrase: Every law that makes an action done before its passage, and innocent when done, criminal, and punishes such action; every law that aggravates a crime, or makes it greater than when committed; every law that changes the nature of the punishment, or makes it greater than at the time the act was committed; every law that alters the rules of evidence so as to make it easier to convict the offender; every law that, while not avowedly relating to crimes, in effect imposes a penalty or the deprivation of a right; every law that deprives persons accused of crime of some lawful protection to which they have become entitled, as a former acquittal. Such laws are therefore unconstitutional so far as they apply to acts committed before their passage.

Express, in the United States, a system organized for the speedy transmission of parcels or merchandise of any kind, and their safe delivery in good condition. It originated in the trip made from Boston to New York by William Frederick Harnden (1813–1845), the first "express-package carrier," March 4, 1839. The project recommending itself to business men, competing companies sprang up rapidly, and express lines were established in all directions. Adams & Co.'s California express was started in 1849; Wells, Fargo & Co.'s in 1852; the American-European Co. was created in 1855. As railways extended, the early "pony express" disappeared, and individual companies now have contracts with the several railway companies, their business over these routes being held to be entitled to the protection of the courts against any efforts to dispossess them. Many of the rival companies were amalagamated, and most of the successful concerns are now joint-stock institutions, the industry employing capital aggregating more than $50,000,000.

Extenuating Circumstances, in legal practice, those circumstances, in connection either with the position of the prisoner or with the act alone, which are taken into consideration by the court in mitigation of the punishment. The previous good character of the person convicted may always be proved as a circumstance giving him some claim to leniency of punishment. Youth, and defective mental power will always be considered in determining the severity of a sentence. Drunkenness, when voluntary, is not held an extenuating circumstance, but if a man is made drunk by the fradulent administration of drugs, and while under their influence kills another, not knowing what he does, the act is not a crime. It is a good excuse for persons charged with crime that they have been compelled by others by threats of death or great violence to do the criminal act. Ignorance of the law is no excuse for an offense. Nor, in general, will ignorance of facts be a good excuse, though in particular circumstances it might form a valid defense.

Exterritoriality, or **Extraterritoriality,** in international law, the privilege of freedom accorded foreigners from local territorial jurisdiction, in favor of government by their own laws. The arrangement is generally guaranteed by treaty. The United States has such treaties with China, Korea, Persia, Turkey, and formerly had one with Japan (see JAPAN).

Extradition, the act by which a person accused of a crime is given up by the government in whose territories he has taken refuge to the government of which he is a subject. Conventions have been entered into by the United States with almost all civilized countries for the apprehension and extradition of persons charged with particular offenses, especially those of the most heinous stamp.

Extravaganza, in music, the drama, etc., a species of composition designed to produce effect by its wild irregularity and incoherence; differing from a burlesque in being an original composition and not a mere travesty.

Extravasation, an escape of some fluid, as blood or urine, from the vessel containing it.

Extreme Unction, since the 12th century, one of the seven sacraments of the Roman Catholic Church. It is performed in cases of mortal disease

by anointing in the form of a cross, the eyes, ears, nose, and mouth.

Eyck, Hubert van, a noted Flemish painter; born in Maaseyck, Belgium, in 1366. It has been claimed that he and his brother Jan were the inventors of oil painting. For transparent and brilliant coloring and minute finish their works have never been surpassed. The only painting that can now certainly be assigned to Hubert is the altar-piece with folding doors, "The Adoration of the Lamb," begun by him and finished by Jan, presented to the Cathedral of St. Bavon. Hubert died in Ghent, Flanders, Sept. 18, 1426.

Eyck, Jan van, a Flemish painter, brother of Hubert; born in Maaseyck, about 1386. He was court painter of Philip the Good, Duke of Burgundy, and practised his art chiefly at Bruges, where he died July 9, 1440.

Eye. The visual apparatus consists of the globe of the eye, of the muscles which move it, and of its appendages, which are the eyelids and eyebrows, and the lachrymal apparatus. The eye in its different parts is subject to various diseases and affections, some of them common to other parts of the body, others peculiar to itself. When the transparency of the cornea, the crystalline lens, or any of the humors, is destroyed, either partially or entirely, then will partial or total blindness follow, since no image can be formed upon the retina; but although all the humors and the cornea be perfectly transparent, and retain their proper forms, which is likewise necessary to distinct vision, yet, from weakness or inactivity of the optic nerve, or injury of the central ganglia with which it is connected, weakness of sight or total blindness may ensue. To the first class belong those diseases called cataracts, ophthalmia, etc., and to the second amaurosis, or gutta serena, etc. Although a person may not be under the influence of any of these diseases, yet defective vision may arise from the eyeball being so elongated that an image is formed before the rays reach the retina (a defect known as short sight or myopia), in which case distinct vision will be procured by interposing a concave lens between the eye and the object of such a curvature as shall cause the rays that pass through the crystalline lens to meet on the retina; or the eyeball may be short, so that the opposite condition arises, a defect which is corrected by convex lenses.

Eylau, a town of 3,546 inhabitants, 23 miles S. of Konigsberg by rail. Here Napoleon encountered the allies — Russians and Prussians — under Benningsen, Feb. 8, 1807. Darkness came on while the contest was still undecided; but as Napoleon had a considerable force of fresh troops close at hand, the allies retired during the night on Konigsberg. Their loss is estimated at about 20,000; that of the French at 10,000, but must have been considerably greater. This place is called Preussisch-Eylau, to distinguish it from Deutsch-Eylau, a town of 4,574 inhabitants, 89 miles N. E. of Bromberg.

Eyma, Louis Xavier, a French writer born in St. Pierre, Martinique, West Indies, Oct. 16, 1816. After a tour through the United States, he returned to France and published several works dealing with America. He died in Paris, March 29, 1876.

Eyre, Edward John, an Australian explorer and colonial governor; born in August, 1815. He emigrated to Australia at the age of 17. In 1840 he failed in an attempt to explore the region between South and Western Australia, though he discovered Lake Torrens. The task which he had set himself, however, he accomplished in 1841. In 1846 he became lieutenant-governor of New Zealand, and in 1852 of St. Vincent in the West Indies. In 1862 he was appointed governor of Jamaica, where in 1865 negro disturbances broke out. The outbreak was suppressed with sharp, stern severity, Eyre was recalled. On his return he was prosecuted; and eventually in 1872 the government refunded to Eyre the costs of his defense, the prosecution not being sustained. After his recall he lived in retirement. He died Dec. 1, 1901.

Eyra, in Scandinavian mythology, the physician of the gods.

Ezekiel, one of the greater prophets to whom is attributed one of the larger prophetic books of the Old Testament, the visions and utterances which it

contains being expressly attributed, in the work itself, to Ezekiel. He was the son of Buzi, a priest (i: 3). He was carried captive, in the time of Jehoiachin, 595 B. C., about 11 years before the destruction of Jerusalem under Zedekiah (xl: 1). His prophecies are mostly in chronological order, those excepted which are launched against foreign nations. There is no direct quotation from Ezekiel in the New Testament, but there are a few allusions to his utterances, especially in the Book of Revelation, which, in the concluding portion, distinctly looks back to the temple arrangements prophesied in the last chapters of Ezekiel. The genuineness and authenticity of the prophecies of Ezekiel have not been seriously impugned either in the Jewish or Christian Church.

Ezra, a man of Judah (I Chron. iv: 17). Also the head of one of the 22 courses of priests who returned from captivity along with Zerubbabel, the civil governor of the exiles, and Jeshua, their high priest Neh. xii: 2). He is called in Neh. 2 Azariah. Also the celebrated scribe and priest who in the year B. C. 459 led the second expedition of Jews from Babylon to Palestine. He was descended from Phineas, the son Aaron, and was probably the great-grandson of Seraiah, whose execution is recorded (II Kings 25: 18-21). His pedigree would give him a position of influence with the Jews in Babylon, and Josephus says he was their High Priest. It is not stated in the Bible how he obtained influence with the Persian king Artaxerxes Longimanus, but he was evidently in high repute in the court of that monarch. He was intrusted by the king with a large sum of money and treasure with which to convey his expedition to Palestine and rebuild the Temple. On his arrival, he commenced a religious and social reformation. Little is known of his subsequent life, but tradition makes him the president of the great synagogue, the maker of the canon of the Old Testament and the author of the books of Chronicles and Esther as well as of the book that bears his own name. The composition of the 119th Psalm which breathes an intense love of the law, which was characteristic of Ezra, is attributed to him. The Talmudic statement of his death is that it occurred in his 120th year while he was on a journey to meet the king at Susa. A tomb said to be his is shown on the banks of the Tigris near its junction with the Euphrates.

Ezra, Book of, an Old Testament book, arranged in the English Bible between II Chronicles and Nehemiah. It is evidently a continuation of the second book of Chronicles and there is no reason to doubt that it was the work of Ezra. It is composed of two portions, the first of which closing with the sixth chapter, narrates the history of the returned Jews and the rebuilding of the Temple. The second portion is a record of Ezra's own work of reformation during a period of about thirteen months. Considerable portions of the book have evidently been lost. The period which the book spans is about 80 years, viz., from the first of Cyrus, 563 B. C., to the eighth of Artaxerxes Longimanus, 456 B. C.; the reigns embraced are those of Cyrus, Cambyses, Smerdis, Darius Hystaspis, Xerxes, and part of that of Artaxerxes. The critics, however, find indications of revision of a later date.

F

F is the sixth letter of the English and other alphabets of Western Europe, as it was also in the Latin alphabet, from which they are derived.

Faber, Frederick William, an English hymn-writer; born in Calverley, England, June 28, 1814. He was long in the Anglican priesthood, and wrote hymns of singular sweetness and spirituality; going over at last to Rome and voicing his new fervor in much sacred song. Among his most familiar hymns are: "Hark, hark, my soul!"; "O Paradise! O Paradise!"; "There's a Wideness in God's Mercy"; etc. He died in the Oratory, Brompton, Sept. 26, 1863.

Fabian, belonging or relating to the famous Roman family, or clan, the Fabian, used especially in the military phrase Fabian tactics, to denote tactics the chief point of which is to weary and exhaust the enemy. By such measures Fabius Maximus greatly harassed Hannibal in the Second Punic War.

Fabian Society, a socialist organization of literary origin, founded by Thomas Davidson, an American, in London, in 1883. The "Fabian Essays" propagates its views.

Fabius, the name of one of the oldest and most famous families of Rome, every member of which was massacred at Cremera, 478 B. C., except Quintus Fabius Vibulanus, who became one of the decemvirate. After him are mentioned Fabius Ambustus, dictator, 350 B. C. Fabius Rullianus, to whose name Maximus was added, twice dictator, conqueror of the Samnites and Etruscans, 323–280 B. C. Fabius Gurges, son of the preceding, consul of Rome. Fabius Pictor, the first writer of Roman history, 3d century B. C. Fabius Maximus Verrucosus, considered the greatest of his family, surnamed "Cunctator," "the Delayer," from his system of warfare. Died 203 B. C.

Fable, in literature, a term applied originally to every imaginative tale, but confined in modern use to short stories, either in prose or verse, which are meant to inculcate a moral lesson in a pleasant garb.

The oldest fables are supposed to be the Oriental; among these the Indian fables of Pilpay or Bidpai, and the fables of the Arabian Lokman, are celebrated. Æsop is well known among the Greeks, and was imitated by Phædrus among the Latin writers. Bodmer has published German fables of the time of the Minnesingers. The first known German fabulist is Stricker, who belongs to the first half of the 13th century. The most successful of German fable writers is undoubtedly Lessing. In the 17th century Gay among English, and La Fontaine among the French were distinguished. Among the most interesting modern productions in this department of literature the fables of the Russian, Ivan Kriloff, deserve special mention. In America George Ade and others have made admirable use of the fable in the arraignment of social follies and political wrongs.

Fabre, Amant Joseph, a French author; born in Rodez, France, Dec. 10, 1842 (or 1843). A drama, "Joan of Arc," made his name most widely known; his other works being largely represented by such books as "Washington, the Liberator of America."

Fabre, Ferdinand, a French novelist; born in Bedarieux, France, in 1830. He died Feb. 16, 1898.

Fabre, Jean Raymond Auguste, a French poet, brother of Ferdinand; born in Jaujac, France, June 24, 1792. He died in Paris Oct. 23, 1839.

Fabre d'Eglantine, Philippe Francois Nazaire, a French poet; born in Carcassonne, France, Dec. 28, 1755. The "Eglantine" denotes the prize, a golden wild rose, which he won in the "floral plays" at Toulouse. He was guillotined in Paris, April 5, 1794.

Fabriano, Gentile da, an Italian painter; born in Fabriano, Italy, about 1370. He made great advances, both in the theory and practice of his art, beyond his predecessors, and was named "The Master of Masters." Many of Fabriano's best works have perished; among them his famous altar piece in the church of San Niccolo. France. He died in Rome about 1450.

Facade, the face or front of any building of importance. It may be applied to any side of a large quadrangular building embellished with sufficiently striking architectural features, but it is usually confined to the principal front, in which the chief entrance is most frequently, if not always, situated.

Facetiæ, humorous sayings, witticisms, jests. There have been many collections of such.

Facial Angle, an anatomical term for the angle contained between two imaginary lines, one from the most prominent part of the forehead to the anterior extremity of the alveolar process of the upper jaw, opposite to the incisor teeth; the other from the external auditory foramen to the same point, serving to measure the elevation of the forehead. This angle is of great service in ethnology, but its magnitude is not an infallible criterion of the intellectual capacity of an individual.

Facial Nerve, a nerve of the seventh pair of cranial nerves, a motor nerve which supplies the muscles of expression on either side of the face. Paralysis of this nerve produces facial paralysis, the result of which is that the affected side is smooth, unwrinkled and motionless, the eyelids are wide open and cannot be closed, and the muscles of the sound side drag the mouth in that direction.

Facies, the anterior part of the skull, the face; in geology and zoölogy the general aspect of an assembly of animals or plants, which is characteristic of a particular locality or period of the earth's history.

Faction, a clan, a society, a party, in Church or State, especially a party in a state combined or acting in union in opposition to the established government; usually applied to a minority, but it may be applied to a majority; a party combined to promote their own views or purposes even at the expense of order and the public good.

Faculty. In the United States, the term faculty indicates the body of persons who are intrusted with the government and instruction of a university or college as a whole, comprising the president, professors, and tutors. It is also used for the body of masters and professors of each of the several departments of instruction in a university; as, the law faculty, etc.

Fadienskoi, a Russian island of the Arctic Ocean, in the province of Yakatsk. It is 100 miles long by about 40 broad, and is inhabited.

Faed, Thomas, a Scotch artist; born in Kirkcudbright in 1826; was educated at the School of Design in Edinburgh. He adopted a style which became very popular, his paintings being from familiar scenes of home life. He died in London, Aug. 17, 1900.

Faenza, a city of Italy, 20 miles from Ravenna. It was once well known for its manufacture of colored and glazed earthenware called Faience. Pop. (1911) 40,164.

Fagot, a bundle of sticks or small branches of trees bound together. In times of religious persecution, the fagot was a badge worn on the sleeve of the upper garment of such persons as had abjured heresy, being put on after the person had publicly carried a fagot to some appointed place, by way of penance. To leave off the wearing of this badge was sometimes regarded as a sign of apostasy. Among military men in England, fagots were persons hired by officers whose companies were not full, to hide the de-

ficiencies of the company. Fagot votes, in English politics, were votes created by the partitioning of an estate into numerous small tenements, which were let to persons at an almost nominal rent, upon condition of voting at elections, according to the dictates of the lessor.

Faguet, Emile, a French critic; born in La Roche-sur-Yon, France, Dec. 17, 1847; d. June 7, 1916.

Fagus, the beech, a genus of trees, one of the tallest and most majestic trees of the forest, abounding in the Middle, Western, and Southern States, in deep, moist soil, and in a cool atmosphere. The trunks of the trees are frequently 8 to 11 feet in circumference, and more than 100 feet high. The roots do not descend deeply into the soil, but extend to a considerable distance close under the surface. There are several beautiful varieties in cultivation, with purple foliage, silver foliage, etc.

Fahrenheit, Gabriel Daniel, a German natural philosopher; born in Dantzic, Prussia, May 14, 1686. He was a maker of scientific instruments, and in 1720 introduced the use of mercury instead of spirits of wine in the construction of the thermometer. He died in 1736.

Faidherbe, Louis Leon Cesar, a French military officer; born in Lille, France, June 3, 1818. He published books on the language, geography, and archæology of Northern Africa. He died in Paris, Sept. 29, 1889.

Faience, a fine kind of pottery originally made in imitation of majolica, and afterward with characteristics of its own. This ware, having passed through the fire, preserves a certain amount of porosity, and is then covered with a glaze.

Faillon, Michel Etienne, a French historical writer; born in Tarascon, France, in 1799. He was a Sulpician and visited Canada in 1854 to investigate the houses of that order. He wrote a comprehensive history of the French in Canada. He died in Paris, Oct 25, 1870.

Fainéants, or **Do-nothing Kings,** the name given in French history to some of the Merovingian sovereigns, who were the puppets of the mayors of the palace.

Fainting, syncope, a sudden suspension of the heart's action, of respiration, internal and external sensation, and voluntary motion. This morbid state generally continues from a few seconds to a minute, but in some cases it lasts for hours and even days. Organic and other diseases of the heart, the pericardium, and the large arteries, or malformation of these parts tend to produce, or at least to predispose, to syncope. It can be produced by pain, loss of blood, other evacuations when too copious, objects offensive to sight or smell, the impure air generated in crowded public buildings, etc. It rarely ends in death. It is more common in females than in men, and recovery is more rapid in the recumbent position.

Fair, a larger species of market, which is held at more distant intervals, and sometimes devoted to one species of merchandise, sometimes to several. In the earlier stages of society, and in inland countries, where the facilities for commerce are comparatively circumscribed, the bringing together of commodities and dealers at certain times and in convenient places is of the utmost importance; and for this purpose various privileges have been annexed to fairs, and numerous facilities afforded for the disposal of property in them. The great fair of Nijni-Novgorod, in Russia, is the most important in Europe, being frequented by buyers and sellers from different parts of Europe and Northern and Central Asia. Another celebrated Russian fair is held at Kiachta, on the Chinese frontier, where the greater part of the commerce between the Chinese and Russian empires is transacted. A large fair is held at Mecca during the resort of pilgrims to that place. In the United States, fairs for charitable and religious purposes are frequently held in all parts of the country, at which a great variety of articles, collected by donation or purchase, are exposed for sale. Important fairs for the competitive exhibition of live-stock and various industrial products are held by numerous organizations throughout the different states. These are merely competitive exhibitions of animal and industrial products, and have no commercial character. Exhibitions of wide

scope and elaborate detail, and of national or international character, are known as world's fairs or expositions.

Fairbairn, Sir William, a Scotch civil engineer; born in Kelso, Scotland, Feb. 19, 1789; entered business in Manchester, England, in 1817. He constructed the first iron ship in England and afterward his firm built over 100 iron vessels. He was associated with Robert Stephenson in designing and building the great tubular bridge over Menai Strait. He died Aug. 18, 1874.

Fairbank, Colvin, an American clergyman; born in Pike, N. Y., Nov. 3, 1816; was graduated at Oberlin College in 1844. He was an ardent abolitionist, and during 1837–1839, aided 23 slaves to escape across the Ohio river. In 1843 he raised $2,275 to secure the liberty of a nearly white slave girl who was to be sold at auction at Lexington, Ky. Later he was detected in violation of the Fugitive Slave Law, and sentenced to 15 years' imprisonment at Frankfort, where he was cruelly treated. In 1864 he was set at liberty after spending more than 17 years in jail. He died in Angelica, N. Y., Oct. 12, 1898.

Fairbanks, Charles Warren, an American Vice-President; was born on a farm in Union Co., Ohio, May 11, 1852. He graduated at Ohio Wesleyan University in 1872; became a lawyer at Indianapolis; in 1892 was chairman of the Republican State Convention; elected United States Senator for the terms of 1897–1903 and 1903–9; elected Vice-President on the ticket with Theodore Roosevelt in 1904. Died, 1918.

Fairbanks, Douglas, born 1883. An American actor. His first stage appearance took place in 1901 and he soon achieved great success. Turning to motion pictures he soon became the most successful screen actor of his day. His great successes have been "Mark of Zerra," "The Three Musketeers," "Robin Hood" and the "Thief of Bagdad." In 1920 he married Mary Pickford, the motion picture star.

Fairbanks, Thaddeus, inventor of the platform scales and other labor-savers; born in Brimfield, Mass., 1796; died 1886.

Fairchild, Charles Stebbins, an American financier; born in Cazenovia, N. Y., April 30, 1842; graduated at Harvard University; admitted to the bar; became deputy attorney-general of New York, and attorney-general. After spending some time in Europe he settled in New York city, where he practised law till 1885, when he was appointed by President Cleveland Assistant Secretary of the Treasury, an office he held till 1887, when he succeeded Secretary Manning. Subsequently he became president of the New York Security and Trust Company, member of the Monetary Commission of 1897, etc.

Fairchild, Herman Le Roy, an American educator; born in Montrose, Pa., April 29, 1850; graduated at Cornell University; taught for two years at Kingston, Pa.; spent several years in scentific work in New York city; became president of the Rochester Academy of Science in 1889, secretary of the Geological Society of America in 1890, general secretary in 1894, and vice-president in 1898.

Fairchild, James Harris, an American educator; born in Stockbridge, Mass., Nov. 25, 1817. He was elected president of Oberlin College in 1866, after a service of 26 years as tutor, Professor of Languages, of Mathematics, and of Moral Philosophy and Theology. He died in 1902.

Fairchild, Lucius, an American military officer; born in Kent, O., Dec. 27, 1831; removed to Wisconsin in 1846, but returned in 1855. At the beginning of the Civil War he enlisted as a private and was soon made captain. He led the charge up Seminary Hill at Gettysburg, where he lost his left arm. He was promoted Brigadier-General in 1863, but resigned to serve as Secretary of State of Wisconsin. He was afterward elected governor. In 1886 he was chosen commander-in-chief of the Grand Army of the Republic. He died in Madison, Wis., May 23, 1896.

Fairfax, Donald McNeill, an American naval officer; born in Virginia, March 19, 1821; was appointed a midshipman in the navy, and rose to the rank of commander. During the Mexican War he participated in the capture of Mazatlan and Lower

California. In 1861 he had personal charge of the transfer of Messrs. Mason and Slidell and their secretaries from the "Trent," a British mail ship, to the "San Jacinto." He later took part in the chief naval operations in Charleston harbor; was promoted rear-admiral, July 11, 1880; and retired Sept. 30, 1881. He died in Hagerstown, Md., Jan. 10, 1894.

Fairfax, Thomas, Lord, an English military officer; born in Denton, England, Jan. 17, 1611. He was the eldest son of Ferdinand, Lord Fairfax. On the first breaking out of the civil discontents, following the example of his father, Fairfax embraced the popular side, and ranged himself as one of the firmest opponents of the royal party. On the commencement of hostilities he was commissioned general under his father, who was made commander in the North. After the passing of the "Self-denying ordinance," Fairfax was appointed general, conjointly with Cromwell. He and Skipton commanded the main body of the Parliamentary army at the battle of Naseby. On the Restoration he withdrew altogether from active life, retiring to his home in the country. He wrote "Short Memorials" of his life, etc. He died near York, England, Nov. 12, 1671.

Fairfax, Thomas, 6th Baron of Cameron; born in England in 1691; was educated at Oxford. Disappointed in England, he came to America and settled in Virginia. There in the midst of 10,000 acres of land he built an unpretentious lodge in which he lived a solitary and secluded life. It was there that Washington first met him. Between the two there sprang up a warm friendship. He died at his lodge, Greenway Court, in Frederick co., Va., Dec. 12, 1782.

JOHN CONTEE (1830–1900), 11th Baron, was a physician, and made no claim to the title. ALBERT KIRBY, 12th Baron, born in Prince George county, Md., June 23, 1870; claimed the title and was confirmed in it in 1908.

Fairfield, a town and port of entry in Fairfield co., Conn., on Long Island Sound, 52 miles N. E. of New York. It contains a stone powder house and four other buildings constructed during the Revolutionary period. The town was founded in 1639. In 1779 it was burned by Governor Tryon. Pop. (1890) 3,868; (1900) 4,489; (1910) 6,134; (1920) 11,476.

Fairfield, Sumner Lincoln, an American author; born in Warwick, Mass., June 25, 1803. He began the publication of the "North American Magazine" in 1833. He died in New Orleans, La., March 6, 1844.

Fair Haven, a town in Bristol co., Mass.; on Buzzard's bay, at the mouth of the Acushnet river, 60 miles S. of Boston. The British were here repulsed by Maj. Israel Fearing on Sept. 7, 1778. Pop. (1920) 7,291.

Fair Isle, a small island in the North Atlantic, lying between the Shetland and Orkney Isles, 22 miles from Sumburgh Head. It is 4 miles long by a breadth of 2½. Here (1588) the Duke of Medina, admiral of the Spanish Armada, was shipwrecked.

Fair Trade, an expression used by certain persons who, professing to be free traders, would still tax goods imported from any country which refuses to accept the principles of free trade. Free traders consider this view as protectionist. The issue is now very prominent in England owing to the open stand of Joseph Chamberlain in favor of "fair trade," and his resignation from the Cabinet on account of that advocacy.

Fairy, a fay; an imaginary being or spirit, supposed to assume a human form, dance in meadows, steal infants, and play a variety of pranks; an enchantress. The fairy superstition belongs to modern Europe. We find nothing like it among the idolatries of the heathen referred to in Scripture. In classical mythology there is nothing nearer to it than the nymph of the fountain or grove among the Greeks. The pure fairy tales first became popular in the latter part of the 17th century, and are more extensive and popular in Germany than in any other country at the present time.

Fairy Rings, or **Circles,** rings occasionally observed in pastures, and usually attributed by the peasantry of Western Europe to the dancing of the fairies. They are occasioned by the growth of certain kinds of fungi

which, proceeding outward from a center, render the soil for a time unfitted for the nourishment of grass.

Faith, that assent or credence which we give to the declaration or promise of another, on the authority of the person who makes it. The term faith is used in theology for the assent of the mind to the truth of what has been revealed to us in the Holy Scriptures; more particularly that living reception of truth by the heart by which we see our sinfulness in the sight of God and are led to flee to Christ for salvation.

Faith Cure, a practice of curing disease without medicine, by arousing the hope and belief of the patient. It must not be confounded with Christian Science, although formerly some religious element was introduced, when it was known variously as Divine Healing, Prayer Cure, etc. In a broad way it covers cures wrought by relics, suggestion, hypnotism, etc., which all tend to excite the hope and expectation of the patient, creating a state of mind that opens the way for the creative processes of nature.

Fakir, a Mohammedan religious mendicant. Among Anglo-Indians, and even among Hindus, the word is often used for a native mendicant of any faith; but specifically it is one of the Mohammedan religion; they are regarded by the unthinking multitude as men of great sanctity. In the United States, fakir is a colloquialism for perambulating street merchants.

Falaise, a town of France, department of Calvados, 15 miles from Caen. The castle, which stands on a precipice, and in which William the Conqueror was born in 1024, is in ruins, with the exception of a tower.

Falb, Rudolf, an Austrian meteorologist; born in Styria, Austria, in 1838; came into prominence as a forecaster of earthquakes. Died in 1903.

Falcon, Faucon, Faucoun, or **Faulcon,** a name of various birds of prey, belonging to the same family as the hawks and eagles. The best-known species is the peregrine falcon, so named from its universal distribution.

Falconet, a little falcon; a name applied to a genus of tiny falcons peculiar to the East Indies. One is found in the Himalayas and Burmese countries. Not one of these little hawks is seven inches in length; they the said to be used by native chiefs for hawking insects being thrown from the hand like a ball. The word was also formerly applied to a small piece of ordnance.

Falconidæ, a family of raptorial birds. They are all remarkable for strong and sharply-hooked bills, and most of them have sharp and powerful talons. In the eagles and falcons these characters are developed in the highest degree. In most, the female is larger than the male, and is much the more powerful bird.

Falconry, the pursuit of game by means of trained falcons or hawks.

Faliero, or **Falieri, Marino,** a Venetian noble; born about 1274, who succeeded Andrew Dandolo as Doge of Venice, in 1354. When he succeeded to the office of doge, he was 80 years of age, and had a young and beautiful wife. He had enemies among the dominant nobility of Venice, and to avenge himself on them he entered into a conspiracy with the plebeians to overturn the government and massacre the patricians. On the night before it was to be carried into effect, the plot was discovered, and Faliero was beheaded April 17, 1355.

Falk, Paul Ludwig Adalbert, a noted German statesman; born in Metschkau, Germany, Aug. 10, 1827; graduated at the Medical Department of the University of Breslau; elected as a Liberal to the Prussian Diet in 1858. When the States of the German empire were consolidated he was appointed to codify the laws of the confederation; he presented to the Prussian Chamber the scheme of ecclesiastical legislation known as the "May Laws," because they were adopted in May, 1873. These laws were administered with such severity that a bitter religious conflict ensued which greatly impeded the development of the empire. He resigned from the ministry July 14, 1879; and was president of the Provincial Court of Westphalia from 1882 till his death, in Hamm, Germany, July 7, 1900.

Falke, Jacob von, a German art critic; born in Ratzeburg, Prussia, June 21, 1825. His administrative capacity placed many art galleries in

Germany and Austria upon a successful basis. He died in Vienna, June 12, 1897.

Falkenhayn, Erich von, a German military officer; born about 1862; served in the Boxer uprising in China; became Prussian Minister of War; succeeded Count von Moltke as Chief of Staff; was credited with responsibility for the Teuton drives against Russia and through Servia; after the failure of the Crown Prince at Verdun, the real war lord was suddenly dismissed by the Kaiser, who had regarded von Falkenhayn as the brains of the German army. Died, 1922.

Falkland Isles, two large islands, with a number of smaller ones surrounding them, in the South Atlantic Ocean. These islands were discovered by Davis in 1592, and came into the possession of the British in 1771. Their appropriation has been at times disputed, and they are still claimed by the Argentine Republic; but since 1833 the British have held uninterrupted occupancy of them. Capital, Stanley; area, 6,500 square miles; pop. (1919) 3,255, consisting mostly of Buenos Ayrean colonists.

Falkner, Roland Post, an American statistician; born in Bridgeport, Conn., April 14, 1866; graduated at the University of Pennsylvania; was instructor in accounting and statistics in the University of Pennsylvania and afterward Professor of Statistics. He served also as statistician of the United States Senate Committee of Finance in 1891; as secretary of the United States Delegation to the International Monetary Conference; and as secretary of the conference in 1892.

Fallieres, Clement Armand, President of France; b. Mézin, 1843. His father was a department clerk. He became a lawyer at Agen; mayor of that city; 1876–1890 parliamentary deputy; held twice the ministeries of Instruction and Justice; Premier in 1883; Senator, 1890; President of the Senate, 1899; President of the Republic in 1906–13.

Fallmerayer, Jacob Philipp, a German author; born in Tschotsch, in the Austrian Tyrol, Dec. 10, 1790. As an explorer of the Orient, his fame is international and his work authoritative. He died in Munich, April 26, 1861.

Fallopian Tubes, two ducts or canals floating in the abdomen, and extending from the upper angles of the womb to the pelvis. They were popularly but incorrectly believed to have been discovered by Fallopius.

Fallow, an agricultural term applied to land ploughed, but not sowed; left to rest after a year or more of tillage.

Fallow Deer, an animal of the deer kind, well-known from being preserved in a semi-domesticated state in many English parks.

Fallows, Samuel, an American clergyman; born in Pendleton, Lancashire, England, Dec. 13, 1835; graduated at the University of Wisconsin, minister of the Methodist Episcopal Church and later of the Reformed Episcopal Church. He served with distinction in the Civil War. Subsequently he preached at Milwaukee; was State Superintendent of Public Instruction in Wisconsin; regent of the University of Wisconsin, and president of Wesleyan University. He became rector of St. Paul's Reformed Episcopal Church in Chicago, and bishop in 1876; was president of the Illinois State Reformatory. Died, 1922.

Fall River, a city and port of entry of Bristol co., Mass., at the mouth of the Taunton river, where it empties into Mount Hope Bay, 49 miles S. of Boston. The stream called Fall River is the outlet of Watuppa lake, and has a fall of 129 feet in less than half a mile, affording excellent water power. Fall River is the largest cotton-milling city in the United States. According to the Federal census of 1900 the city had 785 manufacturing establishments. The city was originally a part of Freetown, but was incorporated separately in 1803. Later it was called Troy, but its first name was restored in 1834. The city charter was granted in 1854. Population (1920) 120,485; 1925, (Est.) 121,156.

Falmouth, a town in Barnstable co., Mass., on Buzzard's Bay; is best known as containing the Wood's Holl Station of the United States Fish Commission. Pop. (1920) 3,500.

Falmouth, a seaport town in England, Cornwall county, at the mouth of the Fall river, 11 miles from

Truro. It has a good harbor and derives its chief importance from being a station of the boats carrying foreign mails.

Falster, one of the Danish islands in the Baltic, separated by narrow straits from Zealand, Moen and Laaland; area, 18 square miles; the pleasantest of all the Danish islands, well watered, richly wooded, and so prolific in fruit that it has been called the "orchard of Denmark." Capital, Nykjobing. Pop. (1911) 37,460.

Familiar Spirit, evil spirits which were supposed to attend and be at the service of a magician or other favored person. The belief is very ancient, and by the law of Moses such as had familiar spirits were put to death. Where Socrates speaks of his attendant demon, he is generally understood to refer to the inner feelings and promptings of his nature, and not to any familiar spirit. In Eastern countries the belief in familiar spirits is very general; and it was widely diffused over Europe in the Middle Ages. A favorite form assumed was that of a black dog. Jovius says that Cornelius Agrippa was always accompanied by a devil in the form of a black dog; and Goethe makes Mephistopheles first appear to Faust in this shape. The "slave of the lamp" mentioned in the "Arabian Nights" as serving Aladdin is a well-known illustration of this superstition.

Family, a household, including parents, children, and servants; the collective body of persons who reside under one roof, and under one head or manager; those who descend from one common ancestor; a tribe or race; kindred; as, the human family.

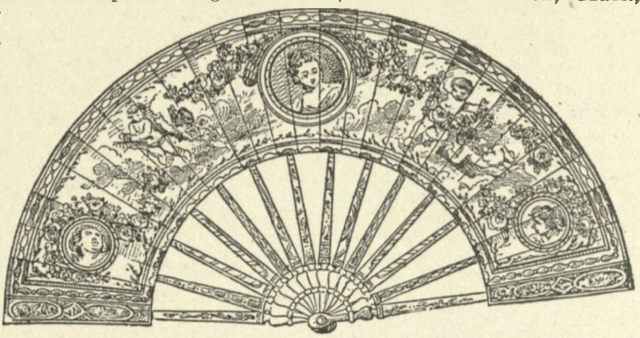
Family Compact, the name of several treaties. The treaty signed at the Escurial between Philip V. of Spain and Louis XV. of France, Nov. 7, 1733, is called by Spanish historians the First Family Compact; and the secret treaty of perpetual alliance between France and Spain, signed at Fontainebleau, Oct. 25, 1743, is termed by them the Second Family Compact. The celebrated treaty between the Bourbons of France and Spain (Louis XV. and Charles III.), known as the Family Compact, was concluded at Paris Aug. 15, 1761. It was a defensive and offensive alliance between France and Spain. Ferdinand IV., King of Naples, acceded to the alliance.

Famine, a scarcity of food over large areas, resulting in suffering or death by starvation and disease to multitudes. As late as the middle of the 17th century famines were a common affliction in Europe and even in the 18th century they still occurred.

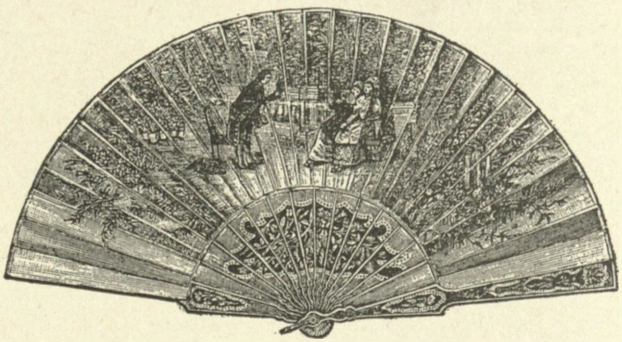
In comparatively modern times there have been no periods of famine in the more civilized countries of America and Europe. Since the general introduction of modern means of communication, and refrigerating plants, the movement of all kinds of foods can be easily regulated. At the present time it would seem almost impossible for a famine to occur in America, Western or Central Europe, but in India and other parts of Asia the situation is different. In India, where there are eight months of dry weather and the crops depend on the rainfall of four months and subsequent irrigation, if there is any lack in the monsoon, famine is almost sure to follow. Under the rule of the English, too, the population has greatly increased, and, while the majority of people live from hand to mouth in ordinary times, the slightest failure in the rice crop causes the famine point to be immediately reached. The recent famine in India cost the government in 1900–1901 $28,235,000, of which amount $21,135,000 was expended in direct relief. Apart from this $13,700,000 was advanced to native states for famine relief and $4,735,000 for special agricultural advances. Readers of the Christian Herald contributed many thousands of dollars to the aid of the sufferers, and Louis Klopsch, the proprietor, visited India and gave personal attention to the work of relief. In 1870–1872 Persia lost 1,500,000 inhabitants, a quarter of the whole population. In the N. provinces of China, Shensi, Shansi, and Honan, with a population of 56,000,000, during the years following 1877 it was reckoned that between 4,000,000 and 6,000,000 people perished. In the famine of 1891–1892 in Russia it was estimated that in 18 provinces 27,000,000 of inhabitants were affected.

Fan, an instrument for winnowing grain by agitating the air, a small vane or sail, used to keep the large sails of a windmill always in the direction of the wind; an instrument used by ladies to agitate the air, and cool the face, in warm weather; hence, anything in the form of a woman's fan when spread; as, the fan of a peacock's tail, etc.

The fan was first brought into European notoriety by Catherine de Medici, who introduced it into France, where it was so constructed that it could be used and folded in a manner similar to the fan in use at the present day. The Chinese have greatly excelled in the art of fan making, and in the species of lacquered fans their superiority is fully admitted. The Chinese themselves use a cheaper sort, made of bamboo and paper, polished. Electric fans are now used in this country for keeping rooms, stores, etc., cool during hot weather; also used as a means of ventilation.



FRENCH FAN OF 17TH CENTURY.



SPANISH SHELL FAN, 18TH CENTURY.

Fanatic, a person affected by excessive zeal and enthusiasm, especially on religious subjects; one laboring under wild and extravagant notions of religion; an enthusiast; a visionary.

Fandango, a lively Spanish dance in triple time, derived from the Moors. It is danced by two persons, male and female, and accompanied by the sounds of the guitar. Also the accompaniment of this dance.

Faneuil, Peter, an American merchant; born in New Rochelle, N. Y., in 1700; settled in Boston, Mass., where he became a successful merchant. In 1740 he offered to build a market house at his personal expense as a gift to the town, which he completed two years later. He died in Boston, March 3, 1743.

Faneuil Hall, a public hall in Boston, presented to the town by Peter Faneuil, in 1740, comprising a market-place on the first floor, and a town hall and other rooms above. In 1761 it was destroyed by fire. In 1763 it was rebuilt by the town; and, in 1775, during the British occupation of Boston, it was used for a theater. During the Revolutionary War this building was often used as a meeting place by the patriots. Owing to the many stirring debates that oc-

curred here, the hall received the name of "the Cradle of American Liberty." The hall contains some fine paintings; and the first floor is still used as a market.

Fanfani, Pietro, an Italian philologist, humorist, and novelist: born in Pistoja, Italy, April 21, 1815; died in Florence, March 4, 1879.

Fanfare, in music, a short passage for trumpets. Certain flourishes in opera music are also called fanfares.

Fanning, David, an American freebooter; born in Wake co., N. C., about 1756; was a carpenter by trade, but led a vagabond life. Late in the Revolutionary War he joined the Tories for the purpose of revenge; gathered a small band of desperadoes like himself, laid waste whole settlements and committed fearful atrocities. For these services he received a lieutenant's commission from the British commander at Wilmington. So encouraged, he captured and hanged many leading Whigs. At one time he surprised a court in session and captured and carried off judges, lawyers, clients, officers and citizens. Three weeks later he captured Colonel Alston and 30 men in his own house and soon afterward seized Governor Burke and his suite and some of the principal inhabitants. The name of Fanning became a terror to the country, and he was outlawed. At the close of the war he fled to New Brunswick, where he became a member of the Legislature. He died in Digby, Nova Scotia, in 1825.

Fantail, in zoölogy, a genus of Australian birds. They derive their name from the fan-like shape of their tails. Also a variety of the domestic pigeon. In gas lighting a form of gas burner, in which the burning jet has an arched form. In carpentry, a kind of joint.

Fantasia, in music, a species of composition in which the author confines himself to no particular form or theme, but ranges as his fancy leads amid various airs and movements.

Fantis, a negro people on the Gold Coast of Africa. They were once the most numerous and powerful people on the Gold Coast, but since 1811 they have diminished in numbers, and now live under the protection of the British garrisons at Cape Coast Castle.

Fantoccini, an exhibition of puppets, or a dramatic representation on a small scale, performed by figures or dolls, an amusement of which the Italians are extremely fond, and which is frequently performed in a portable theater — like that of Punch and Judy.

Fan Tracery, in architecture a term applied to tracery used in vaulting, in which all the ribs that rise from the springing of the vault have the same curve and diverge equally in every direction, producing an effect not unlike that of the stiff portions of a fan. It was used in late Pointed work.

Faraday, Michael, an English scientist; born in Newington Butts, England, Sept. 22, 1791. He received little or no education and was apprenticed to the trade of a bookbinder. During his term of apprenticeship, a few scientific works fell into his hands which he read with avidity, and forthwith devoted himself to the study of, and experiments in, electricity. Having attended the lectures given in 1812 by Sir Humphry Davy, and taken notes thereon, he sent them to that great philosopher, and besought some scientific occupation. The reply was prompt and favorable. In 1813 Faraday was appointed chemical assistant, under Sir Humphry, at the Royal Institution. After a continental tour in company with his patron, Faraday, still pursuing his scientific investigations, discovered, in 1820, the chlorides of carbon, and, in the following year, the mutual rotation of a magnetic pole and an electric current. These were strong encouragements to proceed on the path of discovery, and led to the condensation of gases in 1823. In 1829 he labored hard, and, as he thought at the time, fruitlessly, on the production of optical glass; but though unsuccessful in his immediate object, his experiments produced the heavy glass which afterward proved of great assistance to him in his magnetical investigations. In 1831 the series of "Experimental Researches in Electricity," published in the "Philosophical Transactions," began with the development of the induction of electric currents, and the

evolution of electricity from magnetism. Three years later Faraday established the principle of definite electrolytic action, and, in 1846 received at the same time the Royal and the Rumford medals for his discoveries of diamagnetism, and of the influence of magnetism upon light respectively. In 1847 he discovered the magnetic character of oxygen, and, also, the magnetic relations of flame and gases. His papers, including other contributions to the store of modern science, are too numerous to mention in detail. In 1833 Faraday was appointed Professor of Chemistry in the Royal Institution, London, which chair he continued to hold until his death. In 1835 he received from government a pension of $1,500 per annum in recognition of his eminent scientific merits. In 1836 he was appointed a member of the senate of London University. From 1829 to 1842 he was chemical lecturer at the Royal Academy. In 1823 Faraday was elected corresponding member of the French Academy, in 1825 he was chosen a Fellow of the Royal Society, and in 1832 made a D. C. L. of Oxford University. He was, besides, a knight of several of the European orders, and a member of the chief learned and scientific societies in Europe and the United States. In private life his character was irreproachable, and characterized by great humanity and modesty. He died in Hampton Court, Aug. 25, 1867.

Farafeh, an oasis of the Libyan Desert in Africa, containing several ruins of Greek and Roman origin. The inhabitants fabricate some coarse woolen cloths and earthenware.

Farandola, a dance popular among the peasants of the S. of France and the neighboring part of Italy.

Farce, originally a petty show exhibited in the street; now a recognized performance at the theaters. The difference between comedy and farce is that the former keeps to nature and probability, and therefore is confined to certain laws allowed by critics; whereas farce sets aside all laws upon occasion. Its end is to make merry, and it sticks at nothing to further it.

Farcy, a disease in horses, closely allied to glanders.

Fardel Bound, a term applied to sheep and cattle when suffering from a disease caused by the retention of food in the third stomach, or maniplies. It frequently arises from the eating of over-ripe clover, vetches, or rye grass; the food being tough and indigestible, the stomach is unable to moisten and concoct it with sufficient speed, and fresh quantities being taken in, the stomach becomes overgorged and at last paralyzed and affected with chronic inflammation.

Fargo, William George, an American capitalist; born in Pompey, N. Y., May 20. 1818; became Buffalo agent of the Pomeroy Express Company in 1843; established the first express company W. of Buffalo, in 1844; and in 1868 became president of the great corporation controlling the whole West, the Wells, Fargo Express Company. He died in Buffalo, N. Y., Aug. 3, 1881.

Fargo College, a co-educational institution in Fargo, N. D.; founded in 1888 under the auspices of the Congregational Church.

Faria, Manoel Severim de, a Portuguese author; born in Lisbon, Portugal, in 1583. He devoted many years to the study of his country's literature, giving his researches and thought a lasting form. He died in Evora, Sept. 25, 1655.

Faria y Sousa, Manoel de, a Portuguese poet and historical writer; born near Pombeiro, Portugal, March 18, 1590. He died in Madrid, Spain, June 3, 1649.

Faribault, a city and county-seat of Rice co., Minn. Faribault is noted on account of a memorable controversy which arose in the Roman Catholic Church in 1891 over the action of a priest in transferring the parochial school to the management of the public school board. The scheme and conditions which became known as the Faribault Plan were approved by Archbishop Ireland. On April 30, 1892, the plan was sanctioned in Rome by the Congregation of the Propaganda. Pop. (1920) 11,089.

Farina, Salvatore, an Italian novelist; born in Sorso, Sardinia, Jan. 10, 1846. His tales were successful from the first. The sympathy with lowly life and the rich humor of

his stories have gained him the title of "The Italian Dickens." He is the best known abroad of all Italian novelists.

Farinelli, real name Carlo Broschi, an Italian soprano singer; born in Naples, Italy, Jan. 24, 1705. Many extraordinary stories are related of Farinelli's vocal skill, and his command over the feelings and sympathies of his audience appears to have been unrivalled. He died in Bologna, Italy, Sept. 15, 1782.

Farini, Carlo Luigi, an Italian historian; born in Russi, Oct. 22, 1812. He studied medicine at Bologna, but early entered upon a political career, becoming minister of Public Instruction in 1850, of Commerce in 1861, and president of the Council in 1862 during Cavour's administration. He died Aug. 1, 1866.

Farjeon, Benjamin Leopold, an English novelist; born in London, in 1833. He went to Australia in early life, and after some experience in the gold diggings returned to London in 1869 and devoted himself to literature. He died in 1903.

Farley, James Lewis, an Irish journalist; born in Dublin, Ireland, Sept. 9, 1823. Established in Turkey as a bank official, he became correspondent of two or three great London dailies and speedily made himself an authority on Turkish questions. He died in London, England, Nov. 12, 1885.

Farley, John Murphy, an American clergyman; born in Newton Hamilton, Ireland, April 20, 1842. He was made secretary to Archbishop McCloskey in 1872–1884; became a domestic prelate of Pope Leo XIII. in 1892; was appointed auxiliary bishop of New York and consecrated titular bishop of Zeugma in 1895. Upon the death of Archbishop Corrigan in 1902 Bishop Farley was appointed his successor, and received the pallium, and was solemnly installed as archbishop of New York in 1903. In 1911, he was elevated to the cardinalate, and was enthroned in St. Patrick's Cathedral, New York (1912).

Farlow, William Gilson, an American botanist; born in Boston, Mass., Dec. 17, 1844. After graduating at Harvard, he spent several years in Europe pursuing his favorite study and became Professor of Cryptogamic Botany at Harvard in 1879. Upon the subject of cryptogamic botany, he is considered an authority.

Farm, a tract or piece of land cultivated by a single person, whether owner or tenant; also a district farmed out for the collection of revenue; or the right or permission to sell certain articles subject to duties.

Farman, Elbert Eli, an American diplomatist; born in New Haven, N. Y., April 23, 1831; was graduated at Amherst College in 1885. He studied international law in Berlin and Heidelberg, Germany, in 1864–1867; was United States diplomatic agent and consul-general at Cairo, Egypt, in 1876–1881; accompanied General Grant in the voyage up the Nile in 1878; was a member of the International Commission to revise the judicial codes of Egypt in 1880–1881; judge of the mixed tribunal of Egypt in 1881–1884; and United States member of the International Commission which examined the claims of the inhabitants of Alexandria for losses arising from the bombardment in 1882, 1883 and 1884. He secured the obelisk "Cleopatra's Needle" as a gift of the khedive to New York city, in 1879; made large collections of ancient coins and Egyptian antiquities which he gave to the Metropolitan Museum of Art in New York city. He died in 1911.

Farmer, one who farms or contracts to collect taxes, imposts, duties, etc., for a certain payment per cent.

Farmer, Henry Tudor, an American poet; born in England in 1782. While very young he emigrated to Charleston, S. C., where he continued to reside till his death. He died in January, 1828.

Farmer, Mrs. Lydia Hoyt, an American author; born in Cleveland, O., in 1842; died Dec. 27, 1903.

Farmer, Moses Gerrish, an American electrician; born in Boscawen, N. H., Feb. 9, 1820; was graduated at Dartmouth College in 1844; taught in Elliot, Me., and in Dover, N. H., for two years. He invented several electro-motors, one of which he used in his workshop to

drive a lathe, and another on a miniature railway. On this railway he transported by electricity the first passengers ever so carried in the United States. In 1847 he moved to Framingham, Mass., and invented the telegraph fire alarm. In 1865 he invented a thermo-electro battery and also built the first dynamo, and in 1880 patented an automatic electric light system. Besides these inventions he brought to light and perfected many others of general utility. He died in Chicago, Ill., May 25, 1893.

Farmer-General, in France, one of a company which, under the monarchy, contracted with the government for the privilege of collecting certain taxes, paying over to the government a certain fixed sum each year, and taking the proceeds of the taxes as their equivalent. The company was abolished at the Revolution.

Farmer's Alliance, a general term for an American association of agriculturists which was founded in 1873, originally in Texas, where it was organized for the purpose of coöperation against cattle thieves. In 1887 its members had increased to over 100,000, its scope was greatly extended and it consolidated with the Farmers' Union of Louisiana, becoming incorporated under the laws of the District of Columbia, as the National Farmers' Alliance and Coöperative Union. In 1880 the National Agricultural Wheel was organized in Arkansas, and branches were formed in other States. These two organizations were consolidated at St. Louis, Mo., Oct. 1, 1889, under the name of the National Farmers' Alliance and Industrial Union, with a membership then estimated at from 1,600,000 to 2,500,000. This society is in active operation in all the Southern and Western States (except Ohio and Wyoming), and in New York, New Jersey, and Pennsylvania. Another organization, called the National Farmers' Alliance, was formed in Chicago in 1880, and is now the general representative of State alliances formed in Illinois, Iowa, Indiana, Minnesota, Missouri, Montana, Nebraska, New York, North and South Dakota, Ohio, Pennsylvania, Washington, and Wisconsin. While these associations claim to be non-partisan and non-political, their conventions have adopted platforms urging political reforms, and they have undoubted weight in legislation affecting the interests of the farmer. The People's Party was an outgrowth of the Farmers' Alliance.

Farnese, the patronymic of an illustrious and princely Italian house, which arose about the middle of the 13th century.

Farnese, Alessandro, was born 1546. He early entered upon the profession of arms, and distinguished himself at the battle of Lepanto (1571) under his uncle, the famous Don John of Austria. He was subsequently made commander-in-chief of the army sent to the assistance of the French Catholics, and compelled Henry IV. to raise the siege of Paris; but, being ill-supported by the League, he was eventually obliged to succumb to his great adversary and died soon after in Arras, in 1592.

Farnham, Eliza Woodson Burhans, a prose-writer, born in Rensselaerville, N. Y., Nov. 17, 1815. She traveled extensively; returned to New York in 1841; visited the State Prison and lectured to the women convicts; and was matron of the Sing Sing State Prison for four years. She was a philanthropist. She died in New York city, Dec. 15, 1864.

Farnham, Roswell, a lawyer, and Governor of Vermont from 1880 to 1882; born in Boston, Mass., in 1827. He served during the Civil War as captain and colonel; and was elected Senator in 1868. He died in 1903.

Faroe Islands, a group of 22 islands belonging to Denmark, in the Northern Ocean, about 185 miles N. W. of the Shetland Isles, and 320 S. E. of Iceland; area 540 square miles; pop. (1911) 18,000. The principal island, Stromoe, in the center, is 27 miles long by about 7 broad; the chief of the others are Osteroe, Vaagoe, Bordoe, Sandoe, and Suderoe. Only 17 of the islands are inhabited. Each of these islands is a lofty mountain rising out of the waves, and divided from the others by deep and rapid currents. Soil thin, but tolerably fertile; barley is almost the only cereal grown. Products, hay in large quantities, salted mutton, tallow, feathers, eiderdown, etc. Manufac-

tures, coarse woolen stuffs, and stockings. Vast quantities of sea-fowl haunt the rocks, the taking of which for the sake of their feathers affords a perilous employment to the inhabitants. Capital, Thorshavn, at the S. E. end of Stromoe. These islands are under the jurisdiction of a Danish governor, and have belonged to Denmark since the union of that kingdom with Norway, in the 14th century.

Farquhar, George, a British comedy writer; born in Londonderry, Ireland, in 1678. He died in 1707.

Farquhar, Norman von Heldrich, an American naval officer; born in Pottsville, Pa., April 11, 1840; was graduated at the United States Naval Academy in 1859; was acting master in the African squadron engaged in the suppression of the slave trade in 1859–1861; promoted lieutenant in 1861, and, during the Civil War served in the North Atlantic blockading squadron. He commanded the "Trenton," when she was wrecked at Apia, Samoa, in 1889; became chief of the Bureau of Yards and Docks in 1890; and commandant of the Norfolk Navy Yard. He was promoted commodore in 1897, and rear-admiral in 1899; in the latter year was appointed commander of the North Atlantic Station; and on May 2, 1901, chairman of the Lighthouse Board. Died July 3, 1907.

Farragut, David Glascoe, an American naval officer; born in Campbell's Station, Tenn.; July 5, 1801. He was appointed, without previous training, a midshipman as early as 1810. Under Commodore Porter he was engaged in the "Essex" in her cruise against the British in 1812–1814, and, after her capture, he served on board the line-of-battle ship "Independence." Passing his examination with credit, he was ordered, as lieutenant, to the West India station, and was appointed, in 1847, to the command of the "Saratoga" (20 guns), in which ship he took part in the naval operations during the Mexican War. When the Civil War broke out Farragut received the command of the Gulf squadron which was to coöperate with General Butler in the reduction of New Orleans, and engaged and passed the two strong forts of the Mississippi in April, 1862, which brought about the surrender of that city on the 28th of the same month. Natchez was taken in May, and Farragut's fleet ascended as far as Vicksburg, which place he bombarded till the fall of water compelled him to return to New Orleans. In July, 1862 he was promoted to the rank of rear-admiral in the United States navy; and in March, 1863, he passed the batteries of Port Hudson, and was in a few days again before Vicksburg, coöperating with General Grant in the reduction of that important stronghold. Having been ordered to attempt the capture of Mobile, he silenced the forts commanding the mouth of that harbor August 5, 1864, and passing into the harbor there destroyed a Confederate ironclad ram and four gunboats, with the loss, however, of one of his ironclads, the "Tecumseh," and its crew, by the explosion of a torpedo. The naval successes gained by the Nationals were in a great measure due to the energy and daring of this gallant officer, and in 1864 he was promoted to be vice-admiral, and in 1866 admiral. Admiral Farragut served in the United States navy for 60 years, during about 12 years of which only was he unemployed on sea. In 1865 Farragut was appointed to the command of an American squadron dispatched on a cruise in European waters, from which he returned in 1868, after receiving the highest courtesies in the various states which his fleet visited. He died in Portsmouth, N. H., Aug. 14, 1870.

Farrar, Eliza Ware, an American story-writer; born in Flanders, Belgium, in 1791. She died in Springfield, Mass., April 22, 1870.

Farrar, Frederick William, an English clergyman, dean of Canterbury; born in Bombay, India, Aug. 7, 1831. He was educated at King William's College, Isle of Man, King's College, London, and Cambridge University; was assistant master at Marlborough College; 16 years master at Harrow; canon and archdeacon of Westminster; and chaplain to the queen. He wrote these novels: "Eric, etc." (1858); "Julian Home" (1859); "St. Winifred's, etc." (1863). Of his religious and theological writings the most notable are: "The Witness of History

to Christ" (1871); "The Life of Christ" (2 vols. 1874), a work written for the people and which has had a large circulation; "Life and Works of St. Paul" (2 vols. 1879); "The Early Days of Christianity" (2 vols. 1882); "Eternal Hope," a work which has been severely criticized on account of its lax doctrine regarding the question of everlasting punishment, etc. He died in 1903.

Farrington, Oliver Cummings, an American geologist; born in Brewer, Me., Oct. 9, 1864; was graduated at the University of Maine in 1881; became lecturer on mineralogy in the University of Chicago in 1894, and Curator of Geology at the Field Columbian Museum in the same year.

Farthingale, or **Fardingale,** a name given to the hoop of whalebone used formerly by ladies to spread out the petticoat to a wide circumference. It was introduced into England in the reign of Queen Elizabeth.

Fascisti, the name of an organization which included the more conservative elements in Italy in 1922 and which came into power in that year. The movement resulted from the state of chaos of the Government, which was threatened by the terrorist and Communist element to an extent that Bolshevism seemed about to be inaugurated. The movement was headed by Mussolini, who by a bloodless revolution, the climax was reached Oct. 30, 1922, assumed control of the government. In this action he received the King's enthusiastic support. The monarchical form of government was adhered to, but all power was soon passed to the Fascisti organization. The Fascisti emblem is a black shirt and khaki trousers.

Fascine, in fortification, a cylindrical bundle of fagots or brushwood used in revetments of earthworks. Fascines dipped in pitch or other combustible matter are sometimes used in order to set fire to the enemy's lodgments or other works. In civil engineering fascines are used in making sea and river walls to protect shores subject to washing; or to collect sand, silt, and mud to raise the bottom and gradually form an island, either as a breakwater against inroads, or for purposes of cultivation, as in Holland.

Fast, total or partial abstinence from or deprivation of food; an omission to take food. Also a time set apart to express national grief for some calamity, or to deprecate an impending evil.

The old Egyptians, the Assyrians (Jonah iii: 5), the Greeks, Romans, and other ancient nations, had most of them stated or occasional fasts, as have the modern Mohammedans, Hindus, etc.

The Day of Atonement was the only fasting day enjoined by the law of Moses, but the Mishna speaks of four others, respectively commemorating the storming of Jerusalem by Nebuchadnezzar, the burning of the Temple by Titus, the sack of Jerusalem by Nebuchadnezzar, and the receiving by Ezekiel and the other captives of the news of the destruction of Jerusalem. There were also fasts pr claimed by royal or other authority on special occasions (I Kings xxi: 9–12; II Chron. xx: 3; Ezra viii: 2). For the spiritual and unspiritual way of keeping a fast, see Isaiah lviii: 3.

No stated fasts are enjoined in the New Testament; they arose subsequently, the Lent fast taking the lead. In the 3d century the Latins fasted on the seventh day. In A. D. 813 the Council of Mentz in its 34th canon ordered a fast the first week in March, the second week in June, the third week in September, and the last full week preceding Christmas eve. Toward the end of the 10th century, the custom became prevalent of fasting on Saturday in honor of the Virgin Mary. In the Episcopalian and Roman Catholic Churches the principal fasts of the year are Lent, the Ember days, All-Saints, the Immaculate Conception, Rogation days, and the eves or vigils before certain festivals; as before Christmas day. Some of these fasts are common to both Churches.

Several times in the course of political events have different Christian governments proclaimed days of fasting and prayer, supplication being directed to the great Guide and Director of affairs that He would avert the threatened danger with which the State was confronted. As a notable antitype of this custom may be mentioned the American National Thanksgiving.

Fastenrath, Johannes, a German poet and story-teller; born in Remscheid, May 3, 1839. He translated Juan Diana's comedy "Receipt against Mothers-in-Law"; wrote many works on the history of Spanish literature. A volume of war songs dedicated "To the German Heroes of 1870" is also his. Died in 1908.

Fasti. Numa Pompilius (715 B. C. to 673 B. C.), instituted the custom of marking monthly records of the feasts, games, etc., observed at Rome, on tables of stone. These, preserved by the priests, became the calendar by which the course of public business and of justice was regulated. C. Flavius copied these fasti, 306 B. C. and exhibited them in the Forum; and they subsequently became a kind of abridged annals, recording the names of public magistrates and the most important political events.

Fasting, in ordinary language, the act or state of abstaining partially or entirely from food. In medicine, loss of appetite without any other apparent affection of the stomach; so that the system can sustain almost total abstinence for a long time without fainting.

Fat, in anatomy, an animal substance of a more or less oily character deposited in vesicles in adipose tissue. It forms a considerable layer under the skin, is collected in large quantities around certain organs, as, for instance, the kidneys, fills up furrows on the surface of the heart, surrounds joints, and exists in large quantity in the marrow of bones. It is an excellent packing material in the body, being light, soft, and elastic. It gives to the surface of the human frame its smooth, rounded contour. Being a bad conductor of heat, it enables a person to retain the warmth which he has generated; but its chief use is for the purpose of nutrition.

Fatalism, the doctrine that all things are ordered for men by the arbitrary decrees of God or the fixed laws of nature. In theology it has given birth to theories of predestination, and in moral science to such systems as those of Spinoza and Hegel, and more recently to the philosophy of Herbert Spencer. It is carried out to its most pitilessly logical extreme among the Mohammedans, where everything that can happen is "kismet," i. e., fated, or decreed by fate.

Fata Morgana, a remarkable kind of mirage observed from the harbor of Messina and adjacent places, and supposed by the Sicilians to be the work of the fairy Morgana. Objects are reflected sometimes in duplicate on the surface of the sea, and in the air about 30 feet above it.

Fates, in heathen mythology the three sisters who spin out the destiny of human beings.

Fathers, The, the early writers of the Christian Church, who have given us accounts of the traditions, practices, etc., that prevailed in the early Church.

Fatigue, of body or mind, following sustained muscular or mental work, subjected to experimental study has demonstrated that the inability of muscle or brain to continue their functions indefinitely, is due to the accumulation of toxic substances which remain in the body, instead of being carried away by the blood. The exhaustion does not differ whether produced by prolonged muscular or mental activity. Fatigue occurs also if muscle or nerves are insufficiently nourished.

Fatimides, or **Fatimites,** a race of Mohammedan kings, whose founder, Abu Mohammed Obeidallah, was born in A. D. 882, and began to reign in 910, making Mahadi, the ancient Aphrodisium, about 100 miles S. of Tunis, his capital. The place was called Mahadi, or Director of the Faithful, from the name which he had assumed. He claimed descent from Fatima, the daughter of Mohammed, hence the name Fatimides. This dynasty continued to reign till 1171, producing 14 kings.

Fault, in mining and geology, the sudden interruption of the continuity of strata till then on the same plane, this being accompanied by a crack or fissure varying in width from a mere line to several feet generally filled with broken stones, clay, or similar material. In hunting, a check, the losing of the scent. In tennis, an improper service. At fault, at a loss; in a difficulty; puzzled; embarrassed.

Faun, in Roman mythology, a Latin rural deity, who presided over woods and wilds, and whose attributes bear a strong analogy to those of the Grecian Pan, with whom he is sometimes identified. He was an object of peculiar adoration of the shepherd and husbandman, and at a later period he is said to have peopled the earth with a host of imaginary beings identical with himself. Also one of a kind of demi-gods or rural deities, bearing a strong resemblance in appearance and character to the satyrs, with whom they are generally identified. They are represented as men with the tail and hind legs of a goat, pointed ears, and projecting horns.

Faunce, John, an American naval officer; born in Plymouth, Mass., March 25, 1807. In 1858 he was made commander of the revenue steamer "Harriet Lane," which under his command in 1861, was one of the small fleet that was hastened to the relief of Fort Sumter, and was fired on by the Confederates at Charleston. After the war he was detailed to service in the live-saving department, in which capacity he did much toward its thorough organization and perfection. He died in Jersey City, N. J., June 5, 1891.

Faunce, William Herbert Perry, an American educator; born in Worcester, Mass., Jan. 15, 1859; was graduated at Brown University in 1880, and at the Newton Theological Seminary in 1884. He was made president of Brown University in June, 1899.

Faure, Francois Felix, president of the French Republic; born in Paris, Jan. 30, 1841; was for a time a tanner in Touraine, but became a wealthy shipowner in Havre, and an authority on all questions concerning shipping, commerce, and the colonies. During the Franco-Prussian war he commanded a body of volunteers and gained the ribbon of the Legion of Honor. He entered the Assembly in 1881, served as colonial and commercial minister in the cabinets of Gambetta, Jules Favre, and Tirard, and as minister of marine in that of Dupuy. A moderate republican, he was elected president of the republic on the resignation of Casimir-Perier in 1895. He died in Paris, France, Feb. 16, 1899.

Fauriel, Claude, a French historian; born in St. Etienne, France, Oct. 21, 1772. He died in Paris, July 15, 1844.

Faust, or **Fust, Johann,** one of the three artists to whom the invention of printing has been ascribed, was the son of a goldsmith at Mentz, Germany. The other two were Gutenberg and Schaffer; to the former of whom the invention of printing with wooden blocks has been attributed; and to the latter, who married the daughter of Faust, is allowed the honor of having invented punches and matrices, by means of which this grand art was carried to perfection. It has been pretended that, when Faust went to Paris to sell a second edition of his Bible of 1462, he was arrested on the supposition that he effected the printing of his books by magic; but this story appears to be mere fiction. It is believed that he died of the plague in 1466.

Faust, or **Faustus, Dr. Johann,** a famous magician, about whose name and existence so many obscure legends have grown, lived in the beginning of the 16th century, and was probably born at Knittlingen, in Suabia. After receiving his education at Wittenberg, he went to Ingolstadt, where he studied medicine, astrology, and magic, and occupied himself in alchemical experiments. Faust was a man of great scientific acquirements; and, according to legendary tradition, he made use of his powers to inspire his countrymen with a firm belief that he had dealings with the devil. The story of Dr. Faustus furnished the subject of a remarkable dramatic poem by Christopher Marlowe, and has been immortalized by the genius of Goethe. Gounod's well-known opera is also founded on this character.

Faustina, mother and daughter, wives of two of the noblest among the Roman emperors. The elder, Annia Galeria, usually spoken of as Faustina Senior, was the wife of Antoninus Pius, and died 141 A. D.; the younger, known as Faustina Junior, was married to his successor, Marcus Aurelius Antonius, and died at a village near Mount Taurus in 175 A. D. Both, but

particularly the younger, were notorious for the profligacy of their lives.

Fava, Onorato, an Italian author; born in Collobiano, Piedmont, July 7, 1859. He is versatile and sprightly in many capitally written and original things.

Favre, Gabriel Claude Jules, a French advocate, author and orator; born in Lyons, France, March 21, 1809. Favre became the strenuous opponent of Louis Napoleon after the latter's election to the presidency. In 1858 he became a member of the legislative body; after which time he distinguished himself by his speeches in favor of complete liberty of the press, against the law of "Deportation," the war with Austria of 1859, and, in 1864, by an attack on the policy of the imperial government in the Mexican War. He became vice-president of the provisional government of national defense, and minister of foreign affairs in September, 1870; signed the definitive treaty of peace with Prussia, May 10, 1871, and resigned his post two months later. He was elected to the French Academy in 1867. He died in Versailles, France, Jan. 19, 1880.

Favus, in ordinary language, a slab or piece of marble cut into a hexagonal shape, so as to produce a honey-comb pattern. In pathology, a disease of the skin, characterized by the breaking out of pustules, commonly on the scalp, which are succeeded by cellular crusts resembling an irregular honey-comb.

Fawcett, Edgar, an American author; born in New York city, May 26, 1847; was graduated at Columbia College in 1867; traveled in Europe and Italy, and later resided in England. His prose and verse were pleasing, but ephemeral. He died May 2, 1904.

Fawcett, Henry, an English political economist; born in Salisbury, England, Aug. 26, 1833. An accident which deprived him of sight early in life did not prevent his attainment of distinction as postmaster-general under Gladstone, and as a writer of force on economic subjects. He died in Cambridge, Nov. 6, 1884.

Fawcett, Millicent Garrett, an English writer, widow of Henry; born in Aldeburgh, Suffolk, England, June 11, 1847. She has been a leader in the movement for university education for women.

Fawkes, Faux, or **Vaux, Guy,** an English conspirator; born in York, England, in 1570. He enlisted in the Spanish army in the Netherlands, where he was found by Winter, one of the Roman Catholic conspirators, and with him returned to England in 1604, after agreeing to assist in the Gunpowder Plot. After collecting the necessary combustibles, Fawkes worked his way into the coal cellar under the House of Lords, and after storing it with gunpowder, etc., was appointed to the dangerous duty of firing the mine. The government having had timely information of the detestable plot, the House of Lords and its cellar was searched, and Fawkes found secreted amid some casks of gunpowder, Nov. 5, 1605. He was at once arrested, soon after tried, and Jan. 31, 1606, suffered death at Westminster with several of the other conspirators. The detection of this plot is celebrated to this day in England by bonfires.

Fay, Andreas, a Hungarian author; born in Kohany, Zemplin, Hungary, May 30, 1786. Till the appearance of Kossuth on the scene (1840) he was the foremost leader at Pest of the Opposition party. He died in Pest, July 26, 1864.

Fay, Theodore Sedgwick or **Sedgewick,** an American writer; born in New York city, Feb. 10, 1807. He served with ability in the United States diplomatic service, and after 1861 lived in Berlin, where he died Nov. 17, 1898.

Faye, Hervé Auguste Etienne Albans, a French astronomer; born Oct. 5, 1814. He discovered the comet which bears his name in 1843; wrote a number of books on astronomical subjects; and was the recipient of academic and other honors. He died July 4, 1902.

Fayerweather, Daniel B., philanthropist; born in Stepney, Conn., 1821; died 1890. He was a New York leather merchant, who unexpectedly left $2,000,000 to educational institutions, and $3,000,000 for similar distribution by trustees. A prolonged legal contest sustained his bequests.

Fayetteville, a city and county-seat of Cumberland co., N.C. On April 22, 1861, the Confederates seized the United States arsenal at this point. General Sherman occupied the town March 11–14, 1865, and destroyed the arsenal. Pop. (1920) 8,877.

Fayum, Fayoum, or **Faioum,** a famous valley and province of Central Egypt. It is the most fertile of the Egyptian provinces and produces dhurra, rye barley, flax, cotton, sugar, grapes, olives, figs, etc. Near the capital (Medinet-el-Fayum) large quantities of roses are cultivated, and are converted into rose water which is highly esteemed. Captain Petrie and other explorers have made important excavations, of late years, on the sites of the old cities of Fayum.

Fealty, loyalty; faithful adherence; true service or duty to a superior lord, especially in feudal times.

Feast, a banquet, a festival, a holiday, or a solemnity. Almost every religion has had its solemn feast days. The ancient Greeks and Romans had them, as well as the Jews and modern Christians. God appointed several festivals among the ancient Jews, the first and most ancient of which was the Sabbath, or seventh day of the week, commemorative of the creation. The Passover was instituted in memory of their deliverance out of Egypt, and of the favor of God in sparing their first-born when those of the Egyptians were slain. The feast of Pentecost was celebrated on the 50th day after the Passover, in memory of the law being given to Moses on Mount Sinai. The feast of Tents, or Tabernacles, was instituted in memory of their fathers having dwelt in tents for 40 years in the wilderness, and all Israel was obliged to attend the temple and dwell eight days under tents. These were their principal feasts; but they had numerous others; as the feast of Trumpets, the feast of Expiation or Atonement, the feast of the Dedication of the Temple, the Moons, etc. In the Christian Church, no festival appears clearly to have been instituted by Jesus Christ or His apostles, yet Christians have always celebrated the memory of His resurrection and numerous others were introduced at an early period. At first, they were only appointed to commemorate the more prominent events in the life and death of our Redeemer, and the labors and virtues of the apostles and evangelists; but martyrs came soon after to be introduced, and by the 4th century their number had increased to a very extravagant extent. And not only so, but instead of being spent in devotional exercises they were employed in the indulgences of sinful passions and in criminal pursuits; indeed, many of the festivals were instituted on a pagan model, and perverted to similar purposes.

Feather, a plume or quill, one of dermal growth, multitudes of which constitute the covering of a bird. A feather is homologous with a hair from the skin of a mammal, and some of the inferior birds have imperfect feathers suggestive of hairs only.

Feathering, Paddle-Wheel, a wheel whose floats have a motion on an axis, so as to descend nearly vertically into the water and ascend the same way, avoiding beating on the water in the descent and lifting water in the ascent.

Feathering Propeller, an invention of an Englishman, Maudslay, in which the vanes of the propeller screw are adjustable, so as even to be turned into the plane of the propeller shaft and offer no resistance when the vessel is under sail and the propeller not used.

Featherstonhaugh, George William, an American traveler; born in 1780; made geological surveys in the West for the United States War Department in 1834–1835; was appointed by Great Britain a commissioner to determine the Northwestern boundary between Canada and the United States, under the Ashburton-Webster treaty. He was the author of numerous technical reports and papers. He died in Havre, France, Sept. 28, 1866.

Febiger, John Carson, an American naval officer; born in Pittsburg, Pa., Feb. 14, 1821. On May 5, 1864, while in command of the "Mattabeset," of the North Atlantic fleet, he participated with the little squadron under Capt. Melancthon Smith in defeating the Confederate ram "Albemarle," in Albemarle Sound, N. C.

and was commended for his bravery and skill in that engagement. He was promoted rear-admiral Feb. 4, and retired July 1, 1882. He died in Londonderry, Md., Oct. 9, 1898.

Febrifuge, a medicine tending to cure or alleviate fever. The term should properly be confined to such substances as exercise a direct and specific action on the chain of morbid actions which constitute the disease.

February, the name of the second month of the year. It contains in ordinary years, 28 days, and in bissextilis, or leap year, 29. By the calendar of Julius Cæsar, February had 29 days except in bissextile, or leap year, when it had 30. But Augustus took a day from it, and added it to his own month, August, that it might not have a less number of days than July, dedicated to Julius Cæsar. Previously August had been called Sextilis, and consisted of 30 days only.

Fechner, Gustav Theodor, a German author; born in Gross Sarchen, Prussia, April 19, 1801. His works on purely scientific topics have made him eminent; while under the name of "Doctor Mises" he has written various popular humorous tales. He died in Leipsic, Nov. 18, 1887.

Fechter, Charles Albert, a French actor; born in London, England, Oct. 23, 1824. In 1870 he came to the United States and played to crowded houses, especially in "The Count of Monte Cristo." He died in Quakertown, Pa., Aug. 4, 1879.

Federal Farm Loan Banks, a group of banks organized by the Federal Farm Loan Board in 1916, under the authority of an Act of Congress. These banks are intended to extend rural credits to farmers in the form of loans secured by mortgages, the loans to be reduced annually. The banks are located at Springfield, Mass.; Baltimore; Columbia, S. C.; Louisville, Ky.; New Orleans; St. Louis; St. Paul; Omaha; Wichita, Kan.; Houston, Tex.; Berkeley, Cal.; and Spokane, Wash.

Federal Reserve Banks, a group of banks under the direction of a Federal Reserve Board, authorized by the Act of Congress of Dec. 23, 1913, reforming the national currency and banking laws. Continental United States is divided into twelve Federal Reserve Districts, in each of which is a central reserve city. The latter are Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco. Every national bank had to become a stockholder in the Federal Reserve Bank of the district in which it was situated, and State banks and trust companies could become "member banks" by complying with certain requirements. The Reserve banks began business, Nov. 16, 1914, on a capital aggregating $111,402,033.

Federals, the name given to those who during the Civil War in the United States fought to maintain the Union of the Federal States, in opposition to the Confederates.

Federal States, states united by a federation or treaty which, binding them sufficiently for mutual defense and the settlement of questions bearing on the welfare of the whole, yet leaves each State free within certain limits to govern itself. United States and Switzerland are examples of this political constitution.

Federalist, the name of an early political party in the United States. After the acknowledgment of the independence of the 13 colonies by the mother country, the first task that confronted the successful revolutionists was the erection of a government and the formulation of a constitution. When the deliberative body on whom devolved this duty met, it was discovered that there were various sentiments entertained by its members. Those favoring a strong or national organic union were called Federalists, and numbered in their ranks such men as George Washington, Alexander Hamilton, and others, while those favoring the sovereignty of the States were called Republicans, among them being Thomas Jefferson, James Madison, and others equally distinguished. Later in the history of the country the Federalists became known as Whigs, while the Republicans were called Democrats.

Fee, John G., an American abolitionist; born in Bracken co., Ky., Sept. 9, 1816. As a result of his preaching he was mobbed several times, but in 1853 he went to Berea, Ky., where he succeeded in founding

a church and establishing Berea College, an institution open alike to blacks and whites. He died in Berea, Ky., Jan. 12, 1901.

Feeble-minded, The, a defective class of children for whom educational advantages are provided by special State institutions.

Feehan, Patrick Augustine, an American clergyman; born in Tipperary, Ireland, Aug. 29, 1829; was educated at Castlenock College and at Maynooth College, and came to the United States in 1852. In 1865, he became Bishop of Nashville; and was installed as first Archbishop of Chicago in 1880. He died of apoplexy in Chicago, Ill., July 12, 1902.

Feed Pump, a force-pump for supplying to the boiler a quantity of water equal to that removed in the form of steam.

Feeling, the sensation or impression produced in the mind when a material body is touched by any part of the body; a physical sensation of any kind due to any one of the senses; as, a feeling of warmth, or of cold; also a mental sensation or emotion; mental state; sensitiveness.

Feet-washing, a religious ceremony observed in the Roman Catholic Church, on which occasion, just before Easter, the Pope washes the feet of attendant ecclesiastics, in imitation of the action of Jesus Christ in washing the disciples' feet. A similar ceremony is performed by the emperor of Austria, poor men being selected as the objects.

Feisel, Emir, born, 1883; son of Hussein King of Hejaz; was largely responsible for the success of Arab arms against the Turks in World War. In 1920 was crowned King of Syria. Forced by French to abandon claim to Kingdom. In 1921 became King of Irak or Mesopotamia, under protection of Great Britain.

Feldmann, Leopold, a German dramatist; born in Munich, Bavaria, May 22, 1802. After five years in travel, chiefly in Greece, as correspondent of the "Allegemeine Zeitung," in 1850, he settled in Vienna for life. His comedies were very popular in their day. He died March 26, 1882.

Felidæ, or **Felinæ,** the cat tribe, a family of carnivorous quadrupeds, including the domestic cat, lions, tigers, panthers, leopards, and lynxes. In these animals the destructive organs reach the highest perfection. The head is short and almost rounded in its form. The principal instruments of their destructive energy are the teeth and claws, their strong, sharp

CHARACTERISTIC FEATURES OF THE FELIDAE.

a, tiger's head; b, portion of tongue; c, right fore-paw, showing claws; d, claw, showing tendons.

retractile talons, with which all the four feet are armed, and the corresponding destructive nature of the dentary organs constituting the essential characteristics of the family. The felidæ are found in all parts of the world except Australia.

Felix, Claudius, or **Antonius,** a Roman procurator of Judea, before whom Paul so "reasoned of righteousness, temperance, and judgment to come," that he trembled, saying, "Go thy way for this time; when I have a convenient season I will call for thee." Felix rose from slavery, having been manumitted by Claudius Cæsar. His rule in Judea, notwithstanding its severity or rather in consequence of it, was marked by constant disorders and disaffection. Tacitus paints Felix in the darkest colors — a character confirmed by what is related of him in the New Testament, that he had expected a bribe from Paul, and that, disappointed in this, he left him bound, "to show the Jews a pleasure."—Acts xxiii., xxiv.

Fellahs, the people in Egypt who live in villages and cultivate the soil.

They form three-fourths of the population; are the most ancient race in that country, and are generally believed to be the descendants of the old Egyptians, their physiognomy resembling that which is found on the ancient sculptures. They are a patient and laborious population, and were heavily taxed before the period of English influence in the government.

Fellows, Sir Charles, an English archæologist; born in Nottingham, England, in August, 1799; died in Nottingham, Nov. 8, 1860.

Fellows, John, an American author; born in Sheffield, Mass., in 1760; died in New York city, Jan. 3, 1844.

Fellowship, a foundation in an American university, entitling the holder, who is called a fellow, to an annual revenue during the time he is pursuing advanced study along a particular line. The pecuniary value of a fellowship in an American college varies from $250 to $800 per annum.

Felspar, or **Feldspar,** a genus of minerals rather than a single mineral. Formerly there were included under it five species — viz.: (1) Adularia or moonstone, (2) common, (3) compact, (4) glassy, and (5) Labrador felspar. Now Dana elevates felspar into a group.

Felt, the material formed by uniting and compressing fibers of wool, fur, and other substances fit for the purpose, into a compact body, by what is termed the felting process. This consists in mixing the fibers of the materials employed till they become interlaced or matted together in the form of a soft, loose cloth or sheet, which is done by the instrumentality of carding and doffing machines. The cloth is then wound on a roller, and carried to the felting machine, in which the fibers are combined and interlaced still more closely by the action of heat and pressure, till the loose substance is converted into a close, thick material, possessed of great strength and durability.

Felt, Joseph Barlow, an American historical writer; born in Salem, Mass., Dec. 22, 1789. He was well known for his extensive and accurate knowledge of New England history. He died in Salem, Sept. 8, 1869.

Felton, Cornelius Conway, an American classical scholar; born in Newbury, Mass., Nov. 6, 1807. In 1834 he became Professor of Greek Literature at Harvard; in 1860 its president. He died in Chester, Pa., Feb. 26, 1862.

Felucca, a small vessel propelled by oars and lateen sails; it is long and narrow, carrying 8 to 12 oars on each side, and is used where great speed is required. They are common in the Mediterranean.

Femgerichte, Fehmgerichte, or **Vehmgerichte,** the name of celebrated secret tribunals which existed in Westphalia, and possessed immense power and influence in the 14th and 15th centuries. They are said by some to have been originated by Charlemagne, but it is more probable that they were relics of the ancient German courts of justice, which continued to exist in Westphalia after they had ceased in other parts of Germany. Their number is said at one time to have amounted to 100,000.

Their courts were either open or secret; the former were held by day in the open air, the latter by night in a forest, or in concealed and subterranean places. The process of trial, and the circumstances of judgment were different in the two cases; the former decided in all civil causes, the latter took cognizance of such as had been unable to defend themselves sufficiently before the open courts, as well as such as were accused of heresy, sorcery, rape, theft, robbery or murder. The accusation was made by one of the Freischoffen, who, without further proof, declared, upon oath, that the accused had been guilty of the crime. The accused was then thrice summoned to appear before the secret tribunal, and the citation was secretly affixed to the door of his dwelling, or some neighboring place, the name of his accuser being concealed. By an oath the accused might clear himself; but the accuser might also oppose it with his oath and the oaths of witnesses. If the accused could now bring forward six witnesses in his favor, the accuser might strengthen his oath with 14 witnesses; and sentence of acquittal did not necessarily follow until the accused had supported his case with the oaths of 21 witnesses. The

judges were all armed, and dressed in black gowns, with a cowl that covered their faces like a mask. The condemned, as well as those who did not obey the summons, were then given over to the Frieschoffen. The first Freischoffe who met him was bound to hang him on a tree; and if he made any resistance it was lawful to put him to death in any other way; and a knife was left by the corpse, to indicate that it was a punishment inflicted by one of the Freischoffen. The punishment, however, was rarely inflicted on those who readily appeared, the judges being satisfied with cautioning the offender to redress the wrong he had been guilty of.

At length a great outcry was raised against these courts, but their influence was not entirely destroyed until the public peace was established in Germany, and an amended form of trial and penal judicature introduced.

Femur, in vertebrate animals the first bone of the leg or pelvic extremity, situated between the os innominatum and the tibia; in insects the third joint of the leg; it is long and generally compressed; also in architecture, the long, flat, projecting face between each channel of a triglyph in the Doric order.

Fencing, the art of using skillfully, in attack or self-defense, a sword, rapier, or bayonet; but usually taken to mean address in the use of the second of these weapons. In the school of fence, the foil is wielded. Fencing is much practised in Germany and some other European countries, but is not so common in the United States.

Fenelon, Francois de Salignac de la Mothe, a French prelate; born in the Chateau de Fenelon, province of Perigord, France, Aug. 6, 1651, was educated at Plessis College in Paris, and at the seminary of St. Sulpice, where he received holy orders in 1675. In 1694 he was created Archbishop of Cambray. A theological dispute with Bossuet, his former instructor, terminated in his condemnation by Pope Innocent XII., and his banishment to his diocese by Louis XIV. He was the author of numerous works on philosophy, theology, and belles-lettres. He died in Cambray, France, Jan. 7, 1715.

Fenians, an Irish secret society named from an ancient military organization of Ireland that became extinct in the 3d century. The Fenian society was formed in the United States probably in March, 1858, by the refugees who crossed the Atlantic after the unsuccessful outbreak of 1848, and had for its object the expulsion of the British government from Ireland, and the conversion of that island into an independent republic. In January, 1864, they began to attract notice in Ireland, and the next year some of them were seized and imprisoned. Between 1865 and 1867 they made various outbreaks. In 1866 they captured a British vessel and made a raid into Canada, but were defeated by the volunteers and censured by President Johnson. In 1867 they unsuccessfully attempted an attack on Chester Castle in England, made other risings, and on Dec. 13 blew in the wall of Clerkenwell prison, killing and wounding a number of innocent people living in the adjacent houses. A second Fenian raid into Canada took place in 1870, but was repelled by the militia. The organization seemed to become dormant about 1874, and various persons who had been connected with it joined the "Invincibles," formed some years later for the purpose of assassinating government officers or others obnoxious to its members or its chiefs, but not much was known of this latter organization until the murder of Lord Cavendish called attention to them. In October, 1903, the element in America which represents Fenian traditions, declared publicly its adherence to the purpose of entirely separating Ireland from Great Britain.

Fenn, George Manville, an English story-writer; born in London, Jan. 3, 1831; died Aug. 27, 1909.

Fenn, Harry, an American artist; born in Richmond, England, Sept. 14, 1838; removed to the United States in 1856 and later traveled extensively. He achieved great success as an illustrator of books, and was one of the founders of the American Water-color Society. He died April 22, 1911.

Fennec, a pretty little fox-like animal about 10 inches long, with a tail of about 5¼ inches. The fur is of a whitish hue, the cheeks large, and the

snout sharp like that of a fox; the ears are erect, and nearly 3½ inches long. The fennec is found in the whole of Africa. It builds its nest in trees and does not burrow. Its food is mostly vegetable.

Fenton, Reuben Eaton, an American statesman; born in Carroll, Chautauqua co., N. Y., July 4, 1819. He was elected to Congress in 1852, and there opposed the further extension of slavery. In 1856 he was again elected to Congress, where he remained till 1865, when he resigned to become governor of New York, in which office he served for two terms. In 1869–1875 he was in the United States Senate, and in 1878 was chairman of the United States Commission to the International Monetary Conference in Paris. He died in Jamestown, N. Y., Aug. 25, 1885.

Feodor I., Ivanovitch, the last czar of the dynasty of Ruric, on the throne of Russia; born May 11, 1557. He began his reign in 1584. In his reign the peasants of Muscovy were converted into serfs and attached to the land. Previously they had enjoyed personal liberty. The conquest of Siberia was achieved by Goudonoff, and many remarkable diplomatic relations with foreign courts were effected. He died Jan. 7, 1598.

Fer-de-Lance, a dangerous serpent of Martinique, in the West Indies, known also in other islands and in Brazil. It is from five to seven feet long, and is said to launch itself at the person or animal attacked. Its bite is often deadly.

Ferdinand, the name of several European monarchs.

Ferdinand I., son of Francis; born in Vienna, Austria, April 19, 1793; ascended the imperial throne of Austria in 1835, and continued to pursue the policy of his father, leaving the chief direction of affairs in the hands of Metternich. In his reign, the republic of Cracow was annihilated, and a portion of it added to the empire. During the Revolutionary war of 1848 he dismissed Metternich and made several concessions which were found insufficient. Vienna revolted in May, and Ferdinand at length retired to Olmutz, and on Dec. 2, 1848, abdicated, having no children, in favor of his nephew, Francis Joseph I. He died in Prague, Austria, June 29, 1875.

Ferdinand II. of the Two Sicilies (surnamed Bomba, from his bombarding Palermo and other cities during an insurrection, son of Francis I. of Naples, by Isabella of Spain; born in Palermo, Sicily, Jan. 10, 1810; succeeded his father in 1830. At the outset of his reign he professed to adopt constitutional measures for the regeneration of his unhappy country, but unhappily placing himself in the hands of the Jesuits, he became the instrument by which the most odious tyranny was carried into effect. In 1848, when half the thrones in Europe were trembling in the balance, Sicily burst out into open rebellion. Naples followed suit, and Ferdinand was compelled to summon a parliament and take oath to adopt and maintain a constitution. After succeeding in suppressing the Neapolitan revolt, Ferdinand, in 1849 dissolved the parliament, and violated his oath by annulling the constitution. After succeeding in subjugating Sicily, his tyranny knew neither bounds nor sense of common decency, and the revelations respecting it, published in Mr. Gladstone's famous letter to Lord Aberdeen in 1851, evoked one sentiment of indignation and disgust throughout Europe. Even the most absolute of European sovereigns shared in this feeling, and grave remonstrances were addressed to him at the Congress of Paris in 1856. These proving unavailing, France and England proceeded in the same year to recall their ambassadors and suspended all diplomatic intercourse. He died in Naples, May 22, 1859.

Ferdinand V., called The Catholic, son of John II., King of Navarre and Aragon; born in Los, Spain, March 10, 1452. He married in 1469, the Princess Isabella of Castile, in whose right he succeeded on the death of her brother, Henry IV., to the throne of Castile. Later Ferdinand succeeded his father in the kingdom of Aragon, thus reuniting the two crowns of Castile and Aragon. One of the greatest events of this reign was the conquest of Granada. The war with the Moors began in 1483; victory after victory attended the arms of Ferdinand, and in 1492 the capital city was taken after a siege of eight

months. The "two kings," as they called Ferdinand and Isabella, made their entrance in January, 1493. The dominion of the Moors in Spain had lasted 800 years. By a cruel edict of the same year, 1493, the Jews in Spain were commanded to receive baptism or quit the country in four months. Multitudes of them, counted at from 30,000 to 170,000, became exiles, and the prisons were filled with those who remained. It was at this period that Columbus, with vessels furnished by Ferdinand and Isabella, made his memorable voyages and discovered America, which the Pope Alexander VI. assumed authority to give to those sovereigns. In 1500 Gonsalvo was sent to make the conquest of Naples, which, partly by the sword and partly by the most unscrupulous perfidy, he effected. The infamous League of Cambray was concluded in 1508. Soon after Navarre was conquered and united to Castile and Aragon. Ferdinand died in Madrigalejo, Spain, Jan. 23, 1516, and was interred in the cathedral of Granada with Queen Isabella.

Ferdinand VII., son of Charles IV.; born in San Ildefonso, Oct. 13, 1784; succeeded his father in 1808. Upon the entry of Napoleon's troops into Spain, Ferdinand was taken prisoner and carried to Valencay, where he and his family remained till 1813, when he was restored to his kingdom. After his restoration he dissolved the Cortes and assumed the powers of an absolute monarch. He reëstablished the Inquisition, and those very liberals who had fought for the expulsion of the French from Spanish soil he persecuted with pitiless rancor. In 1820 his people broke out into rebellion and reëstablished the Cortes. Ferdinand was, however, by the aid of French bayonets, restored to his crown, but not to his former absolutism. He bequeathed the crown to his daughter, Isabella, to the exclusion of his brother, Don Carlos — an act that led to a long and disastrous civil war. He died in Madrid Sept. 29, 1833.

Ferdinand, Maximilian, Duke of Saxony, Czar of the Bulgars; born in Vienna, Austria, Feb. 26, 1861. In his eagerness to secure the friendship of Russia, and the recognition of the Great Powers as the Prince of Bulgaria, he brought about the conversion of his son, Prince Boris (born Jan. 30, 1894), from the Roman Catholic to the Orthodox Greek faith on Feb. 14, 1896. In April, following, his election was fully recognized; in 1908 he assumed the title of Czar of the Bulgars, when Bulgaria declared herself independent; in 1912, when she declared war against Turkey, he went to the front; and in 1915 he joined the Central Powers in the World War.

Fergus I., King of Scotland, the son of Fergus, King of the Irish Scots. He was invited to Scotland to repel the Picts, and for this was chosen king. He was drowned in his passage to Ireland, about 305 B. C.

Ferguson, Patrick, inventor of the breech-loading rifle; born in 1744 in Pitfour, Scotland. Entering the army in 1759, he served in Germany and Tobago. In 1776 he patented his rifle, firing seven shots a minute, and sighted for ranges of from 100 to 500 yards; and with it he armed a corps of loyalists, who helped at the battle of Brandywine (1777) to defeat the American army. Three years later, on Oct. 7, 1780, Major Ferguson fell, defending King's Mountain, South Carolina, with 800 militia against 1,300 Americans.

Fergusson, Arthur Walsh, an American linguist; born in Benicia, Solano co., Cal., Dec. 4, 1859; was graduated at St. Augustine College, Benicia, in 1877, and at the Georgetown University Law School in 1885. He first came into public notice in 1889 when he was made official interpreter of the American Conference at Washington. Subsequently he was secretary of the International Monetary Commission in 1891; official interpreter of the Intercontinental Railroad Commission in the same year; secretary of the United States Chilean Claims Commission 1893; Secretary of the United States and Venezuelan Claims Commission in 1894; chief translator of the Bureau of American Republics in 1897; official interpreter of the American and Spanish Peace Commission at Paris in 1898; and Spanish Secretary of the United States Philippine Commission in 1900. He wrote numerous reports, papers, bulletins, etc. He died Jan. 29, 1908.

Fergusson, James, a Scotch writer; born in Ayr, Scotland, Jan. 22, 1808. His monumental achieve-

ment, which constitutes him perhaps the greatest of writers on the subject, is "History of Architecture in All Countries." After 1859 he was one of the Royal Commissioners to investigate the defenses of Great Britain. He died in London, Jan. 9, 1886.

Feriæ, in ancient Rome, public holidays, during which all labor ceased, and all judicial and political proceedings were suspended.

Feringhee, or **Feringee,** the name given by the Hindus to all Europeans, but chiefly to the English, and is intended to be disrespectful rather than complimentary.

Fermentation, a change which occurs in an organic substance, by which it is decomposed.

Fermo, a walled city of Central Italy, till 1860 capital of a delegation of same name. Fermo was founded by the Sabines before Rome existed, was colonized by the Romans toward the beginning of the First Punic War, and was repeatedly sacked by the Goths and other barbarians. In the 8th century the city was transferred to the Holy See. Pop.(1911) 22,570.

GIANT TREE FERN.

Fern, a leafy plant springing from a rhizome, which creeps below or on the surface of the ground or rises into the air like the trunk of a tree. This trunk does not taper, but is of equal diameter at both ends. Some tree ferns reach 75 feet high.

Fern, Fanny. See PARTON.

Fern, or **Farne, Islands,** a group of 17 rocky islets off the N. E. coast of Northumberland co., England. Two lighthouses are found here in a vicinity noted for its perils to mariners. St. Cuthbert died here, and his stone coffin is still pointed out. The "Forfarshire" steamer was wrecked here in 1838, when nine persons were saved by the heroism of Grace Darling (q..v).

Fernald, Charles Henry, zoölogist; born in Mount Desert, Me., March 16, 1838; was educated at the Maine Wesleyan Seminary; was an acting ensign in the United States navy during the Civil War; and Professor of Natural History at the Maine State College in 1871-1886. Since 1886 he is Professor of Zoölogy at the Massachusetts Agricultural College, and State entomologist.

Fernald, Chester Bailey, author and dramatist; born in Boston, Mass., March 18, 1869.

Fernald, James Champlin, clergyman and author; born in Portland, Me., Aug. 18, 1838. His works are chiefly social and economical.

Fernandez, Diego, a Spanish-American historian; born in Palencia, Spain, about 1530. He was apparently a soldier of fortune, lured to the scene of Pizarro's great conquest in the hope of fabulous wealth. He had some fighting experiences, and wrote "The First and Second Parts of the History of Peru" (1571), a narrative of the subjugation of the Incas. He died in Seville, Spain, 1581.

Fernandez-Lizardi, Jose Joaquin, a Mexican novelist; born in the City of Mexico in 1771. He died in the City of Mexico in June, 1827.

Fernandez-Madrid, Jose, a South American poet; born in Cartagena, Colombia, Feb. 9, 1789; died near London, England, June 28, 1830.

Fernando de Noronha, an island in the South Atlantic Ocean, belonging to Brazil. It is 8 miles long, by a mean breadth of 2 miles, and has a rugged, mountainous, wooded surface. It is used as a penal settlement.

Fernando Po, an island in the Bight of Biafra, 20 miles from the West African coast, and about 40 in length by 20 in breadth. The climate is very unhealthy. The capital is Clarence Cove. This island was discovered in 1471 by the Portuguese, who ceded it to Spain in 1778. The Spaniards eventually abandoned it, and the British, in 1824, selected it as a suitable military depot and naval station. They, in their turn, abandoned it in 1834, on account of its insalubrity. The Spaniards again took possession in 1844, and called the island Puerto de Isabel. It is now used by them as a penal settlement, to which, in 1869, several Cuban patriots were deported, as political prisoners.

Ferney, a village of France, in the department of Ain, five miles N. W. of Geneva. This place not merely owes its celebrity, but even existence, to its having been for a lengthened period the residence of Voltaire. Out of a paltry village, consisting of a few miserable cottages, he constructed a neat little town, in which he established a colony of industrious artisans, consisting principally of watchmakers from Geneva. The chateau, to which a fine small theater was attached, was fitted up in a style of elegant simplicity; and his hospitalities were on the most liberal scale. Voltaire resided here, with little interruption, for more than 20 years. Voltaire quitted Ferney for the last time on Feb. 6, 1778. Admirers of Voltaire still make pilgrimages to Ferney, although the castle in which he lived has undergone so many alterations that it contains but few relics of him.

Fernie, Benjamin James, journalist; born at Hales Owen, England, Nov. 29, 1842. Educated for the ministry in the Congregational church, but becoming associated with friends on the London press, entered the ranks of journalism. After service on several newspapers in London and the provinces, became Assistant Editor of "The Christian Herald" of London. In 1878 he established an American edition of that journal, with which he was identified till his death, May 13, 1908.

Fernow, Bernhard Eduard, an American scientist; born in Inowraclaw, Germany, in 1851. In 1898–1903 he was dean of the New York State College of Forestry; in 1907 became dean of Forestry in Toronto University.

Fernow, Berthold, an American author; born in Inowraclaw, Germany, Nov. 28, 1837. He removed to the United States; became a private in the 4th Missouri Cavalry in 1862; and was promoted lieutenant of the 3d United States Colored Infantry in 1863. He was archivist of New York State in 1876–1889. He died in 1910.

Ferrara, a fortified city of Central Italy, capital of province of same name, and formerly an independent duchy under the rule of the House of Este. Under the rule of its native princes Ferrara was the seat of one of the most polished and refined of the Italian courts, and is said to have had from 90,000 to 100,000 inhabitants. But it has long been in a state of decay, and numbers of its splendid palaces are uninhabited. Ariosto resided in this city, and here, in 1516, was published the first edition of his immortal "Orlando"; and here, too, in 1533, he breathed his last. The house in which he lived is still carefully preserved. Ferrara besides being the birthplace was also the place of imprisonment of the poet Tasso.

Ferret, a useful but ferocious little animal, kept in a domesticated state and used for rabbit hunting as well as for destroying rats. In its general form it resembles the polecat, but is rather smaller, its usual length being about 13 inches, exclusive of the tail, which is about 5. It has a very sharp nose, red and fiery eyes, and round ears. Its color is a pale yellow. In the slenderness of its body and the shortness of its legs it resembles the weasel. In its wild state it is a native of Africa. The cold of our winters is so severe for it, that it becomes necessary to keep it in a warm box, with wool or some other substance in which it may imbed itself. In this state it sleeps almost continually; and when awake immediately begins to search about for food: that which is usually given is bread and milk, but its favorite food is the blood of smaller animals. It is by nature an enemy to rabbits; and when sent into their burrows is always muzzled, that he may not kill the rabbits in their holes, but

only to drive them out to be caught in the nets prepared for them. The ferret is tame without attachment; and such is its appetite for blood that it has been known to attack and even kill children in their cradles. It is of an irascible nature, and when irritated, the odor it emits is very disagreeable, and its bite is not easily cured. The female has two broods in the year, each consisting of from six to nine. She not unfrequently devours her young as soon as they are born.

Ferrier, Susan Edmonstone, a Scotch novelist; born in Edinburgh, Scotland, Sept. 7, 1782; died in Edinburgh, Nov. 5, 1854.

Ferris, George W., an American engineer; born in Galesburg, Ill., Feb. 14, 1859; was graduated at Rensselaer Polytechnic Institute in 1881. He conceived the idea of a gigantic revolving wheel which he built in Pittsburg and erected for the World's Columbian Exposition in Chicago in 1893. The wheel could hold more than 1,000 passengers, and during the Exposition it was one of the great attractions. Ferris died in Pittsburg, Pa., Nov. 22, 1896.

Ferrol, a Spanish seaport in Galicia, Spain; on a narrow arm of the sea, 11 miles by water and 33 by rail N. E. of Corunna. A poor fishing town till 1752, it now is one of the strongest fortified places in the kingdom, and possesses one of its three largest arsenals (with dockyards, naval workshops, etc.), while the annual trade reaches about £500,000. The harbor is safe and capacious, and has a very narrow entrance, defended by two forts. The town has manufactures of naval stores, linen, cotton, and leather, and exports corn, brandy, vinegar, and fish. In 1805 a French fleet was defeated by the English off Ferrol. The town was taken by the French in 1809 and 1823, and in 1872 was the scene of a republican rising.

Ferry, Gabriel, the Elder, pseudonym of Eugene Louis Gabriel Ferry de Bellemaire, a French author; born in Paris, France, May 30, 1809. He made repeated voyages to the United States; in his last voyage, to California, he lost his life in the burning at sea of the ship "Amazon," in 1852. His stories are popular in France.

Ferry, Gabriel, the Younger, a French author, dramatist, and novelist, son of Gabriel the Elder and continuing his pseudonym; born in Paris, May 30, 1846.

Ferry, Jules Francois Camille, a French statesman; born in Saint Die, France, April 5, 1832; was admitted to the Paris bar in 1854, and speedily identified himself with the opponents of the empire. He was minister to Athens in 1872–1873, and in 1879 became minister of public instruction and began an agitation against the Jesuits. Their expulsion was effected, and brought about the dissolution of the ministry in September, 1880. M. Ferry then formed a cabinet, which remained in office till November, 1881. In February, 1883, he again became premier, with a policy of colonial expansion, involving a war in Madagascar and the invasion of Tonquin, where a disaster to the French troops brought about his downfall in March, 1885. In 1890 he was made senator. He died in Paris, March 17, 1893.

Fersen, Axel, Count, a Swedish military officer; born in Stockholm, Sweden, in 1755; came to America on the staff of Rochambeau; fought under Lafayette and received from Washington the Order of the Society of the Cincinnati. He returned to Sweden, where he was received with honor, and in 1801 was made grand marshal of that country. On suspicion of complicity in the death of Prince Christian of Sweden, he was seized by a mob while marshaling the funeral procession, and tortured to death, June 20, 1810. His memoirs in which he virtually foretold the secession of the South from the Union show that he was an acute observer.

Fertilization, the fecundation of a plant by the application of the pollen to the stigma. In some cases the pollen simply drops on the stigma, which is called self-fertilization. In most instances, however, it is blown by the wind, or carried by bees, or moths, or other insects, from other flowers of the same species. This is what is termed cross-fertilization. Mr. Darwin found that 20 heads of dutch clover left open to the visits of bees produced 2,290 seeds; the same num-

ber defended from the visit of bees, did not yield even one seed.

Fesch, Joseph, Cardinal Archbishop of Lyons, and brother of Letitia Ramolini, mother of Napoleon I.; born in Ajaccio, Corsica, Jan. 3, 1763. He was educated in France for the Church; in 1790 he was appointed by his nephew, General Bonaparte, commissary-general of the army of Italy, in which capacity he realized a princely fortune. He afterward resumed his clerical studies, and adopting the profession, was, in 1802, consecrated Archbishop of Lyons. In the year afterward, Fesch received a cardinal's hat and was sent to Rome as French ambassador. In 1804 he accompanied Pius VII. to Paris, to assist at the emperor's coronation, and in the following year was created Grand Almoner of France. As president of the Council of Paris he energetically opposed his nephew on many occasions, and especially espoused the cause of the unfortunate Pope. He finally fell into disgrace with the emperor, and retired to Rome, where he passed the remainder of his life in dignified ease and affluence, possessing the finest library and picture-gallery that even Rome could boast of. He died in Rome, May 13, 1839.

Fessenden, Thomas Green, an American author, who wrote partly under the name "Christopher Caustic"; born in Walpole, N. H., April 22, 1771; died in Boston, Mass., Nov. 11, 1837.

Fessenden, William Pitt, an American statesman; born in Boscawen, N. H., Oct. 16, 1806; was graduated at Bowdoin College in 1823 and admitted to the bar in 1827. He entered politics and soon acquired a national reputation as a lawyer and a Whig. He was elected to the United States Senate in 1854, and a week after he took his seat made a speech against the Kansas-Nebraska Bill which placed him in the front rank of senatorial orators. During the Civil War he was conspicuous for his efforts to sustain the national credit. He was made Secretary of the Treasury in 1864, and, having placed it on a firm basis, resigned in 1865 to return to his seat in the Senate. He died in Portland, Me., Sept. 8, 1869.

Fessler, Ignaz Aurelius, a Hungarian author; born in Czurendorf, Hungary, May 18, 1756. A Capuchin priest, his secret communication to Joseph II. in 1781 regarding the monasteries brought about a radical reformation of them. Appointed Professor of Oriental Languages in the Vienna University, he had to leave the post and Austria for his atheistic and seditious tragedy "Sidney" (1787); similar reasons cost him a professorship in the Alexander Nevsky Academy of St. Petersburg; afterward he became general superintendent of the Lutheran congregations in that city. He died in St. Petersburg, Russia, Dec. 15, 1839.

Festus, Porcius, pro-Consul and Governor of Judæa, before whom St. Paul was accused by the Jews; but the apostle appealing to the emperor, Festus sent him to Rome. Also, a celebrated Latin grammarian who lived between the 2d and 4th centuries He compiled some voluminous works on his favorite science, and is classed by Scaliger among the best or most useful etymologists for understanding the language of ancient Rome.

Fetichism, or **Feticism,** the worship of material substances, such as a carved image or fetich, and prevails very extensively among barbarous nations, especially those of the negro race. Among them, tribes, families, and individuals, have their respective fetiches; which are often objects casually selected, as stones, weapons, vessels, plants, etc., and the rude worshipper does not hesitate to chastise, or even throw away or destroy his fetich, if it does not seem to gratify his desires. Applied also to irrational devotion to any subject or idea.

Fetterolf, Adam H., an American educator; born in Perkiomen, Pa., Nov. 24, 1841; was educated at Ursinus College; became president of Girard College in Philadelphia, Pa., in 1882. He died Dec. 2, 1912.

Feudal System, that constitutional system which was introduced into Europe by the N. nations after the fall of the Roman power, and which has left important traces of its existence in most European countries. The constitution of feuds had its origin in the military policy of the Goths.

Huns, Vandals, and other N. nations who overran Europe at the declension of the Roman empire. The term feud is of very doubtful derivation, but most probably it is formed from the Teutonic fee or feh, wages or pay for service, and odh, or od, property or possession; a feud, then, being the property or possession given as wages for service. In order to secure their newly acquired possessions, and at the same time to reward their deserving followers, the conquering generals were wont to allot large districts, or parcels of land, to the superior officers of the army, and these were by them again dealt out in smaller allotments or parcels, to inferior officers and soldiers.

The condition annexed to these holdings was that the possessor should do service faithfully, both at home and in the wars, to him by whom they were given; for which purpose he took the oath of fealty and in case of the breach of this condition and oath, by not performing the stipulated service, or by deserting the lord in battle, the lands were again to revert to him who granted them. The ownership of the land, therefore, properly remained in the hands of the superior, and probably at first was resumable by him at pleasure, or at least on the death of the holder; but in most countries, lands soon came to assume an hereditary character, the rights of a superior, on the death of a vassal, being confined to the exaction of certain dues from his son and successor, as a consideration for confirming to him the feud which his father had held. Where the land descended to a female, the superior was entitled to control her marriage, for the purpose of procuring a trustworthy vassal, a privilege which, like the other, was afterward converted into a pecuniary payment.

According to this system, every receiver of land, or feudatory, was bound, when called on, to serve his immediate lord or superior, and to do all in his power to defend him. Such lord or superior was likewise subordinate to, and under the command of, a higher superior or lord; and so on upward to the prince or general himself. The several lords were also reciprocally bound in their respective gradations to protect the possessions they had given. Thus the connection between lord and vassal was made to wear all the appearance of a mutual interchange of benefits — of bounty and protection on the one hand, and of gratitude and service on the other. In this way the feudal connection was established, and an army was always at command, ready to fight in defense of the whole or of any part of the newly-acquired territory. The wisdom of these measures became evident to the other princes of Europe, and many of them who were independent adopted this system as a means of strengthening their power, parcelling out their royal territories, or persuading their subjects to surrender up and retake their own landed property under the like feudal obligations of military fealty. Thus the feudal constitution, or doctrine of tenure, extended itself over all the W. world; and the feudal laws drove out the Roman, which had hitherto universally prevailed.

This system was adopted in most countries of Europe from the 9th to the end of the 13th century; but it differed in various particulars in the different countries. Though there can be no doubt that feudal principles prevailed to a considerable extent in the polity of the Saxons in England, yet it was only when that country was conquered by the Normans that it was regularly established. In some respects, however, the system of feudalism established in England differed from that of France, from which it was taken. One of these was that the king was the universal lord and original proprietor of all the lands in his kingdom, and that no man could possess or hold any part of it but what was mediately or immediately derived from him, to be held mediately or immediately of him on feudal service. Hence the Conqueror introduced the practice of compelling those holding mediately as well as immediately of himself to swear fealty to him; and thus the inferior vassals were under two oaths — the one of fealty to the king, the other of fealty to their immediate superior. It has been remarked, however, that when the two interests came into collision, the vassal rarely failed to obey his lord rather than his king.

A country, under the feudal law,

was divided into knights' fees, the tenant of each of which appears to have been obliged to keep the field at his own expense for 40 days whenever his lord chose to call on him. For smaller portions of land, smaller periods of service were due. Every great tenant exercised a jurisdiction, civil and criminal, over his immediate tenants, and held courts and administered the laws within his lordship like a sovereign prince. The existence of manor-courts and other small jurisdictions within the kingdom is one of the features of the feudal system. The land escheated to the lord when the tenant left no heir, and it was forfeited to him when he was found guilty either of a breach of his oath of fealty or of felony. There were also fines payable to the lord on certain occasions, as well as aids, reliefs, etc. The vassal had also to attend the lord's courts, sometimes to witness, and sometimes to take part in, the administration of justice; in battle he was bound to lend his horse to his lord if dismounted, to keep his side while fighting, and go into captivity as a hostage for him when taken. It was a breach of faith to divulge his (the lord's) counsel, to conceal from him the machinations of others, to injure his person or fortune, or to violate the sanctity of his roof. The nearest approach to the feudal system in the United States was the tenure by which tenants held from the patroons of manors on and near the Hudson. It nearly caused civil war in New York State and has long been abolished. The right of eminent domain is inherited from the feudal system, the State taking the place of the Crown.

Feuerbach, Anselm, a German archæologist, brother of Ludwig; born Sept. 9, 1798. His "Vatican Apollo" (1833), and essays and studies in classic art and art history, are of great merit and importance. He died Sept. 8, 1851.

Feuerbach, Ludwig Andreas, a German philosopher; born in Landshut, July 28, 1804; died in the Reichenberg, near Nuremberg, Sept. 13, 1872.

Feuerbach, Paul Johann Anselm von, a German penalogist; born in Hainichen, near Jena, Nov. 14, 1775; died in Frankfort-on-the-Main, May 29, 1833.

Feuillants, a reformed branch of the Cistercian order of monks. It was founded by Jean de la Barriere, abbot of the Cistercian monastery of Feuillans near Toulouse, in 1577, who, being opposed to the great laxity of discipline that then prevailed, introduced a much more austere mode of life. They practised great austerities, going barefoot, and living only on herbs.

Feuillet, Octave, a French novelist; born in St. Lo, Aug. 11, 1821. He was elected to the Academy in 1863. Beginning as a novelist of the discreetest sort, he ended in much the fashion of other French story-writers. He died in Paris, Dec. 29, 1890.

Feval, Paul, a French novelist; born in Rennes, Sept. 27, 1817; died in Paris, March 8, 1887.

Fever (from Latin febris, connected with ferveo, I burn), a disease that may be described thus: After a degree of chilliness and shivering, accompanied and succeeded by a feeling of languor, restlessness, weakness, nausea, and want of appetite, and more or less headache, there is a preternatural heat of the body, which is indicated by a dry, burning skin; there is also excessive thirst, cold water being the drink which the patient has the most craving for. The pulse becomes much accelerated, there is increased waste of tissue, great muscular debility, and most of the functions are disturbed. This morbid state is noticeable among the phenomena of many diseases, and is then termed symptomatic fever, but the same symptoms, when observed in other circumstances, are characteristic of the fevers proper, which may be classified as follows:

1. Continued Fever.—(1) Simple fever, or febricula. (2) Typhus fever. (3) Typhoid, enteric, or gastric fever. (4) Relapsing, or famine fever.
2. Intermittent Fever, or Ague.
3. Remittent Fevers.—(1) Simple remittent fever. (2) Yellow fever.
4. Eruptive Fevers.—(1) Smallpox. (2) Cowpox. (3) Chickenpox. (4) Measles. (5) Scarlet fever. (6) Erysipelas. (7) Plague. (8) Dengue fever.

Simple fever, or febricula, may last from one or two to 10 days, and may arise from cold or any slight cause, disordering the several functions of

the economy. It commences with a feeling of chilliness. There are also a feeling of lassitude, pains in the back and limbs, loss of appetite, and nausea. After a few hours the pulse becomes accelerated, and the temperature of the body rises; these phenomena are accompanied by thirst, headache, a furred tongue, a constipated state of the bowels, and a deficiency in the urinary secretion. The symptoms are generally aggravated at night, and may even be accompanied by slight delirium. After a few days the symptoms abate, and the patient begins to recover, but very often the convalescence is somewhat slow.

Fez, one of the three capitals of Morocco, a former empire which became a French protectorate in 1912. It is beautifully situated in a funnel-shaped valley, open only to the N. and N. E., the sloping sides of which are covered with fields, gardens, orchards, and groves, 95 miles from the Atlantic, 225 N. E. of Morocco. Fez contains about 100 mosques, the chief of which, called El Carubin, possesses a covered place for women who may choose to participate in public prayers—a circumstance unique in Mohammedan places of worship. Old Fez was founded in 793 by Edris II., a descendant of Mohammed, and continued the capital of an independent kingdom till 1548, which was then annexed to Morocco. Fez has always been held so sacred by the Arabs and others, that when the pilgrimages to Mecca were interrupted in the 10th century, the Western Moslems journey to this city; and even now none but the Faithful can enter Fez without express permission from the emperor. Pop. estimated at 100,000, about three-fourths Moors and Arabs.

Fezzan, a country of Central Africa, immediately S. of Tripoli, to which it is tributary. Its true boundaries are ill-defined, and its area is uncertain. Fezzan is, as far as has been ascertained, the largest oasis, or cultivable tract in the great African desert of Sahara by which it is surrounded on three sides. The ostrich and antelope are commonly met with, while to the ordinary domestic animals, camels may be added. In summer the temperature is insupportably hot, and, on the other hand, the cold of winter is sufficiently severe to be acutely felt by the natives. Fezzan derives its chief importance as being a depot for the great caravan traffic between Egypt and Barbary, and the countries to the E. and S. of the Niger. Capital, Mourzouk.

Fiber, or **Fibre,** a filament, or thread, the minute part of either animal or vegetable substances.

Fibiger, Johannes Henrik Tauber, a Danish poet; born in Nykjobing, Jan. 27, 1821.

Fibrin, or **Fibrine,** a substance formerly held to be an albuminoid or proteid development which is contained in the blood, and causes it to clot, but is now considered a waste matter produced by incipient decomposition.

Fichte, Immanuel Hermann von, a German philosopher, son of Johann; born in Jena, July 18, 1796; was a mystic theist, but tried to frame a compromise which should not exclude disbelief in a supreme being. He died in Stuttgart, Aug. 8, 1879.

Fichte, Johann Gottlieb, a German philosopher; born in Rammenau in Upper Lusatia, May 19, 1762. He was appointed Professor of Philosophy in the University of Jena in 1794; and the following year published his "Doctrine of Science," a fundamental departure from Kant. He died in Berlin, Jan. 27, 1814.

Fidgets, the colloquial name of the disease or morbid symptom called dysphoria. It consists of an overpowering sense of restlessness; or more specifically, there are present, irritability, dissatisfaction, a sense of fullness in the extremities, thirst, dryness if skin, wakefulness during the greater part of the night, the patient perpetually altering his position in the vain endeavor to obtain relief. About two or three in the morning perspiration generally ensues, followed by heavy slumber.

Field, Mrs. Caroline Leslie, an American author; daughter of Mrs. A. D. T. Whitney; born in Milton, Mass.; died in 1902.

Field, Cyrus West, an American capitalist; born in Stockbridge, Mass., Nov. 30, 1819; received a fair education. About 1845 he turned his attention to ocean telegraphy, and long

meditated the question whether or not a cable could be stretched across the Atlantic. In 1854 the Newfoundland Legislature granted him the right for 50 years to land cables between the United States and Europe on that island. He later organized the New York, Newfoundland, and London Telegraph Company. In 1866, after many disappointments and failures, a cable was successfully stretched across the ocean. For his achievement Congress voted him a gold medal and the thanks of the people. In 1867 the Grand Medal, the highest honor in the Paris Exposition, was bestowed on him. He died in New York city, July 12, 1892.

Field, David Dudley, an American jurist; born in Haddam, Conn., Feb. 13, 1805; was admitted to the New York bar in 1828; practised till 1885, distinguishing himself especially by his labors in the direction of a reform of the judiciary system. In 1857 he was appointed by the State to prepare a political, civil, and penal code, of which the last was adopted by New York, and all have been accepted by some other States. In 1866, by a proposal brought before the British Social Science Congress, he procured the appointment of a committee of jurists from the principal nations to prepare the outlines of an international code, which were presented in a report to the same congress in 1873. This movement resulted in the formation of an association for the reform of the law of nations, and for the substitution of arbitration for war, of which Mr. Field was the first president. He died in New York city, April 13, 1894.

Field, Eugene, an American journalist; born in St. Louis, Mo., Sept. 2, 1850. By his poems and tales in the press he won a high reputation in the West, which before his death had become national. He died in Chicago, Ill., Nov. 4, 1895.

Field, Henry Martyn, an American clergyman and scholar; born in Stockbridge, Mass., April 3, 1822; brother of Cyrus West and Stephen Johnson Field; graduated at Williams College, and was ordained to the ministry in 1842. In 1854 he became editor and proprietor of the New York "Evangelist." Died Jan. 26, 1907.

Field, Kate, an American author and lecturer; born in St. Louis, Mo., about 1840. During several years she was European correspondent of various papers. She founded "Kate Field's Washington," in Washington, D. C. She died in Honolulu, Hawaii, May 19, 1896.

Field, Marshall, an American philanthropist; born in Conway, Mass., in 1835; received an academic education; began business in Pittsfield, Mass., as a clerk in a dry goods store; removed to Chicago in 1856; entered the same business; and rose to the head of the firm. He founded the Field Columbian Museum in Chicago; gave to the University of Chicago land valued at $200,000; to the Home for the Incurables, land valued at $40,000; and to Conway, Mass., a public library. He died in New York city, Jan. 16, 1906.

Field, Stephen Johnson, an American jurist; born in Haddam, Conn., Nov. 4, 1816; brother of Cyrus West Field; graduated at Williams College; studied law and was admitted to the bar; removed to San Francisco in 1849. Soon after he settled in the newly organized city of Yubaville, of which he was appointed justice of the peace. He was elected to the first legislature under the California constitution; prepared a code of mining, civil and criminal laws, which was generally adopted in the Western States; became a justice of the Supreme Court of California in 1857; was appointed its chief-justice in 1859; and in 1863 was appointed an associate justice of the United States Supreme Court, which office he resigned in April 1897. He died in Washington, D. C., April 9, 1899.

Field Cricket, a species of cricket found in hot sandy localities, where it burrows to a depth of 6 to 12 inches. It feeds on insects, for which it lies in wait at the mouth of its burrow.

Field-marshal, the highest military dignity in Great Britain, Germany, and other European countries. George II. introduced the title into England when, in 1736, he created the Duke of Argyll and the Earl of Orkney field-marshals, but it had been long in use in the German armies, and is of German origin. In Great Britain the

dignity is conferred by selection and is held by but few officers.

Fielding, Henry, an English novelist; born in Sharpham Park, Somersetshire, April 22, 1707, of the blood of the Hapsburgs. After ill success as playwright and lawyer he embarked upon a literary career, in which he won fame. He died in Lisbon, Oct. 8, 1754.

Field of the Cloth of Gold, the place where Henry VIII., of England, and Francis I., of France, held interviews, between Guisnes and Ardres, near Calais, June 7–24, 1520. Such was the magnificence displayed that the place of the meeting was named as above.

Fields, Annie (Adams), an American poet and essayist, wife of James T. Fields; born in Boston, Mass., in 1834.

Fields, James Thomas, an American publisher and author; born in Portsmouth, N. H., Dec. 31, 1817. The various publishing firms of which he was partner, with Ticknor, Osgood, and others, were of the first rank. He edited the "Atlantic Monthly" in 1862–1870. He died in Boston, Mass., April 24, 1881.

Field Vole, the short-tailed field mouse. It usually frequents damp places, forming burrows of considerable extent. Its food consists almost exclusively of vegetable substances.

Fieri Facias, a writ which lies for him who has recovered in an action for debt or damages to the sheriff, commanding him to levy on the goods and chattels of the defendant the sum or debt recovered.

Fieschi, Joseph, a Corsican conspirator; author of one of the most terrible conspiracies of history. Having conceived a hatred for the French king, Louis Philippe, he constructed an infernal machine of about 100 gun-barrels fixed in a frame, which he discharged simultaneously, during a review of the National Guard, July 28, 1835. The king escaped unhurt, but Marshal Mortier and 17 people were killed, and many more wounded. Fieschi, and his accomplices, Pepin and Morey, were guillotined, Feb. 16, 1836.

Fiery Cross. Formerly among the Scotch Highlanders when a chieftain desired to summon his clan he slew a goat and, making a cross of any light wood, seared its extremities in fire, and extinguished them in the blood of the animal. This was called the fiery cross, also creau tarigh, or the cross of shame, because disobedience to the symbol inferred infamy. It was delivered to a messenger, who ran with it to the next hamlet, where he presented it to the principal person, with a single word, the place of rendezvous. He who received the symbol was bound to send it forward to the next village; and thus it passed through all the district. At the sight of the fiery cross, every man, capable of bearing arms, was obliged to repair to the place of rendezvous. He who failed to appear, suffered the extremities of fire and sword.

Fife, a wind-instrument, resembling a small flute in its form and method of performance, seldom having any keys, and never more than one. It is chiefly used in martial music.

Fifteen-spined Stickleback, a marine species of stickleback, 5 to 7 inches in length, which makes its nest of seaweed and guards the eggs like the fresh-water species.

Fifth-monarchy Men, in English history, a set of fanatics who formed a principal support of Cromwell during the Protectorate. They considered his assumption of power as an earnest of the foundation of the fifth monarchy, which should succeed to the Assyrian, the Persian, the Grecian, and the Roman, and in which Jesus Christ should reign with the saints on earth for the space of 1,000 years.

Figaro, a dramatic character, brought on the stage in Paris about 1785. Since that time, Mozart, and others, have made the name celebrated in classic operas; and now the term is frequently used to denote an adroit and cunning accomplice.

Fig Tree, a tree of the mulberry family, a native of Western Asia, and is extensively cultivated in California, the annual product being of great value. It was early introduced into the islands and countries on both sides of the Mediterranean and Southern Europe. There are many varieties cultivated.

Figueroa, Francisco de, a Spanish poet born in 1540. When dying (in 1620) he burned all his verses; but they were published from copies in the hands of his friends. He was called by his contemporaries "the Divine Figueroa."

Figueroa, Francisco, a Mexican historian; born in Toluca in 1730; was a Franciscan priest and taught and lectured well; but his great service to literature consisted in the compilation of materials for a history of Mexico. He died in the City of Mexico in 1800.

Figueroa, Francisco Acuna de, a Uruguayan poet; born in Montevideo in 1791. He has been assigned a high rank by competent critics; lofty inspiration and sonorous diction being his characteristics, exemplified in the "National Hymn of Uruguay." He died in Montevideo, Oct. 6, 1862.

Figuier, Guillaume Louis, a French scientist; born in Montpellier, Feb. 15, 1819; died in Paris, Nov. 8, 1894.

Fiji Islands, a group of over 200 islands belonging to Great Britain, in the South Pacific Ocean. Their total area is 7,435 square miles. The two largest are the Viti Levu, with an area of 4,250 miles, and the Vanua Levu, with an area of 2,600 square miles. The islands are mostly mountainous and have a fertile soil, and luxuriant vegetation. The forests contain valuable timber. In 1874 the group was voluntarily ceded to England by the king and chiefs. The government is administered by a governor, who is also consul-general for the Western Pacific. The legislative council consists of six official and six unofficial members. Pop. (1911) 139,541.

Filament, a slender, thread-like process; a fiber or fine thread of which flesh, nerves, skin, roots, etc., are composed. The filament is usually continuous from one end to the other, but in some cases it is bent or jointed. In electricity, the carbon thread in an incandescent lamp bulb.

Filander, in zoölogy, a species of kangaroo found in the N. of Australia, in the region of King George's Sound. It is about the size of a common rabbit. It is also called the short-tailed kangaroo.

File, a bar of cast-steel with small sharp-edged elevations on its surface called teeth, the use of which is to cut into or abrade metals, wood, ivory, horn, etc. Files are of various shapes, as flat, half-round, three-sided, square, or round, and are generally thickest in the middle, while their teeth are of various degrees of fineness and of different forms. A file whose teeth are in parallel ridges only is called single-cut or float-cut. Such are mostly used for brass and copper. When there are two series of ridges crossing each other the file is double-cut, which is the file best suited for iron and steel. Rasps are files which have isolated sharp teeth separated by comparatively wide spaces, and are used chiefly for soft materials such as wood and horn. Each class of files is made in six degrees of fineness, called rough, followed by middle, bastard, second-cut, smooth, and superfine or deadsmooth.

File-fish, a name given to certain fishes from their skins being granulated like a file; they constitute the genus Balistes. The orange file-fish or "barnacle eater" is common along the coast of New England. Balistes capriscus, a common inhabitant of the Mediterranean, has the power of inflating the sides of the abdomen at pleasure; it attains of size of two feet.

Filibuster, a sea-rover; sometimes applied to any military adventurer who undertakes an expedition against a territory, unauthorized by law or the exigencies of war. The term filibuster was first applied in New Orleans to certain adventurers who, after the termination of the war between this country and Mexico, exerted themselves with setting on foot within the United States military expeditions designed to operate in the Spanish-American countries to the S. of us. The pretended object of these expeditions was the emancipation of those countries from tyranny, and the introduction of democratic institutions after the model of the United States. Though the setting on foot of such expeditions is contrary to our neutrality laws, yet the laws were frequently evaded. The most noted expedition of this sort was that led by Walker against Nicaragua in 1856, and which resulted in Walker being shot, when he attempted to lead

a second expedition into the country in 1860.

Filicaia, Vincenzo da, an Italian poet; born in Florence, Dec. 30, 1642. He was a great poet, but lived for a long time in poverty. When this was relieved by eminent patronage in later years, the death of his loved ones clouded his prosperity. He died in Florence, September 24, 1707.

Filigree, a delicate species of ornamental work in gold or silver, wrought in little threads of the metal intertwisted in eccentric forms and patterns.

Filigree Glass, one of the kinds of ornamental glass for which Venice was formerly celebrated, the manufacture of which has been recently revived.

Fillet, in ordinary language, a band of metal, linen, or ribbon worn round the head. Also the fleshy part of the thigh; applied most commonly to veal. Also portions of meat or fish removed from the bone and served either flat or rolled together and tied round; the term is specially applied to the undercut of the sirloin of beef, served whole or cut into steaks, and to slices of flat-fish removed from the bone.

Fillipeen, or **Phillipena,** a small present. When a person eating nuts finds one with a double kernel, he or she gives it to one of the opposite sex, and the individual who, at the next meeting, or after the acceptance by the other of something tendered first utters the word fillipeen, is entitled to a present from the other.

Fillmore, Millard, an American statesman, 13th President of the United States; born in Summer Hill, Cayuga co., N. Y., Feb. 7, 1800. He rose from the humblest beginnings to the highest position attainable by an American citizen. Apprenticed to a wool-carder in his father's locality, he made amends, by his zeal in the pursuit of knowledge, for the scantiness of his means; and before he was of age, his talents and aptitude procured him the notice and esteem of Judge Wood, an eminent lawyer of his native county, who invited the young man to a desk in his office, and offered to defray his expenses while he qualified himself for the profession of the law. Fillmore accepted the offer to a certain extent, while he contrived, by teaching in a school, to press as lightly as possible on the generosity of his benefactor. In 1821 he removed to Erie county, and pursued his legal studies in the city of Buffalo. In 1827 he was admitted as an attorney; in 1829, as a counsellor in the supreme court; and in 1830 he entered into partnership with an older member of the bar. It was in 1829 that he commenced his political career as a representative of Erie county in the State Legislature, and in 1832 he was elected to the Congressional House of Representatives. For a number of years he alternated between political life and the exclusive practice of his profession, rising steadily in the general estimation as an able lawyer and consistent and promising leader of the Whig party. Elected in 1847 to the important post of comptroller of the State of New York, he enjoyed in 1848 the still higher honor of being elected by his party as Vice-President of the United States. The new President, General Taylor, entered on his office in March, 1849, and on his sudden death in July, 1850, Fillmore became, in virtue of his office, President of the United States. He was installed in the White House at what was, in several respects, a critical moment in the history of the Union. It was the era of the Lopez expedition against Cuba; and of a more than usual bitterness in the relations between North and South on the slavery question. Fillmore made Daniel Webster his Secretary of State, an appointment which strengthened and popularized his administration. President Fillmore's messages favored the fugitive slave law, and recommended a protective, but not a prohibitory tariff. Under his presidency California was admitted as a new State into the Union. In his final message he had to deplore the death of Webster; and in March, 1853, he yielded up his office to his successor, General Pierce. He was the candidate of the American party for the presidency in 1856, but he received a very small minority of votes. Fillmore was then visiting Europe, and was received at the principal courts with the distinction which his character and career claimed for him. After his retirement from public life he resided in Buffalo, N. Y., where he died, March 8, 1874.

Film, a transparent, flexible substance used as a substitute for glass plates for photographic work; specifically, a strip of celluloid treated with a sensitized coating, a base for moving pictures.

Filter, a twist of thread, of which one end is dipped in the liquid to be purified, and the other hangs below the bottom of the vessel, so that the liquor drips from it. Also a vessel, chamber, or reservoir through which water or other liquid is passed to arrest matters mechanically suspended therein. The term is also applied to an apparatus for arresting dust, steel filings, smoke, etc., in the air breathed.

Filter Bed, a settling pond whose bottom is a filter.

Fin, the organ by which locomotion is effected in a fish. As a rule fins consist of a membrane supported by rays.

Finance, the art of managing money matters, the person who professes this art being called a financier. Finances is often used for money itself, but with a reference to the purpose to which it is to be applied, as where the finances of a country are said to have improved or fallen off. Sometimes the word is applied to private wealth, but it is properly applicable to public funds. It is used in the United States as in England, rather in a political and economic sense than officially; but in France there is at the present time a Minister of Finances, corresponding to the Secretary of the Treasury of the United States.

Finch, Francis Miles, an American poet, and a judge of the United States District Court; born in Ithaca, N. Y., June 9, 1827. He wrote "The Blue and the Gray." Died in 1907.

Finck, Henry Theophilus, an American musical critic and author; born in Bethel, Mo., Sept. 22, 1854. He graduated at Harvard in 1876; and from 1878 to 1881 studied physiological psychology at Berlin, Heidelberg, and Vienna. He has been musical critic of the New York "Evening "Post" since 1881.

Findlay College, a co-educational institution in Findlay, O.; founded in 1882 under the auspices of the Church of God.

Findlay, city and county seat of Hancock Co., Ohio, on the Blanchard River, 44 miles S. of Toledo; was founded early in the 19th century and incorporated in 1837. The neighboring oil and natural gas-fields, stone quarries, clay, lime, and gravel deposits, have enhanced its industrial and commercial activities which are considerable. Pop. (1920) 17,021.

Fine Arts, a term generally applied to those arts in which the artist seeks chiefly to give pleasure by the immediate impression produced on the mind by his work. These arts are thus distinguished from arts which are designed to answer some practical purpose, and so have been termed useful.

Fingal, a personage celebrated in the poems of Ossian, who was his son. He was Prince of Morven, province of ancient Caledonia, and struggled against the power of the Romans, who were in his time, the rulers of England. He also undertook warlike expeditions to the Orkneys, Ireland, and even Sweden. He lived in the 3d century.

Fingal's Cave, a curious cavern formed of basaltic columns, in the Isle of Staffa, one of the Hebrides.

Finger Prints, popular name of a recently developed and widely adopted system for detecting crime and identifying criminals; consists of an impression of the ball of a finger or, preferably, of the thumb, on some plastic substance or inked surface, which is then carefully catalogued and filed for future use. It is said that the fine lines in the skin of thumb or finger do not vary materially from youth to old age; and that no two persons' finger prints are alike; hence the value of this form of identification.

Finland, Republic of, (called by the natives, Suomen-maa, "land of marshes"), a country of Northern Europe, including (with the exception of part of Lapland) the extreme N. W. portion of the Russian empire; length, 600 miles; average breadth, about 240 miles; area, 132,510 square miles; pop. 3,366,507, chiefly Finns and Lapps; capital, Helsingfors.

Finland, which is divided into 8 provinces, consists principally of a tableland from 400 to 600 feet above

the level of the sea, and interspersed with hills of no great elevation. In the N., however, the Manselka Mountains have an average height of between 3,000 and 4,000 feet. The coasts are surrounded by a vast number of rocky islets, separated from the mainland and from each other by intricate and narrow channels, rendering the shores of the country easy of defense in case of hostile attack by sea. The chief natural feature of Finland is its myriads of lakes, which spread like a network over a large proportion of its surface. The greater number of these are in the S. and E.; and generally abound with islands. There are numerous rivers, but none of much importance.

The climate is rigorous. Even in the S. the winter lasts from 6 to 7 months, and in the N. from 8 to 9 months. Dense fogs are very frequent; heavy rains take place in autumn, and in May and June the thaws put a stop to nearly all traveling. In the N. the sun is absent during December and January; but during the short summer, while that luminary is almost perpetually above the horizon, the heat is often very great; and near Uleaborg, in about lat. 65°, corn is sown and reaped within 6 or 7 weeks. Crops are exposed to the double danger of being destroyed by sudden frosts, and by the ravages of a variety of caterpillar.

Rye, oats, and barley are grown. The most important products are, however, timber, deals, potash, pitch, tar, and resin; all of which articles are extensively exported. Next to agriculture, stock-breeding and fishing form the leading occupations of the inhabitants.

The Finns were pagans, living under their own independent kings, till the 12th century, about the middle of which the country was conquered by the Swedes, who introduced Christianity. The province of Wyborg was conquered and annexed to Russia by Peter the Great in 1721; the remainder of the country became part of the Russian dominions (also by conquest) in 1809. Owing to the evident determination of the Russian government to abolish the autonomy of Finland, there was a large emigration to America. Famine in 1902-3 was greatly relieved by American benevolence. On Dec. 6, 1917, Finland proclaimed a republic. The Russian Bolshevist troops driven out by 1919. Treaty of independence signed Oct. 14, 1919.

Finland, Gulf of, one of the great arms of the Baltic Sea, extending E. and N. between lat. 58° 40′ and 60° 40′, and between lon. 23° and 30° 10′ E. It is 260 miles long by 25 to 90 miles wide.

Finley, John, an American poet; born in Brownsburg, Va., Jan. 11, 1797. He died Dec. 23, 1866.

Finley, John Huston, an American educator; born at Grand Ridge, Ill., Oct. 19, 1863; was Secretary of the New York State Charities Aid Association in 1889–1892; president of Knox College in 1892–1899; Professor of Politics at Princeton University in 1900–1903; president of the College of the City of New York in 1903–11–13; became Commissioner of Education of the State of New York and President of the State University in 1913; was selected as his biographer by Grover Cleveland (1908).

Finley, Martha, pseudonym Martha Farquharson, an author; born in Chillicothe, O., April 26, 1828. She wrote the popular "Elsie" and "Mildred" series of fiction and other works. She died Jan. 30, 1909.

Finsen Light Cure, invented by Prof. Niels R. Finsen of Copenhagen (died Sept. 24, 1904), is used for the cure of lupus, acne, erisypelas, and similar eruptions, and in combination with X-rays for deep-seated cancers. The Finsen Lamp consists of a powerful electric light focussing through telescopes of colored glass on the diseased surfaces requiring treatment.

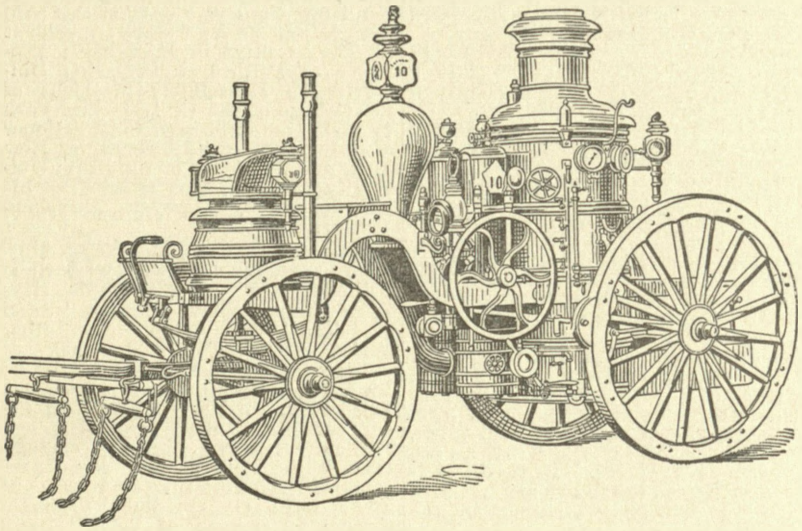
Fiord, an inlet of the sea, generally long, narrow, and deep; a term applied in Scandinavian countries to any bay, creek, or arm of the sea which extends inland, and sometimes used to express an inland lake or considerable sheet of water; as, Sogne Fiord.

Fir, in the narrower and stricter sense of the word, the name of a genus of trees having solitary leaves growing around the branches. The fir is thus distinguished from the pine, the leaves of which grow in twos, threes,

fours, or fives; and from the cedar and the larch, both of which have the leaves fasciculated. The term fir, thus limited, is applied only to the different varieties of the silver fir and the spruce fir.

Firdausi, or **Firdusi,** a Persian poet; lived from about 935 to about 1020. His true name was Abul Kasim Mansur. He is the greatest of Persian epic poets.

Fire Alarm, an apparatus for communicating warning of a fire, as by telegraphic signal, etc. Also an automatic arrangement by which notice of fire is given.



STEAM FIRE ENGINE.

Firearm, a weapon which projects a missile by the explosive force of gunpowder or other similar explosive, that owes its expansion to ignition; as rifles, muskets, pistols, etc. The term is not now generally extended to cannon.

Fire Armor, a device to protect firemen and others from the effects of smoke, gas, etc.

Fireball, a ball filled with powder or other combustibles, intended to be thrown among enemies, and to injure by explosion, or to set fire to their works. Also a popular name applied to a certain class of meteors which exhibit themselves as globular masses of light moving with great velocity, and not infrequently passing unbroken across the sky until lost in the horizon.

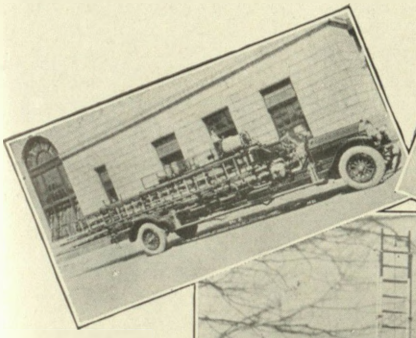
Fire Balloon, a balloon whose ascensional power is derived from a body of heated air rising from a fire beneath the open mouth of the bag. Also a balloon sent up at night with fireworks, which ignite at a certain regulated height.

Fire Boat, a small steamboat equipped with apparatus for extinguishing fires that may occur on the wharves or among the shipping. Used in many large cities, they have proved of great service.

Fire Brick, a brick capable of sustaining without fusion, the extreme action of fire. They are used for lining furnaces, and for all kinds of brick-work exposed to intense heat which would melt common bricks.

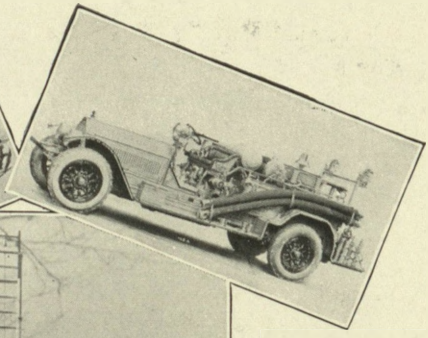
Firedamp Indicator, an instrument founded on the laws of the diffusion of gases.

Fire Engine, a machine employed for throwing a jet of water for the purpose of extinguishing fires. This



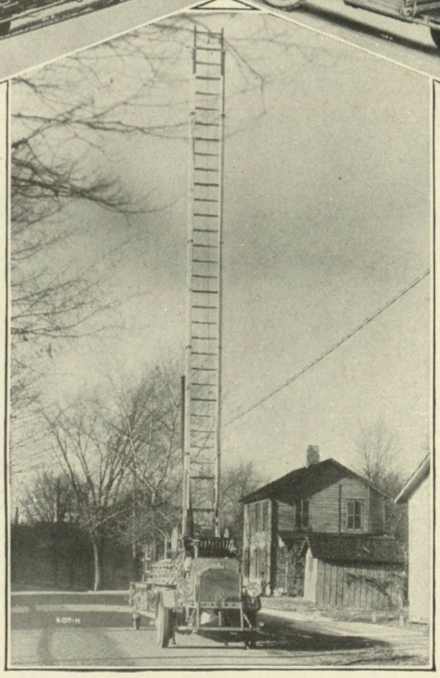
SERVICE TRUCK

Combined Hook-and-Ladder and Chemical Engine. Six-Cylinder, 120-Horsepower



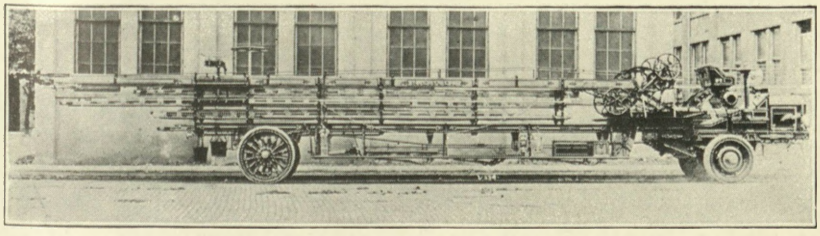
TRIPLE COMBINATION TRUCK

Hose-Wagon, Pumper and Chemical Engine. Capacity, 1,000 Gallons a Minute. 1,200 Feet 2½-Inch Hose. Six-Cylinder, 120-Horsepower



AERIAL TRUCK

Seventy-five-Foot Ladder, One-Man Operation. Six-Cylinder, 120-Horsepower.



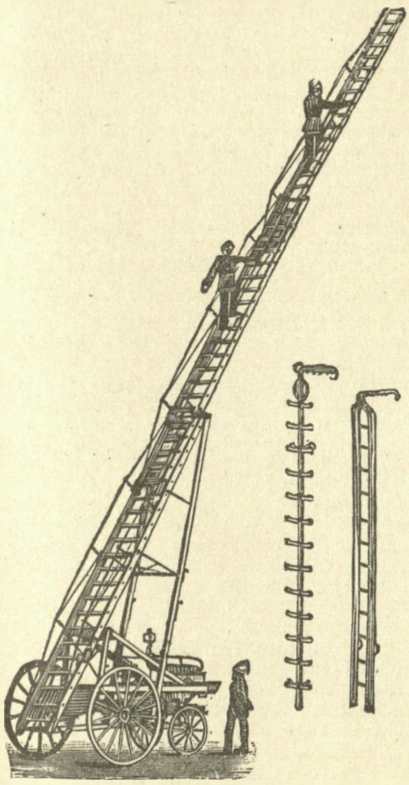
AERIAL TRUCK

Seventy-five-Foot Ladder. One-Man Operation. Six-Cylinder, 120-Horsepower

COPYRIGHT, BY F. E. WRIGHT.

GAME FISH CAUGHT WITH THE FLY

name was formerly applied to the steam engine. Machines for the extinguishing of fires were employed by the Romans, and are referred to by Pliny; but he gives no account of their construction. Apollodorus, architect to the Emperor Trajan, speaks of leathern bags with pipes attached, from which water was projected by squeezing the bags. Hero of Alexandria, in his treatise on pneumatics — written probably about 150 years before the Christian era — describes a machine which he calls "the siphons used in conflagrations." It consisted of two cylinders and pistons connected by a reciprocating beam, which raises and lowers the pistons alternately, and thus, with the aid of valves opening only toward the jet, projects the water from it, but not in a continuous stream, as the pressure ceases at each alternation of the stroke. The more recently constructed fire engines include contrivances for preventing the entrance of mud and gravel, and for ready access to the valves in case of their being out of order, while the cistern is dispensed with, a hose being carried directly to the water-supply. They are usually drawn by two horses, though smaller engines are made to be drawn by hand or by one horse, while gasoline propelled engines are used in all large cities.



MODERN FIRE LADDER.

In the United States the use of fire engines dates from 1731. At the present time they are to be found in all the cities, towns, and larger villages of the Union, and American fire extinguishing methods have aroused admiration in Europe, where fire departments are following American examples.

Fire Escapes are of two distinct kinds — one for affording aid from outside, and another for enabling those within the house to effect their own escape. Of the latter the simplest is a cord firmly attached to the window sill of every sleeping apartment, and coiled in a suitable place. A pulley fixed to the window sill, over which runs a rope with a chair or simple board to sit on, is a well-known contrivance. Fire escapes, to be used from without, consist either of simple ladders kept at convenient stations, or a series of ladders that can be joined together; of poles with baskets attached; of ropes with weights at one end, that they may be thrown into windows; of combinations of ladders, ropes, bags, baskets, nets, etc. In most large American cities, fire escapes consisting of iron stairways or ladders are required by law to be constructed on all high buildings.

Firefly, a small beetle which emits a beautiful phosphoric light from the under surface of the terminal segments of the abdomen. In the United States during the summer months these little insects abound, and are observed to be particularly active and luminous after slight showers of rain, studding the trees and grass with their pale lights.

Fire Hose. In the United States cotton is woven into a tube by machinery constructed for the purpose. Two such tubes are fitted one within the other, and held together by a solution of india-rubber, which forms a water-tight layer. English hose is generally made of leather fastened by rivets.

Fire Island, the most W. end of a strip of the Great South Beach, Suffolk co., N. Y., 40 miles long, averaging one-half mile W., off Long Island, between Great South Bay and the Atlantic Ocean, and containing a lighthouse. The beach took its name from the fires built there as signals to vessels during the war with England in 1812.

Firelock, a musket or other gun, with a lock furnished with a flint and steel, by means of which fire is produced in order to discharge it.

Fire-making, the art of producing fire. Plutarch says that in his time there were fireless races of mankind. The oldest method known of making fire is the South Sea Island one by means of a stick and a groove. By a change in the way of working, this became the Fire Drill. There followed next, the method of striking fire by means of a flint, a piece of iron pyrites and tinder. This process was known to the ancients, which is the reason why they called one of the two minerals used pyrites — fire-stone. The Greeks knew how to concentrate the sun's rays by a burning glass, and the Romans effected the same result by concave mirrors. Fire has been obtained by the revolution of a windlass in the hole of an oaken post smeared with tar. The usual method, before the lucifer match, was to keep the hearth-fire alive all night, under the penalty, in winter, of a trip across the snow to the nearest neighbor's in the morning.

Fire Marshal, an officer in some of the larger American cities who has command of the fire department and who directs the work of extinguishing fires. He has large powers of discretion, and also police authority.

Fireproof, proof against fire; incombustible. Buildings are rendered fireproof by constructing them entirely of brick or stone, and using iron doors, lintels, etc., and stone stairs. Wood can be treated with silicate of soda, which, on the application of a strong heat, fuses into a kind of glass, forming a shield against fire. Cloth or wood impregnated with certain saline substances will not blaze. Modern skyscrapers are of fire-proof construction.

Fireproof Wood in Ships. Wherever it is necessary to use wood in ships it should be rendered fireproof. This can be done by a simple process, which consists in withdrawing all sap and moisture from the lumber in a vacuum, and then filling the pores with phosphate of ammonia. This mineralized wood cannot be set on fire. Wood treated as above shown is employed exclusively in the following ships of the United States navy: The "Wilmington," "Annapolis," "Marietta," "Helena," "Nashville," "Wheeling," "Newport," and "Vicksburg." The speedy destruction of the Spanish cruisers in the fight off Santiago and the burning of a Japanese and five Chinese ships during the war between these countries, show the importance of using fireproof wood in the construction of naval vessels.

Firestone, Harvey Samuel, an American manufacturer; born, 1868. In 1900, organized the Firestone Tire and Rubber Company at Akron, Ohio. Is President of the Steel Products Company and other industrial concerns. Was a pioneer tire manufacturer.

Fire Worshipers, the Zoroastrians, called also Guebres. No prominent race now in India has become more rapidly modified by intercourse with Europeans.

Firmament, the word usually designates the expansive arch over our heads, in which all the various phenomena of the stars and planets appear to take place.

Firman, in Turkey, any decree issued by the Porte and authenticated by the Sultan's own cipher or signet.

First Fruit, the fruit or produce first matured or collected in any season; first profits of anything; first or earliest effects of anything in a good or bad sense. In ecclesiology, that portion of the fruits of the earth and other natural produce, which, by the usage of the Jews and other ancient nations, was offered to God.

Fischer, Sir Henry Charles, a German-English telegrapher; born in Munden, Hanover, in 1833. He was educated in Germany, and entered the Hanoverian government telegraph service in 1852; went to England in 1856; at the transfer of the telegraph to the State (1870), was deputed by the postmaster-general to organize the staff and other arrangements of the Central Telegraph Office, and made controller; he retired in 1898.

Fischer, Kuno, a German historian of philosophy; born in Sandewalde, Silesia, July 23, 1824. He was interdicted from teaching philosophy at Heidelberg in 1853; but after filling professorships in Berlin and Jena, he had the satisfaction of being called to the chair of philosophy at Heidelberg in 1872. He died in 1907.

Fish, the name applied to a class of animals exclusively aquatic, and occupying the fourth and lowest station of the section Vertebrata.

Fish, Hamilton, an American diplomatist; born in New York city, Aug. 3, 1808; was graduated at Columbia College, and admitted to the bar in 1830. He was elected a congressman in 1842, and governor in 1848. In 1851 he was elected to the United States Senate, where he opposed the repeal of the Missouri Compromise and joined the Republican party on its foundation. He was Secretary of State under Grant from 1869 to 1877, signing, as one of the commissioners, the Washington Treaty of 1871, and carrying through the settlement of the "Alabama" question. Died in Garrison's, Putnam co., N. Y., Sept. 7, 1893.

Fish, Nicholas, an American military officer; born in New York city, Aug. 28, 1758, studied law; joined the Continental army and distinguished himself during the Revolutionary War. He was made adjutant-general of New York in 1786; supervisor of United States revenue in 1794, and president of the New York State Cincinnati Society in 1797. He died in New York city, June 20, 1833.

Fish Culture, or **Pisciculture,** the artificial propagation of fish to offset the destructive effect of fisheries. The art of fish fertilization is comparatively new. In the United States the art has made greater progress than in Europe. Dr. Garlick in 1865 began the propagation of brook trout, and New Hampshire imported salmon eggs from Canada to hatch in the waters of that State. Since then the various States have one by one taken up the art, till now over three-quarters of them have regularly appointed fish commissioners.

The United States Commission of Fish and Fisheries is placed in charge of a Commissioner who is required to be a person of scientific and practical acquaintance with the fish and fisheries of the sea, coast and inland waters. In the year ended June 30, 1923, the distribution of fish and eggs was as follows: Eggs, 1,463,730,432; fry, 2,586,812,290; fingerlings, yearling and adults, 264,316,307; total, 4,314,859,029. Allotments of fish and eggs were made to 29 State Fish Commissions.

Fisher, George Park, an American author and educator; born in Wrentham, Mass., Aug. 10, 1827; studied theology at the Yale Divinity School; at Andover, and in Germany; was Professor of Divinity in 1854–1861, and subsequently of Ecclesiastical History, at Yale. He died in 1909.

Fisher, John Arbuthnot, Baron Fisher of Kilverstone, a British naval officer, born in Ceylon in 1841; was retired with the rank of Admiral of the Fleet in 1911; recalled to active service at the outbreak of the World War as First Sea Lord of the Admiralty; and reorganized the navy by planning ships, training officers, and inspiring the strategy which held command of the North Sea. His reputation in and out of the navy was founded on his remarkable administrative ability. Died, 1920.

Fisher's Hill, a lofty eminence, about 20 miles S. of Winchester, Va., between the Massanutten and North Mountains, rising from the banks of a branch of the Shenandoah. This place was the scene of the victory, Sept. 22, 1864, of a National force under General Sheridan, over one of Confederates under General Early.

Fishery, the business or occupation of catching fish for the purpose of trade, and the supply of food.

Fisk, Franklin W., an American educator; born in Hopkinton, Vt., in 1820; was graduated at Yale Univer-

sity in 1849; taught there awhile; then became Professor of Rhetoric in the Seminary of Beloit, Wis. He was called to the Chicago Theological Seminary when that school was founded in 1859. Subsequently he was president of the seminary till 1900 when he resigned. He died in Chicago, Ill., July 4, 1901.

Fiske, Bradley Allen, an American naval officer; born in Lyons, N. Y., June 13, 1854; was appointed a cadet midshipman in the United States navy Sept. 24, 1870; became a lieutenant Jan. 26, 1887, and lieutenant-commander March 30, 1900. He invented a boat detaching and attaching apparatus for warships in 1877; the first electric ammunition used in the navy in 1888; electric gun training apparatus and electric steering gear the same year; range and position finders in 1889; improvements of the range finder and electric steering gear in 1895; and an electrical apparatus for transmitting the orders of a ship's commander from the deck bridge to the engine room in 1896. He was promoted to rear-admiral Aug. 3, 1911; commanded the 1st, 3d and 5th divisions of the Atlantic fleet in 1912; was Naval Aid for Operations from 1913 till May, 1915, when he resigned, and member of the General Board of the Navy and the Joint Board of the Army and Navy, in 1910–11 and 1913–15 respectively.

Fiske, John, an American historian; born in Hartford, Conn., March 30, 1842. He graduated at Harvard in 1863, and in 1865 took his degree in law, but never practised. He was for a while lecturer on philosophy at Harvard, and from 1872–1879 assistant librarian. He won world-wide renown in 1874, by "Outlines of Cosmic Philosophy," an exposition of the philosophy of natural evolution; and wrote several other books, dealing with American history. Died in Cambridge, Mass., July 4, 1901.

Fissure, in ordinary language, a narrow opening, a crack. In botany the opening of seed-vessels, anthers, etc. In heraldry, the fourth part of the bend sinister. In geology, a crack in the strata.

Fistula. In surgery, a long and sinuous ulcer, having a narrow opening, and sometimes leading to a large cavity, and which has no disposition to heal.

Fitch, Ashbel Parmalee, American statesman and financier; born Movers, Clinton co., N. Y., October 8, 1848; educated at Jena and Berlin; member of Congress from 1886 to 1893, and Comptroller of New York city from 1893 to 1897. Died, 1904.

Fitch, John, an American inventor; born in East Windsor, Conn., Jan. 21, 1743; manufactured arms during the Revolutionary War. In 1786 he built a steamboat which could run 8 miles an hour. Two years later a company was organized in Philadelphia, which built a steampacket that ran on the Delaware river for about two years, when the company failed. He wrote a history of his work on the steamboat which he left in a sealed envelope directed to "My children and future generations." He died in Bardstown, Ky., July 2, 1798.

Fitch, William Clyde, an American playwright and author; born in New York, May 2, 1865. He was educated at Hartford, Conn., and Amherst College, and wrote many successful plays. He died Sept. 4, 1909.

Fitchburg, a city and one of the capitals of Worcester county, Mass.; on the Nashua river, which affords excellent water-power, and on the Boston & Maine and other railroads; 50 miles N. W. of Boston; embraces several villages; is a trade center of a large farming section; has productive granite quarries nearby; and manufactures cotton, woolen, and gingham goods, boots and shoes, machinery, paper, fire-arms, bicycles, and ironware. Pop. (1920) 41,013.

Fitzgerald, Edward Lord, an Irish patriot; born near Dublin, Ireland, in 1763. He was a son of the first Duke of Leinster. He distinguished himself for intrepidity as aide-de-camp to Lord Rawdon in the latter part of the American Revolutionary War, and was severely wounded in the battle of Eutaw Springs. On his return to Ireland, Fitzgerald was desirous of effecting a separation of that country from England, and induced the French Directory to furnish him with a fleet and troops. A landing was attempted on several occasions, but without success, owing to

the vigilance of the English channel fleet; and Fitzgerald was seized, tried, and condemned to death. He died of his wounds before the time fixed for his execution, 1798.

Fitzgerald, Edward, an English poet; born in Bredfield House, near Suffolk, England, March 31, 1809. His father, John Purcell, assumed the name of Fitzgerald, which was his wife's family name. His writings are for the most part remodeled translations of poems in other languages; among them "The Rubaiyat of Omar Kahyyam" (1859), a translation that won for Fitzgerald great celebrity, although at first published anonymously. He died in Merton, Norfolk, England, June 14, 1883.

Fitzgerald, Percy Hetherington, an Irish novelist; born in Fane Valley, Louth, Ireland, in 1834. He studied at Trinity College, Dublin, and became a member of the bar; making excursions into literature.

Fitzgibbon, Mary Irene, an American philanthropist; born in London, England, May 12, 1823; removed to New York early in life. In 1869 Archbishop (later Cardinal) McCloskey requested her to organize a work for the care of the waifs of the diocese. She began this work with only $5, but soon raised enough money to provide a temporary home. In 1870, the legislature authorized the city to grant the asylum a site and to appropriate $100,000 toward a building, providing an equal amount should he raised by subscriptions. This amount was soon raised. At the time of Sister Irene's death, the buildings of the asylum covered an entire block and were valued at over $1,000,000. She died in New York city, Aug. 14, 1896.

Fitzpatrick, William John, an Irish biographer; born in Dublin, Ireland, Aug. 31, 1830. From the day of his graduation at the Catholic College in Clongowes Wood, he devoted himself to the study of Ireland's rights and wrongs, and of the actors in Irish history. He died in Dublin, Dec. 24, 1895.

Five Forks, a locality near Dinwiddie Court-house, Va. Here on April 1, 1865, a severe engagement was fought between the National troops and the Confederates, the former under the command of General Sheridan, and the latter under that of General Lee. After several hours' heavy fighting the Confederates retreated with a loss of a large number of killed and wounded, 5,000 prisoners, and several guns. The National loss was about 1,000 men, including General Winthrop, who was killed.

Five-Mile Act, an old English law, an Act, 17 Chas. II., c. 2, passed in 1665, which forbade non-conformist pastors who refused to take an oath of non-resistance to come within five miles of any corporation in which they had preached since the passing of the Act of Oblivion in 1660. The Toleration Act of 1689 swept it away.

Fives, an English game at ball, in which the ball is struck against a wall. It is played either in close or in open courts, of various shapes and proportions.

Fixed Star, in pyrotechnics, a composition introduced into a rocket case and emitting fire at five holes, to represent a star. The composition is niter, sulphur, gunpowder meal, and antimony.

In astronomy fixed stars are those which till lately were supposed absolutely to maintain their relative positions toward each other in the sky, and are still admitted to do so very nearly. They are contra-distinguished from planets or "wandering stars." They shine by their own light, and probably are suns each one surrounded by planets of its own.

Fixture, in law, a term applied to things of an accessory nature annexed to houses or lands, so as to become part of the realty. The annexation must be by the article being set into or united with the land, or with some substance previously connected therewith. Thus a shed built upon a frame not let into the earth, is not a fixture. Machines and other things erected for the purposes of trade are not fixtures, if they can be removed without material damage to the property. Fixtures may not be distrained upon.

Flag, an ensign or colors; a piece of cloth, either plain or colored, and having certain figures, lines or marks painted or worked on it; a banner indicating nationality, occupation, or intelligence. Flags of nationality are

standards, ensigns, pennants (pendants), jacks. Flags of occupation indicate service, as war, merchant, dispatch, pilot, yacht-squadron, liners, etc. Flags of intelligence are of various colors and of three shapes: square, pointed, and burgee. They are used in various combinations to transmit messages according to a printed or secret code. The standard (military or naval) is a war flag. The ensign is national. The idea of standards originated with the Egyptians at an early age. When the 13 colonies began to feel the pressure of British rule they placed upon their banners a rattlesnake, cut in 13 pieces, representing the 13 colonies, with the motto: "Join or die." When these colonies became more united in their purpose of resistance to British tyranny, they placed upon their flag a well-formed rattlesnake in the attitude of about to strike, with the motto, "Don't tread on me."

The next form of the United States flag was our present standard, the Stars and Stripes. On June 14, 1777, the Continental Congress resolved that the flag of the United States be 13 stripes, alternate red and white and that the union be 13 white stars on a blue field, representing "a new constellation." On Jan. 13, 1794, by an act of Congress, the flag was altered to 15 red and white stripes, and 15 stars. On April 4, 1818, Congress again altered the flag by returning to the original 13 stripes, and 15 stars, as the adding of a new stripe for each additional State would soon make the flag too unwieldy. A new star is added to the flag on July 4 following the admission of each State into the Union. To honor, protect, and display the flag, on appropriate occasions, FLAG DAY, June 14, originated Feb. 12, 1898, with the Congress of National Patriotic Societies.

Flagellants, a Christian sect which arose in 1260 at Perugia, called by the French Perouse, and spread throughout and beyond Italy. Its adherents, who saw a plague raging, and moreover expected the world speedily to terminate, believed that they could propitiate the Divine Being by walking in procession with only a cloth tied round them, and flagellating their bare shoulders with whips which they carried. At first they were noted for sanctity, and made many converts even from the most abandoned classes, but doubtful characters beginning to join their ranks, they fell into disrepute, and were restrained from their processions by the civil and ecclesiastical authorities, then the sect gradually died away. The terror produced by the dreadful disease called the black death, which destroyed many millions of people in Europe between 1348 and 1351, produced a revival of the flagellation mania which spread over most of Europe and was attended by greater extravagances than before. In 1414 an effort was made in Thuringia to revive them anew, but the burning alive of their leader, Conrad Schmidt, and 90 of his followers in part thwarted the project, though even then the extirpation of the sect was found a work of extreme difficulty. The practices of the Flagellants have been occasionally witnessed within recent years in New Mexico.

Flageolet, in music, a small pipe with a mouth-piece inserted in a bulb (hence the derivation of the name from the same root from which the word flagon comes), producing a shrill sound, similar but much softer in quality than that produced from the flauto piccolo. It was formerly employed in the orchestra.

Flagg, George Whiting, an American artist; born in New Haven, Conn., June 26, 1816. He was elected a member of the National Academy of Design in 1843, and an academician in 1851. He died on Nantucket Island, Mass., Jan. 5, 1897.

Flagg, Wilson, an American naturalist: born in Beverly, Mass., Nov. 5, 1805. He died in North Cambridge, Mass., May 6, 1884.

Flamboyant, in architecture, a term applied to the decorated and very ornamental style of architecture of French invention and use. One of the most striking and universal features is the waving arrangements of the tracery of the windows, panels, etc. The foliage used for enrichments is well carved and has a playful and frequently good effect.

Flamborough Head, a bold promontory of England, on the Yorkshire coast, projecting a considerable distance into the sea. This is at once

the most striking and most celebrated headland on the E. coast of Great Britain, rising 450 feet sheer above the sea, having on its summit a lighthouse, 214 feet high, showing a revolving light.

Flamen, in Roman antiquities, the name given to any Roman who was devoted to the service of one particular god. The most dignified were those of Jupiter, Mars, and Quirinus, and were called respectively Flamen Dialis, Flamen Martialis.

Flamingo, a genus of web-footed birds which may be regarded as in some respects intermediate between the storks and the ducks, their long legs and necks giving them a resemblance to the former, while their webbed feet connect them with the latter. There are nine species of true flamingoes. Their food appears to be mollusca, spawn, grass, water plants, insects, etc., which they fish up by means of their long neck.

They breed in companies in mudflats or inundated marshes, raising up the mud into a small hillock, which is concave at the top so as to form a nest. In this hollow the female lays her eggs, and hatches them by sitting on them with her legs doubled up under her.

The young, which never exceed three in number, do not fly till they have nearly attained their full growth, though they can run very swiftly and swim with ease almost immediately after their exclusion from the shell. The common American species is of a deep red color, with black quills. It is peculiar to tropical America, migrating in summer to the Southern, and rarely to the Middle States.

Flammarion, Camille, a French astronomer, writer on descriptive astronomy, and "astronomical novelist"; born in Montigny-le-Roi, Haute Marne, France, Feb. 25, 1842. He has contributed many articles to the "New York Herald."

Flanders, the name of a very interesting and early civilized portion of Europe, forming two contiguous provinces of Belgium, termed East Flanders (capital Ghent) and West Flanders (capital Bruges). West Flanders has a considerable coast-line, in the central part of which is the port of Ostend. The surface is generally level, excepting the dunes, or sandhills, on the coast. The soil is fertile and agriculture good. East Flanders has an area of 1,158 square miles and pop. (1912) 1,134,079; West Flanders has area of 1,249 square miles and pop. 884,777. The region was the scene of some of the severest fighting in the great war, especially in 1916–17. See APPENDIX: *World War.*

Flandrin, Jean Hippolyte, a French painter; born in Lyons, France, March 23, 1809. Among his chief works are the fine series of frescoes in the churches of St. Germain-des-Pres and St. Vincent de Paul, Paris, which are reckoned among the masterpieces of modern painting. He died in Rome, Italy, March 21, 1864.

Flash, Henry Lynden, an American author; born in Cincinnati, O., Jan. 20, 1835; was graduated at the Western Military Institute, Kentucky, in 1852; served during the Civil War as volunteer aide on the staffs of Generals Hardee and Wheeler. He was the author of "Poems," and of many popular ballads which appeared during the Civil War.

Flatfishes, the family containing the sole, the plaice, the turbot, the halibut, the brill, etc. They are compressed or flattened laterally, not vertically, as is often erroneously supposed.

Flathead, or Salish, Indians, in the State of Washington. They are so named on account of a practice formerly prevalent among them, of flattening the heads of their infants by artificial means. The custom, it is said, has been abandoned by this tribe, though it still exists among several neighboring tribes, to whom the name of Flathead is not generally given. The flattening of the head is accomplished by subjecting the skull of the infant to severe mechanical pressure during the first six or eight months of its life.

Flaubert, Gustave, a French novelist; born in Rouen, France, Dec. 12, 1821; died in Rouen, May 8, 1880.

Flax, a plant of the genus Linum including over 100 species.

Common flax is cultivated principally for the fibers yielded by it, of which linen is made. The use of this article is so ancient that no tradition

remains of its introduction. The mummies of Egypt are always enveloped with it; and its use among the ancient Jews is familiar from the Bible. The use of linen passed from Egypt to Greece and Italy. Besides forming agreeable and beautiful apparel, the rags are made into paper.

The seeds of the flax yield an oil well known in commerce under the name of linseed oil. The cakes of seed remaining after the oil is expressed are used for fattening cattle and sheep.

In the three chief varieties of flax; the first produces a tall and slender stem, with very few flowers, ripens late, and affords the longest and finest fibers; the second produces numerous flowers, and is the most proper for cultivation where the seed is the object, but its fibers are short and coarse; the third is the most common, and is intermediate between the other two.

Flaxman, John, an English sculptor and draughtsman; born in York, England, July 6, 1755. His father was a figure-molder. The monuments to Nelson, Howe, and Reynolds in St. Paul's are by his hand. One of his latest and finest productions is the "Shield of Achilles." He died in London, Dec. 7, 1826.

Flea. A wingless insect, probably related to flies; with saw-like, biting jaws (mandibles); with other mouth-appendages (labial palps) adapted for sucking; with legless, biting, maggot larvæ. It is remarkable for its agility, leaping a distance of 200 times its length, and its bite is very troublesome.

Fleece, Order of the Golden, a military order instituted by Philip the Good, Duke of Burgundy, in 1429, on the occasion of his marriage with the Portuguese princess, Isabella. The order now belongs to both Austria and Spain.

Fleming, Mrs. May Agnes (Early), a Canadian story-writer; born in New Brunswick in 1840; died in 1880.

Fleming, Paul, a German poet; born in Hartenstein, Saxony, Oct. 5, 1609. He was attache of an embassy to Russia and Persia, and his "German Poems," which appeared in 1642, were often republished. He died in Hamburg, April 2, 1640.

Flemish Brick, a sort of European brick used for paving. They are of a yellowish color, and harder than the ordinary bricks.

Fletcher, Frank Friday, an American naval officer; born in Oskaloosa, Ia., Nov. 23, 1855; was graduated at the U. S. Naval Academy in 1875; became rear-admiral in 1911, and admiral in 1915; and was given command of the Atlantic fleet. He commanded the naval force off the W. coast of Mexico in 1913–14, and seized the port of Vera Cruz (April 21, 1914) and held it till the arrival of U. S. troops (April 30), when he withdrew his ships.

Fletcher, Julia Constance, pseudonym George Fleming, an American novelist; born in Rio Janeiro, Brazil, in 1858; daughter of James C. Fletcher, who was a missionary to Brazil and wrote "Brazil and the Brazilians." She resided for years in Italy and in London.

Fleurus, a town of Belgium, in the province of Hainault, near the Sambre, 7 miles N. E. of Charleroi. This place is noted for four important battles having taken place in its vicinity. The fourth, more commonly known as the battle of Ligny, took place on June 16, 1815. On that day Blucher was defeated by Napoleon.

Fleury, Andre, Hercule de, a cardinal and prime minister of France under Louis XV.; born in Lodeve, France, in 1653; from his 73d to his 90th year he administered affairs with success. He died in 1743.

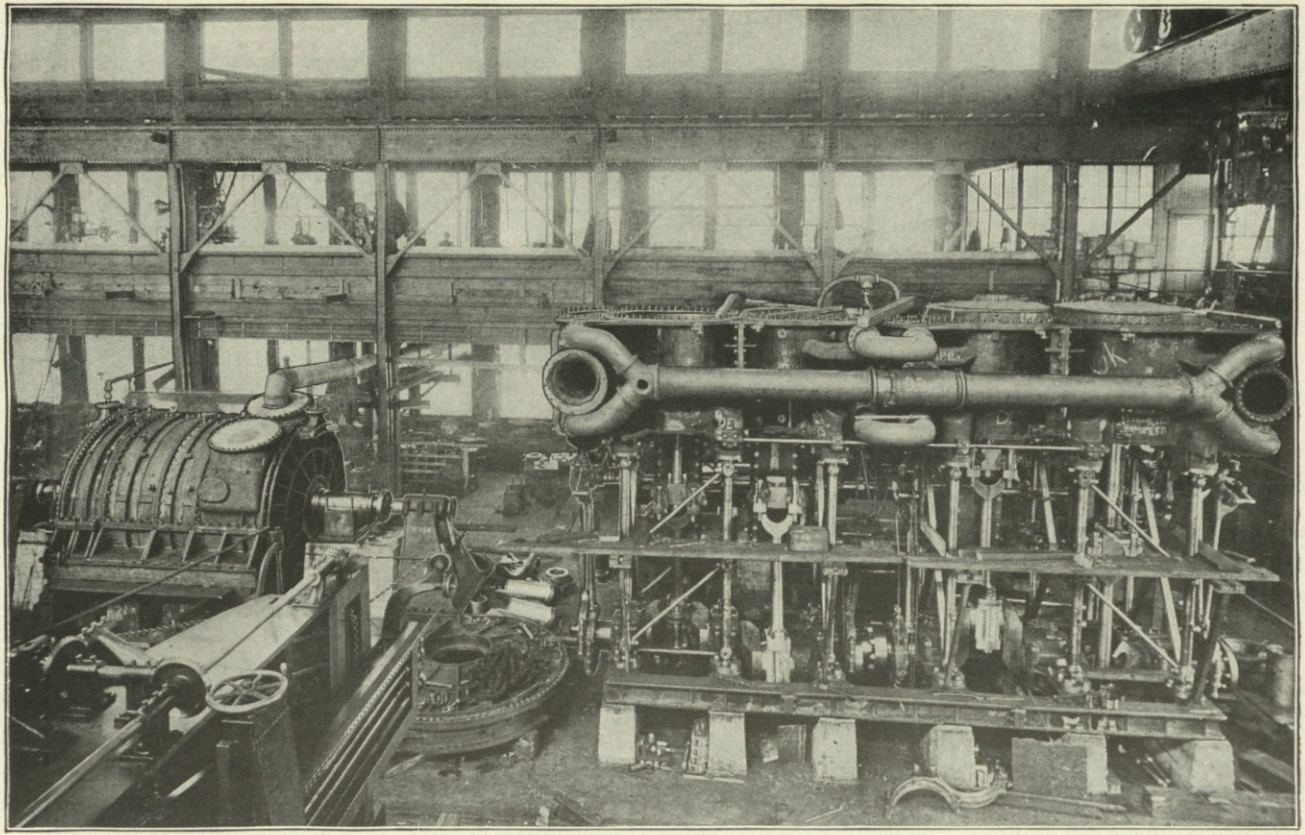
Flint, city and capital of Genesee county, Mich.; on the Flint river and the Grand Trunk and other railroads, 34 miles S. E. of Saginaw; is the farming trade center for the county; is in a rich grain section; ships large quantities of lumber; has the State Institution for the Deaf and Dumb and a private Retreat for the Insane; and manufactures flour, lumber, autos, carriages, and woolen goods. Pop. (1920) 91,599.

Flint, Austin, an American physician; born in Petersham, Mass.; Oct. 30, 1812; was graduated at the medical department of Harvard College in 1833. Professor of Pathology

MARINE LIFE

COPYRIGHT, BY F. E. WRIGHT

1. Pecten Opercularis (*Scallop*); 2. Muræna Helena (*Eel*); 3. Cynthia (*Sea Squirt*); 4. Conger Vulgaris (*Conger Eel*); 5. Dolium Galea (*Tun Shell*); 6. Ascidian (*Tunicate Animal*); 7. Stegostoma Tigrinum (*Tiger Shark*); 8. Cestum Veneris (*Venus's Girdle*); 9. Atlanta (*Heteropod*); 10. Salpa Maxima (*Swimming Tunicate*); 11. Rhizostoma Cuvierii (*Umbrella Fish*); 12. Loligo (*Squid*); 13. Eggs of the Loligo; 14. Actæon Mediterranea (*Hydrozoon*); 15. Octopus Vulgaris (*Devil Fish*); 16. Halichondria (*Sponge*); 17. Polythoa Cavolinii (*Rock Coral*); 18. Adamsia Rondeletii (*Sea-anemone*); 19. Uranoscopus (*Star Gazer*); 20. Holothurian (*Sea-cucumber*); 21. Trigla Pini (*Red Mullet*); 22. Calappa (*Decaped Crustacean*); 23. Hyas Araneus (*Great Spider Crab*); 24. Palinurus Vulgaris (*Lobster*); 25. Serranus (*Sea-perch*); 26. Cribella Oculata (*Star-fish*); 27. Corallium Rubrum (*Red Coral*); 28. Serpula (*Tubular Sea-worm*); 29. Spirographis Spellensonia (*Annelid*); 30. Trygon Pastinaca (*Sting-ray*); 31. Asterina Gibbosa (*Gibbon's Starlet*); 32. Asteroidia (*Yellow Coral*); 33. Aplysia Punctata (*Sea-hare*); 34. Cidaris Papillata (*Sea-urchin*); 35. Torpedo Oculata (*Electric-fish*); 36. Cereactis Aurantiacii (*Sea-anemone*); 37. Cereanthus Membranaceus (*Sea-anemone*).



CURTIS TURBINE, 8000 B. H. P.

TRIPLE EXPANSION, 8250 I. H. P.

MARINE ENGINES

in the Long Island College Hospital in 1861–1868; president of the New York Academy of Medicine in 1872–1875, and of the American Medical Association in 1884; delegate to the International Medical Congress in Philadelphia in 1876, etc. He was the author of numerous text-books, clinical reports and medical papers. He died in New York city, March 13, 1886.

Flint, Timothy, an American author; born in North Reading, Mass., July 11, 1780. He was a Congregational minister during 1812–1814; subsequently he devoted himself to editorial work, descriptive writing, and fiction. He died in Salem, Mass., Aug. 16, 1840.

Flint, Weston, an American librarian; born in Pike, N. Y., July 4, 1835; was graduated at Union College in 1860, and at the Law Department of Columbia University in 1877; United States consul to China in 1871–1874; librarian of the Scientific Library, United States Patent Office, in 1877–1887; and was appointed librarian and secretary of the board of trustees of the Public Library in Washington in 1898. He died in 1906.

Flint Glass, a species of glass made of white sand, 52; carbonate of potash, 14; oxide of lead, 33; alumina, 1; with metallic additions to neutralize color. Pure white sand free from oxide of iron is required for flint glass, as iron imparts a green color.

Flint Implements, a generic term used for any implements of flint obtained from Pleistocene or more recent deposits, each being afterward named more specifically as its exact nature becomes understood. Evans divides the implements into three classes — spear heads, oval or almond-shaped flint implements, and flint flakes. They have been found in various parts of the world, and do not always indicate extreme antiquity. Obsidian, a very hard flint, was used by the Aztecs in edged instruments at the time of the Spanish conquest.

Flintlock, the old-fashioned lock for firearms, in which the cock held a piece of flint, and came glancing down upon the steel cap of the pan which contained the priming. Flintlocks were invented early in the 17th century.

Floating Battery, a vessel strengthened so as to be shot-proof, or as nearly so as possible, and intended for operating in comparatively smooth water, for defending harbors or attacking fortifications.

Floating Breakwater, in hydraulic engineering, a contrivance contrivance consisting of a series of square frames of timber, connected by mooring chains or cables, attached to anchors or blocks of stone, in such a manner as to form a basin, within which vessels riding at anchor may be protected from the violence of the waves.

Floating Bridge, a bridge composed of rafts or timber, with a plank floor, resting wholly on the water.

Floating Islands, Gardens, and Houses, gardens and islands, formed of patches of wood and weeds, covered with grass, flowers, and other vegetable productions, supported on the surface of the water. In the United States, on the Mississippi, and in India on the Ganges, such islands, detached from the banks by the force of the currents, are often seen carried down to the sea, with tall trees standing erect on them. In Northern India, and on the borders of Tibet, and Persia, floating gardens are often erected by the natives, for the purpose of raising melons, cucumbers, and other similar vegetables and plants, which require a very aqueous soil for their cultivation. There is a notable floating island in Scott's Pond, Rhode Island.

Flodden, a village of England, Northumberland county, near the Scottish border, 5 miles S. E. of Coldstream; memorable as being the scene of the battle of Flodden Field, one of the most sanguinary conflicts recorded in British history. James IV., King of Scotland, having invaded England with a large force, was encountered here, Sept. 9, 1513, by an English army under the Earl of Surrey. James was killed and his army totally defeated. The loss on the part of the Scots was extremely great. Besides the king himself, no fewer than 12 earls, 13 barons, and 5 eldest sons of peers, with a vast number of knights and persons of distinction, and probably about 10,000 common soldiers, were left dead on the field. The

English loss was about 7,000. This is by far the most calamitous defeat recorded in Scottish annals.

Flood, a sudden and unusual overflow of water, caused by excessive rains, giving rise to an overflow of the rivers; by the bursting of the banks of rivers, lakes, and reservoirs; by the sudden melting of ice and snow; and by irruptions of the sea, produced by high tides, wind storms driving the sea water inland, earthquakes, volcanic outbreaks, and the bursting of sea banks.

Floquet, Charles Thomas, a French statesman; born in St. Jean de Luz in 1828; died in Paris, Jan. 18, 1896.

Flora, in Roman mythology, the goddess of flowers and gardens. She had especially to do with vines, olives, all kinds of fruit trees, and honey-bearing plants. In botany, the whole vegetation of a country or geographical period, as the American flora, meaning all the wild plants now occurring in this country; the Eocene flora, signifying all the plants found fossil in the Eocene.

Florence, a famous walled city of Central Italy; on both sides of the Arno, 187 miles N. W. of Rome. It stands in a richly wooded, well-cultivated, and beautiful valley, encircled by the Apennines. The Arno intersects it from S. E. to N. W., the communication between the opposite sides of the river being maintained by means of seven bridges. Florence contains a great number of magnificent edifices and squares, generally adorned with statues, columns, or fountains; there are no fewer than 170 churches, 89 convents, 2 royal, and many other palaces, 12 hospitals, and 8 theaters, great and small.

The duomo, or cathedral, a vast edifice, coated with marble, about 500 feet in length, and 384 feet in height to the top of the cross, stands in a spacious square. The church of Santa Croce, called the Pantheon of Florence, is interesting from its containing the remains and tombs of four of the greatest men of modern Italy, or indeed of modern times — Michael Angelo, Galileo, Machiavelli, and Alfieri. Among the palaces are the Palazzo Vecchio, or Old Palace, inhabited by the Medici when citizens of Florence, which was begun in 1298, and finished in 1550. Adjoining it is the Piazza del Palazzo Vecchio, a square containing a fine collection of statues, and a noble arcade, the Loggia di Lanzi, under the porticoes of which are magnificent groups of sculpture. But the crowning glory of Florence is its Grand Gallery, occupying the upper floor of the Ufizi, a building erected after a design of Vasari, by Cosmo I., consisting of two parallel corridors or galleries, each 448 feet in length, and 72 feet apart, united at one end by a third corridor. This contains some masterpieces of statuary, as the world-renowned "Venus de Medici," "The Knife-Grinder," the "Fawn," "Niobe and her Children," etc. The collection of pictures comprises superb examples of all the best schools, and is said to surpass even that of the Vatican. A splendid apartment, known as the Tribuna, contains the rarest treasures of the collection, and is in itself a wonder of art, with its cupola inlaid with mother of pearl, and its rich marble pavement. Florence is subject to fogs in the winter; but in spring and autumn it is a delightful residence, well provided with everything that can gratify the man of taste and science, or the voluptuary. Florence has produced more celebrated men than any other place in Italy, or, perhaps, of Europe; among others may be specified Dante, Petrarch, Boccaccio, Villani, Cosmo and Lorenzo de Medici; Galileo, Michael Angelo, Leonardo da Vinci, Benvenuto Cellini, Alberti, Lapo Brunelleschi, Giotto, Andrea del Sarto, Machiavelli; Popes Leo X. and XI., Clement VII., VIII., and XII. The origin of this city is not clearly ascertained; but it owed its first distinction to Sylla, who planted in it a Roman colony. In the reign of Tiberius it was distinguished by its writers and orators. In 541 it was almost wholly destroyed by Totila, King of the Goths. About 250 years afterward it was restored by Charlemagne. It then became the chief city of a famous republic; and was for a lengthened period in Italy what Athens had been in Greece in the days of Xenophon and Thucydides. At length, in 1537, the Medici, from being the first of her citizens, became sovereign dukes of Florence. The city aft-

erward became the capital of the former grand-duchy of Tuscany till 1860, when it was annexed to the new kingdom of Italy, and in 1865 the seat of government was transferred thither from Turin. Pop. (1921) 253,565.

Florentine Fresco, a kind of painting, first practised at Florence during the flourishing period of Italian art, for decorating walls.

Florentine School, a school of painting remarkable for greatness; for attitudes seemingly in motion; for a certain dark severity; for an expression of strength by which grace is perhaps excluded; and for a character of design approaching to the gigantic.

Florida, a State in the South Atlantic division of the North American Union, bounded by Alabama, Georgia, the Atlantic Ocean, Gulf of Mexico, and the Straits of Florida; area 58,666 square miles; admitted to the Union in 1845; number of counties, 50. Pop. (1910) 751,139; (1920) 968,470; (1925 Est.) 1,090,754.

The surface of the State is very low and flat, gradually rising from a few feet above sea-level along the coast to a central ridge with an altitude of about 300 feet. The flat lands extending along the coasts consist of open grass-grown savannahs, cypress swamps, pine forests, and "cabbage hummocks," so called from the extensive growth of the cabbage palms. The W. part of the State, excepting on the coast, is quite hilly. The S. part of the peninsula is built up of successive coral dikes; the upper part being occupied by Lake Okeechobee, whose shallow waters gradually merge into the Everglades, an extensive swamp covering the entire lower part of the State. The Everglades are penetrated in all directions by a network of small, shallow streams, and at short intervals over the entire area are found wooded islands covered with semi-tropical vegetation. The Everglades are separated from the Gulf by extensive cypress swamps, the forests extending down the W. coast, narrowing out around the cape, and extending up along the Atlantic coast. Many of the Florida swamps are so densely overgrown with vegetation that they have been explored but little and are considered impassable. Florida is noted for the number, size, and clearness of her springs, the most famous being the Silver Spring near Ocala.

Florida exhibits the vegetable productions of both temperate and semi-tropical nature. In the N. the products include peaches, pears, and cotton, while the middle and S. counties produce the finest oranges, pineapples, mangoes, cocoa palms, guavas, and almost all tropical fruits. The aggregate value of all crops in 1919 was $80,256,806.

The principal manufactures are naval stores, cotton-seed oil, cigars, lead pencils, refined sugar, flour, salt by evaporation, palmetto hats, braids, and wooden boxes. The U. S. Census of 1920 reported 2,582 establishments with an output valued at $213,326,811; of this 280 tobacco factories produced cigars and cigarettes to the value of $37,926,000. Railroad mileage in 1923 was 5,283.

Florida is the resort of a great number of winter tourists. Year by year this number has steadily increased. Scores of new towns have sprung into being, both along the coasts and inland, each with special attraction for the tourists as well as prospective investors. Many fortunes have been acquired in the advancement of real estate values in various parts of the state.

Florida was discovered by Juan Ponce de Leon, March 27, 1513, on Easter Sunday, after which the peninsula was named. He and his successors explored a large part of Florida in search of gold and "the fountain of perpetual youth." He was killed in a fight with the natives in 1521. In 1539 a force of 600 under Fernando De Soto landed at Tampa Bay and moving to the N. and W., overcoming the natives by treachery and violence, passed beyond the present limits of Florida. A settlement of French Huguenots was attempted in 1564, but two years later was exterminated by the Spanish. From this time the Spanish were in absolute control, and settlements were made at Pensacola and elsewhere along the coast. In 1687 the first large consignment of negro slaves was brought to Florida. In 1814 it was captured by the United States forces under Andrew Jackson. Then followed a long series of wars with the natives, the whole of Florida

being ceded to the United States by Spain in 1819. In 1822 Florida was organized as a Territory of the United States. From 1835 to 1842 the Seminole Indians were in active hostility and on their final surrender they were removed to a special reservation. Florida was admitted to the Union as a State in 1845. At the outbreak of the Civil War the principal government posts were seized by the State forces. Fort Pickens, however, was held by a Union garrison, and used as the base of operations. Florida was readmitted to the Union on July 4, 1868.

The governor is elected for four years; annual salary $6,000. Legislative sessions are biennial with 60-day limit. Representatives in Congress 4. Entire State Government (1917) Democratic.

Florida Keys, or Reefs, in Florida, a chain of small islands, keys or reefs, extending S. W. from Cape Florida, about 220 miles. They are considerable in number, but only a few are important. Chief, that on which the city of Key West is built.

Florin, a gold coin formerly used in England, but long since extinct. Also the name of a silver coin current in several countries.

Florio, John, an English lexicographer, and the translator of Montaigne; born in London, England, about 1553; died in Fulham in 1625.

Floripondio, the poisonous Datura sanguinea, a S. American stramonium. The ancient Peruvians made an intoxicating beverage from its seeds, which, however, taken in excess, produces furious delirium. The priests of an ancient S. American Temple of the Sun used it to produce oracular inspiration, and the Arabs of Central Africa smoke it as a narcotic and for the relief of asthma and influenza.

Floris, Francis, a Flemish historical painter, surnamed the "Flemish Raphael"; born in Antwerp about 1520; died in Antwerp, Oct. 1, 1570.

Floss Silk, the portions of raveled silk broken off in reeling the silk from the cocoons, carded and spun into a soft coarse yarn, and used for common fabrics, embroidery, etc.

Flotow, Friedrich Adolphus von, German composer; born in Teutendorf, Mecklenburg-Schwerin, Germany, April 26, 1812. He died in Darmstadt, Germany, Jan. 23, 1883.

Flotsam, Jetsam, and **Ligan,** in law: Flotsam, or floatsam, is derelict or shipwrecked goods floating on the sea; jetsam, goods thrown overboard which sink and remain under water; and ligan, goods sunk with a wreck or attached to a buoy, as a mark of ownership.

Flounder, one of the most common of the flat fishes, and found along the shores of almost all countries. The body is extremely flattened at the sides.

Flour, the finely-ground meal of wheat, and of any other corn or cereal which has been reduced to powder in a mill. The component parts of flour are starch, gluten, sugar, gum, bran, and water, the prime element being starch.

Flourens, Marie Jean Pierre, a French physiologist; born in Maureilhan, Herault, France, April 15, 1794. In 1840 he was elected member of the French Academy; in 1846 was made a peer of France, and in 1855 professor in the College of France. He was promoted grand officer of the Legion of Honor, April 24, 1845, and made member of the municipal Council of Paris in 1864. He died in Montgeron, near Paris, Dec. 6, 1867.

Flower, that part of a plant which is destined to produce the seed.

Flower, Roswell Pettibone, an American financier; born in Jefferson Co., N. Y., Aug. 7, 1835. In 1881 he was elected to Congress, and in 1886 was appointed president of the Subway Commission. He was reëlected to Congress in 1888 and 1890, and in 1891 was elected governor of New York. From the close of his term till his death he applied himself to the interests of his large banking house and to a systematic course of philanthropy. He died in Eastport, Long Island, N. Y., May 12, 1899.

Flower Month, in general any month in any country in which flowers are springing most abundantly; in the United States, June is specially the month of flowers.

Flowing Sheets, the position of the sheets, or lower corners of the principal sails, when they are loosened to

the wind, so as to receive it into their cavities, in a direction more nearly perpendicular than when they are close-hauled, though more obliquely than when the vessel is sailing before the wind.

Flowers, Artificial, imitations of flowers, made of various materials. These are not a modern invention. Among the ancients the floral wreaths made by the Egyptians enjoyed as great a reputation as at the present day do the products of American art.

The first artificial flowers made in modern times in civilized countries were manufactured out of many colored ribbons which were twisted together and attached to small pieces of wire. In course of time feathers were substituted for ribbons, a material much more elegant than that previously in use, but one to which it was not so easy to give the requisite shades of color. In former times in the height of the fashionable rage for porcelain, flowers of all kinds were made of that substance and the odor of the real flowers was imitated by means of perfumes.

Flowers, Colors of. The colors of flowers have been arranged in two series, the blue and the yellow, in both of which red and white are found, green being produced by a mixture of the two. It has been estimated that in an average collection of 1,000 plants about 284 have white flowers, 226 yellow, 220 red, 141 blue, 73 violet, 36 green, 12 orange, 4 brown, and 2 black. White flowers are more generally odoriferous than those of other colors, and their odors are almost always agreeable. Red flowers, though less numerous than yellow ones, are more often sweet-smelling.

Floyd, John Buchanan, an American politician; born in Blacksburg, Va., June 1, 1807. He served in the Virginia Legislature several terms; and was governor of the State in 1850–1853. In 1857 President Buchanan appointed him Secretary of War. While in the cabinet, he was detected in the act of stripping the Northern arsenals of arms and ammunition, and indicted by the grand jury of the District of Columbia as being privy to the abstracting of $870,000 in bonds from the Department of the Interior. He fled, however, to Virginia, where, at the close of 1860, he became a brigadier-general in the Confederate army. In that capacity he was driven from West Virginia by General Rosecrans. The night before the surrender of Fort Donelson he stole away in the darkness, throwing the responsibility of surrendering on a subordinate officer, and, being censured by the Confederate government, never afterward served in the army. He died near Abingdon, Va., Aug. 26, 1863.

Floyd, William, an American statesman; born in Brookhaven, Suffolk co., N. Y., Dec. 17, 1734. In 1775 he was appointed a delegate to the first Continental Congress, and continued by successive reappointments a member of every Continental Congress up to 1782 inclusive. From 1777 to 1788 he also was a State senator under the first constitution of New York, and in the presidential elections of 1792, 1800, and 1804, was a presidential elector. He died in Weston, Oneida co., N. Y., Aug. 4, 1821.

Flugel, Johann Gottfried, a German lexicographer; born in Barby on the Elbe, Nov. 22, 1788. He spent many years in the United States in business, diplomatic, and official occupations. He died in Leipsic, June 24, 1855.

Fluid, having the parts easily separable; consisting of particles which move and change their relative positions very readily; capable of flowing; liquid; gaseous. The fundamental property of fluids, viewed as forces, in physics, is their equality of pressure in all directions. The term includes both liquids and gases.

Fluorine, a widely distributed chemical element, one of the reputed halogens, which was known only in a combined state, until De Moissan in 1887 isolated it as a colorless gas, that attacks almost every substance and is the most active element known. Its most abundant compound is calcic fluoride, which exists in the mineral kingdom not only as fluor-spar, but forms an essential part of the bones and teeth of animals. Fluorine is used commercially, especially in etching on glass. It has to be preserved in gutta-percha bottles, with water.

Flute, a portable musical instrument, consisting of a tube furnished

with six holes for the fingers, and from one to fourteen keys which open other holes.. The sound is produced by blowing with the mouth into an oval aperture near the head. Its compass is about two and a half octaves, including the chromatic tones. It is made of ebony or other material, usually in four pieces.

Flute Organ, an organ in which the sound is produced by the action of wind on a cutting edge, in contra-distinction to the reed organ, in which the sound is produced by a vibrating tongue of metal. It is also called the mouth organ.

Fluxion, in medicine, an unnatural flow or determination of blood or other humor toward any organ; a catarrh.

Fly, an insect, characterized as possessing a pair of veined and membranous wings, with two movable bodies called balancers placed a little behind them. The sucker performs the part of a lancet, and pierces the envelope of vegetable or animal fluids, in order to allow of the fluid itself being transmitted up into the mouth of the insect. The antennæ are united in front, and are approximated at the base. The legs of this class of insects are long and slender; and the feet it is well known are furnished with skinny palms, to enable them to stick on glass and other smooth bodies by means of the pressure of the atmosphere.

Fly Catchers, an extensive family of birds, represented in North America by about 30 species. As their name implies, the fly catchers prey on insects, which they seize in mid-air. They have the beak horizontally depressed, and armed with bristles at its base, with the point more or less decurved and emarginated. The value of the insectivorous family of birds to man is incalculable. One of the best types of fly catchers is that presented by the tyrant fly catcher, king bird or bee martin.

Flying, the power of locomotion through the air possessed by various animals in different degrees. Birds, bats, and insects can raise themselves into the air and sustain themselves there at will. Squirrels, phalangers, some lizards. one of the tree frogs, and flying fish can move through the air in one direction for a short time.

Flying Dragon, a lizard of the sub-family of acrodonts. It is distinguished from other reptiles of this order by a membrane extending horizontally from its sides, and supported by six false ribs. This wing-like formation is not used in actual flying, but acts as a parachute to support the animal when leaping from branch to branch. Its total length is about 9 inches.

Flying Dutchman, a phantom Dutch ship supposed to be encountered off the Cape of Good Hope. The origin of the myth is doubtful.

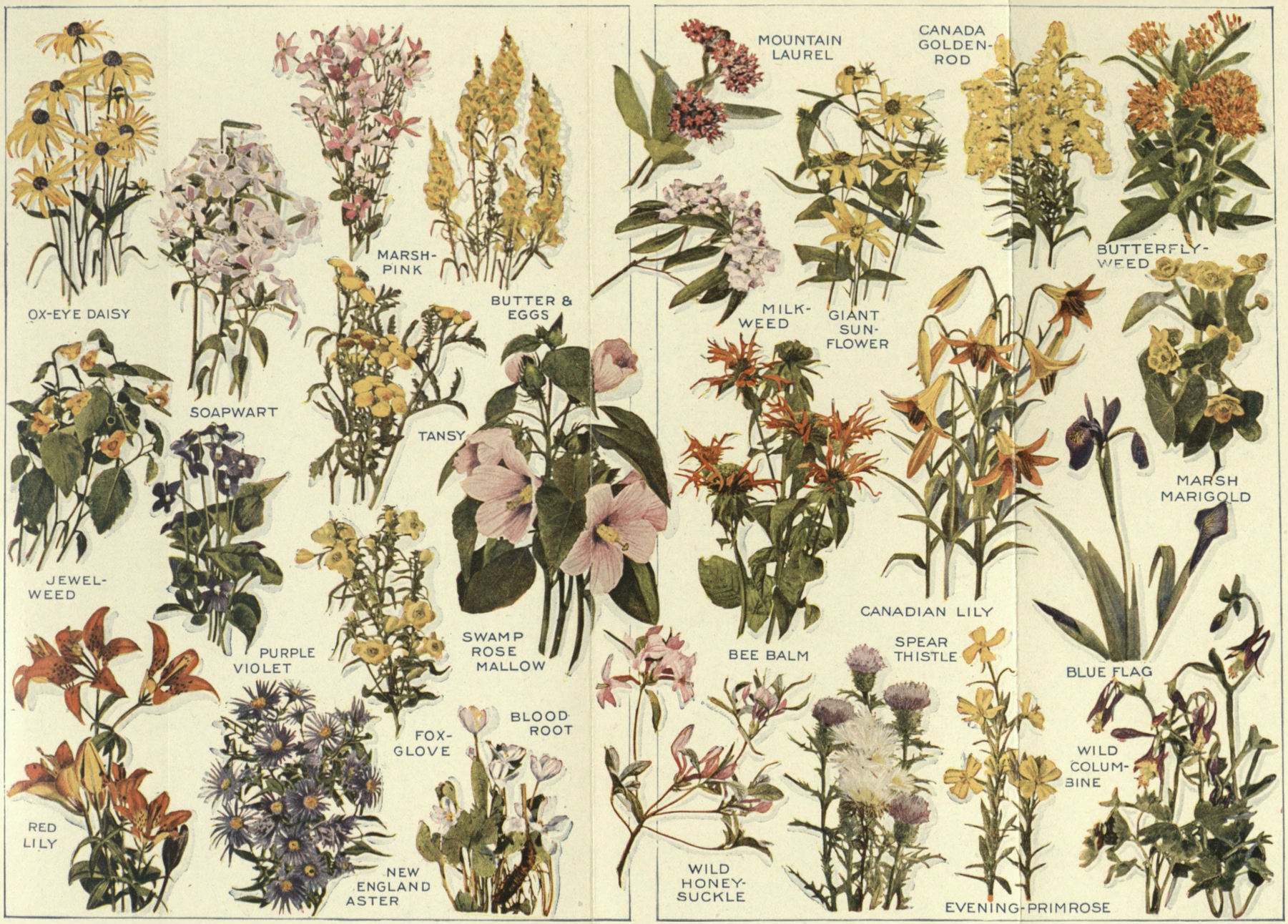
Flying Fish, the name given to more than one fish which, having extended fins, leaps from the water, and after a more or less lengthened flight, drops into it again. The fins seem to act as parachutes rather than as wings.

Flying Frog, a frog having large webbed feet with adhesive disks.

Flying Lemur, called also colugo, an animal closely allied to the bats, which possesses the power of flying or leaping considerable distances by means of a membrane connecting its limbs with each other. The flying lemur differs from the bats in many respects, not the least important deviation of which is the absence of opposable thumbs on all the feet, which are composed of five fingers united by a membrane. Notwithstanding this, it certainly bears in its appearance and habits a remarkable similarity to the flying fox.

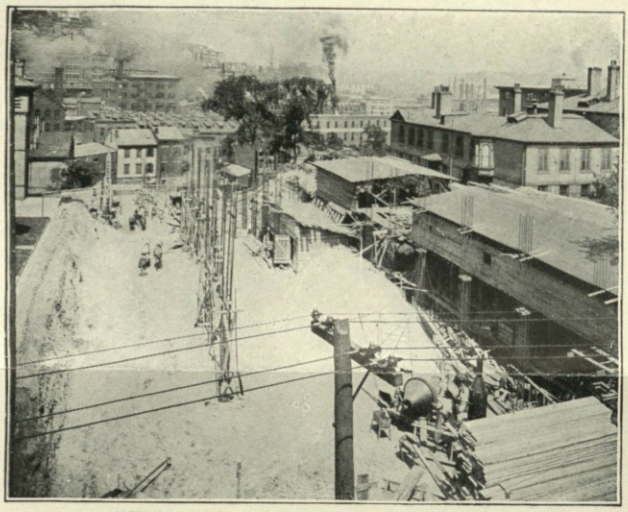
Flying Machine, a device for enabling man to navigate the air. The feat of flying has been often attempted; even among the ancients it was tried, and we are informed, succeeded to some slight extent.

The most notable modern experiments with a view to attaining this end have been conducted by Hiram Maxim, of England, and Prof. Samuel P. Langley, of Washington, D. C.; the former constructing his machine on the plane system, and the latter designing his somewhat in the form of a fish. The flying machine proper is heavier than air, depending on the motions of mechanically propelled wings for its support. But the more

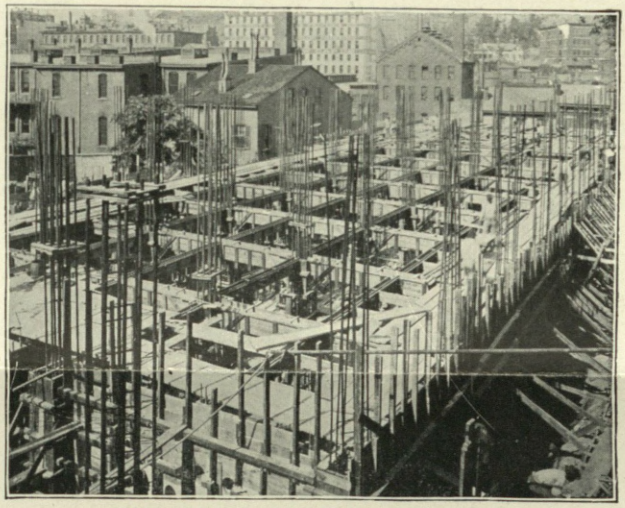


COPYRIGHT, BY F. E. WRIGHT

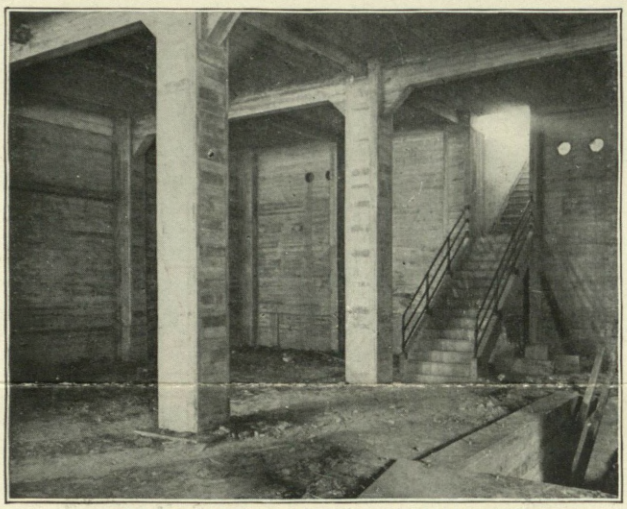
WILD FLOWERS OF NORTH AMERICA



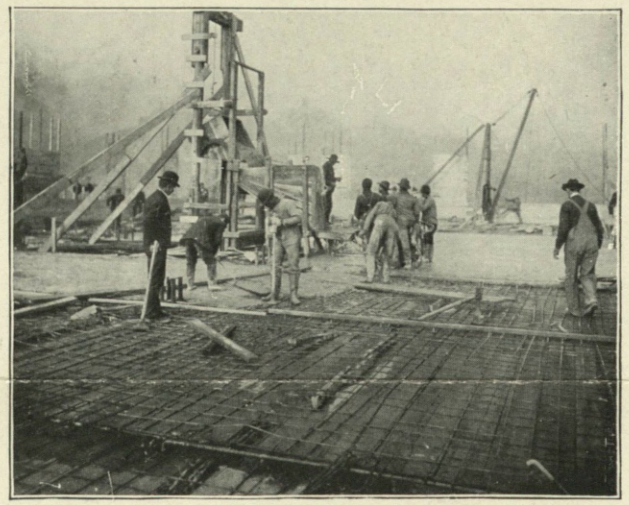
SITE WITH PORTIONS OF COLUMNS ERECTED



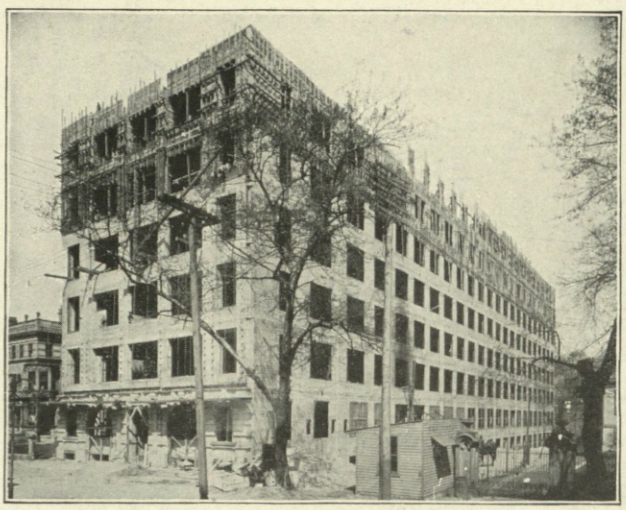
VIEW OF WOOD CENTERING—SECOND FLOOR



FIRST FLOOR, SHOWING COMPLETED COLUMN AND GIRDER CONSTRUCTION



METHOD OF FLOOR CONSTRUCTION



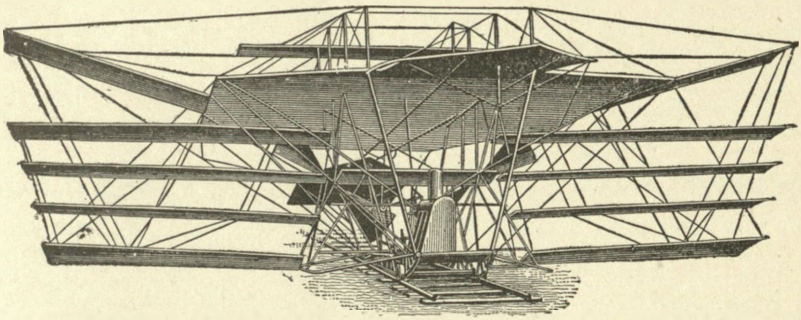
EXTERIOR VIEW OF INCOMPLETED BUILDING

THE COMPLETED BUILDING (63 x 350 FEET)

RE-INFORCED CONCRETE BUILDING CONSTRUCTION

usual and hitherto most successful type is the manageable balloon. In such a one Santos-Dumont in September, 1901, succeeded in winning the prize of $20,000 offered to the aeronaut who should first (under given conditions) circle the Eiffel tower, in Paris. Other notable and successful experimenters include the Wright Brothers, Dayton, O. See AERONAUTICS; BALLOONS.

Flying Squid, in zoölogy, an appellation given by sailors to certain mollusks which can leap out of the water so high as often to fall on the decks of vessels. They are used as bait in the Newfoundland cod fishery, and are the principal food of the dolphins and cachalots, as well as of the albatross and the larger petrels.



MAXIM'S FLYING MACHINE.

Flying Squirrel, a name given to such squirrels as have the skin of the sides very much extended between the fore and hind legs, so as, to a certain extent, to sustain the animal in the air when taking long leaps.

Fly Wheel, a heavy wheel attached to machinery to equalize the movement. By its inertia it opposes any sudden acceleration of speed, and by its momentum it prevents sudden diminution of speed; in the latter case it acts as a store of power to continue the movement when the motor temporarily flags, or in passing dead centers when the motor is inoperative. Fly wheels are also used to accumulate power.

Fo, the name given by the Chinese to Buddha.

Foch, Ferdinand, a French military officer; born in Tarbes, Department of Hautes-Pyrénées, Oct. 2, 1851; served as a subaltern in the Franco-Prussian War (1870–1); was Professor of Tactics in the Ecole de Guerre for five years and subsequently its Director; became commander of the 20th Army Corps at Nancy; in 1915 was given command of all the northern armies of France, being the chief confidant of his long-time associate, subsequently Marshal Joffre. In 1918 Foch was appointed generalissimo of the Allied armies in France and Flanders. He was made marshal of France in 1918, and a British field marshal. Under his guidance the Allies brought the World War to a successful conclusion. He signed the armistice Nov. 11, 1918. See APPENDIX: *World War.*

Fog Alarm, an audible signal, warning vessels from shoals or other dangerous places. They consist of bells, whistles, and trumpets, and they are sounded by the current, by the ebbing and flowing tide, by the swaying of the waves, by the wind, by bellows, by clockwork impelled by weight or spring.

Foglar, Ludwig, an Austrian poet; born in Vienna, Dec. 24, 1819; died in Kammer, Aug. 15, 1889.

Fogo, Fuego, or **St. Philip,** one of the Cape Verde islands, in the Atlantic Ocean, and the highest of the group, being 9,760 feet above sea-level.

Fohi, the first Chinese emperor and legislator. He is said to have founded

this kingdom 2,207 years B. C. Nothing certain is known of his reign; but there are attributed to him the institution of marriage, the invention of fishing, hunting, music, and writing. He acknowledged and worshiped a supreme deity. He is supposed to be the Noah of the Bible.

Foil, in fencing, a rod of steel, representing a sword, with a handle or hilt at one end, and a leather button at the other to prevent accidents. Foils measure from 31 to 38 inches long.

Foil, a leaf or thin sheet of metal placed beneath transparent jewels to heighten their color and improve their brilliancy; also applied to those sheets of tin amalgam placed behind mirrors to make them reflect perfect images.

Foix, Gaston de, nephew of Louis II. of France; born in 1489. He had the command of the army of Italy, and on account of the daring exploits was denominated the "Thunderbolt of Italy." After performing prodigies of valor he was killed at the battle of Ravenna, April 11, 1512.

Foix, Gaston III., Count de, and Viscount de Bearn, a French military officer; born in 1331; acquired the surname of Phœbus. He made war on the Count of Armagnac and took him prisoner; was for a short time governor of Languedoc; and in 1390 magnificently entertained Charles VI. at his chateau of Mazeres. He wrote a book on the pleasures of the chase, of which several editions were published. He died in 1391.

Folcland, or **Folkland,** the land of the people, that portion of Anglo-Saxon England which was retained on behalf of the community. It might be occupied in common or possessed in severalty, but could not become allodial estate or absolute private property except with the consent of the Witan or highest council in the land. From time to time large grants were made both to individuals and to communities; and land thus cut off from folcland was called bocland or "bookland." Ultimately the king practically acquired the disposal of it, and the remnant of folcland became crown lands.

Folcmote, in Anglo-Saxon England, an assembly of the people to consult respecting public affairs.

Foley, John Henry, an Irish sculptor; born in Dublin, Ireland, May 24, 1818. The most popular of his works are a statue of Seldon placed in the new palace of Westminster in 1855, near that of Hampden, considered his masterpiece. He died in Hampstead, near London, England, Aug. 27, 1874.

Folger, Charles James, an American jurist; born in Nantucket, Mass., April 16, 1818, and graduated at Hobart College in 1836. He was secretary of the United States Treasury in 1881–1884. In 1882 he was defeated by Grover Cleveland for governor of New York. He died Sept. 4, 1884.

Folio, in printing: (1) The running number of the pages of a book. (2) A sheet of paper once folded. (3) A book of the largest size, whose sheets are folded but once.

Folk, Joseph Wingate, an American lawyer; born in Brownsville, Tenn., Oct. 28, 1869; acquired a collegiate education; was admitted to the bar in 1890; circuit attorney in St. Louis, Mo., in 1900–4, during which time he attracted national attention by his successful campaign against bribery and corruption; governor of Missouri in 1905–9; appointed Solicitor of the U. S. Department of State in 1913; chief counsel for the Interstate Commerce Commission from March 1, 1914.

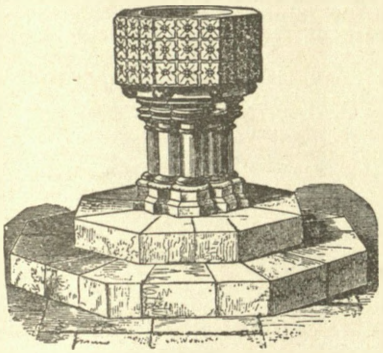
Folklore, the science which embraces all that relates to ancient observances and customs, to the notions, beliefs, traditions, superstitions, and prejudices of the common people.

The American Folklore Society was instituted at Cambridge, Mass., early in 1888: (1) For the collection of the fast-vanishing remains of folklore in America, viz.: (a) Relics of old English folklore (ballads, tales, superstitions, dialect, etc.); (b) lore of negroes in the Southern States of the Union; (c) lore of the Indian tribes of North America (myths, tales, etc.); (d) lore of French Canada, Mexico, etc. (2) For the study of the general subject, and publication of the results of special studies in this department. Already its journal has amply justified its existence by a series of articles of striking originality and value. Societies have been formed in other lands.

Follen, August, a German poet; born in Giessen, Germany, Jan. 21, 1794. He became intensely popular as the author of "Sons of Fatherland," a patriotic hymn; and numerous translations and poetic appeals to the instinct of liberty. He died in Bern, Switzerland, Dec. 26, 1855.

Follen, Eliza Lee (Cabot), an American author; born in Boston, Mass., Aug. 15, 1787. She died in Brookline, Mass., Jan. 26, 1860.

Fond du Lac, city and capital of Fond du Lac county, Wis.; on Lake Winnebago and several railroads; 63 miles N. W. of Milwaukee; is an extensive shipping point of lumber from surrounding hardwood forests; has steamer connection through the lake and Fox river with all Great Lake



BAPTISMAL FONT.

ports; manufactures lumber, leather, flour, carriages and wagons, paper, engines, and farm implements; and contains Winnebago Park, Grafton Hall (Presb.), Female Institute and two convents. Pop. (1920) 23,427.

Font, the vessel which contains the water for the purpose of baptism. Fonts were required to be covered and locked; originally their covers were simply flat, movable lids, but they were subsequently very highly ornamented.

Fontainebleau, a town of France, department of Seine-et-Marne, near the Seine, in the forest of the same name, 32 miles S. S. E. of Paris. Manufactures porcelain. Fontainebleau owes its celebrity, and indeed origin, to its palace, or chateau, a favorite residence of the French monarchs. This is a vast and superb pile, in fact, rather a collection of palaces of different architectural periods than a single edifice. Saracenic, Tuscan, and Greek orders are intermixed and interspersed with that of the Renaissance, and with the most bizarre and dissimilar ornamentation; yet, on the whole, the structure has a striking air of grandeur and majesty. It is surrounded by magnificent gardens, and lies in the forest of Fontainebleau, a finely-wooded tract of 42,500 acres, intersected by the Seine, and presenting a very varied and picturesque surface. The chateau of Fontainebleau has been the scene of many historical events. It was here that Louis XIV. signed the Revocation of the Edict of Nantes, in 1685; and it is intimately connected with the history of Napoleon, who made it his favorite residence. He signed his abdication in the palace, in 1814. Under Napoleon III. the palace was still more enlarged and embellished, and became the scene of luxurious autumnal fetes, rivaling those of the days of Louis XIV. The forest of Fontainebleau became famous during the 19th century as the resort of many famous French painters of the modern school.

Fontana, Domenico, an Italian architect; born in Mili, Italy, in 1543. Sixtus V. wished to remove the great obelisk now in front of St. Peter's church, which was then nearly buried under the rubbish, to the middle of the square. Fontana happily executed this gigantic operation in 1586. Among other buildings erected by Fontana by the command of Sixtus V., the library of the Vatican and the aqueduct deserve particular mention. Having been accused of converting to his private use the money received for public purposes, he was deprived of his office by the Pope, but immediately received the offer of the post of architect and chief engineer of the King of the Two Sicilies, and in 1592 went to Naples. He there constructed several canals to prevent inundations, a new road along the bay, and the royal palace in the capital. Fontana died in Naples in 1607.

Fontana, Ferdinand, an Italian poet; born in Milan, Italy, Jan. 30, 1850. He made his mark early in journalism, and wrote some good librettos.

Fontane, Theodor, a German author; born in Neuruppin, Prussia, Dec. 30, 1819; died in Berlin, Sept. 21, 1898.

Fontanes, Marquis Louis de, a French statesman; born in Niort, France, March 6, 1757. Proscribed by the Revolution for editing papers opposed to the Terror, he fled to England. Later he attained high office under Napoleon and the restored Bourbons; died in Paris, March 17, 1821.

Fontenoy, Battle of, one of the most famous battles in the War of the Austrian Succession. It was fought at a small village of the same name, in Western Belgium. Here, May 11, 1745, the French under Marshal Saxe defeated the Allies under the Duke of Cumberland, with very heavy loss on both sides. Irish exiles in the French service took a conspicuous part in the victory.

Fontevraud, or **Fontevrault,** a branch of the Benedictine order of monks; so named from the place where the first monastery of the sect was erected.

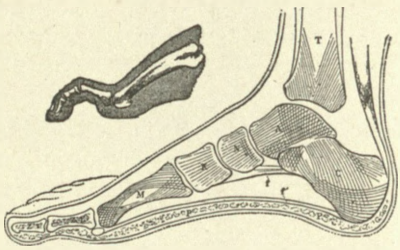
Fonvielle, Wilfried de, a French scientific writer; born in Paris, July 21, 1824. He aimed to popularize scientific truths by his writings.

Food, any substance which, taken into the body, is capable of sustaining or nourishing, or which assists in sustaining or nourishing the living being.

Fools, Feast of, the name of a festival regularly celebrated, with the most absurd ceremonies, both by clergy and laity, in several countries of Europe, from the 5th to the 16th century. It is said to have been introduced in imitation of the Roman Saturnalia, and its celebration took place about the same time, the great day being New Year's; but the ceremonies were often continued from Christmas to the last Sunday of Epiphany. The Feast of Fools was condemned by several Popes and bishops in the 15th century, and the Council of Basel, in 1435, expressed its detestation of this and several other festivals; but it continued to be observed in many places down to the time of the Reformation.

Fool's Parsley, a plant which grows wild in some places in the Northern States. It somewhat resembles parsley in its foliage and general appearance, so that serious accidents may occur from its being mistaken for that herb, it being a poisonous plant, similar to hemlock in its properties.

Foot, that part of the lower extremity below the leg on which we stand and walk. It is composed of three series of groups of bones — the tarsal, or hindermost; the metatarsal, which occupy the middle portion; and the phalanges, which form the toes. The tarsal bones are seven in number. Above, they are connected with the tibia and fibula bones of the leg, and below form the heel and the hinder part of the instep. The metatarsal



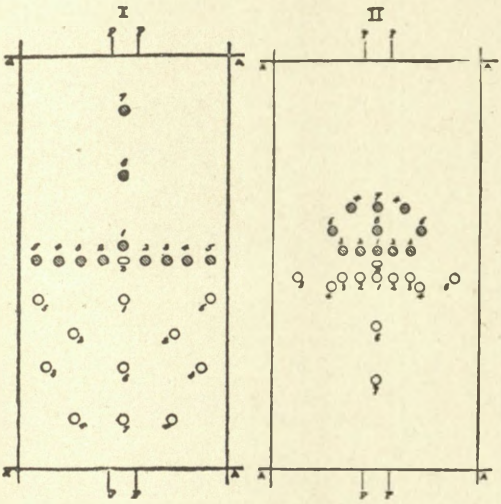
HUMAN FOOT AND TOE; SIDE VIEW OF BONES.

bones are five in number, and belong to the class of long bones. They are connected posteriorly with the tarsal, and anteriorly with the phalangeal bones. Their anterior ends form the balls of the toes. The first metatarsal bone is the shortest and strongest, while the second is the largest — the others all decreasing in length according to their distance from it. These bones from the anterior portion of the instep. The phalanges, or bones of the toes, are 14 in number, three to each toe, except the great one, which has only two. The upper ones, which are longest and largest, are named the metatarsal; the next, the middle; and the most anterior, the ungual phalanges. The bones of the foot, more particularly those that compose the

tarsus and metatarsus, are firmly connected together, so that they are not liable to be displaced; and those parts where they articulate with one another being covered with a tolerably thick layer of highly elastic cartilage, they possess a considerable degree of elasticity. They are bound together in various directions, by a number of ligaments. The movements of the foot, which are permitted by the connecting ligaments, are affected by a variety of muscles. The foot is usually so much interfered with in civilized life as to be deprived of much of its beauty, and even of its utility; its movements being impeded by its being confined in tight-fitting boots, to the shape of which feet are made to conform.

In arithmetic, a measure of length, consisting of 12 inches, or 36 barleycorns laid end to end. It also expresses surface and solidity. A square foot is the same measure both in length and breadth, containing $12 \times 12 = 144$ square or superficial inches. A cubic or solid foot is the same measure in all directions, or 12 inches long, broad and deep, containing $12 \times 12 = 144 \times 12 = 1{,}728$ cubic inches to the solid or cubic foot. As this term is employed in almost all languages as a linear measure, it has doubtless been derived from the length of the human foot. Though the denomination is the same, the measure itself varies considerably in different countries.

As a military term, soldiers who march and fight on foot; infantry; as, horse and foot.



FOOTBALL FIELD AT KICK-OFF. FOOTBALL FIELD AT SCRIMMAGE.

Football, a field game played in the United States, Great Britain, Canada, and Australia. The game is said to have originated among the Romans, but it was under the guidance of the public schools of Great Britain that it advanced and became popular. There are at present several styles of football, the American and English Rugby, and the Association games, being the most popular. The American Rugby game is played among the colleges, schools, and athletic clubs of the United States. The game is played on a field 330 feet long and 160 feet wide, the boundaries being marked off with chalk lines, with lines at every five yards, running across the field. Two goal posts are placed 18 feet 6 inches apart in the middle of each end line. These posts are 20 feet high and have a cross bar 10 feet from the ground. The ball has an oval-shaped leather covering containing an inflated rubber bladder. The football team consists of 11 men, the center, two guards, two tackles, two halfbacks, two ends, the quarterback, and the fullback. The game is commenced by one team placing the ball in the center of the field and kicking it into the opponents' territory. One of the opponents catches it, and runs forward until tackled and thrown by one of the other team. The ball is then put down for scrimmage. The center of the team holding the ball passes it back between his legs to the quarterback, who in turn passes it to some man who runs with it. The men on the opposing team try to keep the ball from advancing by throwing the runner. When the run-

ner is stopped he calls "down" and the ball is held. The team is allowed three downs, in which it must either advance the ball 5 yards, or lose 20 yards, or surrender the ball to its opponents. The game continues until one team forces the ball over its opponents' goal line. This is called a touchdown, and scores five points. The ball is then taken out, about 15 yards from the goal line, in a line parallel to the side lines, from the point where the ball was downed. A member of the team then tries to kick the ball over and between the opponents' goal posts. This kicked goal counts one point. The ball is then taken out to the center of the field and kicked off again by the losing team. The game is played in two halves of 35 minutes each, with a 10 minute intermission.

The game has been greatly developed by the American colleges, and a uniform system of rules governs the play.

The English game differs from the American in that 15 men, instead of 11, form a team. The game is more open, more kicking being done, but does not develop team work and interference to any great extent. In the Association game the ball is advanced entirely by kicking, butting with the head, "kneeing" and "breasting," the hands not being used at all. The team consists of five forwards, three halfbacks, two fullbacks, and a goal tender. The goals are made by kicking the ball between goal posts, 8 feet apart, and under a bar 8 feet from the ground. See SOCCER.

Foote, Andrew Hull, an American naval officer; born in New Haven, Conn., Sept. 12, 1806; entered the navy as a midshipman in 1822. In 1849–1852 he was engaged in the suppression of the slave trade on the coast of Africa. In command of the China station in 1856, when the Chinese and English were at war, he exerted himself to protect American property, and was fired upon by the Celestials. His demand for an apology was refused and he stormed and captured four Chinese forts, killing and wounding 400 of the garrisons of 5,000 men. In 1861 he commanded the expedition against Forts Henry and Donelson on the Tennessee and Cumberland rivers, and directed the attack on Island Number 10. In 1862 he was promoted rear-admiral, and in 1863 was ordered to take command of the South Atlantic Squadron, but died in New York while preparing to join his flag-ship, June 26, 1863. He was noted for earnest religious principles and practise in war and peace.

Foote, Henry Stuart, an American statesman: born in Fauquier co., Va., Sept. 20, 1800; was graduated at Washington College in 1819. In 1847 he was elected to the United States Senate from Mississippi, and in 1852 was elected governor of the State. He was a strong opponent of secession at the convention held at Knoxville, Tenn., in 1859, but when secession was an assured fact, he accepted an election to the Confederate Congress where he was active in his opposition to most of President Davis's measures. Senator Foote was one of the most conspicuous of Southern duelists. He died in Nashville, Tenn., May 20, 1880.

Foote, Lucius Harwood, an American diplomatist; born in Winfield, N. Y., April 10, 1826; was educated at Knox College and at the Western Reserve University; and went to California in 1853. He was appointed minister to Korea in 1882; distinguished himself in the protection of Japanese and other foreigners in the nationalist revolt in Seoul in 1883, and received the thanks of the Emperor of Japan, the Chinese government, and the Emperor of Korea for his services. He resigned in 1884 and in 1890 became treasurer of the San Francisco Academy of Sciences. He died June 4, 1913.

Foote, Mary (Hallock), an American author; born in Milton, N. Y., Nov. 19, 1847; married a mining engineer. She has been the author of several novels and collections of short stories illustrated by herself, on life in the Rocky Mountain regions.

Foote, Samuel Augustus, an American statesman; born in Cheshire, Conn., Nov. 8, 1780; and was graduated at Yale College in 1797. He served one term in the United States Senate; was governor of Connecticut, and one of the presidential electors on the Clay and Frelinghuysen ticket in 1844. It was he who in 1829 introduced the bill "on the public lands"

that occasioned the famous debate between Hayne and Webster. He died in Cheshire, Conn., Sept. 15, 1846.

Footprints, the footmarks or imprints left at inconceivably remote periods by the feet of various animals on the wet clay or sand of sea-beaches or similar localities, and which are now found at various levels in the solid strata of the earth. The footprints in the Silurian and other very antique rocks are mostly those produced by the claws of crustaceans. In the Triassic rocks of Connecticut, the footprints of 32 or more species of bipeds, and 12 of quadrupeds, have been found.

Foraker, Joseph Benson, an American statesman; born near Rainsboro, O., Jan. 5, 1846; enlisted as a private in the 89th Ohio Infantry and served till the end of the Civil War. He was graduated at Cornell University in 1869, and began law practice in Cincinnati, in the same year. He was judge of the Superior Court of Cincinnati in 1879–1882, governor of Ohio in 1885–1887 and 1887–1889, and United States Senator in 1897–1903, being again elected in the latter year. He died May 10, 1917.

Forbes, Archibald, a British journalist; born in Morayshire, Scotland, in 1838; was educated at the University of Aberdeen. Subsequently he watched the course of events in Servia; described the war with Turkey; and went to India to report the Afghan War, and to South Africa for the Zulu War. Afterward he revised his letters and reports, and recast them into historical narratives of the various campaigns. He died in London, March 29, 1900.

Forbes, David, an English geologist; born in Douglas, Isle of Man, Sept. 6, 1828. As a civil engineer he traveled all over the world, studying rock formations and fossils, and writing "On the Geology of Bolivia and Southern Peru" (1861); and kindred treatises. He died in London, Dec. 5, 1876.

Forbes, Duncan, a Scotch jurist; born near Inverness, Scotland, Nov. 10, 1685. He studied at Paris, Utrecht, and Edinburgh, and rose, in 1737, to the rank of president of the Court of Session. It was mainly owing to his exertions that the rebellion of 1745 was prevented from spreading more widely among the clans; but so ungratefully was he treated by the government, that he was never able to obtain repayment of the various sums he had expended to uphold it. He was the author of "Thoughts on Religion," the "Culloden Papers," etc. He died Dec. 10, 1747. The Astor Library contains an interesting work about him.

Forbes, Edward, a British naturalist; born in Douglas, Isle of Man, Feb. 12, 1815. He died Nov. 18, 1854. His active public life did not exceed five and twenty years, but into that period were crowded the labors and triumphs of the longest career; yet his work was only half done; and as was remarked of the father of modern geology, the loss sustained by his death was aggravated by the consideration of how much of his knowledge had perished with himself, and notwithstanding all that he had written, how much of the light collected by a life of experience and observation was now extinguished.

Forbes, Henry O., a Scotch naturalist; born in Aberdeen, Scotland, Jan. 30, 1851. He traveled in Java, Sumatra, Timor, and New Guinea, and wrote "New Guinea" (1886); which last domain he has most exhaustively explored.

Forbes, John Franklin, an American educator; born in Middlesex, N. Y., June 13, 1853; was graduated at the University of Rochester in 1878. In 1885 was made president of the John B. Stetson University in Deland, Fla.

Forbidden Fruit, a name given to the fruit of a tree in Ceylon of the Apocynacea species. The fruit is of peculiar shape, as if it had been bitten, thus giving rise to the legend that it is the fruit referred to (Gen. 2:17).

Forbin, Claude, Chevalier de, a French naval officer; born in Gardannes, France, Aug. 6, 1656. In 1685 he accompanied the French ambassador to Siam, where he gained the favor of the king, then desirous of introducing into his kingdom the Christian religion and the civilization of the West. Forbin remained two years, as high admiral, general, etc., to his Siamese majesty. In 1708 he was in-

trusted with the command of the squadron which was to convey the Pretender to Scotland, but owing to the vigilance of Admiral Byng, he could not effect a landing. He wrote his "Memoirs" (1730). He died near Marseilles, France, March 4, 1733.

Force, in physics, an influence or exertion which, if made to act on a body, has a tendency to move it when at rest, or to affect or stop its progress if it be already in motion. The strength of man's arms is a force, so is the power of a horse or ox to pull a vehicle, or turn a wheel, or set in action an agricultural machine. Gravity, friction, elasticity of springs or gases, electrical or magnetical attraction or repulsion are forces. Accelerated force is the increased force which a body exerts in consequence of the acceleration of its motion. Active force is force which tends to move another body from a state of rest. Animal force is the muscular strength of man, horses, asses, cattle, or other animals viewed as a moving power.

Force, Peter, an American historian; born near Little Falls, N. J., Nov. 26, 1790. His life work, entitled "American Archives," a valuable collection of 22,000 books and 40,000 pamphlets, was bought by the government (1867) and placed in the library of Congress. He died in Washington, D. C., Jan. 23, 1868.

Forceps, a name common to certain instruments of various shapes, according to the purpose they are intended to serve; but the principle of all is that of a pair of pincers with two blades, either with or without handles. They are much used in surgery, especially for taking hold of substances that cannot be conveniently laid hold of with the fingers. Certain kinds are used for tooth-drawing; others for securing the mouths of arteries, in order to their being tied; others are used in dissecting; others in lithotomy, and others in midwifery for aiding delivery in difficult cases.

Force Pump, a pump which delivers the water under pressure, so as to eject it forcibly or deliver it at an elevation. The term is used in contradistinction to a lift pump, in which the water is lifted, and simply runs out of the spout.

Ford, Henry, an American manufacturer, born in Greenfield, Mich., July 30, 1863; learned the machinist's trade; and in 1887 settled in Detroit, where, in 1903, he organized the largest automobile manufactory in the world, employing over 20,000 persons, and producing over 2,000 cars daily. In 1914 he established a profit-sharing system for his employes, under which he agreed to distribute $10,000,000 annually. Toward the close of 1915, when the war in Europe had assumed astounding conditions, he chartered a ship and headed a party of influential men and women on a mission to Norway, where he proposed to organize a conference of peace advocates to influence the belligerents to end the struggle. This movement, the entire expense of which he personally bore, proved futile. As soon as the United States entered the war, he offered his services, money, plant, and operatives to the Government free of any charge.

Ford, James Lauren, an American journalist; born in St. Louis, Mo., July 25, 1854.

Ford, John Donaldson, an American engineeer; born in Maryland; was graduated at the Potts School of Mechanical Engineering in June, 1862, and entered the United States navy as third assistant engineer in July of that year. During the Civil War he took part in several important engagements. Later, after having served on many expeditions, he was detached and ordered to Baltimore for the purpose of organizing the Baltimore Manual Training School. In 1890 he was made chief engineer in the navy; was assigned to duty on the "Brooklyn" in 1896; and in 1898 joined the Asiatic fleet and took part in the destruction of the Spanish fleet and batteries at Cavite.

Ford, Paul Leicester, an American author; born in Brooklyn, N. Y., in 1865. He was killed by his brother Malcolm, May 8, 1902. He wrote historical and biographical works, as well as a number of novels.

Ford, Sallie Rochester, an American story-writer; born in Rochester Springs, Boyle co., Ky., in 1828. Together with her husband she edited the "Christian Repository" and the "Home Circle" for years.

Ford, Walter, an American songwriter; born in Philadelphia, Pa., about 1860; was the senior member of Ford & Bratton Co., publishers of popular songs. With his partner, John W. Bratton, he brought out about 100 songs of which he wrote the words. He died March 6, 1901.

Ford, Worthington Chauncey, an American statistician; born in Brooklyn, N. Y., Feb. 16, 1858; was chief of the Bureau of Statistics, Department of State, in 1885–89, and of the Bureau of Statistics in the Treasury Department in 1893–98; was with the Boston Public Library in 1897–1902; Chief of Division of Manuscripts, Library of Congress in 1902–9; then editor, Massachusetts Historical Society.

Fore-and-aft, a term denoting the whole length of a ship, from stem to stern. A fore-and-aft sail is one whose middle portion is fore-and-aft; one which is attached to a spar or stay in the midship line of the vessel, and not to a yard, which is athwart ship.

Forecastle, a short deck placed in front of a ship above the upper deck. It is generally terminated at each end, in ships of war, by a breastwork, the foremast part reaching to the beakhead, and the after portion reaching to the fore-chains. This part of a ship used to be very much elevated in former times, for the accommodation of archers and cross-bowmen; whence the term forecastle.

Foreign States, in law, every nation is foreign to all other nations; and the several States of the American Union are foreign to each other, with respect to their municipal laws. But the reciprocal relations between the National government and the several States are not considered as foreign, but as domestic.

Foreign Judgment, in law, the judgment of a foreign tribunal. Such judgment may be evidenced by exemplifications certified under the great seal of the state or country where the judgment is recorded, or under the seal of the court where the judgment remains.

Foreign Laws, the laws of a foreign country. The courts do not judicially take notice of foreign laws; and they must, therefore, be proved as facts. When evidence is given of those laws, the court is to judge of their applicability to the matter in issue.

Forelands, North and **South,** two headlands on the S. E. coast of England, and on the E. seaboard of the county of Kent; the first, or North Foreland, forms the N. E. angle of the county; it projects into the sea in the form of a bastion, and consists of chalky cliffs nearly 200 feet in height. A lighthouse of the first class, having a fixed light elevated 340 feet above the level of the sea, was erected on this promontory in 1688. The South Foreland, about 16 miles S. of the former, consists also of chalky cliffs, and has two lighthouses, with fixed lights, erected upon it, to warn ships coming from the S. of their approach to the Goodwin Sands.

Forensic Medicine, the science of medicine as applied to law; medical jurisprudence.

Foreordination, or **Predestination,** according to the Calvinistic view, the predestination before the foundation of the world of some to eternal life and others to eternal death.

Foresters, any of several fraternal benefit societies, so called. The Ancient Order of Foresters was founded in England in 1745, and was established in America in 1836. Official returns of the order show the total membership throughout the world to exceed 1,280,000, and in America 41,000. The Foresters of America, a distinct organization, was founded in 1864, report a membership of about 210,600. The Independent Order of Foresters was founded in 1874, and the returns of the order show a total membership in the United States of 198,725.

Forest Laws, in English law, laws for the regulation of the forest. These were instituted under the Conqueror, and were so severe that a man killing a deer might be mutilated and put to death. The Long Parliament put an end to these extortions.

Forestry, the act, occupation, or art of forming and cultivating forests; the systematic utilization, reproduction and improvement in productive capacity of trees in masses, including the planting and culture of new

forests. The usefulness of forests to man lies: (1) in their furnishing him with timber for fuel and for manufacturing and building purposes as well as with other serviceable products, such as their bark, their sap (by distillation), turpentine, creosote, wood alcohol, vanilin, etc.; also fertilizers, fodders, materials for textile fabrics, dyes, inks, etc. (2) in their influence on climate, by furnishing large tracts of superior coolness, by conserving humidity, decreasing evaporation, breaking the force of winds, etc. (3) In their influence on the waterflow, by keeping the ground more moist, conserving the springs, making the outflow of water more steady and regular, and causing the snow within them to melt more slowly, thus preventing dangerous floods; causing the rainfall to sink slowly into the soil rather than to flow in torrents over the surface; also by holding the soil together with their roots, so keeping the hillsides from being denuded and preventing their soil from being carried down over the cultivable fields below, sanding over valleys and silting up streams. This being the case, not only private interest exists in forests but a public interest, which necessitates at times governmental action — an action to which in the United States we have but recently awaked. Such action rests on the following principles: (1) The widest scope should be allowed to private enterprise in production, care being taken that abundant statistics in regard to supply and demand and opportunity for education on the subject be furnished. (2) Adequate legal protection should be given to forest property. (3) Whenever improper management threatens damage to neighboring property the State should interfere to enforce proper management. (4) Wherever public welfare demands the reforestation of denuded tracts, the State should assist individual or communal enterprise in performing this, or else do the reforesting as a work of internal improvement. (5) In cases where a permanent forest is desirable and private interest can not be relied on for its proper management, the State should own and manage it.

According to the report of the U. S. Forest Service for the year ended June 30, 1916, the forests of the United States then covered 550,000,000 acres or about one-fourth of the continental area; the forests publicly owned contained one-fifth of all timber standing; and the forests privately contained at least four-fifths of the standing timber, and this was generally the most valuable.

The original forests of the United States covered 850,000,000 acres, with a stand of not less than 5,200,000,000,000 feet of merchantable timber. There were five great forest regions—the Northern, the Southern, the Central, the Rocky Mountain, and the Pacific. The present rate of cutting for all purposes exceeds the annual growth of the forests. The great pineries of the Lake States are nearing exhaustion and heavy inroads have been made upon the supply of valuable timber throughout all parts of the country.

We take from our forests yearly, including waste in logging and in manufacture, more than 22,000,000,000 cubic feet of wood, valued at about $1,375,000,000. We use in a single year 90,000,000 cords of firewood, nearly 40,000,000,000 board feet of lumber, 150,000,000 ties, nearly 1,700,000,000 staves, 445,000,000 board feet of veneer, over 135,000,000 sets of heading, over 350,000,000 barrel hoops, over 3,500,000 cords of native pulp wood, 170,000,000 cubic feet of round mine timbers, nearly 1,500,000 cords of wood for distillation, over 140,000 cords for excelsior, and nearly 3,500,000 telegraph and telephone poles.

The heavy demands for timber have been rapidly pushing the great centers of the lumber industry toward the South and West. In consequence the State of Washington now leads in lumber production, followed closely by Louisiana, then Mississippi, North Carolina, and Oregon. Among the soft woods, in 1915, the production of yellow pine lumber amounted to about 14¾ billion feet; the Douglas fir of the Northwest held second place with more than 4½ billion feet, while white pine, with 2¾ billion feet ranked third. Of the hardwoods oak came first, with approximately 3 billion feet, followed in the order named by cypress, maple, red gum, chestnut, yellow poplar, birch, and beech.

The Forest Service of the United States is now a Bureau in the Department of Agriculture. It has charge of the administration and protection of the National forests and also promotes the practice of forestry generally through investigations and the diffusion of information.

In 1891 Congress authorized the President to set apart forest reserves, but no provision for their administration and use was made till 1897. By 1924 the net area of National forests, including those in Alaska and Porto Rico, had grown to 157,502,793 acres, with an additional 706,975 acres acquired by purchase in the White Mountains and the Southern Appalachian regions.

Our National forests have been set aside as follows: By President Harrison, 13,416,710 acres; by President Cleveland, 25,686,320 acres; by President McKinley, 7,050,089 acres; by President Roosevelt, 148,346,924 acres. In a readjustment of boundaries President Taft added 4,333,847 acres and withdrew 11,680,578 acres, and President Wilson added 562,279 acres and withdrew 11,615,124 acres.

Forey, Elie Frederic, a French military officer; born in Paris, France, Jan. 10, 1804. When the expedition to Mexico was decided upon in 1861, Forey received the command of the French troops. After several sanguinary engagements, he attacked and stormed the strong post of Puebla, thereby throwing open the road to the city of Mexico. For this service he was made Marshal of France, when he resigned his command to General Bazaine, and returned home, receiving the command of the 2d army corps, in 1863. He received the Grand Cross of the Legion of Honor in 1859, and was elected to the senate in that year. Died in Paris, France, June 20, 1873.

Forfeiture is a punishment annexed to some illegal act or negligence in the owner of real property, whereby he loses all his interest therein, and it goes to the party injured, as a recompense for the wrong which either he alone or the public with him has sustained. It is almost unknown in the United States.

Forge, the apparatus or works for heating bars of iron and steel and working them under the hammer. Works in which cast iron is converted into malleable iron and also where native ores are reduced to the metallic state, are also forges.

Forget, Amédée Emmanuel, a Canadian official; born in Marieville, P. Q., Nov. 11, 1847; admitted to the bar in 1871; Secretary Manitoba Half-breed Commission in 1875, Commissioner for settlement of half-breed troubles in the Territories in 1885, Lieutenant-Governor of the Northwest Territories in 1898–1905; became the first Lieutenant-Governor of Saskatchewan in 1905.

Fork, an instrument divided at the end into two or more points or prongs, and used for lifting or pitching anything. The instrument used at table is only about three centuries old. The use of any species of forks at the table was quite unknown till the 15th century, and they were then known only in Italy, which has the merit of this invention. As late as the middle of the 17th century forks were used in America and England only by the highest classes. The general use of silver forks in America cannot be dated farther back than the beginning of the 19th century.

Forlorn Hope, a body of men selected to attempt a breach, or to lead in scaling the walls of a fortress. The name is given on account of the extreme danger to which the leaders of a storming party was necessarily exposed. As, however, the honor of success is proportionable to the peril of the undertaking, there is ordinarily no lack of volunteers for this arduous service.

Formation, in geology, a term used in speaking of certain large groups of rock, whether stratified or unstratified. Thus it is usual to speak of a limestone, a sandstone, or a clay formation, or a granite or slate formation, without reference to limestones or other rocks of any particular age. So also we speak of Tertiary and Secondary formations, and formerly of Primary, now Palæozoic formations — the term then referring to a natural group, definite in respect to age, but indefinite as to material.

Formosa (Chinese Tai-Wan, or "Terrace Bay"), an island in the Chinese Sea, belonging to Japan:

about 80 miles from the Chinese coast, from which it is separated by the Channel of Foh-kien (sometimes called Strait of Formosa), and 170 miles N. of Luzon, the chief of the Philippine Islands; length, N. to S., about 250 miles; breadth, in its center, about 80 miles; area estimated at 13,840 square miles. A chain of mountains runs through the island in its entire length, forming, in general, the barrier between the Chinese on the W., and the independent natives of the unexplored country on the E. side. On many of its peaks snow remains during the most part of the summer. It exhibits distinct evidence of former volcanic action, and sulphur, naphtha, and other volcanic products are abundant. Soil, highly fertile and productive, so much so indeed that this island has long been familiarly known as the granary of the Chinese maritime provinces. All the large plain of the S. resembles a vast cultivated garden. The principal productions are rice, sugar, camphor, tobacco, wheat, maize, millet, truffles, vegetables, and the choicest of Asiatic and European fruits; pepper, aloes, green tea, cotton, hemp, and silk are also important articles of cultivation. The leopard, tiger, wolf, etc., are found in the more impenetrable tracts of the interior; the domestic breeds of animals, game, etc., are abundant. Gold is believed to impregnate the soil in the E. part of the island; but the chief mineral deposits are salt and sulphur. The trade is mostly in the hands of Chinese and British merchants, who also own all the shipping. The principal article of import is opium. The natives bear no resemblance to the Chinese; but they have an apparent alliance with the Malay or Polynesian race. The Japanese, Spanish, Portuguese, and Dutch have been successively masters of this island. It was ceded to Japan in 1895 after the Chinese War. Native opposition was subdued, roads, railways, telegraphs, established, and an era of modern development commenced. Pop. (1924) 3,758,900; chief town, Taiwan City (61,000).

Formula, in chemistry, an expression by means of symbols, especially letters and numbers, of the chemical elements contained in a compound; in medicine a prescription. In mathematics, a formula is the expression of a general rule or principle in algebraic symbols.

Fornaris, Jose, a Cuban poet; born in Bayamo, Cuba, in 1826. He wrote dramas and volumes of verse.

Forneron, Henri, a French historian; born in Troyes, France, Nov. 16, 1834. He was connected with the ministry of finance. He died in Paris, March 26, 1886.

Forney, John Weiss, government official; b. Lancaster, Pa., Sept. 30, 1817. He became a journalist in Philadelphia and Washington; clerk to Congress 1851-55; sec. to the Senate 1861-68; died in Philadelphia, Dec. 9, 1881.

Forrest, Edwin, tragedian; b. Philadelphia, Pa., Mar. 9, 1806; achieved great success in America and Great Britain. He retired in 1871, and died in Philadelphia, Pa., Dec. 12, 1872.

Forrest, Nathan Bedford, Confederate cavalry commander; born in Tennessee, July 31, 1821. He was a slave trader in Memphis, Tenn., and at the outbreak of the Civil War, joined the Confederate army as a private, rapidly rising as a commander of cavalry to the rank of lieutenant-general. His name became notorious in connection with the Fort Pillow Massacre (q. v.), although he always denied the charge that no quarter was allowed. He died in 1877.

Forster, Friedrich Christoph, a German author; born in Munchengosserstadt, Germany, Sept. 24, 1791. He fought in the war of liberation, and with a "Battle Cry to the Aroused Germans" won fame as a song-writer. He died in Berlin, Germany, Nov. 8, 1868.

Forster, Johann Reinhold, a German naturalist; born in Dirschau, Prussia, Oct. 22, 1729. In 1772 he received the offer of naturalist to Captain Cook's second expedition to the South Seas. In association with his son, he published a work on the botany of the expedition, and "Observations Made During a Voyage Round the World." In 1778 he returned to Germany, and was soon afterward made Professor of Natural History and Mineralogy at Halle, where he died, Dec. 9, 1798

Forster, John, an English historical writer; born in Newcastle-on-Tyne, England, April 2, 1812. He was educated for the law; held one or two public offices, and finally engaged in literature and journalism. He died in London, Feb. 2, 1876.

Forsyth, George Alexander, an American military officer; born in Muncy, Pa., Nov. 7, 1837; served with unusual distinction in the Civil War, taking part in 16 pitched battles, two sieges, and over 60 minor engagements; was brevetted Brigadier-General in 1868 for his action in an engagement with hostile Indians. He was a member of the board of officers to inspect the armies of Europe and Asia in 1875–1876, and on staff and frontier service till 1890, when he was retired. He died Sept. 12, 1915.

Forsyth, James W., an American military officer; born in Ohio, Aug. 26, 1836; was graduated at the United States Military Academy in 1856 and assigned to frontier duty. During the Civil War he served on General McClellan's staff in the Peninsular and Maryland campaigns; was brevetted major for gallantry at Chickamauga in 1863, and served as assistant adjutant-general of volunteers and chief of General Sheridan's staff in 1864–1865. Subsequently he was assistant inspector-general of the Department of the Gulf in 1866–1876; aide to General Sheridan in 1869–1873, and colonel of the 7th cavalry. He was retired in 1897, as a Major-General, U. S. A. He died in 1906.

Forsyth, John, Secretary of State (1834-1841); was born at Fredericksburg, Va., in 1780. In 1827 he was Governor of Georgia. He died in 1841.

Fort, an inclosed work, erected near fortress or fortified town, to command the approaches to it.

Fort Dodge, city and capital of Webster county, Ia.; on the Des Moines river and the Illinois Central and other railroads; 85 miles N. W. of Des Moines; is in a grain, coal, and gypsum section; has many points of scenic interest; is the seat of Tobin College, Convent of Our Lady of Lourdes, and Lutheran and Roman Catholic schools; and has important manufactures. Pop. (1920) 19,347.

Forth, a river of Scotland, rising on the E. side of Ben Lomond, in Stirlingshire. After a sinuous course E. past Aberfoyle, Stirling, and Alloa, it unites with an arm of the sea, called the Firth of Forth. The Forth possesses many good harbors, and St. Margaret's Hope, above Queen's Ferry is one of the safest roadsteads in the island. Length of river, including its "links," 180 miles. The Firth at its mouth is about 40 miles wide.

Forth Bridge, a remarkable work in engineering, spanning the Firth of Forth in Scotland; completed and formally opened on March 4, 1890. The construction was begun early in 1883, and the total cost up to the time of completion may be given in round numbers as $16,000,000. The following statistics are given in a paper on "The Bridge and Its History," by Philip Philips, one of the resident engineers: Total length, upward of 1½ miles; cantilever arms projection (outer), 680 feet; depth of cantilevers over piers, 342 feet; depth at ends, 41 feet; distance apart of lower members at piers, 120 feet; distance apart of lower members at ends, 31.5 feet; diameter of largest tubes, 12 feet; top members, distance apart at vertical columns, 33 feet; top members, distance apart at ends, 22 feet; struts, largest diameter, 8 feet; ties, greatest length, 327 feet; central girder, span, 350 feet; central girder, depth at center, 51 feet; central girder, depth at ends, 41 feet; internal viaduct spans, various, 39 to 145 feet; total amount of steel in bridge, over 50,000 tons; south-approach viaduct, total length, about 1,980 feet; south-approach viaduct, average span, 168 feet; wind pressure allowed for, 56 pounds per square foot; depth of water in channels to be spanned, 218 feet; height of cantilever pier (masonry) above water, 209 feet; greatest air pressure in working the caissons, 32 pounds above atmosphere; weight on a single pier, 16,000 tons; thickest steel plates, 1¼ inch; length of plates used in tubes alone, 40 miles; greatest depth of foundations, 88 feet below high water; contraction and expansion allowed for, between 6 and 7 feet. The designers of the bridge were Sir John Fowler and Benjamin Baker.

Fortier, Alcee, an American educator; born in Louisiana, June 5, 1856. He won distinction when very young, with stories of life in his native State; became Professor of Romance Languages in Tulane University, 1880; died Feb. 14, 1914.

Fortification, the art of increasing by engineering devices, the fighting power of troops who occupy a position. The great improvements lately made in the construction of heavy guns have rendered it necessary to revise the systems of fortification formerly in vogue. Iron and steel turrets are taking the place of masonry on low sites which are much exposed and where earth cannot be employed advantageously. These turrets are revolving cupolas, with spherical roofs; while in some instances the guns are mounted on disappearing carriages. In the United States the frontiers exposed to attack being very largely maritime, the fortifications are principally batteries of heavy guns adapted to a contest with steel-plated ships. These are inclosed in the rear with a land front, as protection against a land attack, but not made sufficiently strong to stand a long siege, it being taken for granted that reinforcements can quickly be provided to repel a besieging force. It was formerly usual to mount guns in masonry casements built tier over tier, this method of building being common throughout the world. But this method has been discarded in consequence of the modern development in ships and guns. The system recommended by a board of military engineers, in 1886, proposed the use of steel turrets, armored casements, barbette batteries, mortar and floating batteries, and submarine mines; but so rapid has been the advance of military progress that the plan outlined by that board has been very largely modified in recent constructions, it having been found that, all things considered, earth and sand constitute the most effective defense.

Iron-clad Forts.— For nearly an entire generation — ever since 1859 — the progress of fortification in Europe was in the direction of the use of some form of iron armor. In England the necessity for using iron in fortifications was apparent just as soon as this material began to be used in ships, and in 1861 England entered upon the work of rebuilding her forts with iron. It was substantially completed in 1878, at a cost of $37,000,000, expended on nine harbors. Within the last few years have come the solid iron turrets, of enormous thickness, carrying two 80-ton guns each, which form part of the defenses of Dover, England. While many of these forts, which were built while the contest between guns and armor was still in progress, can be pierced by the more recent guns, yet the number of large guns which they mount is far superior to the number that could be brought against them afloat, and in connection with torpedoes and ironclad ships they afford a secure defense.

Fortlage, Karl, a German philosopher; born in Osnabruck, Germany, June 12, 1806. A Hegelian in his student days, he arrived finally at what we might designate "transcendental pantheism." He died in Jena, Nov. 8, 1881.

Fortress, the development of modern ordnance has rendered fortification as exhibited in the construction of the fortresses of the past practically obsolete and useless. It is probable that no fortress in the world (with the exception, perhaps, of Gibraltar, the natural situation of which renders it inexpugnable) would form a serious obstacle to a modern naval or land attack, if the assailants were provided with the most approved modern heavy guns. In view of this fact the construction of fortresses has been directed almost entirely to enabling them to cause a ricochet of shots directed against them rather than to oppose the direct impact. Hence modern fortresses are usually small, and present nowhere a direct angle to the line of fire, being generally constructed on the turtle-back or spherical plan. They usually contain but few guns, and those of the heavier calibers, rendering them offensive rather than great strongholds of defense, as formerly. Of this latter class the strongest fortress surviving in the United States is Fortress Monroe, on Hampton roadstead in Virginia, erected for the defense of Norfolk navy yard. It was planned and built by a French engineer, and was an important Federal stronghold during the Civil War.

Fort Scott, city and capital of Bourbon county, Kan.; on the Marmiton river and several trunk line railroads; 98 miles S. of Kansas City; has productive artesian and mineral wells, bituminous coal mines, quarries, and pottery clay deposits; contains the Kansas Normal College, Notre Dame College, Collegiate Institute and Mercy Hospital; and has considerable manufacturing and horse and mule interests. Pop. (1920) 10,693.

Fort Sumter, in Charleston Harbor, S. C., is famous for the attack by the Confederate General Beauregard on April 12, 1861, which commenced the Civil War.

Fort Wayne, city and capital of Allen county, Ind.; at junction of the St. Joseph's and St. Mary's rivers, which here form the Maumee, and on several trunk line railroads; 102 miles N. E. of Indianapolis has varied manufactures with an annual output of over $15,000,000, besides large railroad repair shops; contains handsome Federal and county buildings, Concordia College (Luth.), Westminster Seminary, Sacred Heart Academy, medical, art, and music schools, and Hope and St. Joseph's hospitals. Pop. (1920) 86.549.

Fort Worth city and county seat of Tarrant Co., Tex., 175 miles N. E. of Austin, the capital. Located on Trinity River. Incorporated 1872, the city has become an important transportation centre with 17 railroads connecting. It has 31 public parks. Industrially, it has great oil refineries ($52,000,000 annual product), automobile assembling shops, machine shops, stockyards, packing houses, etc. Numbered in its institutions are over 100 churches, 9 hospitals; it is seat of Texas Woman's college (successor to Polytechnic College; Texas University (here since 1910 and absorbing Ft. Worth Medical College); Southwestern Theological Seminary; Masonic Orphans' Home and School; Southend University, etc. Area, 14,233 acres. Assessed realty value $113,298,922. Population (1926) estimated, 159,000.

Forum, an open space in Roman cities, generally surrounded by a covered colonnade, that fronted an ambulatory, and buildings of various kinds, such as temples, courts of law, etc. The Roman forum corresponded to the agora of the Greeks, and no Roman city or colony was without this important center for the transaction of business and public affairs.

Forward, Walter, an American statesman; born in Connecticut in 1786. In 1849 he was appointed charge d'affaires to Denmark, but resigned in 1851 to become president-judge of the District Court of Allegheny co., Pa. He died in Pittsburg, Pa., Nov. 24, 1852.

Forwood, William H., an American military surgeon; born in Delaware, Sept. 7, 1838; was graduated at the Medical Department of the University of Pennsylvania and at Georgetown University, Washington, D. C.; entered the regular army as an assistant surgeon in 1861, and served throughout the Civil War; and was brevetted captain and major for faithful and meritorious services. He located military hospitals in Savannah, Ga., and the camp hospitals in Montauk Point during the Spanish War; and was appointed surgeon-general of the army in June, 1902. He died May 11, 1915.

Foscari, Francesco, a doge of Venice; born in 1372, in 1416 was named procurator of St. Mark's, and in 1423 was elected doge. His son Giacopo, being accused of ordering the assassination of a senator Donati, he was banished from the city, the father having to ratify the sentence. Love of his country, and devotion of his wife, compelled the banished Foscari at all hazards to revisit his beloved Venice, where, being discovered by his enemies, he was denounced, again made prisoner, put to the question of the rack, and a second time banished, dying soon after of his wounds, or the torments of his secret punishment, and of grief at separation from his idolized family. The fate of the son had such an effect on the doge that the bereaved father went mad, in which state the enemies of his family compelled him to abdicate. He died three days after in a spasm, upon hearing the bells of St. Mark's announce to Venice the election of a new ruler. Byron has written on the subject a tragedy entitled "The Two Foscari." He died in Venice, Nov. 1, 1457.

Foscolo, Ugo, an Italian poet and patriot; born on the island of Zante, Jan. 26, 1778. He died Oct. 10, 1827, in London, England.

Fosdick, Charles Austin, an American writer of juvenile books; born in Randolph, N. Y., Sept. 6, 1842. He served in the Union navy in the Civil War from 1862 to 1865. Besides contributions to periodicals, he published under the pseudonym "Harry Castlemon" over 30 books for boys. He died Aug. 22, 1915.

Fosdick, Harry Emerson, an American clergyman; born, 1878. Graduated from Colgate University, Union Theological Seminary and Columbia. Ordained Baptist minister in 1903. Professor Union Theological Seminary, 1915. A great pulpit orator and as such has achieved countrywide fame.

Foster, Charles, an American financier; born in Seneca co., O., April 12, 1828; elected to Congress in 1870; governor of Ohio in 1879–1881; and Secretary of the United States Treasury in 1891–1893. He founded the town of Fostoria, O., and was long identified with its principal business interests. He died Jan. 9, 1904.

Foster, Hannah (Webster), an American novelist; born in 1759. She died in Montreal, Canada, April 17, 1840.

Foster, Henry, an English scientist; born in Woodplumpton, Lancashire, in 1797. The gold medal of the Royal Society of Great Britain was awarded him for his services on the Arctic Expedition of Captain Ross in 1818–1819. On April 27, 1828, he sailed on the "Chanticleer," as commander of an expedition to determine the direction of the principal ocean currents in both hemispheres. He was drowned while exploring the Chagres river in Panama, Feb. 5, 1831.

Foster, John Gray, an American military officer; born in Whitefield, N. H., May 27, 1823; was graduated at the United States Military Academy in 1846, entering the engineer corps. He served in the Mexican War and was brevetted captain for meritorious services. For two years he taught at the United States Military Academy, but at the outbreak of the Civil War he was assigned to duty at Fort Sumter and was one of its garrison during the siege. In 1861 he was commissioned a Brigadier-General of volunteers; was later promoted Major-General of volunteers; and became commander of the Department of North Carolina, defending that region with skill. Subsequently he commanded the Departments of Ohio and Florida, and in 1865 was brevetted Major-General, U. S. A. He died in Nashua, N. H., Sept. 2, 1874.

Foster, John Watson, an American diplomatist; born in Pike co., Ind., March 2, 1836; was graduated at the Indiana State University in 1855; studied law, and was admitted to the bar in Evansville, Ind. After the Civil War, during which he served with distinction, he was editor of the Evansville "Daily Journal" and postmaster of that city; minister to Mexico in 1873–1880, to Russia in 1880–1881, and to Spain in 1883–1885; was special commissioner to negotiate reciprocity treaties with Spain, Germany, Brazil and the West Indies, in 1891; and United States Secretary of State in 1892–1893. Subsequently he was agent for the United States before the Bering Sea Arbitration Tribunal at Paris; participated in the peace negotiations with Japan; represented China in The Hague Conference of 1907. Died, 1917.

Foster, Lafayette Sabine, an American statesman; born in Franklin, Conn., Nov. 22, 1806; was graduated at Brown University in 1828. He served several terms in the Legislature; was elected to the United States Senate in 1854; was president pro tempore of the Senate in 1865; and, after Andrew Johnson became President, was acting Vice-President of the United States. He died in Norwich, Conn., Sept. 19, 1880.

Foster, Stephen Collins, an American song-writer; born in Pittsburg, Pa., July 4, 1826; was educated at Athens Academy and Jefferson College, Pennsylvania. He composed the music and wrote the words of over 125 popular songs and melodies. He died in New York city, Jan. 13, 1864.

Fouche, Joseph, Duke of Otranto, a French detective; born in Nantes, May 29, 1763. The Revolution, into

which he entered with enthusiasm, found him teaching philosophy in Nantes. As he had not taken orders he married, became advocate, and was sent to the convention by the department of Loire-Inferieure. Here he was placed on the committee for public education, voted for the death of the king, and was implicated, at least nominally, in the atrocities of the period. He was minister of police under the Directory, and gained the favor of Napoleon who made him a duke, but with good reason never fully trusted him. After the battle of Waterloo, Fouche urged Napoleon's second abdication, and advised him to seek an asylum in the United States. He placed himself at the head of the provisional government, negotiated the capitulation of Paris, obtained the removal of the army behind the Loire, and thus prevented useless bloodshed. Louis XVIII., who valued his ability, made him again minister of police; and it is to his credit that he labored so zealously in favor of moderate measures as to incur the hatred of all the ultra-royalists. He died at Trieste Dec. 25, 1820.

Foulke, William Dudley, lawyer and author; born in New York city, Nov. 20, 1848; graduated at Columbia University in 1869 and from its Law School in 1871. He became widely known through his activity in promoting civil service reform.

Foundation for the Promotion of Industrial Peace, an institution created and endowed by President Roosevelt in 1907 with the Nobel peace prize of $40,000, awarded him the previous year, for the purpose of bringing together representatives of capital and labor for a better understanding of their mutual relations; but the purpose failed.

Founders and Patriots of America, The, a society founded in 1896, and incorporated March 18, the object stated in the articles of incorporation being "to inculcate patriotism; to discover, collect, and preserve records, documents, manuscripts, monuments, and history relating to the first colonists and their ancestors and their descendants, and to commemorate and celebrate events in the history of the colonies and the republic."

Foundling, a child abandoned by its parents and found by strangers. Even in ancient times the State made provision for the preservation of exposed children; but foundling hospitals are an institution of modern times.

The foundling hospital in Paris was formally established in 1670, and is the most famous institution of the kind in the world. It receives not only foundlings strictly so called, that is deserted children of unknown parentage, but also deserted children of known parents, and destitute children generally, as well as children pronounced incorrigible by the law courts or declared to be so by their parents. The institution also assists poor mothers by donations and by sending nurses for their infants. The children received are at once sent to the country and boarded out, their foster-parents receiving a certain payment from the State, which ceases after 12 years. The children are then apprenticed or employed in some way, but they do not pass from the supervision of the State till they reach the age of 21. Foundling hospitals exist in many other countries. In the United States there is no hospital on the same plan as at Paris, and the mortality of infants in public institutions has been so great as to excite public amazement and indignation.

Fouquier, Henry, a French journalist; born in Marseilles, Sept. 1, 1838. For many years his lively talent enriched the columns of "Gil Blas," "Figaro," and "L'Echo de Paris," over his own name and such pseudonyms as "Nestor," "Columbine," and "Columba." Died in 1901.

Fouquier-Tinville, Antoine Quentin, an execrable monster of the French Revolution; born in Heroul, France, in 1747. His early career was immoral, but insignificant. On the outbreak of the Revolution, he figured as one of the fiercest democrats. By Robespierre he was appointed, first, a member, then director and public accuser, of the revolutional tribunal. Without education, conscience or sense of justice, he executed with brutal apathy the bloody orders of the Committee of Public Safety. Incapable of friendship, or of anything even remotely allied to generosity, he systematically abandoned

his successive coadjutors in their hour of need, and sent to the scaffold, without the slighest compunction, Bailly and Verginaud, Danton and Hebert, Robespierre and St. Just. He himself died by the guillotine, in a cowardly manner, May 7, 1795.

Fourier, Francois Marie Charles, a French social economist; born in Besancon, France, April 7, 1772. At first in trade, then in the army, the seeing a cargo of rice thrown into the sea to raise its price led him to attempt a reform abolishing the competitive system, by means of associated production and life in "phalansteries." He died in Paris, Oct. 8, 1837.

Fourier, Jean Baptiste Joseph, Baron, a French mathematician; born in Auxerre, France, March 21, 1768. He was an active Jacobin during the French Revolution. His later energies were divorced from politics and given up to science. He died in Paris, May 21, 1830.

Fourierism, a system partly of coöperation, partly of socialism; advocated, and to a certain extent carried out, by Francois Marie Charles Fourier. Fourier's scheme was that what he called from the word phalanx, a phalanstery, consisting of about 400 families, or 1,800 persons, should live together, combining their labor, upon a district about a square league in extent. The buying and selling transactions requisite for the support of the community were to be managed by a single person, which would save a multitude of peddling operations. If any brought capital into the concern, it was not confiscated, but he was allowed interest upon it. The labor being carried on in common, the profits were apportioned on the following system: First a minimum of mere subsistence money was assigned to every member of the society, including those incapable of labor. The remainder of the profits were then divided in proportions agreed on beforehand, to renumerate labor and talent, and pay interest on the capital received. The profits divided thus were then expended by the individual recipients as they pleased. An effort was made about 1852 to form an industrial colony on Fourier's plan, but the attempt was unsuccessful.

Fournel, Francois Victor, a writer on the antiquities and curiosities of Paris; born near Varennes, France, Feb. 8, 1829; died in 1894.

Fournier, August, an Austrian historian; born in Vienna, June 19, 1850. He also wrote many biographies and sketches of special periods.

Fournier, Edouard, a French historical writer; born in Orleans, France, June 15, 1819. The annals of the capital and its topographical features have received interesting treatment at his hands. He died in Paris, May 10, 1880.

Fowl, in its general sense, this term is nearly synonymous with birds; but in a more restricted sense it means those domestic birds brought up in a farmyard for the table. Fowls originally came from Persia and India, and they are valuable to the breeder in many ways, yielding profit as they do in eggs, in broods, and in feathers. The principal kinds of this useful domestic creature are: (1) the game fowl, with erect and slender body and showy colors; valued also for the delicacy of the flesh and of the eggs, though the latter are rather small. It is this breed which is used for cock fighting; and is characterized by great pugnacity. (2) The Dorking fowl, so named from Dorking, in Surrey, where it has long been bred in great numbers for the London market — a breed characterized by an additional spur on each leg; often of a white color, with short legs; one of the most useful of all breeds, both for excellence of flesh and for abundance of eggs. (3) The Polish fowl, black, with a white tuft, a breed very extensively reared in France, Egypt, etc., little inclined to incubation, but valued for an almost uninterrupted laying of eggs. (4) The Spanish fowl, very similar to the Polish, but larger, and laying larger eggs, on account of which it is now much valued, black, with white cheeks and large red comb. (5) The Malay fowl, tall and handsome, and very pugnacious, but little esteemed. (6) The Hamburg fowl, of very beautiful plumage, and much valued for the quality both of flesh and eggs, as also for extreme productiveness of eggs. (7) The Cochin China fowl, a large, tall, ungraceful variety, with

small tail and wings, for which there was a great rage among poultry fanciers when it was introduced, more particularly about the year 1852, and which is valuable chiefly on account of its fecundity, eggs being laid even during winter, and the hens incubating frequently. (8) The bantam fowl, a diminutive variety, rather curious than useful. Of most of these there are many sub-varieties and fancy breeds — gold-penciled, silver-penciled, etc. The guinea fowl, or pintado, is sometimes classed among the common order of fowls; they are very wild and restless in their nature, and, unlike the ordinary fowls, they give no notice to any one of their laying or sitting; they have consequently to be closely watched. The guinea fowl is very delicate eating, and is in season about Lent. Their eggs are something like those of turkeys, but not so gross. As the guinea fowl rarely watches over her nest and rears a brood, its eggs are generally put under a common hen, which performs the duties of foster-mother.

Fowler, Charles Henry, an American clergyman; born in Burford, Ontario, Canada, Aug. 11, 1837; was graduated at Genesee College in 1859 and at the Garrett Biblical Institute in 1861; studied law; was pastor for 11 years in Chicago, Ill.; president of the Northwestern University in 1872–1876; and corresponding secretary of the Missionary Society in 1880. He was elected a bishop of the Methodist Episcopal Church in 1884; visited Japan, Korea, and China in 1888; organized the Peking and Nanking Universities; was stationed for eight years on the Pacific coast; founded the Maclay College of Theology in Southern California, and assisted in founding Wesleyan University in Lincoln, Neb. He was a delegate to the Wesleyan Conference in Great Britain in 1898. D. 1908.

Fowler, Joseph S., an American lawyer; born in Steubenville, O., Aug. 31, 1820. He was State comptroller under Andrew Johnson; took a leading part in the State Constitutional Convention in January, 1865; and was a United States Senator in 1866–1871. In 1871 he retired from political life and engaged in law practice in Washington, D. C. He died in 1902.

Fowler, Orson Squire, an American phrenologist; born in Cohocton, Steuben co., N. Y., Oct. 11, 1809; was graduated at Amherst College in 1834, and opened a phrenological office in New York in 1835. He died near Sharon Station, Conn., Aug. 18, 1887.

Fowler, William Worthington, an American author; born in Middlebury, Vt., June 24, 1833. He died in Durham, Conn., Sept. 18, 1881.

Fox, an animal closely allied to the dog; a native of almost every quarter of the globe; and generally esteemed the most sagacious and crafty of all beasts of prey. All the species are wily and voracious, greedily devouring birds and smaller quadrupeds, disliked and betrayed by most of those animals who dread their attacks, and extremely difficult to be tamed even when very young. The black fox inhabits the N. parts of Asia and America and is much hunted owing to the value of its fur. Some naturalists regard it as a mere variety of the red fox.

The red fox is found throughout North America and has been considered as identical with the common fox of Europe, though there can be no doubt of their difference. The general color of this fox in summer is bright ferruginous on the head, back, and sides. Beneath the chin it is white, while the throat and neck are of a dark gray. The under parts of the body toward the tail are very pale red. It is about 2 feet long and 18 inches high. The skins are much sought for and are employed in various manufactures.

The crossed fox differs very much from the common fox. The color of his fur is a sort of gray, resulting from the mixture of black and white hair. He has a black cross on his shoulders, from which he derives his name. The muzzle, lower parts of the body, and the feet, are black; the tail is terminated with white. It inhabits the N. parts of America, and may perhaps be only a variety of the black fox.

The swift fox, a beautiful little animal, which was first accurately described by Mr. Say, inhabits the great plains which lie at the base of the Rocky mountains. It is much smaller than the other American species, and forms its habitation by burrow-

ing. It is distinguished by its extraordinary speed, which appears to surpass that of any other animal. Its body is slender, and the tail rather long, cylindrical, and black. The hair is fine, dense, and soft.

The gray fox is common throughout the N. parts of America, more particularly in the neighborhood of habitations. Its general color is gray, becoming gradually darker from the shoulders to the hips. It has a sharp head, marked by a blackish gray triangle, which gives it a peculiar physiognomy. The tail is thick, and contains at its tip a tuft of stiff hairs, hence the subgeneric distinction of the bristle-tailed foxes.

The Arctic fox is smaller than the common fox. It has short rounded ears almost hid in its fur; its hair is long, soft, and somewhat woolly; its legs are short, having the toes covered with fur, like those of the hare; hence its specific name. It inhabits the countries bordering on the frozen ocean in both continents. Their skins are not of any great value, though frequently used as rugs.

Fox, Charles James, an English statesman; second son of Henry, 1st Lord Holland; born Jan. 24, 1749. The adoption of the disastrous measures which terminated in the independence of the American colonies was strongly opposed by him. During the whole of this eventful contest he spoke and voted in direct opposition to the ministerial system, and, in conjunction with Burke, Barre, Dunning, and other eminent parliamentary leaders, displayed the highest talents both as a statesman and orator. He died Sept. 13, 1806, without pain and almost without a struggle.

The opinions formed of this eminent leader as a practical and theoretical statesman, it is unnecessary to say, have been as various as the shades of party difference. That he was a sincere friend to all the broad and generous principles on the due development of which rest the freedom and best interests of mankind, is not to be doubted, and that they were alloyed by great latitude on the subject of party and political expediency is equally clear. As a powerful and purely argumentative orator he was of the very first class; though as to eloquence and brilliancy he perhaps yielded to Pitt, Burke, and Sheridan; nor were his voice and manner prepossessing, though highly forcible.

Fox, George, founder of the society of Friends; born in Drayton in Leicestershire, England, in July, 1624. His father was a weaver, and by the strict honesty of his conduct had won from his neighbors the sobriquet of "Righteous Christer." George, while yet a boy, was distinguished by his gravity and exemplary conduct. When in the 20th year of his age he received that which he regarded as the voice of God in his soul, directing him to Christ as alone able "to speak to his condition." Very soon after this he commenced his public ministrations. From the first, his preaching seems to have made many converts and excited much opposition. Within 10 years of Fox's first appearance as a preacher, meetings of the Friends were established in most parts of England. At the same time, so actively were they persecuted that for many years there were seldom less than 1,000 of them in prison. The act empowering magistrates to tender the oaths of allegiance and supremacy to any person whom they thought fit to suspect, also operated with great severity against the Friends; under its provisions Fox was committed to prison at Lancaster in the beginning of 1664, whence he was removed to Scarborough Castle, where he lay till the autumn of 1666. In 1669 Fox married Margaret Fell, the widow of one of the judges of the Welsh courts. The year 1670 witnessed the passing of the most stringent of the Conventicle Acts, forbidding under heavy penalties the assembling for religious worship, in any house, of more than four persons besides the family, except according to the usages of the Church of England. Fox exhorted his friends to firmness, and himself remained in London, to share with their sufferings. Soon after his recovery from a severe illness he sailed for Barbadoes, where he exerted himself greatly in the interests of religion and humanity. It was while in this island that Fox drew up a statement of his own and his friends' belief in all the great doctrines of Christianity — a statement clearly disproving their alleged sympathy with Socinian tenets.

After a considerable time spent in Barbadoes, Jamaica, and the North American continent, he returned to England in 1673. Here further persecutions awaited him. He underwent 14 months' imprisonment, and was at length liberated by the Court of King's Bench on account of the errors in his indictment. In 1677, in company with Penn and Barclay, who had joined the Society about 10 years before, he paid a visit to Holland and some parts of Germany, where his services seem to have been well received. The last 15 years of his life were tranquil as regards personal molestation, but he continued to be actively engaged in various ways in promoting the welfare of his brethren. Their persecutions continued throughout the reign of Charles II., and it was not until the first year of William and Mary that a bill was passed which nullified the Conventicle Acts, and allowed the Friends to make a solemn declaration in lieu of taking the oaths, and Fox had the gratification of seeing the public worship of the Society legally recognized before his death. He died in London, Jan. 13, 1690.

Fox, Gustavus Vasa, an American naval officer; born in Saugus, Mass., June 13, 1821. He was appointed Assistant Secretary of the Navy, and held this post till the end of the Civil War. He planned a number of operations for the navy, including the capture of New Orleans; and was sent by the government on the monitor "Miantonomoh" to convey the congratulations of Congress to Alexander II., on his escape from assassination. His visit to Russia materially aided the acquisition of Alaska by the United States. and was the longest voyage then made in a monitor. He died in New York city, Oct. 29, 1883.

Fox, John (William), an American writer of dialect stories; born in Bourbon Co., Ky., in 1863.

Fox, Williams Carlton, an American diplomatist; born in St. Louis, Mo., May 20, 1855; educated at Washington University, St. Louis, and at Chester Military College, Chester, Pa. He was United States vice consul-general at Teheran, Persia; organized the American Missionary Hospital during the cholera epidemic there in 1892; chief clerk Bureau of American Republics in 1898–1905, and Director in 1905–7; and Minister to Ecuador in 1907–11; was a member of the Government Board of Management of the Expositions of 1901, 1904, and 1905.

Fox, William Freeman, an American forester; born in Ballston Spa, N. Y., Jan. 11, 1840; was graduated at Union College in 1860; studied engineering; served in the Civil War; and subsequently took charge of the Department of Forestry of New York State. He died in 1909.

Fox Bats, the bats with fox-like heads. They are of large size, the kalong, measuring four to five feet between the tips of the expanded wings, and inhabit the Eastern Islands, Southern Asia, and Africa.

Foxe, John, an English divine; born in Boston, Lincolnshire, in 1516. He studied at Oxford, but was expelled in 1545, after becoming a convert to Protestantism. His fame as an author mainly rests upon his "History of the Acts and Monuments of the Church," commonly known as "Foxe's Book of Martyrs." This celebrated work, upon which he labored for 11 years, was published in 1563. He died in April, 1587.

Foxglove, a genus of plants; the purple foxglove. It grows to the height of three or four feet, with very long spikes of numerous drooping flowers, which are generally purple, though occasionally white.

Fox Hound, a hound kept and trained for hunting foxes. They are smaller than the staghound, averaging 22 to 24 inches in height. They vary greatly in color. They possess a very fine scent, great fleetness, and endurance.

Fox-Kane, Margaret, an American spiritualist; born in Bath, Canada, in 1836; was about 12 years old when her family were startled by mysterious rappings. All endeavors to trace them to any physical source proved unavailing. Various experiments were tried, but the "occult" power refused to act save in the presence of Margaret and her sister Leah. In 1850 the two girls went to New York city, the "manifestations" be-

came the subject of public discussion, and "mediums" sprang up all over the country. In 1888 Margaret made a public exposure of her pretended "manifestations," which she subsequently contradicted. She died in Brooklyn, N. Y., March 8, 1893.

Fox Shark, a shark called also the sea-fox, the thresher, and the sea-ape. It attains a length of about 15 feet. The resemblance to a fox is in the length and roughness of the tail.

Frackleton, Susan Stuart (Mrs.), an American artist; born in Milwaukee, Wis., June 5, 1848; became prominent as a ceramic artist. She won many prizes in American, European, Canadian, and Mexican competition; invented a gas-kiln for firing decorated china and glass; and was the founder and first president of the National League of Mineral Painters. In 1901 she received a medal at the Paris Exposition for her exhibit of pottery.

Fraction, a part of any magnitude, integer (whole number), or unit. For example, "two and a fraction" means two units and that part of a unit which can be distinguished, as one-half, two-fifths, and so on.

Fracture, the breaking of a bone. It is divided into simple and compound; simple when the bone only is injured; compound when the soft coverings are so injured that either one of the fractured ends protrudes through the skin, or the skin and muscles are so lacerated as to expose the bone.

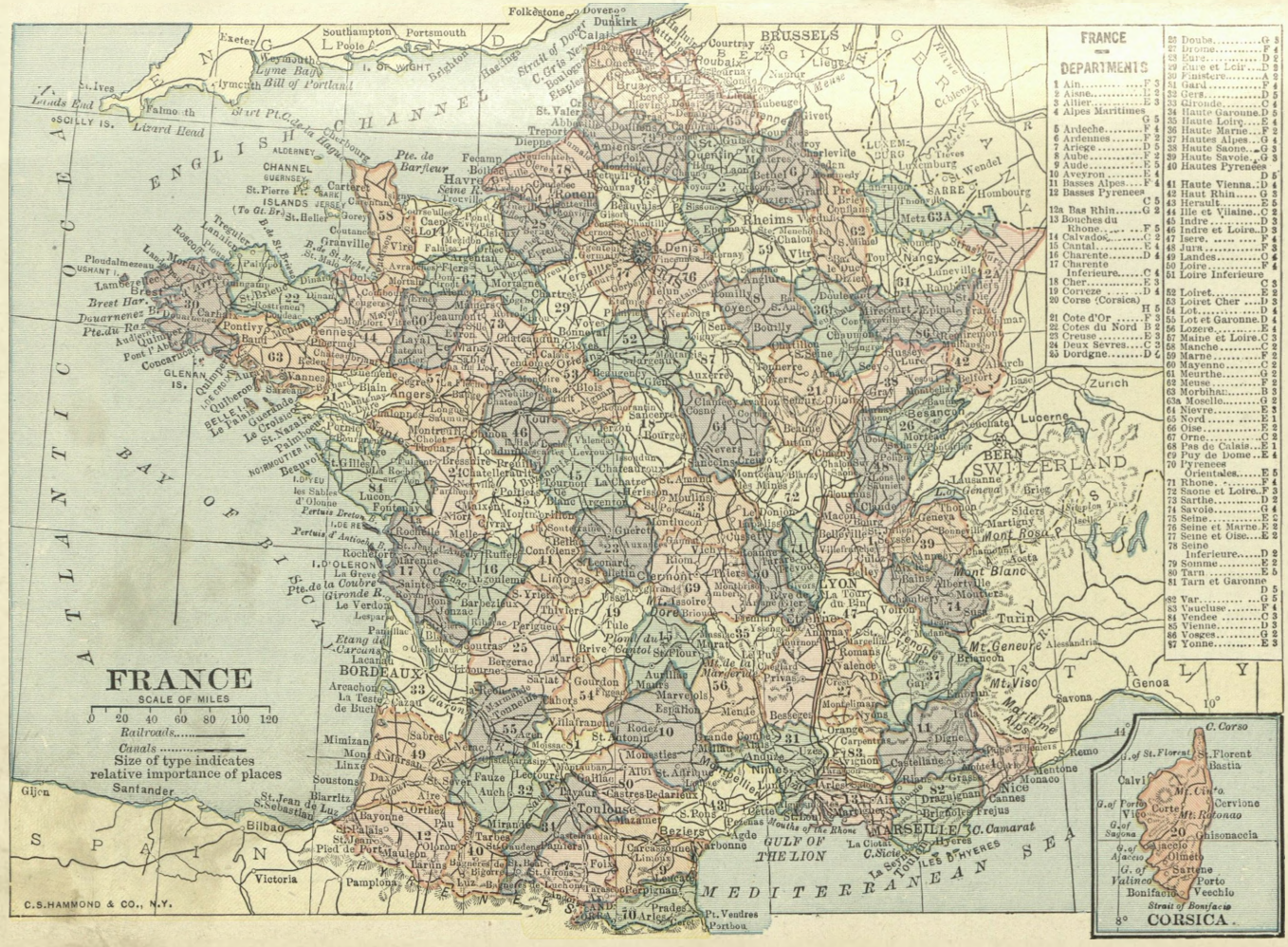
Fra Diavolo ("The Devil's brother"), a Neapolitan robber, whose real name was Michael Pozzo; born in Itri, in 1760. He began life as a stocking-maker, after which he became a friar, and in this capacity was the leader of a gang of banditti in Calabria. In 1799 he assisted Cardinal Ruffo, who headed the counter revolutionists in favor of the Bourbons of Naples. For this he received a pardon of his crimes and a pension of 3,600 ducats, with which he was enabled to purchase an estate. He lived in peace till 1806, when he rose again in favor of the expelled Bourbons. He entered Spalinga, and threw open the prisons, when he was joined by large numbers of lazzaroni; but after a severe engagement with the Bonapartists, he was taken prisoner, condemned, and executed the same year. Auber has written an opera on his adventures.

Fragonard, Jean Honore, a French painter; born in Grasse in October, 1732; died in Paris Aug. 22, 1806.

France (anciently Gallia), a maritime country in the W. of Europe, forming one of its most extensive, most populous, and most influential States.

General Description.— France is bounded N. by the North Sea and the Strait of Dover; N. W. by the English Channel; W. by the Atlantic, more especially that part of it called the Bay of Biscay; S. by Spain and the Mediterranean Sea; E. by Italy, Switzerland, and the Rhine and Ger- Palatinate; N. E. by the Palatinate, Luxemburg, and Belgium. The breadth near the center is 400 miles, and along the parallel of 46° 15′, where it is narrowest, does not exceed 340 miles. The total area of France is 212,659 square miles. On taking a survey of this great country it is impossible not to be struck with the advantages it derives from its position. It not only forms a continuous and compact whole, but while protected by great natural barriers at most parts where it is connected with the continent a long line of coast on the W. and N. W. gives it immediate access to the great ocean thoroughfare, while on the S. its harbors in the Mediterranean secure to it a large share in the traffic of that important inland sea.

Before the Revolution of 1789 France was divided into general governments, or provinces. The number of these general governments has varied at different epochs. Under Francis I., by whom they were instituted, there were nine. Under Louis XIV. the number was fixed at 32, to which a 33d was added by the acquisition of Corsica, under Louis XV. In 1789 it was determined that the whole of France, including the island of Corsica, should be parceled out into departments, and each department subdivided successively into arrondissements, cantons, and communes, an arrangement which was actually carried out in 1790. The number of departments was originally 83, but it has been at different times increased and


FRANCE
SCALE OF MILES
0 20 40 60 80 100 120
Railroads
Canals
Size of type indicates relative importance of places
FRANCE
DEPARTMENTS
1 Ain ..... F 3
2 Aisne ..... D 3
3 Allier ..... E 3
4 Alpes Maritimes ..... G 5
5 Ardeche ..... F 4
6 Ardennes ..... D 2
7 Ariege ..... D 5
8 Aube ..... F 2
9 Aude ..... E 5
10 Aveyron ..... E 4
11 Basses Alpes ..... F 4
12 Basses Pyrenees ..... C 5
12a Bas Rhin ..... G 2
13 Bouches du Rhone ..... F 5
14 Calvados ..... C 2
15 Cantal ..... E 4
16 Charente ..... D 4
17 Charente Inferieure ..... C 4
18 Cher ..... E 3
19 Correze ..... D 4
20 Corse (Corsica) ..... H 5
21 Cote d'Or ..... F 3
22 Cotes du Nord ..... B 2
23 Creuse ..... D 3
24 Deux Sevres ..... C 3
25 Dordgne ..... D 4
26 Doubs ..... G 3
27 Drome ..... F 4
28 Eure ..... D 2
29 Eure et Loir ..... D 3
30 Finistere ..... A 2
31 Gard ..... F 4
32 Gers ..... D 5
33 Gironde ..... C 4
34 Haute Garonne ..... D 5
35 Haute Loire ..... E 4
36 Haute Marne ..... F 2
37 Hautes Alpes ..... G 4
38 Haute Saone ..... G 3
39 Haute Savoie ..... G 3
40 Hautes Pyrenees ..... D 5
41 Haute Vienna ..... D 4
42 Haut Rhin ..... G 3
43 Herault ..... E 5
44 Ille et Vilaine ..... C 2
45 Indre ..... D 3
46 Indre et Loire ..... D 3
47 Isere ..... F 4
48 Jura ..... F 3
49 Landes ..... C 5
50 Loire ..... F 4
51 Loire Inferieure ..... C 3
52 Loiret ..... E 3
53 Loiret Cher ..... D 3
54 Lot ..... D 4
55 Lot et Garonne ..... D 4
56 Lozere ..... E 4
57 Maine et Loire ..... C 3
58 Manche ..... C 2
59 Marne ..... F 2
60 Mayenne ..... C 2
61 Meurthe ..... G 2
62 Meuse ..... F 2
63 Morbihan ..... B 3
63a Moselle ..... G 2
64 Nievre ..... E 3
65 Nord ..... E 1
66 Oise ..... D 2
67 Orne ..... C 2
68 Pas de Calais ..... E 1
69 Puy de Dome ..... E 4
70 Pyrenees Orientales ..... E 5
71 Rhone ..... F 4
72 Saone et Loire ..... F 3
73 Sarthe ..... D 2
74 Savoie ..... G 4
75 Seine ..... E 2
76 Seine et Marne ..... E 2
77 Seine et Oise ..... E 2
78 Seine Inferieure ..... D 2
79 Somme ..... E 2
80 Tarn ..... E 5
81 Tarn et Garonne ..... D 5
82 Var ..... G 5
83 Vaucluse ..... F 4
84 Vendee ..... C 3
85 Vienne ..... D 3
86 Vosges ..... G 2
87 Yonne ..... E 3
ENGLISH CHANNEL
ATLANTIC OCEAN
BAY OF BISCAY
MEDITERRANEAN SEA
GULF OF THE LION
BRUSSELS
SWITZERLAND
Folkestone
Dover
Dunkirk
Calais
Southampton
Portsmouth
Exeter
Weymouth
Lyme Bay
Bill of Portland
I. OF WIGHT
Poole
Falmouth
Lizard Head
Scilly Is.
Land's End
St. Ives
Start Pt.
Cape de la Hague
Cherbourg
Alderney
Channel Islands
Guernsey
Jersey
St. Pierre
St. Helier
Carteret
Barfleur
Pte. de Barfleur
Havre
Fecamp
Dieppe
Treport
Abbeville
Amiens
Boulogne
Courtray
Roubaix
Lille
Ostend
Ypres
Liege
Namur
Meuse R.
Sambre R.
Scheldt R.
Seine R.
Somme R.
Oise R.
Marne R.
Rhine R.
Moselle R.
Saone R.
Rhone R.
Loire R.
Garonne R.
Dordogne R.
Rouen
Caen
Cherbourg
Granville
St. Malo
Dinan
Brest
Brest Har.
Douarnenez B.
Pte. du Raz
Audierne
Quimper
Pont l'Abbe
Concarneau
Lorient
Quiberon B.
Belle Isle
Le Faou
Guerlesquin
St. Nazaire
Paimboeuf
Noirmoutier I.
Pertuis Breton
Pertuis d'Antioche
I. d'Oleron
I. de Re
Pte. de la Coubre
Gironde R.
Le Verdon
Etang de Carcans
Lacanau
Arcachon
La Teste de Buch
Bordeaux
Bayonne
Biarritz
St. Jean de Luz
St. Sebastian
Bilbao
Santander
Gijon
Victoria
Pamplona
Spain
Pau
Orthez
Tarbes
Lourdes
Mirande
Auch
Agen
Montauban
Toulouse
Carcassonne
Narbonne
Beziers
Agde
Montpellier
Nimes
Arles
Marseille
Toulon
Hyeres
Iles d'Hyeres
Cannes
Nice
Monaco
Grasse
Draguignan
Frejus
Aix
Salon
Tarascon
Avignon
Orange
Valence
Vienne
Lyon
Grenoble
Chambery
Annecy
Geneva
Lausanne
Lucerne
Zurich
Basel
Belfort
Besancon
Dijon
Nancy
Metz
Thionville
Luxemburg
Wendel
Saarbrucken
Hombourg
Strasbourg
Colmar
Rheims
Verdun
Sedan
Mezieres
Paris
Versailles
Orleans
Tours
Chartres
Le Mans
Angers
Nantes
Rochefort
La Rochelle
Poitiers
Limoges
Perigueux
Cahors
Agen
Auch
Pau
Bayonne
Biarritz
Mont Blanc
Mont Rosa
Mt. Cenis
Mt. Viso
Turin
Genoa
Savona
Alessandria
Corsica
C. Corso
G. of St. Florent
St. Florent
Bastia
Calvi
Mt. Cinto
Corte
Vico
Cervione
G. of Porto
Mt. Rotondo
G. of Sagona
Ghisonaccia
Ajaccio
G. of Ajaccio
Olmeto
Sartene
G. of Valinco
Porto Vecchio
Bonifacio
Strait of Bonifacio
C. Camarat
C. Sicie
Gulf of Lyons
Mouths of the Rhone
Pt. Ventres
Portbou
Prades
Perpignan
Narbonne
Carcassonne
Foix
Lourdes
Tarbes
Mirande
Auch
Agen
Montauban
Castelnaudary
Mazamet
Lodeve
Millau
Rodez
Mende
Le Puy
Aurillac
Brive
Tulle
Limoges
Thiviers
Perigueux
Bergerac
Libourne
Saintes
Rochefort
La Rochelle
Fontenay
Niort
Poitiers
Chatellerault
Loudun
Saumur
Le Mans
Alencon
Argentan
Falaise
Lisieux
Pont l'Eveque
Honfleur
Caen
Bayeux
Cherbourg
Coutances
Avranches
Mont St. Michel
St. Malo
Dinan
Lannion
Morlaix
Brest
Quimperle
Lorient
Vannes
Redon
Chateaubriant
Segre
Laval
Mayenne
Fougeres
Vitre
Rennes
Dol
Dinard
Pontivy
Carhaix
Huelgoat
Ploudalmezeau
Ushant I.
Lampaul
Le Conquet
Roscoff
Treguier
Lannion
Paimpol
Binic
St. Brieuc
Pte. de Bas
Granville
Cancale
St. Malo
Dinard
Dinan
Caen
Falaise
Argentan
Alencon
Mortagne
Nogent le Rotrou
Dreux
Evreux
Pont Audemer
Bernay
Lisieux
Pont l'Eveque
Honfleur
Havre
Fecamp
Yvetot
Neufchatel
Gisors
Pontoise
Versailles
Paris
Meaux
Melun
Fontainebleau
Montargis
Gien
Sancerre
Bourges
Vierzon
Issoudun
Chateauroux
La Charite
Nevers
Cosne
Auxerre
Joigny
Sens
Provins
Troyes
Bar sur Aube
Chaumont
Langres
Vesoul
Gray
Dijon
Beaune
Autun
Chalon sur Saone
Macon
Bourg
Belley
Culoz
Aix les Bains
Albertville
Moutiers
Modane
Briancon
Embrun
Gap
Digne
Barcelonnette
Castellane
Draguignan
Brignoles
Toulon
Hyeres
Iles d'Hyeres
Cannes
Nice
Monaco
Grasse
Draguignan
Frejus
Aix
Salon
Tarascon
Avignon
Orange
Carpentras
Vaison
Nyons
Die
Crest
Montelimar
Valence
Romans
Vienne
Lyon
Grenoble
Chambery
Annecy
Geneva
Lausanne
Lucerne
Zurich
Basel
Belfort
Besancon
Dijon
Nancy
Metz
Thionville
Luxemburg
Wendel
Saarbrucken
Hombourg
Strasbourg
Colmar
Rheims
Verdun
Sedan
Mezieres
Paris
Versailles
Orleans
Tours
Chartres
Le Mans
Angers
Nantes
Rochefort
La Rochelle
Poitiers
Limoges
Perigueux
Cahors
Agen
Auch
Pau
Bayonne
Biarritz
Mont Blanc
Mont Rosa
Mt. Cenis
Mt. Viso
Turin
Genoa
Savona
Alessandria
Corsica
C. Corso
G. of St. Florent
St. Florent
Bastia
Calvi
Mt. Cinto
Corte
Vico
Cervione
G. of Porto
Mt. Rotondo
G. of Sagona
Ghisonaccia
Ajaccio
G. of Ajaccio
Olmeto
Sartene
G. of Valinco
Porto Vecchio
Bonifacio
Strait of Bonifacio
C. Camarat
C. Sicie
Gulf of Lyons
Mouths of the Rhone
Pt. Ventres
Portbou
Prades
Perpignan
Narbonne
Carcassonne
Foix
Lourdes
Tarbes
Mirande
Auch
Agen
Montauban
Castelnaudary
Mazamet
Lodeve
Millau
Rodez
Mende
Le Puy
Aurillac
Brive
Tulle
Limoges
Thiviers
Perigueux
Bergerac
Libourne
Saintes
Rochefort
La Rochelle
Fontenay
Niort
Poitiers
Chatellerault
Loudun
Saumur
Le Mans
Alencon
Argentan
Falaise

MOTOR DRIVEN ARMY TRANSPORTS

1—American Army transport train.
2—British ammunition cars.
3—French Army transport.
4—French transports for carrying aeroplanes.

Photos by Brown Bros.

decreased. There are 86 departments, exclusive of the "territory of Belfort"; pop. (1921) 39,402,766.

Of the total area of 136,101,760 acres, 25,521,108 acres were under forests in 1924; 9,483,625 acres were reported as moor and uncultivated land; and 100,000,000 acres, of which 55,560,000 were arable, were returned as being under crops, fallow, and grass. In 1923 the production of the leading crops in metric tons was as follows: Wheat, 7,905,508; oats, 5,479,038; rye, 937,675; barley, 1,023,169; maize, 301,190; buckwheat, 334,000; potatoes, 9,534,091; sugar beets, 3,222,453. There were on Jan. 1, 1923, of farm animals: Horses, 2,848,000; mules, 192,000; asses, 284,000; cattle, 13,769,000; sheep, 9,925,000; goats, 1,353,000, and swine, 5,406,000. The most valuable crops of which the cultivation on a great scale is not general, but confined to particular districts, are madder, tobacco, saffron, and hops. The cultivation of tobacco is monopolized by the government, and is confined to certain departments. It yields an annual gross revenue to the government of about $75,000,000 to $80,000,000, but from this total there needs to be deducted the expense incurred in the cultivation and manufacture of the tobacco. The breeding of stock is in France, if not imperfectly understood, very indifferently practiced. The races of oxen include a few good breeds, with many more of the most inferior description. The rearing of sheep is more successful, and the fleece has in many districts been carefully and skillfully improved, and much wool, scarcely inferior to that of the merino, is raised. The general employment of cattle for agricultural purposes gives little encouragement to the rearing of draft horses; but the warlike propensities of the nation have always created an extensive demand for horses of a description adapted both for heavy and light cavalry. Considerable pains have been taken to improve such breeds by the establishment of government studs, and the rearing of them is extensively and successfully carried on. Asses and mules, generally of a superior description, are much used in France.

The cultivation of the vine is one of the most important branches of French agriculture. In 1912 there were 1,519,884 wine-growers reported and the vintage was valued at $357,085,000. In 1915 there were 3,807,982 acres under vines, the production was 448,819,000 gallons of wine, the exports of wine were 22,286,000 gallons, and the imports, 184,866,000 gallons. The production of cider was 649,154,000 gallons. From early in the seventies up to 1900 there was a great demand for American plants for grafting on French vines. In 1881 the total area replanted with American vines was 21,262 acres; in 1889 it was 471,000 acres, and in 1900 it was 2,414,495 acres. The old vineyards which were destroyed by the phylloxera have been "reconstituted," as the French say, by graftings from the United States, and it is believed that they are now phylloxera-proof. The acreage planted in vines in France has been steadily decreasing since 1895, when it was 4,316,090, as compared with 3,807,982 in 1915. In 1923 the acreage was 3,412,127 producing 56,982,933 hectolitres.

A large part of the wealth of France consists in its fruits, the principal production of which in 1915 included cider apples, 4,482,367 metric tons; table apples, 206,361 tons; pears, 65,621 tons; chestnuts, 147,088 tons; and walnuts, 49,360 tons.

The coal fields of France are so numerous that coal mines are worked in 33 departments; but most of these are very limited in extent. The output of coal and lignite in 1923 was 38,576,815 metric tons, but the supply falls so far short of the annual consumption that a large import takes place from England and Belgium, particularly the latter, and wood is the common domestic fuel.

The iron mines of France are numerous and productive, but suffered great losses by the invasion of Germany in the World War. It is estimated that France was thus deprived of 68 per cent. of her coal, 47 per cent. of her coke, and 90 per cent. of her iron. The production of iron ore in 1923 was 23,225,564 tons, and of pig iron, 5,229,581 tons. On July 1, 1924, France had 135 blast furnaces. Only about 55 per cent. of the pre-war capacity of the plants is available today.

By Jan. 1, 1924, 2,700,000 hydro-electric horse power was in use.

While the pre-war steel production of France was 4,687,000 tons, the fluctuations during the years of the war and immediately after were great, ranging from 1,000,000 to 3,550,000. In 1923 the total steel output was 4,976,869 tons. Since the war the machine tool industry has expanded greatly and not only in quantity of output but also in quality. The exports of heavy machinery in 1923 were 186,942,222 pounds, valued at about $50,000,000. New plants with model equipments of most improved type have worked for a great degree of excellence in quality of output.

The number of spindles in 1923 was 10,594,000; mechanical looms, 176,000; hand looms, 25,000. The production was 220,000 metric tons of cotton yarn and 11,200,000 pieces of cloth averaging 100 metres in length. France has been most fortunate in being able to provide work for her people. Only 90,000 were estimated as being out of work in 1921, while the statistics for 1923 show that there existed no person who might be classed as unemployed. This is the more remarkable when the opposite conditions existed largely throughout Great Britain and the Continental countries. In 1923 262,877 alien workers were brought into France, and 69,470 during the first five months of 1924. The permanent settlement in France of those alien workers appears to be permanent.

The potential hydro electric power in France was estimated in 1924 to be 9,000,000 horse power, of which 2,700,000 horse power is being utilized, which is to be increased by 350,000 horse power in the fall of 1926.

At the beginning of 1922 there were 25,766 miles of railway lines of general interest, and 5,500 miles of lines of local interest.

In France education in all its branches has long been taken under the special cognizance of the State, and the superintendence of it is expressly committed to a high functionary, who takes the name of Minister of Public Instruction. The principal educational establishments are classed under three heads—primary, secondary, and superior. At the head stands the university, which is very different from other universities, and embraces the faculties or university colleges scattered over the whole of France in the principal towns. Education is free and compulsory. The public schools are now all under the charge of laymen. Religion in like manner is taken under the cognizance of the State, and falls within the province of a special minister. The State places all forms of religion on an equal footing and professes to deal impartially with all by paying salaries to their ministers. With the quality of the particular religion, therefore, the State concerns itself no further than simply to know that it is not obviously subversive of social order or morals. The Roman Catholics form about 78½ per cent. of the population, the Protestants less than 2; many profess no religion.

By the law of 1872, which has been supplemented down to 1892, personal military service is declared to be obligatory. Every Frenchman 20 years old and not unfit for military service, must serve, first in the regular army (armee active) for 3 years, then in the reserve of the regular army for 10 years, next in the territorial army for 6 years, and finally in the reserve of the territorial army for 6 years. The active army and its reserves are distributed all over France, but the territorial army and its reserves are confined to fixed areas. The total peace footing was in 1923, 660,000 men, and is based upon 18 months' service, each class of conscripts furnishing 250,000 men with 100,000 professional soldiers constantly recruited. Of this total French troops number 461,000 and Colonials 189,000 with 10,000 in the Foreign Legion. The French army has 1,972 first-line aeroplanes, with a reserve of near 5,000 machines, all of them of post war model. An estimate of the number of first-line planes to be in service by the fall of 1925 is 2,500. The French navy, under the allotment of the Washington Conference of Naval Disarmament, in 1922, was 1.75 as against 5-5-3 for Great Britain, the United States and Japan.

France has been a republic since the overthrow of the second empire by a Paris mob on Sept. 4, 1870. The details of the constitution were fixed by a law dated Feb. 25, 1875, and several amendments have been enacted in subsequent years. This law places the legislative authority in the hands

of a National Assembly composed of two chambers, the chamber of deputies and the senate. The chamber of deputies consists of 584 members representing the arrondissements, and the members are elected for four years by universal suffrage. The senate consists of 300 members who must be 40 years of age at least. They are elected by special bodies of delegates for nine years, one-third retiring every three years. The head of the government is a president, elected for seven years by a majority of votes of the members of the two chambers. Extensive colonies in Asia and Africa, with smaller possessions in America and Oceania, give the French dominions an area of 5,817,797 sq. m. and a pop. estimated at 99,525,000. The Anglo-French Colonial agreement, Apr. 8, 1904, adjusted long standing conflicting claims. In 1906 the Algeciras conferences ended the Franco-German Morocco embroglio. The Separation Bill to end Church subsidies by the State under the Concordat of 1801 took effect Dec. 11, 1906.

On Aug. 2, 1914, a German army crossed the Belgian border into France; on the following day France declared that war with Germany began with this invasion; and on the 10th France declared war with Austria-Hungary. For the most important events that followed see APPENDIX; *World War.*

France, Anatole, a well-known French poet and novelist; born in Paris, April 16, 1844, elected to the French Academy in 1884. Died, 1924.

Francesco di Paula, or **St. Francis of Paola,** an Italian monk, founder of the order of the Minims; born in Paula or Paola, a village of Calabria, in 1416. Francis, notwithstanding his rigorous mode of life, attained to a great age. He died in Plessis-les-Tours April 2, 1507; was canonized in 1519.

Francia, José Gaspar Rodriguez, dictator of Paraguay; born in Assuncion, in 1757. His mother was a Creole. Arrived at the proper age, he was sent to the University of Cordova, with a view to entering the Church; but his plans underwent a change while he was still a student, and on his return to his native town with the degree of doctor of laws, he began his public career as a barrister. In 1811, soon after the revolution in the Spanish possessions of South America became general, Dr. Francia, then in his 54th year, was appointed secretary to the independent junta of Paraguay; and on the formation of a new congress, called in 1813, he was appointed consul of the republic, with Yegros for his colleague. In 1817 unlimited despotic authority was conferred upon him, which he exercised during the remainder of his life. He died in Assuncion, Sept. 20, 1840.

Francillon, Robert Edward, an English novelist; born in Gloucester, England, March 25, 1841. He delights in realistic descriptions of scenes of adventure.

Francis I., King of France; born in Cognac, France, Sept. 12, 1494; succeeded to the throne in 1515, on the death of Louis XII., who died without male issue. He died at the Chateau de Rambouillet, March 31, 1547, and was succeeded by his son, Henry II.

Francis II., King of France, the eldest son of Henry II. and his queen Catherine de Medici; born in Fontainebleau, Jan. 19, 1543. He succeeded his father in July, 1559, having in the preceding year married Mary Stuart, daughter of James V. of Scotland. He made the Cardinal of Lorraine first minister, and his brother, the Duke of Guise, commander-in-chief. The insolence and cruelty of their rule produced profound discontent, and led to the conspiracy of Amboise and the beginning of the civil war between the Catholics and Protestants. The states general were convoked at Orleans in 1560, and the Prince of Conde, who had joined the Protestants, was there arrested, and sentenced to death; but the sentence was not executed in consequence of the death of the king soon after, in Orleans, Dec. 5, 1560.

Francis Joseph I., Emperor of Austria and King of Hungary; born in Vienna, Aug. 30, 1830; ascended the throne Dec. 2, 1848. His first step was to promise a free and constitutional government to the country. The course of events, how-

ever, prompted him to close the national assembly, and to assume absolute power. He centralized the governments of his heterogeneous nationalities at Vienna, and inaugurated a series of reforms favorable to the middle classes. In April, 1854, he married the Princess Elizabeth Amalie Eugenie, daughter of the Duke Maximilian Joseph, and cousin to the King of Bavaria. The plenipotentiaries of Austria, Prussia, and Denmark assembled at Vienna to consider the terms of a peace, July 26, 1864, which was concluded Oct. 30. The convention of Gastein signed Aug. 14, 1865, which transferred the government of Schleswig to Prussia, and that of Holstein to Austria, was a few days after confirmed by the emperor and the King of Prussia at Salzburg. At the beginning of 1866, the armaments against Prussia commenced, and an imperial order was issued May 6, placing the whole army on a war footing. The emperor showed much devotion in the struggle which ensued, and the fortunes of war having proved adverse, at once made peace. In 1867, the emperor put an end to the hostilities of Hungary by reëstablishing the constitution of that country; and was crowned at Budapest as King of Hungary. In December of the same year, a new constitution was promulgated, as the fundamental law of the empire. Francis Joseph was condemned for his treatment of Hungarian revolutionary leaders, several of whom were executed at the beginning of his reign. His brother, Maximilian, the usurping emperor of Mexico, was executed by the Mexicans. July 19, 1867; his son, Crown Prince Rudolph, was either killed or committed suicide Jan. 30, 1889; and his wife, Empress Elizabeth, was murdered by an anarchist at Geneva, Sept. 10, 1898. He died Nov. 21, 1916, and was succeeded by his nephew as Karl (Charles) I.

Francis, Charles Spencer, an American diplomatist; born in Troy, N. Y., June 17, 1853; was graduated at Cornell University in 1877; learned the printer's trade in the composing room of the Troy "Times"; became an equal partner of the same with his father in 1887; and in 1897, sole owner. He was U. S. Minister to Greece, Rumania, and Servia in 1900–2; Ambassador to Austria-Hungary in 1906–10. He died Dec. 1, 1911.

Francis, Joseph, an American inventor; born in Boston, Mass., March 12, 1801; was the inventor of a number of lifeboats. He died in Cooperstown, N. Y., May 10, 1893.

Francis, Philip, Sir, an Irish-English statesman, the best accredited of the candidates for authorship of the "Junius" letters; born in Dublin, Oct. 22, 1740. The "Letters"—savage assaults on the heads of the party in power, up to George III. himself—appeared in the "Public Advertiser" of London from 1768 to 1772. He died in London, Dec. 23, 1818.

Francis, St., or Francis of Assisi, founder of the Order of Franciscan friars; born in Assisi in 1182. His proper name was Giovanni Bernardone, but he afterward received the name of Franciscus. He died in Assisi, Oct. 4, 1226. He was canonized by Pope Gregory IX. in 1228.

Franciscans, the designation borne by the members of the three great religious orders founded in the 13th century by St. Francis of Assisi. The first of these orders is that of the Friars Minor, known as the Greyfriars, and in France as the Cordeliers. The second order is that of the Poor Clares, called in Italian Povere Donne (Poor Ladies), and in France the Clarisses. The third order is that of Penance, or Tertiaries.

Francis de Sales, St., Bishop of Geneva, born of a noble Savoyard family, in the chateau of Sales, near Geneva, Aug. 21, 1567. He was educated by the Jesuits at Paris, studied law at Padua, and having a strong bent to theology and a religious life, entered the Church. In 1610 he founded the Order of the Visitation, of which the first directress was his friend, Madame de Chantal. He died Dec. 28, 1622; was canonized by Pope Alexander VII. in 1665.

Franck, Johann, a German hymn-writer; born in Guben in 1618. His hymns are distinguished for a fervent ecstatic quality. He died in the Niederlausitz in 1677.

Franck, Sebastian, a German prose Pietist and spiritual and ethical writer; born in Donauworth in 1499. He was a priest who enlisted warmly

in the cause of the Reformation. He died in Basel, Switzerland, in 1543.

Francke, Kuno, an American educator; born in Schleswig, Germany, Sept. 27, 1855; became Professor of German Literature in Harvard University.

Francois, Luise von, a German novelist; born in 1817; died in 1893.

Franconia, a name which was originally applied to the Germany country on both sides of the Main, which was colonized by Frankish settlers under Thierry I., eldest son of Clovis I., who succeeded to his father's German possessions in 511. Conrad, Duke or Count of Franconia, was elected King of Germany Nov. 8, 911, and princes of the same house occupied the throne from 1024 till 1250. The Emperor Wenceslaus in 1387 divided the empire into four circles, and Maximilian I. in 1512 erected Franconia into a distinct circle. In 1806 it was divided among Wurtemberg, Baden, Hesse-Cassel, the Saxon duchies, and Bavaria, but since 1814 the greater part has belonged to Bavaria, where the districts of Upper, Middle, and Lower Franconia were established in 1837. Upper Franconia includes the N. E. portion of Bavaria. Middle Franconia abuts upon Wurtemberg. Lower Franconia occupies the N. W. part of Bavaria. The district is noted for its mineral springs at Kissingen, Bruckenau, Orb and Wipfeld.

Franco-Prussian War. The remote causes of this war are to be sought for in the mutual jealousy which had existed between France and Prussia for some years. The immediate occasion of the war was an offer made in June, 1870, by General Prim, then at the head of affairs in Spain, of the crown of that country to Leopold of Hohenzollern, a prince belonging to the reigning house of Prussia. The war was welcomed by both sides with equal enthusiasm. The French were especially jubilant and anticipated the cries of victory by shouts of "A Berlin a Berlin!" Preparations had begun to be made by both belligerents even before the date of the formal declaration of war, and were actively carried forward on both sides. The French were the first in getting their troops to the frontier; but in this they were only apparently in advance of the Germans, for it soon became manifest that the French army, instead of being in a complete state of readiness for war, was defective in almost everything essential to the equipment of an army, and that the munitions of war and other equipage, without which the army could not move, could not be sent after it with the requisite dispatch. Owing to the prevalence of the system of paying for substitutes who never appeared and were yet registered as belonging to the army, it was likewise discovered that the numbers of the army did not reach anything like the amount represented in the official estimates.

In Germany everything formed a complete contrast to this state of matters. There the arrangements for mobilizing the army which had previously been tested in Prussia, were again found to work admirably. Each section of the army was completely organized in the headquarters of the district which it occupied in time of peace, and was only sent to the frontiers after being furnished with everything it required. In this way the German army, though later than the French in reaching the scene of war, was ready to commence active operations as soon as all the sections had arrived. In addition to this, Prussia, against which country alone the war had been declared, was not only joined according to treaty by all the States of the North German Confederation, but also by those of the South, on whose neutrality, perhaps even upon whose alliance, Napoleon and the French had counted. The whole of Germany N. and S. was thus in arms, and was able to muster forces far outnumbering those of the French. While the whole French army brought into the field at the commencement of the war numbered no more than 310,000 men, the troops of the Germans in the field amounted in all to 477,000, to which must be added strong reserves ready, with the exception of such as were necessary to protect the interior and to resist a threatened landing on the N. coast by the French fleet, to be brought to the scene of war at any time, giving a total strength on the side of the Germans of more than 1,000,000 of men. In these circumstances the result could scarcely be doubtful.

On September 1, 1870, the army of MacMahon was surrounded at Sedan by a force of overwhelmingly greater numbers, and on the following day both army and fortress surrendered by capitulation. A corps which had been raised in Paris, and sent under Vinoy to the assistance of Marshal MacMahon, arrived too late to be of any service, and hastily returned to Paris. On this occasion 50 generals, 5,000 other officers, and 84,000 private soldiers became prisoners of war. Among these was Napoleon III., who was unexpectedly found to have been present with the army of MacMahon. He had a personal interview on the day after the battle with King William of Prussia, who assigned to him Wilhelmshohe, near Cassel, as his place of residence during his captivity.

One of the first consequences of this crushing defeat was an outburst of rage on the part of the Parisians against the Napoleon dynasty, which on Sept. 4 was declared by Gambetta and some members of the corps legislatif belonging to the Left to be dethroned. The same members then proceeded to the Hotel de Ville and proclaimed a republic. A government of national defense was then formed, at the head of which was placed General Trochu.

The French made grand efforts to organize new armies, and fought bravely against overwhelming numbers. Paris held out much longer than even the most sanguine of the French had at first expected. Sallies were made at intervals by the garrison, but not sufficiently often or in sufficient strength to have any decisive effect. On the failure of the last sally the city which had already for about three weeks been suffering bombardment from the Germans, was in such a desperate condition that the government could no longer help seeing that a capitulation was inevitable. The terms were settled on Jan. 28, the chief being that all the forts around Paris should be immediately handed over to the Germans, and that the city should pay a contribution of 200,000,000 francs. An armistice of three weeks was at the same time concluded, to allow of the election and assembling of a National Assembly to decide on war and peace. This armistice, however, was not to extend to the scene of war in the S. E. until a separate arrangement had been made regarding it. Here the fortress of Belfort still held out, but at last, on Feb. 16, it agreed to capitulate. The garrison, on account of its gallant defense was allowed to march out with full military honors. On the same day the armistice became general. The fortress of Bitsch (Bitche), in the department of Moselle, did not surrender till after the conclusion of the preliminaries of peace.

Meantime the elections for the assembly had taken place on the 8th. It met at Bordeaux, and on the 17th it appointed M. Thiers head of the executive, and on the 21st he arrived at Versailles along with a diplomatic commission to negotiate for peace. After the armistice had been thrice prolonged the preliminaries of peace were signed at Versailles on Feb. 26, and accepted by the assembly at Bordeaux on March 1. The principal terms were the following: (1) That France should cede to Germany one-fifth part of Lorraine, including Metz, together with the whole of Alsace except Belfort and the surrounding district; (2) that France should pay to Germany a war indemnity of five milliards of francs; (3) that certain departments of France should remain in the occupation of the Germans, and should not be fully evacuated until after the payment of the whole indemnity. The definitive treaty of peace, which was signed at Frankfort on May 10 and ratified on the 21st, confirmed in all essential particulars the preliminaries of Versailles. The last installment of the war indemnity was paid on Sept. 5, 1873, and France completely evacuated by the Germans on the 13th of the same month.

Frank, Royal Thaxter, an American military officer; born in Gray, Me., May 6, 1836; was graduated at the United States Military Academy in 1864. During the Civil War he was brevetted major and lieutenant-colonel for bravery at Fredericksburg, Dec. 13, 1862. Later was promoted colonel of the 1st United States Artillery and was in command of the Artillery School at Fort Monroe in 1888-1897. He was promoted Brigadier-General in 1898; died March 4, 1908.

Frankfort, a city, capital of the State of Kentucky, and county-seat of

Frankfort county; on the Kentucky river, 65 miles E. of Louisville. The city is built on a high plain and is regularly laid out. Here are the Capitol, Court house, governor's residence, the Kentucky Military Institute, the State Home for Feeble-Minded Children, etc. On one of the hills in the vicinity of the city is a cemetery where lie the remains of Daniel Boone, several governors, and other prominent persons of the State. Pop. (1920) 9,805.

Frankfort-on-the-Main, a city of Germany, the capital of a district of same name, on the Main, 20 miles above its conflux with the Rhine. It is divided by the river into two unequal parts; the one on the N. bank, called Frankfort proper, being considerably larger than the other, which is called Sachsenhausen; and the two communicate by a stone bridge. Frankfort was formerly fortified; but most of its outworks are now converted into gardens and promenades, and it is entered by nine gates. The principal streets are wide; there are also many squares and a number of large buildings; among which may be named the Rœmerberg, or old palace, in which the emperors of Germany were elected, and place of the assembling of the Diet; the Taxis palace, a place of residence of the emperors; and the Sallhof, a modern imperial palace. Frankfort was founded by the Franks in the 5th century. Charlemagne, who had a palace in this city, summoned a council in 794, and it was surrounded with walls by Louis I. in 838. By the Congress of Vienna, in 1815, it was made one of the four free cities of Germany, and the seat of the Germanic Diet. It was made a free port in 1831. The constituent assembly, elected in 1848, held its sittings at Frankfort. It was occupied by the Prussians July 16, 1866, and is now incorporated with Prussia. Councils were held here in 794, 853, 1001, 1007 (Feb. 2), 1234, and 1400. Pop. (1919) 433,002.

Frankfort-on-the-Oder, a well-built town of Prussia, the capital of a district of the same name, province of Brandenburg, 48 miles from Berlin. Manufactures are woolens, silks, leather, earthenware, tobacco, mustard, etc. Near it is Kunersdorf, the scene of the victory of the Austrians and Russians over Frederick the Great in 1759. Pop. (Est.) 71,000. The district has an area of 8,000 square miles, with a population of 1,000,000.

Frankincense, a resin obtained from a great number of trees of the fir species, and greatly esteemed as an incense. The article now universally known as frankincense is the resin called thus, a common, inodorous article, little better than common white resin. The article once so highly valued, and which, with gold and myrrh, was deemed a gift to lay before the Saviour, must have been some other drug more precious than pine or spruce resin, and was doubtless the still valuable and beautiful substance known as benzoin.

Frankl, Ludwig August, Chevalier von Hochwart, an Austrian poet; born in Chrast, Bohemia, Feb. 3, 1810. He died in Vienna, March 14, 1894.

Frankland, Sir Edward, an English chemist; born in Churchtown, England, in 1825; studied chemistry in the Museum of Practical Geology and in Germany under Bunsen. He made the discovery of the union of organic radicles with metals, announcing in 1850 the preparation of compounds of zinc with methyl and ethyl. From this he deduced the conclusion that an atom of the metal could only attach itself to a definite number of the atoms of other elements, which discovery led to the theory of "equivalents." He was appointed Professor of Chemistry at Owens College, Manchester, in 1851, and there developed the process of making water gas. Becoming Professor of Chemistry in the Royal School of Mines in 1865 he turned his attention to water analysis, the purification of sewage and the means of preventing pollution. Subsequently he proved that compressed gases are capable of giving out a flame of constant spectrum, from which he concluded that the photosphere of the sun was atmospheric. He also investigated the chemistry of foods. He died in Norway, Aug. 11, 1899.

Frankland, later changed to FRANKLIN, a state formed in 1784 when North Carolina ceded her W. lands to the United States. The inhabitants of East Tennessee, alleging that no

provision was made for their defense or the administration of justice, assembled in convention and took measures to form a new and independent State. Notwithstanding the fact that North Carolina, willing to compromise, repealed the act of cession the same year, the scheme was urged forward and at a second convention, Dec. 14, steps were taken toward the organization of a separate State under the name of Frankland. A provisional government was set up. John Sevier was chosen governor, and the machinery of an independent State was put in motion. Very soon rivalries and jealousies appeared, opposing parties arose and divided the people, and a third party favoring adherence to North Carolina, led by Colonel Tipton, showed much increasing strength. Party spirit ran high. Frankland had two sets of officers, and civil war became imminent. Finally an armed collision between the men under Tipton and Sevier took place. The latter were defeated, arrested and taken to prison in irons. Frankland had received its death blow. The assembly of North Carolina passed an act of oblivion, and offered pardon to all offenders, whereupon the troubles ceased.

Franklin, Benjamin, an American statesman; born in Boston, Mass., Jan. 17, 1706. When 12 years old he was apprenticed to his brother James to learn the printer's trade. Three years later James started a newspaper called the "New England Courant." Benjamin tried his hand as a contributor to the columns of the newspaper, and with such success that, when his brother was arrested and imprisoned for a month by the speaker of the assembly for a too liberal exercise of his critical faculties, the management of the paper was confided to Benjamin. The younger brother presumed perhaps too much upon his success; and for this and other reasons the relations of the two gradually ceased to be harmonious, and Benjamin left Boston, drifting finally to Philadelphia, where he landed with only $1.25 in his pocket.

He was fortunate enough to find employment immediately with a printer who had very little knowledge of his business, and to whom therefore Franklin's expertness and ingenuity were not long in proving almost indispensable.

An accident secured him the acquaintance of Sir William Keith, the governor of the colony, who persuaded him to go over to England for the requisite material to establish himself in the printing business in Philadelphia, by the promise to advance what money he would need for this purpose, and also to secure to him the printing for the government. Franklin arrived in London on Dec. 12, 1724. Instead of the letters of credit he expected he discovered that no one who knew Keith placed the smallest dependence upon his word. Franklin soon found employment in a London printing house, where he remained for the next 18 months. He then returned to Philadelphia, where, in connection with a fellow printer whose father advanced some capital, he established a printing house for himself. In September, 1729, he bought for a trifle the "Pennsylvania Gazette," a newspaper then only three months old, and in its columns proceeded to lay the foundation of his reputation as a journalist.

In the following year Franklin married his old love, Deborah Reed, a widow, a young woman of his own station in life, by whom he had two children, a son who died in his youth, and a daughter, Sally, who afterward became Mrs. Bache, a name since associated with the history of American science. In 1732 he commenced the publication of what is still known to literature as "Poor Richard's Almanac," which attained a circulation then unprecedented in the colonies. His contributions to it have been republished in many languages. In 1736 Franklin was appointed clerk of the assembly, in 1737 postmaster of Philadelphia; and shortly after he was elected a member of the assembly.

In 1746 he began those researches in electricity which gave him a position among the most illustrious natural philosophers. He exhibited in a more distinct form than heretofore the theory of positive and negative electricity; by his famous experiment with a boy's kite he proved that lightning and electricity are identical; and he it was who suggested the protecting of buildings by lightning conductors. At the comparatively early age of 47 he was elected to the Royal Society of Lon-

don. Outside of his contributions to electrical science Franklin was the author of many other discoveries of only less importance. They are: (1) The course of storms over the North American continent — a discovery which marked an epoch in the science of meteorology, and which has since been utilized by the aid of land and ocean telegraphy. (2) The course and most important characteristics of the Gulf Stream, its high temperature, and the consequent uses of the thermometer in navigation. (3) The diverse powers of different colors to absorb solar heat.

But his electrical experiments, brilliant as they were, were only the embellishments of his greater career as a statesman and diplomatist. In 1757 he was sent to England to insist upon the right of the province to tax the proprietors of the land still held under the Penn charter for their share of the cost of defending it from hostile Frenchmen and Indians. His mission was crowned with success. He was absent on this work five years, during which he received honorary degrees from Oxford and Edinburgh. In 1764 he was again sent to England to contest the pretensions of Parliament to tax the American colonies without representation. The differences, however, became too grave to be reconciled by negotiation. The officers sent by the home government to New England were resisted in the discharge of their duty, and in 1775 patriotism as well as regard or his personal safety decided Franklin to return to the United States, where he at once participated actively in the measures and deliberations of the colonists, which resulted in the Declaration of Independence, July 4, 1776.

To secure foreign assistance in prosecuting the war in which the colonies were already engaged with Great Britain, Franklin, then in the 71st year of his age, was sent to Paris. He reached the French capital in the winter of 1776–1777, where his fame as a philosopher as well as a statesman had preceded him. His great skill and popularity, reinforced by the then hereditary antipathy of the French and English people for each other, conspired to favor the purpose of his mission. A treaty of alliance with the United States was signed by the French king Feb. 6, 1778, while opportune and substantial aids in arms and munitions of war as well as money were supplied from the royal arsenals and treasury. On Sept. 3, 1783, his mission was crowned with success through England's recognition of the independence of the United States. Franklin continued to discharge the duties of minister-plenipotentiary in Paris till 1785. He reached Philadelphia Sept. 14, 1785, when he was elected almost immediately governor of Pennsylvania with but one dissenting vote beside his own. To this office he was twice reëlected unanimously. During the period of his service as governor he was also chosen a delegate to the convention which framed the Constitution of the United States. With the expiration of his third term as governor in 1788 Franklin retired from public life, after an almost continuous service of more than 40 years. Franklin was the founder and first president of the Philosophical Society of Pennsylvania, and an honorary member of all the leading scientific societies of the Old World. He died April 17, 1790, and was buried in the graveyard of Christ Church, Philadelphia.

Franklin, Sir John, an English navigator, born in Spilsby, Lincolnshire, April 16, 1786; when only a boy he went to sea, and later entered the English navy. In 1806 he was present at the battle of Trafalgar, and in 1814 at that of New Orleans, and in 1819 was appointed to head an overland expedition from Hudson's Bay to the Arctic Ocean. After suffering many hardships and being frequently on the verge of death from hunger and fatigue, he reached home in 1822. In the following year he married a Miss Purden, the daughter of an architect, and the author of several poetical effusions. She died in 1825. In 1827 Captain Franklin was married a second time, and in 1829 had the honor of knighthood conferred upon him. In 1845, Sir John set out on a third expedition with two ships, called the "Erebus" and "Terror," on a trip of exploration, and spent his first winter in a cove between Cape Riley and Beechey Island. After that period many expeditions were dis-

patched, both from England and America, in search of Sir John, of whom there were no tidings, and not till 1859 were indisputable proofs obtained of the death of Sir John and the loss of his crew. It remained, however, for Lieutenant Schwatka to find the bodies of the Franklin party in his expedition of 1879–1880.

Franklin, William Buel, an American military officer; born in York, Pa., Feb. 27, 1823; was graduated at the United States Military Academy in 1843. In the Mexican War he served on the staff of General Taylor as a topographical engineer; was engaged in making reconnoissances and carried Taylor's orders at the battle of Buena Vista. At the outbreak of the Civil War he was assigned to the command of a brigade in Heintzelman's division. He took part in the battle of Bull Run, served with distinction in the Peninsular campaign and was promoted Major-General in 1862. Subsequently he served under McClellan in Maryland and under Burnside at Fredericksburg, was assigned to the Department of the Gulf, under Banks, in 1863; and in 1865 was brevetted Major-General in the regular army, but resigned a year later to engage in manufacturing. He was United States Commissioner-General to the Paris Exposition in 1899. He died March 8, 1903.

Franklin and Marshall College, an educational institution in Lancaster, Pa.; founded in 1787 under the auspices of the Reformed Church in the United States.

Franklin College, a coeducational institution in Franklin, Ind.; founded in 1834 under the auspices of the Baptist Church.

Franks, the name of a confederation which was formed about 240, by the tribes dwelling on the banks of the Lower Rhine and the Weser, who united under the title of Franks or free men. They invaded Gaul in 256, and for 12 years ravaged that country and Spain, extending their incursions as far as the opposite continent of Africa. Probus drove them back into their native marshes in 277; but their influence gradually increased, and after the death of Constantine I., in 337, they constituted a powerful faction at the imperial court. In 355 they again invaded Gaul, and were defeated by Julian, who permitted them to establish a colony in Brabant or Taxandria. In 418 they again invaded Gaul, where, under their leader Pharamond, they founded the modern kingdom of France.

Franks, Sir Augustus Wollaston, an English archæologist; born in Geneva, Switzerland, in 1826; died in London, May 22, 1897.

Franul von Weiszenthurn, Johanna, a German dramatist and actress; born in Grunberg, in Coblentz, in 1773. Her interpretations of stage emotions and characters made her an international celebrity; and her plays are works of great power. She died in Vienna, May 17, 1845.

Franz, Robert, a German musician; born in Halle, Prussia, June 28, 1815. He was famous for his songs, which were of a peculiar lyric beauty. His first published composition appeared in 1843. The latter years of his life were spent in editing the works of Bach, Handel, etc. He died in Halle, Oct. 24, 1892.

Franzen, Frans Michael, a Swedish poet; born in Uleaborg, in Finland, Feb. 9, 1772. He was Professor of Literature and Ethics in the University of Abo; but after the annexation of Finland to Russia he settled in Sweden, and in 1831 was made Bishop of Hernosand. He died Aug. 14, 1847.

Franzos, Karl Emil, an Austrian novelist; born in Podolia, Austria, Oct. 25, 1848; of Jewish parentage. First studying jurisprudence, he edited an illustrated paper in Vienna, and finally studied in Berlin as a man of letters. His first volume — "Semi-Asia: Pictures of Life in Galicia, Bukowina, Southern Russia and Rumania" (1876) — was a brilliant success all over Europe, being translated everywhere; and he maintained high rank. He died in 1904.

Frapan, Ilse, pseudonym of Ilse Levien, a German story-writer; born in Hamburg, Feb. 3, 1852; best in delineations of the life of the people.

Fraser, Duncan Cameron, a Canadian official; born in New Glasgow, N. S., Oct. 1, 1845; admitted to the bar in 1873; elected to the Legislative Council of Nova Scotia

in 1878 and 1888 and to the Commons in 1891 and 1896; became Lieutenant-Governor of Nova Scotia in 1906.

Fraternal Societies. Many of the secret fraternal societies of the United States include in their obligations the payment of sick and death benefits, and fraternal care of the members when sick. Others are formed for the express purpose of insurance, the money for death payments being raised by assessments, the assessment rate either remaining stationary or increasing with the age of the member. The insurance is generally from $1,000 to $3,000. Another class of such societies is that in which the lodge principle prevails and which have the social features prominently kept in view. In these a stipulated sum is paid on the death of a member, and assessments are made on the death ratio. According to the reports of the supreme bodies for approximately 1916 the membership of the principal fraternal organizations in the United States and Canada was as follows:

Freemasons	1,829,255
Odd Fellows	1,606,546
Manchester Unity	1,509,892
Modern Woodmen of America	990,113
Eastern Star	819,724
Woodmen of the World	770,631
Knights of Pythias	722,075
Prechalites	701,040
Good Templars	620,000
Loyal Order of Moose	620,000
Improved Order of Red Men	469,480
Benevolent and Protective Order of Elks	453,516
Royal Arch Masons	422,359
Order of Owls	413,627
Order of Eagles	400,000
Knights of Columbus	368,135
Druids, United Ancient Order of.	335,310
Maccabees	316,575
Junior Order United American Mechanics	250,950
Ancient Order of Hibernians	250,000
Knights Templar	243,590
Royal Arcanum	238,776
American Yeomen	227,643
Nobles of the Mystic Shrine	225,000
Foresters of America	210.617
B'rith Abraham	203,509
Independent Order of Foresters	198,725
Woman's Ben. Assn. of Maccabees	187,591
Knights and Ladies of Security	165,779
Ladies' Catholic Ben. Assn	161,375
Loyal Orange Institution	150,000
Tribe of Ben Hur	100,018
Protected Home Circle	92,489
Sons and Daughters of Liberty	92,473
Mystic Workers of the World	91,971
Court of Honor	77,063
Knights of the Golden Eagle	74,063
United Commercial Travelers	73,062
Order of Gleaners	72,331
Pat. and Prot. Order of Stags	68,574
Daughters of America	68,000
Hermann's Sons	64,800
Fraternal Aid Union	64,283
Catholic Mut. Ben. Assn	64,187
Fraternal Order of Oaks	58,000
National Union Assurance Society	57,817
Ladies of the Maccabees	51,073
Mystic Order Veiled Prophets	50,000
New England Order of Protection	49,350
Knights of Malta	45,000
Independent Order B'nai B'rith	44,893
United Order Amer. Mechanics	38,212
Improved Order of Heptasophs	36,521
Royal League	31,838
Sons of St. George	30,683
Daughters of Isabella	27,000
Fraternal Brotherhood	25,632
Order Sons of Temperance	25,000
Miscellaneous	144,883
Total	7,801,049

By 1922 it was estimated that there were in the United States a total membership of 17,500,000 in all societies, associations and fraternal organizations having varied interests.

Fratricelli, Fraticelli, or Fratricellians, originally the name assumed in the 13th century by the Franciscans by direction of their founder to mark the humble character of their claims. Specifically, one of the names claimed in the 14th century as a monopoly by the section of the Franciscans who remained true to the rigid rules of their founder when the majority of the order gradually welcomed some relaxation of their stringency.

Fraud, in law, all deceitful practices in defrauding or endeavoring to defraud, another of his known right, by means of some artful device, contrary to the plain rules of common honesty. It is condemned by the common law, and punishable according to the heinousness of the offense. All frauds and deceits for which there is no remedy by the ordinary course of law are properly cognizable in equity, and, indeed, constitute one of the chief branches of cases to which the jurisdiction of chancery was originally confined. A fraudulent conveyance of lands or goods to deceive creditors is, as to creditors, void in law; and a fraudulent conveyance to deceive purchasers

is also, as to such purchasers, void. Where a person is party to a fraud, all that followed by reason of that fraud shall be said to be done by him. A party prejudiced by a fraud may file a bill in equity for a discovery of all its circumstances. Mere inadequacy of price alone is not a ground for a court to annul an agreement; but if there be such inadequacy as to show that the person did not understand the bargain he made, or was so oppressed that he was glad to make it, knowing its inadequacy, it will show a command over him which may amount to a fraud. If a person be fraudulently prevented from doing an act, equity will consider the act as done; and equity also relieves against bargains made under misconception of rights. In treaties, concealment of a material fact by one of the parties, in order to keep the other in ignorance, whereby to profit, is a gross fraud, and the contract will be set aside in equity. Gross criminal frauds are punishable by way of indictment or information; such as causing an illiterate person to execute a deed to his prejudice, etc. For these, and such-like offenses, the party may be punished with fine and imprisonment. Frauds are not indictable at common law unless they be such as affect the public — as vending unwholesome provisions, or using false weights and measures; these offences, however, being usually dealt with by local ordinances, or by statutes of general application throughout the State.

Fraunhofer, Joseph von, German optician; born 1787; died 1826. He ultimately became a partner in a manufactory of optical instruments at Munich. His many improvements in glass-making, in optical instruments, and in the polishing of lenses were eclipsed by his investigation of the innumerable dark fixed lines in the solar spectrum, known as Fraunhofer's Lines. The importance of this discovery can scarcely be overestimated. It led to the invention and use of the spectroscope, to the science of spectroscopy, and to all our present knowledge of solar and stellar chemistry.

Frazee, Laurence Fisher, an American inventor; born in New Brunswick, N. J., May 22, 1813. During the Civil War he had command of the transport "Massachusetts." He was the inventor of numerous useful appliances, including a life-raft which was purchased by the United States government; the lifeboat davits in use on ferry-boats and ocean steamships; a stern paddle wheel for canal boats; a safety gangplank; etc. He died in Jersey City, N. J., Oct. 10, 1896.

Frear, Walter Francis, an American jurist; born in Grass Valley, Cal., Oct. 29, 1863; was graduated at Yale University in 1885, and at the Yale Law School in 1890; was made second judge of the first Circuit Court of Hawaii, in January, 1893, and first associate justice in the Supreme Court of the Republic of Hawaii in January, 1896. He was chief-justice of the Supreme Court of Hawaii in 1900–7; chairman Hawaiian Code Commission in 1903–5; and governor of the territory in 1907–13. He was author of "Evolution of the Hawaiian Judiciary," etc.

Frechette, Louis Honore, a French-Canadian poet; born in Levis, Quebec, Nov. 16, 1839. He wrote many odes and lyrics. He was a Knight of the Legion of Honor; officer of the Academy of France, and clerk of the Legislative Council of Quebec. He died May 31, 1908.

Frederic, Harold, an American journalist and novelist; born in Utica, N. Y., Aug. 19, 1856. He was for many years London correspondent of the New York "Times." He died in London, Oct. 19, 1898.

Frederick, a city and county-seat of Frederick co., Md., 62 miles W. by N. of Baltimore. During the Civil War it was twice occupied by the Confederates, the second time, in 1864, by General Early, who forced the citizens to pay a ransom of $200,000. In 1862 Federal troops under McClellan occupied the place. Pop. (1920) 11,066.

Frederick I., surnamed Barbarossa, Emperor of the Holy Roman Empire, son of Frederick, Duke of Suabia; born in 1121, and was chosen to succeed his uncle Conrad III. in 1152. He had accompanied Conrad to Palestine five years previously, and his great qualities had already appeared. He was crowned at Aix-la-Chapelle a few days after his election. His great ambition was to secure the independence of the empire, and, above

all, to be master of Italy, but after repeated efforts he gave up his attacks on the Pope and the Lombard towns. In 1188 he assumed the cross, set out in the following year on the third crusade, was opposed on the march by the Greek emperor and the sultan, arrived in Asia, and was drowned while crossing a river. Frederick was great, not only as a soldier, but as a ruler. His administration was marked by justice, his subordinate officers were chosen for their capacity and probity, he was himself an educated man and promoted education and literature. His memory is still cherished among the peasants of Germany, who dream of the return of Fritz Redbeard, as the Welsh did of King Arthur. He died in June, 1190.

Frederick II., Emperor of the Holy Roman Empire, son of Henry VI. and Constance, of Sicily; born in Jesi, Dec. 26, 1194, elected king of the Romans in 1196, again after his father's death, and a third time on the excommunication of Otho IV., in 1211. Frederick was the most accomplished sovereign of the Middle Ages; but his strong sympathies with his Italian motherland, and his unremitting endeavors to establish a compact and all supreme empire in Italy, were the causes, not only of his own misfortunes, but of the miseries which he brought on the German empire, by embroiling him in costly wars abroad, and leading him to neglect the welfare and sacrifice the interests of his German subjects. He died in Viorenzuoli, Dec. 13, 1250.

Frederick III., Emperor of the Holy Roman Empire, a title sometimes applied to the son of Albert I., who was chosen emperor by some of the electors in 1314, but was defeated by Louis of Bavaria and taken prisoner in 1322. He died Jan. 11, 1330. The Frederick III. of history, however, was the son of Ernst, and was born in Innsbruck, Dec. 21, 1415. He was elected emperor in 1440 and ruled for 53 years, the longest German reign. His sobriquet was "the Pacific," owing to his plans for the pacification of the empire. He died in Ling, Aug. 19, 1493.

Frederick V., Elector-Palatine and King of Bohemia; born in Amberg in 1596; succeeded his father, Frederick IV., in 1610. In 1618 he married the Princess Elizabeth, daughter of James I. of England, and in the following year accepted the crown of Bohemia. He made a triumphal entry into Prague, followed in 1620 by his total defeat by the Imperial forces at the battle of Prague, and the loss of his kingdom and hereditary States. He took refuge in Holland, and died in Mentz, Germany, Nov. 19, 1632. From him, through his marriage, is descended the present royal family of England.

Frederick William, generally called the Great Elector; born in 1620, and at the age of 20 years succeeded his father as Elector of Brandenburg. He is considered as the founder of Prussian greatness. He made Prussia free from feudal subjection to Poland, conquered Pomerania, joined the League against Louis XIV., and defeated the Swedes who invaded Prussia in 1647. By affording protection to the French Protestant refugees, he gained, as citizens of the State, 20,000 industrious manufacturers, and he also gave great encouragement to agricultural improvements. He founded the library at Berlin, and a university at Duisburg. He died in Potsdam, April 29, 1688.

Frederick I., first King of Prussia (Frederick III. as Elector of Brandenburg), son of the above; born in Konigsberg, July 22, 1657. He succeeded his father in 1688, and in 1701 obtained the title of king, which he had long coveted. He placed the crown on his head with his own hands. In 1694 he founded the University of Halle; two years later, the Berlin Academy of Painting; and, in 1707, he established the Academy of Sciences, Berlin, and made Leibnitz first president. He was thrice married; his third wife became insane, but her state was concealed from him. One day she escaped, rushed into the king's apartment, smashing the glass door, and so terrified him that he immediately fell into a fever, and after six weeks' illness died, Feb. 25, 1713.

Frederick William I., son of the above, and father of Frederick the Great; born in 1688, and commenced his reign in 1713, after having married the daughter of the Elector of

Hanover, afterward George I. of England. In 1715 he declared war against Charles XII. of Sweden, and in conjunction with Denmark took Stralsund; but on the death of Charles, in 1718, he made peace. The habits of this sovereign were entirely military. One of his strongest peculiarities was an extraordinary love for tall soldiers. He held science and literature in profound contempt; but money he worshipped, and men of a military character after his own ideal he respected and encouraged. He died May 31, 1740.

Frederick II., best known as Frederick the Great; born Jan. 21, 1712; the son of Frederick William I., and the Princess Sophia Dorothea of Hanover. Though, by the direction of his father, he was instructed only in the details of military exercises and service, his taste for poetry and music was early developed by the influence of his first instructress, the highly gifted Madame de Rocoules, and his early teacher, Duhan, who, countenanced by the queen, formed a secret opposition to his father's system of education. The death of his father raised him to the throne May 31, 1740. Frederick on his accession found in his States a population of only 2,240,000. At his decease he left 6,000,000. He raised Prussia to this pitch of greatness by his talents as a legislator and general, assisted in the field and in the cabinet during a reign of 46 years by many distinguished men. The story of his wars would be a history of Europe. But he was not alone a great commander. He encouraged agriculture, the arts, manufactures, and commerce, reformed the laws, increased the revenues, perfected the organization of his army, and thus improved the condition of the State. He died in Sans-Souci, Aug. 17, 1786, in the 75th year of his life, and the 47th of his reign, and left to his nephew, Frederick William II., a kingdom increased by 29,000 square miles, more than 70,000,000 Prussian dollars in the treasury, an army of 200,000 men, great credit with all the European powers, and a State distinguished for population, industry, wealth, and science. Frederick the Great was an admirer of General Washington, whose abilities he perceived and did not hesitate to acknowledge — a fact which Americans will always remember. The present German emperor has presented to the United States a statue of Frederick the Great.

Frederick William III., King of Prussia, son of the above; born Aug. 3, 1770; commenced his reign in 1797 by maintaining a strict neutrality in the various alliances with and against France, which resulted from the ambitious designs of Napoleon I. In 1805, however, he yielded to the solicitations of Russia, allying himself with the czar against the French emperor. The rapid campaign of 1806, and the defeat of the Prussians at Jena, opened the gates of Berlin to the enemy, in whose hands it remained till 1809. In 1807 the battle of Friedland led to the humiliating peace of Tilsit, by which Frederick lost half his dominions. Forced, in 1812, to contribute a force of 30,000 men to Napoleon's army, he subsequently joined his troops with those of Russia. The allies having triumphed over the French at Leipsic, Frederick William, in 1814, entered Paris with Czar Alexander. He also accompanied the latter to England in the same year. On the return of Napoleon from Elba, he once more joined the allies. After the victory of Waterloo, in which the Prussians, under Blucher played an important part, Prussia, once more at peace, gradually recovered the losses she had sustained, under the wise and paternal sway of Frederick. He died June 7, 1840.

Frederick William IV., King of Prussia, son of the preceding; born Oct. 15, 1795; on the death of his father, succeeded to the throne in 1840. He served, as a simple officer, in the campaigns of 1813 and 1814, and evinced, at an early period of his life, a very great love for the arts, which he preserved throughout his career. During the first years of his reign his subjects anxiously demanded the reform of the government, requiring the liberal constitution which had been promised them in 1815, in return for the great sacrifices they had made during the continental war. In 1847, at a general diet of the Prussian States, many of these reforms were granted. In March, 1848, however, the people and the troops came into collision, the king was obliged to change the minis-

try, to issue a general amnesty, and commence a war in favor of Schleswig against Denmark, and to salute from his balcony the corpses of the insurgents. The mingled irresolution and absolutism of Frederick, however, led him subsequently to other conflicts in June and August of the same year; and it was not till two coups d'etat that Frederick, assisted by his army, succeeded in retaining his authority almost unimpaired by the powers he had yielded. Toward the end of 1857, a severe illness, resulting in the loss of some of his faculties, caused his brother William to be nominated regent, who succeeded him as king on his death, near Potsda , Jan. 2, 1861.

Frederick III. 2d Emperor of Germany, and 8th King of Prussia; born in Potsdam, Prussia, Oct. 18, 1831; was educated at Bonn University; entered the army; became Crown Prince of Prussia in 1861; served with distinction in the Danish War; conducted a brief but brilliant campaign in the war between Prussia and Austria; and at the outbreak of the Franco-Prussian War was placed in command of one of the three divisions of the German Army. He became Emperor Mar. 1, 1888, but died from cancer of the throat three months later, June 15, 1888.

Frederick VIII., King of Denmark, born at Copenhagen, June 3, 1843. He succeeded his father Christian IX., Jan. 29, 1906. He married June 28, 1869, the daughter of King Carl XV. of Sweden and Norway, Princess Luise. Their children include King Haakon VII. of Norway. He died May 15, 1912.

Frederick William, Former Crown Prince of late German Empire, born May 6, 1882. He received a military education; married the Grand Duchess Cecile of Mecklenburg-Schwerin, born Sept. 20, 1886, on June 6, 1905; and in the great war was credited with supreme authority in the stubborn Verdun campaign. See APPENDIX; *World War.*

Fredericksburg, a city in Spottsylvania co., Va.; 61 miles N. of Richmond; was the scene of several battles in the Civil War. Pop. (1920) 5,882.

Fredericksburg, Battle of. On Dec. 13, 1862, General Burnside crossed the Rappahannock river at Fredericksburg, and attacked the Confederates, who, under General Lee, occupied a strong position on the heights. The Union forces were estimated at 100,000 men, and the Confederate at 80,000. The battle, after raging with desperate violence through the day, terminated in the defeat of General Burnside. Little fighting took place Dec. 14 and 15, and on Dec. 16 the Union forces recrossed the river with opposition. The Union loss was 1,138 killed, 9,105 wounded, and 2,078 missing; while the Confederate loss amounted to 595 killed, 4,061 wounded, and 653 missing.

Fredericq, Paul, a Belgian historian; born in Ghent, Aug. 12, 1850.

Fredericton, city, port of entry, and capital of York county and of the Province of New Brunswick; on the St. John river and the Intercolonial and Canadian Pacific railroads; 60 miles N. W. of St. John. It contains the Parliament building, Old Government House, Christ Church Cathedral, University of New Brunswick, Provincial Normal School, Victoria Public Hospital, and a military school; has a large shipping trade, and is chiefly engaged in manufacturing. Pop. (Est.) 8,100.

Fredro, Count Alexander, a Polish dramatist, called "the Moliere of Poland"; born in Suchorow, in Galicia, in 1793. He was the founder of Polish comedy. He died in 1876.

Free Church of England, an evangelical Protestant denomination founded on the basis of recognizing only two orders — the first being presbyters, and the second deacons. "Nevertheless, the first order is divided into two distinct offices, viz., bishops and presbyters. This Church maintains the ecclesiastical parity of presbyters, whether episcopally or otherwise ordained." The governing body is the Convocation, consisting of all the clergy and laity in the several churches.

Free Church of Scotland, the name assumed by the large number of ministers and their adherents who left the Scottish Establishment at the "Disruption" of May 18, 1843. They had seceded in vindication of what they called the "Headship of Christ," i. e., to gain liberty to obey what

they deemed the will of their Divine Lord in all Church arrangements.

Free Companies, bands of discharged soldiers, who ravaged France after the conclusion of the peace of Bretigny, May 8, 1360. Bertrand du Guesclin, born in Brittany in 1314, put himself at their head, and led them against Peter the Cruel, King of Castile, whom he dethroned in 1365, placing Henry, Count of Trastamara, on the throne. Edward the Black Prince recalled the free companies, defeated Henry at Najara, April 3, 1367, and restored Peter the Cruel, who was, however, defeated March 14, 1369, and killed by Henry of Trastamara, March 23.

Freehold, an estate or real property held in fee simple in America, or in England either in fee simple or fee tail; the tenure by which such an estate is held.

Freeman, Edward Augustus, an English historian; born in Harborne, in Staffordshire, Aug. 2, 1823. His first publication (1849) was a "History of Architecture," especially devoted to Gothic architecture. His architectural researches helped to turn his attention to history, but his earliest works were the product of his interest in contemporary questions. He was appointed Professor at Oxford, 1884. His contributions to the periodicals of his day were frequent and of great weight; and he was a fiery and unvarying champion of national freedom. He died in Alicante, in Spain, March 16, 1892.

Freemason, a member of an ancient secret order or fraternity now designated as "Free and Accepted Masons." The order is of such ancient origin that even the derivation of its name is in doubt. By a majority of the authorities it is held that the word "free" is to be taken in the sense of one who is free of the masons' guild. But the most reasonable theory is that the name owes its origin to the practice of the ancient masons of giving the passed apprentice his freedom as he was sent forth to seek employment on some great and worthy structure in process of erection to complete his mechanical education. It was early in the 17th century that the word was first used in the sense in which it is now universally understood. At that time the ancient guilds of practical masons began to admit as a mark of especial esteem certain worthy persons whom it was intended to honor, not regular members of the guild through apprenticeship and occupation. To these was given the appellation "accepted." They were afterward given the title of "freemasons" also, inasmuch as they were admitted to a full membership in the guild and were duly acquainted with all its secrets. In the year 1717 J. T. Desaguliers, a man of scientific knowledge and attainments, brought a number of scattered "lodges" or guilds of London under a single jurisdiction called the "Grand Lodge," and it is to this ancient and august body that all the regular lodges of the ancient craft today trace their origin. The first Provincial Grand Lodge in America was established at Boston in 1733 by Henry Price, who, in 1734, was made Grand Master over all of North America. The order has attained a remarkable growth throughout the world, and especially in the United States and Canada, the returns of the grand lodges of these two countries showing a membership (1923) of 2,857,101.

Freethinker, a name often assumed by those who, disbelieving in revelation, feel themselves free to adopt any opinion in religious or other matters which may result from their own independent thinking. The name was specially claimed by those who in the 17th and 18th centuries took part on the anti-Christian side in the deistic controversy.

Free Trade, the term applied to national commerce when unrestricted by laws or tariffs, and not unduly stimulated by bounties. As an economic principle, free trade is the direct opposite to the principle or system of protection, which maintains that a State can reach a high degree of material prosperity only by protecting its domestic industries from the competition of all similar foreign industries. To effect this, countries either prohibit the importation of foreign goods by direct legislation, or impose such duties as shall, by enhancing the price, check the introduction of foreign goods.

Freewill, free will, freedom and necessity, liberty and necessity, terms

employed to denote the power of a man over the determination of his own will, one of the most difficult questions in the whole field of mental sciences.

Freezing, Congelation, or **Solidification,** the transformation of a liquid into a solid under the influence of cold. Each liquid always solidifies at the same temprature, which is called its freezing point, and the solid also melts again at the same temperature. Thus the freezing point and the melting point, or point of fusion, are the same, and the point is always the same for the same substance.

Freiberg, a mining town of Saxony, 19 miles from Dresden. It is the capital of the mining district of Saxony, and contains a mining academy founded in 1765, with 13 professors, fine scientific collections, among which is the celebrated collection of precious stones amassed by Werner, and a large library. There is a fine relic called the Golden Portal belonging to the ancient Church, which stood on the site of the Gothic cathedral. It is an ancient imperial city, and is still surrounded by the old walls and ditch. The town owes its origin to the discovery of silver mines in the 12th century. In the 17th century it had great wealth and a population of 40,000. It is said to have about 150 mines of silver, copper, lead, and cobalt in its vicinity; but their product has lately fallen off. The manufactures are chiefly metal ware, feather goods, pigments, etc. Here, on Oct. 29, 1762, Prince Henry of Prussia defeated the allied Austrian and Saxon army. Pop. (1910) 36,237.

Freiburg, or **Fribourg,** a canton of Switzerland, between the canton of Berne and the Pays de Vaud. Freiburg is finely diversified with every kind of scenery, comprising wooded or grassy hills, Alpine mountains, and long and beautiful verdant valleys. Of the population, seven-eighths are Roman Catholics; the Protestants, about 8,400, reside principally in the district of Morat. Pop. (1913) 142,690. Its capital, of the same name, occupies a singularly wild and romantic situation on the Sarine, 16 miles from Berne.

Freiburg in Breisgau, a town of Germany, Grand-Duchy of Baden; 32 miles N. N. E. of Basel. It is an open, well-built town; the walls and ditches with which it was formerly surrounded have been converted into promenades and vineyards. The cathedral, one of the most beautiful and perfect specimens of Gothic architecture in Germany, cruciform in shape, and built of red sandstone, was begun in 1122, but not completed till 1513. Its W. steeple, 381 feet high, is remarkable for its elegance and lightness. The university was founded in 1455. Freiburg was founded in 1091 by the Duke of Zahringen, and created a town in 1115. Freiburg has repeatedly changed masters; twice it was given over to France. It also played an eventful part in the Thirty Years' War. In 1806 it fell to Baden; and in 1848 the Baden revolutionists were defeated here by the troops of the German confederation. Pop. (1910) 83,324.

Freight, formerly a charge paid to the owner of a ship for the carriage and safe delivery of goods; but the term now extends to transportation by land, especially on railroads, and also to the goods that are shipped. In cases of maritime freight, a person chartering a ship pays freight for the goods sent by it, and dead freight in respect of any deficiency of cargo; the terms of the agreement are fixed by the charter party. A person sending goods by a general ship pays freight for them; and the contract takes the form of a bill of lading.

Freiligrath, Ferdinand, a German poet; born in Detmold, Germany, June 17, 1810. His first volume of "Poems" (1838), won a royal pension, which he renounced as discrediting his liberalism, publishing a "Confession of Faith" in verse (1844). Banished as a sower of sedition, he took refuge in London till the Revolution of 1848. Returning, he was tried for high treason for his poem "The Dead to the Living," but acquitted; then threatened with prosecution for "Political and Social Poems." From 1851 till 1867 he again resided in England as manager of a Swiss banking establishment. He was deprived of this post by the failure of the bank, whereupon a national subscription was got up in his behalf in Germany, which enabled him to return to private life. Many of his songs are widely popular. He was an admirable translator, not-

ably from Scott, Shakespeare, and Longfellow. He died in Cannstatt, Germany, March 18, 1876.

Frelinghuysen, Frederick, an American lawyer; born in Somerset co., N. J., April 13, 1753; was graduated at the College of New Jersey in 1770. He was a member of the Continental Congress much of the time during the Revolutionary War; and was U. S. Senator in 1793–96. He died April 13, 1804.

Frelinghuysen, Frederick Theodore, an American statesman; born in Millstone, N. J., Aug. 4, 1817. He was attorney-general of New Jersey in 1861–1866; United States Senator in 1868–1877; and Secretary of State under President Arthur in 1881–1885. He died in Newark, N. J., May 20, 1885.

Frelinghuysen, Joseph Sherman, an American statesman; born in Raritan, N. J., March 12, 1869; in State Senate in 1905–11 (President in 1910); elected U. S. Senator for the term of 1917–23.

Frelinghuysen, Theodore, an American lawyer; born in Millstone, N. J., March 28, 1787; was graduated at the College of New Jersey in 1804; and admitted to the bar in 1808. In the War of 1812 he commanded a company of volunteers, and in 1829 was elected United States Senator. He was chosen chancellor of the University of New York in 1838; was nominated for Vice-President of the United States in 1844; and in 1850 became president of Rutgers College. He died in New Brunswick, N. J., April 12, 1862.

Fremont, Jessie Benton, an American author, wife of John Charles; born in Virginia in 1824; daughter of Senator Thomas H. Benton. She died Dec. 27, 1902.

Fremont, John Charles, an American general and explorer, popularly known as "The Pathfinder of the Rocky Mountains"; born in Savannah, Ga., Jan. 31, 1813, of a mixed French and Virginian parentage. In 1838–1839 he undertook the exploration of the country between the Missouri river and the British frontier, and in 1838 received a commission as 2d lieutenant in the corps of topographical engineers. Shortly afterward, he proposed to the government to undertake the exploration of the Rocky Mountains — at that day a terra incognita. His plan being approved, he, in 1842, started with a handful of picked men, and reached and explored the South Pass. Not only did he fix the locality of that great defile through which thousands have since found their way to California, but he defined the astronomy, geography, botany, geology, and meteorology of that region, described the route since followed, and designated the points upon which a line of United States forts were subsequently erected. In 1845 he cleared the N. part of California of Mexican troops, and then, seeking a broader field of activity, planned an expedition to the distant territory of Oregon. He approached the Rocky Mountains by a new line, scaled the summits S. of the South Pass, deflected to the Great Salt Lake, pushed investigations right and left his entire course, and at the same time connected his survey with that of Commodore Wilkes' exploring expedition. In this daring expedition he crossed 3,500 miles of country in sight of eternal snows, discovering the grand features of Alta California, its great basin, the Sierra Nevada, the valleys of San Joaquin and Sacramento, and determined the geographical position of the W. portion of the North American continent. In 1846 he was promoted lieutenant-colonel and also military commandant and civil governor of the Territory of California, in which capacity he in 1847 concluded those articles of capitulation by which Mexico conceded exclusive possession of that territory to the United States. In the same year he purchased in California the valuable Mariposa estate upon which he settled in 1849. In 1853 he undertook a fifth expedition across the continent, made new discoveries, and reached California after enduring almost incredible hardships. In 1856 he was the first candidate of the Republican party for the presidency; and in 1861, on the outbreak of the Civil War, was appointed a Major-General of volunteers. He then, as commander of the western Union army, marched into Missouri with the view of encountering General Price's Confederate force then in possession of that State, but an unfortunate dispute with a subordinate

officer caused the War Department to relieve him of his command. He was governor of Arizona in 1878–1881. He died in New York city, July 13, 1890.

Fremont, Jules Joseph Taschereau, a Canadian jurist and author; born in Quebec in 1855; was appointed professor of civil law in Laval University in 1893.

French, Alice (OCTAVE THANET), novelist; born at Andover, Mass., March 19, 1850; came into prominence after 1878 by her short stories descriptive of Iowan, Arkansas, and Western life.

French, Daniel Chester, an American sculptor; born in Exeter, N. H., April 20, 1850; was educated in Boston and in Florence, Italy; had studios in Boston and Concord, N. H., in 1878–1887, and in New York city in 1887–1900.

French, Sir John, 1st Earl of Ypres; b., 1852; Br. military officer; entered the navy in youth, but soon changed to the army; first served in the Nile expedition of 1884–85; distinguished himself in the Boer War as a cavalry leader; and shortly before the opening of the World War (1914) he resigned his army command during the controversy over the use of troops in Ulster. He had been knighted and appointed lieutenant-general, Inspector-General of the Forces (1907), and Chief of the General Staff (1912). In August, 1914, he was given chief command of the British forces in the field, with the rank of Field Marshal, and served brilliantly through first years of World War. Commander-in-chief of troops stationed in England, 1915. Died, 1925.

French, L. Virginia (Smith), an American poet; born on the E. shore of Maryland in 1830; she was associate editor of the "Southern Lady's Book," a fashion magazine published in New Orleans (1852). She died in McMinnville, Tenn., March 31, 1881.

Frenzel, Karl Wilhelm, a German author; born in Berlin, Germany, Dec. 6, 1827. He published several volumes of historical essays, two volumes of dramatic criticism, and numerous historical novels of the 18th century.

Frerichs, Friedrich Theodor, a German physician; born in Berlin in 1819. In 1851 he went as Professor of Pathology and Therapeutics to Breslau, where he became also director of the medical clinic. In 1859 he was called to succeed Schonlein in Berlin as director of the medical clinic in the Charite Hospital. His principal work, however, is "Klinics of Diseases of the Liver," with atlas — which has been translated into French, English, and Italian. He died in 1855.

Fresco, a kind of painting performed on fresh plaster, or on a wall covered with mortar not quite dry, and with water colors. The plaster is only to be laid on as the painting proceeds, no more being done at once than the

FRESCO CEILING.

painter can dispatch in a day. The colors, being prepared with water, and applied over plaster quite fresh, become incorporated with the plaster, and retain their beauty for a great length of time.

Fresenius, Karl Remigius, a German chemist; born in Frankfort-on-the-Main, Dec. 28, 1818; was Professor of Chemistry at Wiesbaden; and in 1862 founded the "Journal of Analytical Chemistry." Died, 1897.

Fresnel, Augustin Jean, a French physicist; born in Broglie, France, May 10, 1788. In 1815 he became distinguished as the discoverer of the polarization of light, and in 1823 was elected a member of the Academy. He made important re-

searches respecting the wave theory of light. The result of his great discovery is shown in the system of lens lighting apparatus, which has changed the mode of lighthouse illumination over the whole world, and is universally known as the "Fresnel system." He died July 14, 1827.

Fresno, city and capital of Fresno county, Cal.; on the Southern Pacific and other railroads; in the noted San Joaquin Valley; 208 miles S. E. of San Francisco; is chiefly engaged in growing grapes, raisins, and fruit, manufacturing wines, olive oil, and lumber, raising grains and livestock, and mining gold and copper. Pop. (1920) 44,616.

Freud, Sigmund, born 1856. An Austrian psychiatrist. Has become an international figure for his studies and writing on psychoanalysis. Lectured in U. S. in 1909.

Freyer, John, an English linguist; born in Hythe, England, Aug. 6, 1839; was graduated at Highbury College in 1860; professor of Alfred University, Hong-Kong, China, in 1861; Professor of English in Tung-Wen College, Peking, China, in 1863–1865; and for many years was employed by the Chinese government in the translation of scientific and technical books into Chinese. He was the author of a large number of essays and reports in the Chinese language, and was appointed Professor of Oriental Languages and Literature in the University of California, in 1896.

Freylinghausen, Johann Anastasius, a German theologian; born in Gandersheim, Germany, Dec. 2, 1670. His work on the "Foundation of Theology" is the masterpiece of the Pietist movement of Halle. He died in Halle, Prussia, Feb. 12, 1739.

Freytag, Gustav, a German author; born in Kreuzburg, Prussia, July 13, 1816. Among his works outside of the drama may be mentioned "Ancestors," a cycle of six stories portraying the German civilization from the beginning of historic times; and "Charlemagne" (1894). He died in Wiesbaden, Germany, April 30, 1895.

Friar, any religious of the male sex belonging to a monastic order. The term is used specifically for religious belonging to one of the four mendicant orders for men: (a) The Franciscans, or Friars Minors, popularly called Gray Friars; (b) the Dominicans, or Preaching Friars, popularly called Black Friars; (c) the Augustinians; (d) the Carmelites, popularly known as White Friars.

Friar Bird, a bird, so called because its head and neck are bare of feathers. There is a tubercle at the base of the bill. It is found in Australia. It is called also the monk, the leather head, the poor soldier, the pimlico, and four o'clock.

Fric, Joseph Vaclav, a Czech author; born in Prague, Austria, Sept. 5, 1829. Political activity and journalistic independence resulted in his exile, but he was granted amnesty after wandering through Europe and writing anti-Austrian books and papers. He died in Prague, Oct. 14, 1890.

Friedlander, Ludwig, a German classical scholar; born in Konigsberg, Prussia, July 24, 1824. His most representative work is "Typical Studies in the History of Roman Manners and Morals" (6th edition 1889), written in popular style. He died in 1909.

Friedmann, Alfred, a German poet and story-teller; born in Frankfort-on-the-Main, Prussia, Oct. 26, 1845.

Friedrich, Friedrich, a German novelist; born in Grosz-Vahlberg, Little Brunswick, Germany, May 2, 1828. He died in Plauen, near Dresden, Saxony, April 13, 1890.

Friedrichs, Hermann, German author; born in St. Goar on the Rhine, Germany, June 14, 1854.

Friendly Suit, in law, a suit instituted between two parties who are not really at variance, to obtain a judicial decision upon a certain point.

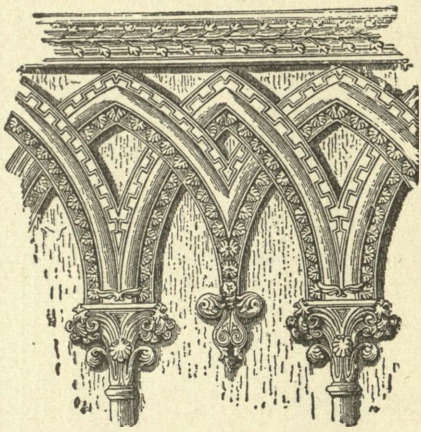
Friends, Society of, the organization commonly called Quakers, founded in the middle of the 17th century by George Fox. They are distinguished from other Christian bodies by the special stress they lay on the immediate teaching and guidance of the Holy Spirit, and their belief that no one should be paid or appointed by human authority for the exercise of the gift of the ministry. In obedience to this belief they hold their meetings

without any prearranged service or sermon, and sometimes in total silence. The Friends believe that the sacraments of Baptism and the Lord's Supper are to be taken spiritually, and not in an outward form. Their protests against the use of oaths and against the exaction of tithes and church rates cost them much suffering and frequent imprisonment during the first 50 years of their existence. The simplified dress which Friends adopted from conviction 200 years ago became stereotyped into a uniform. This dress has generally been given up, as have the "testimony" against music and singing in its rigid application, and the peculiarities of speech, such as the use of "thee" and "thou" instead of "you" (though many Friends still retain this custom among themselves), and the avoidance of all titles of courtesy. Of late years there has been a very decided evangelical movement among Friends, under the influence of which the old quietism is dying out. As a result of this change the influence of the Society beyond its own borders, through home and foreign missions and adult First Day (Sunday) Schools, has developed to a remarkable extent. There is in the United States a numerous body of Friends called Hicksites (from their founder, Elias Hicks), who separated from the orthodox community. They hold latitudinarian views. The Wilburite section are conspicuous in Pennsylvania by their adherence to the livery and the "plain language." Large numbers of persons who do not appear in the statistical returns attend the Mission meetings of the Society of Friends, and very large numbers come under their influence in the foreign mission field.

Fries, Elias, a Swedish botanist; born Aug. 15, 1794, in Smaland, Sweden, and studied at Lund, where he early taught botany. In 1834 he was called to the chair of practical economics at Upsala, with which in 1851 that of botany was conjoined. In 1851 Fries was appointed director of the botanical museum and garden at Upsala, and in 1853 rector of the university. He resigned in 1857, and died in Upsala, Feb. 8, 1878.

Fries, Jacob Friedrich, a German philosopher; born in Barby, Prussia, Aug. 23, 1773. He is a link between Kant's system and the so-called historical school. He died in Wartburg, Germany, Aug. 10, 1843.

Frieze, in architecture, that portion of the entablature which is between the architrave and the cornice. It was generally adorned with triglyphs in the Doric order, the intervening spaces, called metopes, being filled with sculptured figures in alto-relievo, or with the skulls of oxen and wreaths alternately; while in the Corinthian and Composite orders it was ornamented with figures or scroll work in low relief, extending along its entire length. The term frieze was



FRIEZE, DRONTHEIM.

also applied to a broad band of sculpture, in low relief, that was frequently placed round the cella of a Grecian temple, immediately under the ceiling of the portico, and completely surrounding the exterior. In modern domestic architecture a frieze is frequently introduced immediately below the cornice of an apartment.

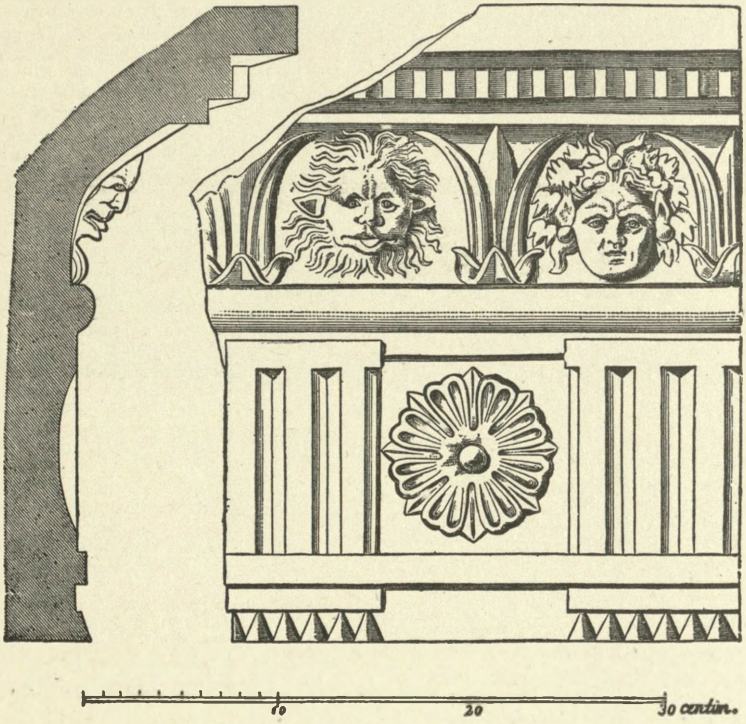
Frigate, originally a Mediterranean vessel propelled by sails and oars; afterward a ship of war, between a sloop or brig and a ship of the line. Such vessels generally carried from 30 to 50 guns on the main deck and on a raised quarter desk and forecastle. They were usually employed as cruisers or scouts. The name is now

POLSKI INSTYTUT

no longer used, since the application of steam to war-vessels removed the 28 to 44 gun frigate type, with its covered gun and upper flush decks.

Frigate Bird, a genus of natatorial birds. They have a long and forked tail, and an expansion of wings sometimes reaching 10 or 12 feet. They abound on both the Atlantic and Pacific coasts of tropical America. They are called also man-of-war birds.

night in the year, each nominally six months in duration, but the day is really considerably longer than the normal amount, owing to the influence of refraction in keeping the sun above the horizon. The intense cold of winter covers every land within the limits with glaciers and congeals immense expanses of every sea. The heat of summer, on the contrary, is much above what might be expected, for,



FRIEZE, ROMAN-DORIC.

Frigid Zones, the two cold zones or imaginary belts encircling the world. The northern has the North Pole for its center and the Arctic Circle for its circumference. Similarly the southern has the South Pole for its center, and the Antarctic circle for its circumference. Within these limits there is but one day and one

though the solar beams are very oblique, yet, continuing for half a year without intervals of night, they produce great effects. It is a geological problem how plants, now found fossil in the polar latitudes, managed to pass undestroyed through the long winter. The frigid is called also the frozen zone.

Fringillidæ; a family of passerine birds of which the finch and sparrow are familiar species. The Arkansas finch of the Southern Rocky Mountains to the coast of California, is 4¼ inches long; the wing, 2 2-3 inches; the upper parts olive-green, the head, wings, and tail black; beneath, bright yellow. The common sparrow, the true type of the finch tribe, is a European bird, one of the most omnivorous of all birds, and has been lately successfully introduced into this country. It is nearly six inches in length, of a robust form; bill dusky; eyes hazel; the top of the head and back part of the neck ash gray; the throat, fore part of the neck, and space around the eyes black; the cheeks whitish; the breast and all the under parts pale ash; the back, scapulars, and wing coverts are reddish-brown, mixed with black the latter tipped with white, forming a light bar across the wing; tail brown, edged with gray, and rather forked; legs pale brown. The plumage of the female is plainer and duller than that of the male; beyond each eye there is a line of white, and she has no black patch on the throat. Sparrows are bold and crafty; and their partiality to the homes of man does not originate from any social affection on their part, but because their chief subsistence is most abundantly found there.

Frisbie, William Albert, journalist and author; born at Danbury, Conn., Dec. 12, 1867; graduated at Iowa College 1889; has written several humorous animal stories.

Frisby, Edgar, astronomer with relative rank of commander in the United States navy; was born at Great Easton, England, May 22, 1837. He became assistant-astronomer at the Naval Observatory, Washington, and in 1878, professor of mathematics in the United States navy. He retired in 1899.

Frisians or **Frisii** (later called Frisones), an ancient Germanic people, who inhabited the extreme N. W. of Germany, between the mouths of the Rhine and Ems, and were subjected to the Roman power under Drusus. They were subdued by the Franks, and, on the division of the Carlovingian empire, their country was divided into West Frisian (West Friesland), and East Frisian (East Friesland).

Frissell, Hollis Burke, an American educator; born in Amenia, N. Y., July 14, 1851; was ordained to the Presbyterian ministry in 1880; chaplain in the famous Hampton Institute for Indian and colored youth in 1880–1893; then succeeded as principal; is connected with the principal Southern education boards.

Frith, William Powell, an English painter; born in Studley, England, in 1819; became a Royal Academician in 1853; received the decoration of the Legion of Honor in 1878; honorary member of the principal art academies in Europe. Died in 1909.

Frobisher, Martin, an English navigator; born in Doncaster, Yorkshire, England, about 1536; was a mariner by profession. In search of a N. W. passage to India and under the patronage of the Earl of Warwick, he set sail with a fleet of three vessels from Deptford in June, 1576. After exploring different parts of the Arctic coast, and entering the strait that bears his name he returned to England, bearing with him some black ore which is said to have been gold. In consequence of this discovery he was encouraged to make two more journeys, both of which proved fruitless. On board the "Triumph" he took part in the destruction of the Spanish Armada and was knighted for his bravery. In 1594 he served under Henry IV. of France against the Leaguers and Philip II. of Spain, and while attacking a fort near Brest received a mortal wound. He died in Plymouth, England, Nov. 7, 1594.

Frobisher Strait, a passage between the W. side of Davis Strait and the N. side of Hudson Strait, is 140 miles long, with an average breadth of 20. It is not of any practical value as a channel of communication. It was discovered in 1576 by Sir Martin Frobisher, an energetic English navigator.

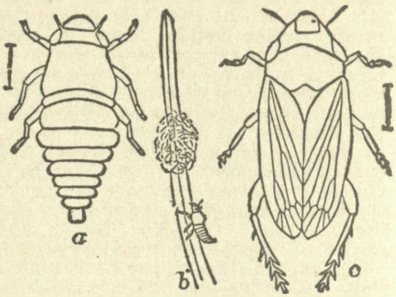
Froebel, Friedrich, a German educator; born in Oberweissbach, April 21, 1782. He was for some time associated with Pestalozzi, but evolved a theory of education of his own. To explain it he wrote "The Education of Man" (vol. i. 1826), a work of deep and original thought. He opened

the first kindergarten or children's garden at Blankenburg, Thuringia, in 1840. He died in Marienthal, June 21, 1852.

Frog, tailless amphibia distinguished from its congeners by having the tongue and tympanum distinct, the skin smooth, and the toes without claws; they are, however, pointed, and the hinder feet are united almost to the tips by a membrane. The species are numerous; they are widely distributed over the globe, many inhabiting tropical regions. The common frog is too well known to require description. It is found at the genial period of the year, burying itself at the approach of winter, in the mud at the bottom of ponds, and reappearing early in spring. In the month of March it lays its eggs, which are enveloped in a gelatinous material, in water, where they float. Each female deposits from 600 to 1,200 eggs a year. By April they have greatly increased in size and are becoming hatched. The immature frogs which come forth are called tadpoles. They have tails, no legs, breathe by gills, and are aquatic. Six or eight weeks later the legs are fully developed, the tail is absorbed, and they quit the water, remaining, however, in its vicinity to the last. The common frog is found in most parts of this country, in Europe, in parts of Asia, and in the N. of Africa. The eatable frog is common on the European continent. The bull-frog of North America is also well known. In farriery a kind of tender horny substance growing in the middle of a horse's foot, dividing into two branches which run like a fork toward the heel.

Frogfish, a species of fish having a horizontally flattened head, broader than the body, a deeply-cleft mouth, which is often furnished with filaments, the anterior dorsal fin short, and supported by three spinous rays. They keep themselves hidden in the sand, like the fishing frog, and surprising their prey, inflict dangerous wounds with their spinous rays.

Frog Hoppers, ranked under the homopterous sub-order of insects. The name of frog hopper refers partly to the form of their body, partly to their leaping powers, which are great; this power arises from the length of their hind legs. The larva of these insects, which resembles the parent in most respects except in the want of wings, envelops itself in a froth resembling human spittle. All must have often observed this on plants.



FROG HOPPERS.

Frohlich, Abraham Emanuel, a Swiss fabulist; born in 1796. He wrote three epics on the reformers Zwingli, Ulrich von Hutten, and Calvin; a volume of "Rhymed Proverbs," and "Selected Psalms and Spiritual Songs." He died in 1865.

Frohlich, Karl Hermann, a German poet and artist; born in Stralsund, April 8, 1821. His silhouettes and figures, accompanied by verse, have delighted childhood in two continents.

Frohschammer, Jakob, a German philosopher; born in Illkosen, Bavaria, Jan. 6, 1821; was a Catholic priest when he began the series of writings which called public attention to him and cost him his pastorate. These include "Christianity and Modern (Nature) Science," in which and other works, mysticism, "otherworldiness," and the phenomena of the imagination are incorporated among the more ordinary particles of the philosophic mosaic. He died in the Kreuth, June 14, 1893.

Froissart, Jean, a French chronicler; born in Valenciennes, in Hainault, in 1337. He began at 20 to write the history of the wars of the time, and made several journeys to examine the theater of the events he was about to relate. His chronicles form a work of permanent value, because of their accurate and impartial account of im-

portant events of the 14th century. They narrate events connected with France, England, Scotland, Spain, Brittany, etc. He is said to have died in poverty at Chimay in 1400 or 1410, but the year, the place, and the circumstances of his death are all alike uncertain.

Fromentin, Eugene, a French author; born in La Rochelle, Oct. 24, 1820. He died in St. Maurice near La Rochelle, Aug. 27, 1876.

Fronde, the name of a political faction which played a conspicuous part in French history during the minority of Louis XIV., and which gave rise to the celebrated insurrectionary movement known historically as the War of the Fronde. The members of this party obtained the derisive name of Frondeurs (slingers), from the pertinacious lampoon warfare which they waged against both the powerful minister of that day, Cardinal Mazarin, and the Queen Regent, Anne of Austria. Mazarin, as a foreigner and a parvenu, enjoyed the detestation of the French people — both patrician and proletarian — and especially had incurred the opposition of the Parliament of Paris to his measures. In 1648 Mazarin ventured on the bold step of arresting two of the most popular members of the latter body, and on the next day the Parisians rose in arms, dispersed some of the royal troops sent out against them, and barricaded the approaches to the Louvre, compelling the court party to retire to St. Germain, and thus leaving Paris in the hands of the insurgents. Upon the Prince de Conde advancing to besiege the capital, the parliament called the citizens to arms, when the Prince de Conti, the Duc de Beaufort ("Le Roi des Halles," and son of Henry IV.), and numerous others of the great nobles of the kingdom, came forward to head the insurrection. The famous Cardinal de Retz also joined the movement, nor was beauty wanting, in the persons of the Duchesses de Longueville and de Montbazon, to inspire the popular cause. The Prince de Conde, too, changed sides and went over to the malcontents, with whom the court party shortly afterward patched up a treaty of peace of but brief duration. Fresh contentions arose, and Mazarin caused the arrest of Conde and Conti, two of the princes of the blood. This step on the part of the hated Italian excited a revolt in the provinces, and Marshal Turenne hastened to the rescue of the Frondeur princes, but was routed in the battle of Rethel (1650). The cardinal, however, enjoyed but a mere temporary supremacy; the parliament again agitated against him, and procured his banishment from France, leaving the Prince de Conde master of the situation. Subsequently, the contest degenerated into a war of intrigue. Some of the Frondeur leaders were influenced by the queen to desert their party, and others were bought over by the cardinal's gold. Ultimately, all parties being weary with these dissensions, the court agreed to remove Mazarin, and a general amnesty was proclaimed. Conde, who refused to be a party to these terms, now finding his cause desperate, entered the Spanish service; while Mazarin, after a time, returned to Paris, and again obtained the reins of government.

Frontaura, Carlos, a Spanish author; born in Madrid, Spain, Sept. 4, 1834.

Frontenac, Louis de Buade, Comte de, a French colonial officer, born in France in 1620. He entered the army in 1635, and at an early age became brigadier. In 1672 he was appointed governor of the French possessions in North America, to be recalled 10 years later. In 1689 he was again sent out by the king, as the only man who could rouse the despairing colonists to hope and action. During the next nine years he loosed his savage allies on the defenseless villages of New England, repulsed a British attack on Quebec, and so broke the power of the Iroquois that they were never again a terror to the colony. He died in Quebec, Nov. 28, 1698.

Froschdorf, a village in Lower Austria, rather more than 30 miles from Vienna, and not far from the frontiers of Hungary, on the right bank of the Leitha river; called by the French Frohsdorf. It is celebrated for its splendid castle, which in recent times has acquired a kind of political importance, from having been, since 1844, the residence of the Duchess d'Angouleme and the rendezvous of the elder Bourbon party. After the

death of the duchess it came into the possession of the Comte de Chambord, who greatly beautified the interior.

Frostbite, the freezing of any portion of the body by exposure to a high degree of cold. The parts of the body most exposed to the serious consequence of frostbite are those farthest from the seat of circulation, and the most exposed to a great degree of cold. These are, the toes and feet, fingers, ears, nose, and the cheeks below the eye. The effect of intense cold is, in the first place, to deaden the sensibility of the part most exposed, which it does by contracting the vessels and driving the blood from the surface; when the part, losing its healthy vitality, is unable to resist the specific influence of the surrounding cold, and quickly falls a prey to the potency of the frost, in a very short time resulting in death, or in gangrenous mortification of the member or organ, which soon after separates or falls off. To guard against the danger of frostbite, the inhabitants of very cold countries, as the Russians and Esquimaux, cover both the cartilage of the ear and the nose. The treatment of frostbite consists in coaxing back by degrees the vitality of the part; this is most prudently effected by friction, at first with snow, then with water at ordinary temperature, no warmth being applied for some time. As the coldness subsides, the painful tingling returns, then redness and heat; in a short time the latter will be above the natural standard, and if not moderated, the part will inflame, and perhaps mortify.

Frothingham, Arthur Lincoln, an American archæologist; born in Boston, Mass., June 21, 1859; was educated in Rome, Italy, and at Leipsic; lectured on archæology at Johns Hopkins University in 1882–1886; and became Professor of Archæology and the History of Art at Princeton University in 1887. He was secretary of the Archæological Institute of America in 1884; founder of the "American Journal of Archæology" in 1885; associate director of the American School of Classical Studies, Rome, in 1895–1896; and director of the American Oriental Society.

Frothingham, Nathaniel Langdon, an American clergyman; born in Boston, Mass., July 23, 1793. His writings are marked by grace and refinement; died in Boston, April 3, 1870.

Frothingham, Octavius Brooks, an American clergyman; born in Boston, Mass., Nov. 26, 1822. His radical views led to the resignation of his pastorate in the Unitarian Church, Salem, Mass. He preached in Jersey City in 1855–1859; then organized the Third Unitarian Church in New York city, where he preached very radical and advanced views till the dissolution of the Church in 1879. The remainder of his life was devoted to travel and literary pursuits, his home being in Boston. He died in Boston, Nov. 27, 1895.

Froude, James Anthony, an English historian; born in Dartington, Devonshire, England, April 23, 1818. In the beginning of the Tractarian controversy he was a close friend of Newman, and was a contributor to the "Lives of the English Saints." He took orders in the Anglican Church (1844). He has written several standard historical works. He was the successor of Edward A. Freeman in the Professorship of Modern History at Oxford. He died in London, Oct. 20, 1894.

Fructidor, the name given in October, 1793, by the French Convention to the 12th month of the republican year. It commenced on Aug. 18, and ended on Sept. 16, and was the third summer month.

Fruit, in botany, a term applied to the ripened ovary and its contents, quite regardless of their being eatable or otherwise. The most common forms of fruit are, the pomum or apple, the drupe or peach, and plum; the glans, as the acorn; the pineapple, the fruit of which is a scaly berry, surmounted by a crown of spinous leaves. This fruit may be considered one of the finest in the world. The legume, or pea; the siliqua, or pod, as in the mustard, and which differs from the legume chiefly in this, that the chamber containing the seeds is divided; the capsule, as in the poppy, larkspur, etc.; and the bacca, or common currant, gooseberry, etc. Besides these leading and distinctive forms of fruit, there are numerous minor variations in their external forms and internal structures.

Fruitarian, literally, one whose food consists exclusively of fruits and nuts, those products of the vegetable kingdom which require neither cooking nor seasoning to become edible and palatable.

Fruit Pigeon, in ornithology, a genus of pigeons which feed solely on fruit. The species inhabit the forests of India, the Moluccas, the Celebes, Australia, and the Pacific Islands. Their plumage is very brilliant; green, yellow, and purple are the prevailing colors.

Frustum, or **Frust,** in geometry, a portion cut off from any solid figure; used specially in the expression, frustum of a cone, which means any part cut off from a cone, excepting only the vertex.

Fry, Elizabeth (Gurney), an English philanthropist and prison reformer; born in Earlham, Norfolk, England, May 21, 1780. In 1810 Mrs. Fry joined the ministry, and thenceforward devoted herself to offices of the purest benevolence and piety. Owing to her unwearied exertions, important reforms were effected in the prison systems, not only of Great Britain, but also in those of France and Germany. After years of indefatigable labor among the poor and the criminal, this estimable lady died in Ramsgate, Oct. 12, 1845.

Fry, James Barnet, an American military officer; born in Carrollton, Green co., Ill., Feb. 22, 1827; was graduted at the United States Military Academy in 1847. After serving as assistant instructor at West Point, he was assigned to the 3d Artillery, then in Mexico, where he remained till the close of the war. At the outbreak of the Civil War he was appointed to the staff of General McDowell. In 1863 he was appointed provost marshal-general of the United States, with headquarters at Washington, D. C.; and in 1864 was promoted Brigadier-General. He was brevetted Major-General in the regular army, March 13, 1865, for "faithful, meritorius, and distinguished services," and after the war served in the divisions of the Pacific, the South, the Missouri, and the Atlantic, till 1881, when he was retired. He died in Newport, R. I., July 11, 1894.

Fry, William Henry, an American composer and journalist; born in Philadelphia, Pa., in August, 1815. In 1844 he became a contributor to the "Ledger" in his native city, and in the course of the year following he brought out his opera of "Leonora." In 1846, Fry visited Europe, remaining there six years, as the correspondent of several American newspapers, and after his return in 1852 again gave his attention to music, producing several symphonies of great merit, besides composing the music to the inaugural ode for the Industrial Exhibition at New York in 1853. He subsequently became attached to the editorial staff of the New York "Tribune," and attained much popularity as a public lecturer. He died in Santa Cruz, W. I., Dec. 21, 1864.

Frye, William Pierce, an American diplomatist; born in Lewiston, Me., Sept. 2, 1831; was graduated at Bowdoin College in 1850; and was later admitted to the bar; was a Representative in Congress in 1871–1881. In the latter year he was elected to the U. S. Senate and by re-elections held his seat till death. He was president pro tem. of the Senate in 1896–1901; was a member of the American-Spanish Peace Commission in 1898, and after the death of Vice-President Hobart was again elected president pro tem. of the Senate. He was for many years a member of the Senate Committee on Foreign Relations. He died Aug. 8, 1911.

Fuchsia, so named from the discoverer, Leonard Fuchs, a German botanist. More than 50 species are known; most from the warmer parts of America, Mexico, Peru, Chile, etc., except two from New Zealand. These beautiful plants are common in gardens, conservatories, and flower pots in windows. The hybrids generated by intercrossing them now amount to some hundreds.

Fuel, any combustible substance which is used for the production of heat. In this extended sense of the term, alcohol, wax, tallow, coal-gas, oil, and other inflammable bodies which are occasionally used, especially in the chemical laboratory, as sources of heat as well as light, might be included under it. But the term

fuel is more properly limited to coal, coke, charcoal, wood, and a few other substances, which are our common sources of heat, and as such are burnt in grates, stoves, fireplaces, and furnaces. In this country, as in England, coal, from its abundance and cheapness, is the fuel commonly employed; but in other countries, as France, Germany, etc., wood is chiefly used, either in its original state or in the form of charcoal. Peat is used in Ireland.

Fuenterrabia, or **Fontarabia,** a fortified frontier and seaport town of Spain, in Biscay, province of Guipuzcoa, on a small neck of land, on the left bank of the Bidassoa, at its mouth, 20 miles W. by S. of Bayonne. The town used to be reckoned one of the keys of the kingdom, but its walls were levelled by the British troops in 1813. Fuenterrabia was taken, in 1521, by Francis I. of France, in 1719, by the Duke of Berwick.

Fuero, a Spanish term, derived from the Latin forum, which signifies a place where justice is administered; and hence, jurisdiction. From this latter sense it came, in Spain, to be transferred to collections of laws, as embraced in special charters and privileges extended to certain provinces, and forming what Americans would call a "constitution."

Fugger, the name of a rich and illustrious family of Suabia, descended from a weaver, who originally lived in the environs of Augsburg, about 1300. They were at first successful in selling clothes, but afterward extended their dealings, and became merchants, accumulating an immense fortune. Reaching the height of their affluence at the commencement of the 16th century, they rendered considerable services to the Emperors Charles V. and Maximilian, by making them large advances. These princes bestowed titles of nobility on the Fugger family, and they soon became connected with the best blood of Germany. The best known of them are the three brothers, Ulric, James, and George; and afterward Raymond and Antony, both sons of George. Ulric received for his loans to Maximilian the countship of Kirchberg, and the seigniory of Weissenhorn, which afterward remained in the possession of his family. He was a great encourager of learning. Antony and Raymond bore, to a great extent, the expenses of the expedition of Charles V. against Algeria, obtaining from him the permission to coin money. One day, at an interview with the emperor, Antony, as a mark of his regard and esteem, threw into the fire all the title-deeds and securities which Charles had deposited with him. Several of this family still exist, and Augsburg owes its position on the Continent, as a financial center, to the energy and talent of the Fuggers.

Fugger, Otto Heinrich, Count of, a Bavarian-Spanish general; born in 1592. He led troops at his own cost against the Bohemian rebels; in 1624 fought at Breda; in 1632 was with Tilly in Franconia; then commanded in Suabia; in 1634 assisted at the conquest of Regensburg and the victory at Nordlingen; in 1635 took Augsburg, removing the Lutheran senate and installing a Catholic one; while serving under Montecuculi as imperial general-master of ordnance against the Turks, he fell at St. Gotthardt, Aug. 1, 1664.

Fugitive, in law. As one State cannot pursue those who violate its laws into the territories of another, the practice prevails among the more enlightened nations of mutually surrendering such fugitives to the justice of the injured State. This practice is founded on national comity and convenience, or on express compact. The United States recognize the obligation only when it is created by express agreement. As between the States of the American Union, extradition is made compulsory by the Federal Constitution. In the several States there are statutory provisions or established usages regulating the procedure in such cases.

Fugitive Slave Law, a law which was enacted by the Congress of the United States in 1850. By its provisions a slave escaping from his master into another State was to be seized and restored to his owner, and any person aiding in his flight was to be deemed guilty of having committed a penal offense. The most noted case arising during this exciting period of national history was that of Dred Scott.

Fulda, Ludwig, a German dramatist; born in Frankfort-on-the-Main, July 15, 1862. His special gifts are an easy mastery of the resources of language and of poetical technique, and a lively wit ever conscious of a serious purpose.

Fulgora, in entomology, lantern fly, has a large head, much prolonged in front, and was said by Madame Merian to shine with a phosphorescent light. The fact has since been disputed. It is a native of Surinam. Another species is from China.

Fuller, Anna, an American novelist; born in Cambridge, Mass., Nov. 9, 1853.

Fuller, Henry Blake, an American author; born, of New England blood, in Chicago, Jan. 9, 1857. He has written stories of Chicago life.

Fuller, Hiram, an American journalist; born in Plymouth co., Mass., about 1815. Together with N. P. Willis and George P. Morris he published the "New Mirror." The three subsequently established the "Daily Mirror," which Mr. Fuller edited for 14 years. He lived several years in London and Paris, and died in 1880.

Fuller, Margaret. See OSSOLI.

Fuller, Melville Weston, an American jurist; born in Augusta, Me., Feb. 11, 1833; was graduated at Bowdoin College in 1853; admitted to the bar in 1855; settled in Chicago, Ill., in 1856, and practised there till 1888, when he was appointed by President Cleveland to be Chief Justice of the United States Supreme Court, which office he held until his death, July 4, 1910.

Fuller, Thomas, an English historian; born in June, 1608. He was a presbyter of the Established Church and a prebendary of Salisbury Cathedral. He was a voluminous writer. The one work for which he is now esteemed is "The Worthies of England" (folio, 1662), which is full of biographical anecdote and acute observations on men and manners. He died in London, England, Aug. 16, 1661.

Fullerton, Lady Georgiana, an English novelist, daughter of the 1st Earl Granville and wife of Alexander Fullerton; born in Tixall Hall, Staffordshire, England, Sept. 23, 1812. She died in Bournemouth, Jan. 19, 1885.

Fulling, a process by which cloth made of a felting fiber is condensed, strengthened, and thickened, with a loss of width and length.

Fulling Mill, a mill for fulling cloth.

Fulmar Petrel, a bird which inhabits the Northern seas, where it is found almost everywhere in incalculable numbers. It breeds in the Faroe Islands, Iceland, Greenland, Spitzbergen, and in Scotland in the Southern Isles of Barra and the Outer Hebrides, and particularly in the islands of St. Kilda, Borrera, and Soa. The fulmar is about the size of a large duck. The head and neck are pure white; the back and wings of a pearly gray; breast, belly, and under surface white; bill yellow; legs and toes a brownish yellow. The color of the young is a brownish gray. In St. Kilda, where they breed in incredible numbers, these birds are of the greatest value to the inhabitants. Its eggs are held in high estimation, and sought at great risk. It breeds on the faces of the highest precipices, on which every grassy shelf over a few inches in extent is covered with their nests. These are slightly excavated in the turf and lined with dry grass and withered tufts of seapink. One egg is deposited at a time, which the natives rob the nest of by descending with ropes from the summit of the cliffs. The birds, both old and young, when seized vomit a quantity of clear amber-colored oil of a disagreeable odor. This oil is one of the most valuable products of St. Kilda. The old birds have been seen to feed the young with it. The best quality is obtained from the old birds. The fulmar feeds on animal substances, chiefly fat. It flies buoyantly and rapidly, and accompanies the ships to the highest accessible latitudes, keeping an eager watch for any fatty substance thrown overboard.

Fulminate, in chemistry, a salt of fulminic acid.

Fulton, Robert, an American inventor, celebrated as being the introducer of steam navigation; born of Irish descent, in Little Britain, Lancaster co., Pa., in 1765. Early in life he manifested a taste for painting, and purposing to adopt it as a profession, he repaired to England to study under

Benjamin West. In that country, however, he became acquainted with the Duke of Bridgewater, the founder of the canal system of Great Britain, who induced Fulton to abandon art, and take to the study of mechanical science. This nobleman was at the time engaged in a scheme of steam navigation, which he imparted to Fulton. The latter visiting Birmingham was brought into communication with the celebrated James Watt, who had just succeeded in his great improvement of the steam engine, with the construction of which Fulton made himself thoroughly familiar during his stay. About this time he invented a machine for spinning flax, and another for making ropes, for which he obtained patents in England. In 1796 he published a treatise on the improvement of canal navigation. From 1797 to 1804 he resided in Paris with Mr. Joel Barlow, the American representative at the French court. During this period he invented a submarine or plunging boat, called a "Torpedo," designed to be used in naval warfare. He invited the attention of the French government to his invention, and Bonaparte, then First Consul, appointed Volney, La Place, and Monge as a commission to examine it. Several experiments were made in 1801 in the harbor of Brest. He could easily descend to any depth, or rise to the surface; and where there was no strong current, the boat was quite obedient to her helm while under water. On one occasion, he remained in the torpedo several feet below the surface for more than four hours; but the motion of the boat while submerged was very slow, and it was clearly unequal to the stemming of a strong current. The French government declined to patronize the project, and Fulton accepted an invitation from the English ministry, who also appointed a commission to test the merits of his torpedo. He appears, however, to have received but little encouragement, and in 1806 he returned to the United States. Having been supplied with the necessary funds by Robert Livingston, who had been American ambassador at Paris, Fulton had the satisfaction of proving, in 1807, that steam could be applied to the propulsion of vessels with entire success. His achievement excited universal admiration, and from that time steamboats were rapidly multiplied on the waters of the United States. His first steamboat, called "The Clermont" (of 140 feet keel and 16½ feet beam), made a progress on the Hudson of 5 miles an hour. His second large boat on the Hudson was the "Car of Neptune," and was built in 1807. He afterward built other steam vessels, one of them a frigate which bore his name. His reputation became established, and his fortune was rapidly increasing, when his patent for steam vessels was disputed, and his opponents were in a considerable degree successful. Though an amiable, social, and liberal man, the anxiety and fretfulness occasioned by the lawsuits about his patent rights, together with his enthusiasm, which led him to expose himself while directing his workmen, impaired his constitution, and he died at New York city, Feb. 24, 1815.

Fulton, Justin Dewey, an American clergyman; born in Earlville, N. Y., March 1, 1828; was graduated at the University of Rochester in 1851; held pastorates at Tremont Temple, Boston, in 1863–73, and at the Hanson Place Baptist Church, Brooklyn, in 1873–75; and founded the Centennial Baptist Church in Brooklyn. He died in Somerville, Mass., April 16, 1901.

Fumay, a small town of N. France, on the neck of territory jutting up into Belgium to the S. E. of Charleroi, and on the left bank of the Meuse, 14 miles N. of Charleville. It is picturesquely situated among wooded heights, two of which, named Dames de la Meuse (Ladies of the Meuse), overhang the river. Besides iron works, the town possesses the largest slate quarries in the Meuse valley. It suffered in the early operations of the great war. See APPENDIX; *World War.*

Funchal, the capital and seaport to the island of Madeira, in the center of a large bay on the S. coast. It is irregularly built; the streets are narrow, winding, ill-paved, and dirty. An old castle, which commands the roads, stands on the top of a steep, black rock, called Loo Rock, surrounded by the sea at high water. The entire produce of the island, consisting mostly

of wine and sweetmeats, is exported from Funchal. Pop. (1900) 20,844, among whom are many English, French, Portuguese, and mulatto and negro freedmen.

Funck - Brentano, Theophile, a French philosophical and critical writer; born in Luxembourg, Aug. 20, 1830. His thorough studies in law and medicine imparted to his philosophical writings an exactitude of thought and inspired a special stress on method. As a critic he was esteemed for the careful elaboration of his thought. He died in 1906.

Function, in physiology, the proper office of any organ in the animal or vegetable economy.

Fundy, Bay of, a large inlet of the Atlantic, on the E. coast of Canada, separating the S. part of the peninsula of Nova Scotia from New Brunswick, extending 100 miles S. W. to N. E., and about 30 miles average breadth. The bay receives the waters of the St. John, the St. Croix, and numerous other rivers. The bay is deep, but its navigation is dangerous. At its entrance are Grand Manan and other islands. The tides sometimes rise to the height of 70 feet. A ship railway has been constructed across the narrow Chignecto isthmus to connect this bay with Northumberland strait and the Gulf of St. Lawrence.

Funen, an island of the Danish archipelago, separated from Jutland by the strait called Little Belt; area, 1,123 square miles; pop. 252,288.

Funeral Rites. Religious dogmas combine with physical circumstances to decide the character of the last tribute of friendship and love paid to the remains of the dead.

Among the Hindus the corpse is perfumed and adorned with flowers; it is then burned; after many ceremonies the bones are deposited in a casket and buried, but afterward disinterred and thrown into the Ganges. The Mohammedans bury their dead. The interment takes place as soon as possible, in obedience to the command of the prophet. No signs of excessive grief, no tears nor lamentations are allowed. The Egyptians, it is well known, embalmed their dead. Among the Jews the next of kin closed the eyes of the deceased; the corpse was then washed, and laid for a time in spices or anointed with spices, swathed in linen bandages, and deposited in the tomb. In the religious creed of the Greeks and Romans sepulture was an act of piety to the dead; without it the spirit had to wander 100 years on the banks of the gloomy Styx. The last breath was generally caught by a near relative, who opened his mouth to receive it; the body was washed and crowned with flowers, a cake of flour and honey placed in the hand, as a bribe for Cerberus, and an obolus in the mouth, as a fee for Charon. Interment and burning were practised indifferently.

In the Roman Catholic Church the body is washed immediately after death, a crucifix is placed in the hands, and a vessel of holy water at the feet, with which the visitants sprinkle it. The ecclesiastics remain with it till the interment, offering up prayers. When the time of burial arrives the priest bearing the crucifix stands at the head, and the officiating priest at the foot of the coffin. The coffin is sprinkled thrice with holy water, and the "De profundis" and "Miserere" are chanted. The body is carried to the church, during which time psalms are chanted, especially the "Miserere," and, at the close of each, a requiem. In the church the office of the dead is performed and the mass is celebrated. In conclusion the body is thrice censed and sprinkled with holy water. At the grave a prayer and benediction are pronounced and the body and grave are thrice censed and sprinkled with holy water. The anthem "Ego sum Resurrectio" then commences, during which the body is again thrice sprinkled. A prayer, followed by an anthem, "Si iniquitates" and "De profundis," succeeds; and the body with the feet toward the E., is lowered into the grave, each of the mourners, before it is covered, sprinkling it in turn. The dead are commemorated on the third, seventh, and twentieth day after interment, and on their anniversaries. Among Protestant bodies there is usually no formal service, but prayer is offered up or an ordinary religious service held before the interment in the house of the deceased or his relative, or, in the case of a public funeral, in some public place. The wake, or watching, is celebrated in some parts

of Great Britain, particularly in the remoter districts. In North Wales the "myl nos" is kept with solemnity. The friends bring a picnic supper and pass the night before the funeral in singing psalms and reading the Scriptures. In Ireland the wake of the lower classes is usually a scene of tumult and drunkenness.

Funeral Sacrifice, the slaying of men or animals to accompany the soul of an eminent person to the world of spirits—the former to give him what assistance he needs, the latter to supply him with food. It was an early and a widespread custom.

Fünfkirchen, or **Pecs,** capital of Baranya Co., Hungary, and an important military town, on the southern foothills of the Meczek Mountains, 248 miles S. E. of Vienna. It was the Roman Colonia Serbinium; was occupied by Turks (1543-1868); and derives its name from 5 mosques, 3 of which exist as Christian Churches. The 12th century Roman Catholic cathedral is the chief building; the see dates from 1009. The town has a large trade. Pop. (1910) 49,822.

Fungi, an extensive group of myptogamic plants, including mushrooms, toadstools, rusts, smuts, and mildews. With the Algæ (seaweed, etc.) they form the great subdivision of the vegetable kingdom known as Thallophyta, but, unlike the Algæ, they are all parasites or saprophytes without chlorophyll. Lichens, formed by the symbiotic union of algæ and fungi, are also included among thallophytes. Fungi are found all over the globe, but are most numerous in moist temperate climates. Decaying vegetation is what they most live on, but animals are also subject to their ravages, though such cases are comparatively rare. Even man himself does not escape, as certain cutaneous disorders are occasioned by fungous growths. They attack the housekeeper's bread, cheese, vinegar, paste, yeast, preserves, and mustard, the farmer's corn and potatoes, the vintager's grapes, the gardener's berries, and the joiner's timber; while a host of forms prey on the living tissues of plants, scarce any of which are free from their depredations and many of which are assailed by a dozen different species at once. Fungi are ot purely cellular growth. They form no woody fibre like flowering plants, nor do their tissues contain chlorophyll. They consist of mere aggregations of homogeneous cells. Though many become corky, woody, and horny in the course of their growth they have no other identity with true wood than that of density and weight, and possess none of the complex structure of flowering plants. They exhibit a wonderful variety of external forms; but the composition of them all is the same—an aggregation of simple cells. Their earliest vegetation is a prolongation of the membranes of their spores, a name given to their reproductive seminal dust, which though performing the office of seeds, differ from true seeds in being mere individual cells. From these arises a delicate, minute, webby growth, called the mycelium, which is the true vegetation of the plant, and which gives rise to the reproductive bodies at once, or builds up a receptacle which contains them. It is this mycelium which penetrates and destroys the the object on which it is parasitic. It is made up of radiating and intertwining fibers formed of rows of cells placed end to end. These are in many instances so minute that they easily traverse the tissues of living plants and the pores of solid wood. From this mycelium grow the spores, which, in their simplest form, consist of the terminal cell or cells, which drop off to form new plants. They are of the extremest minuteness, a quantity of them appearing to the naked eye like a mere cloud of impalpable powder. Ten millions have been estimated to exist in a single individual.

Few objects in nature exhibit more gorgeous colors than the fungi. The larger fleshy forms present an endless variety of graduated tints. Some of the Boleti exhibit on being broken a remarkable change or color, the white or yellowish hue of the interior changing instantly to a vivid blue. Their texture is as variable as their color. Some are almost fluid, others fleshy, papery, leathery, corky, or hard and horny. Their size is equally various, ranging from mere specks to masses some feet in girth. Their rapid growth is astonishing. Puff balls sometimes grow 6 inches in diameter in a night. Masses of paper pulp thrown out hot

from a vat have been found within 24 hours filled and swollen with a species of Agaricus. Some of the Coprini grow up in a night and melt away in the morning. Other species, like the Polypori, grow slowly, and add a new layer every year, covering that of the previous season. Their expansive force in growing is very great. Notwithstanding their soft yielding texture, agarics are able to raise heavy stones under which they spring up; and Bulliard tells of a Phallus which burst a glass vessel in which it had been confined. They generally appear in the greatest abundance in moist autumn weather, though some are found wherever there is moisture. Some species of Agaricus possess a remarkable luminosity, and certain Rhizomorphæ growing in mines shed a phosphorescent light of extreme brilliancy. Fungi differ from flowering plants in their chemical influence upon the air. They absorb oxygen and exhale carbonic acid, performing the same office in this respect as animals, which they most resemble in chemical composition. The odors they emit in decay are more like putrescent animal than vegetable matter. Some species of Phallus and Clathrus emit a most intolerably offensive stench. Others, on the contrary, are very agreeable to the smell, and some in drying acquire a fine aroma. They are quite as variable to the taste.

Fungi are a very ancient article of food, and they are extensively eaten on the European Continent by all classes. Among Anglo-Saxons they are rejected by the masses, with the exception of a very few species. The species commonly cultivated, the mushroom proper, is the Agaricus campestris which grows wild in old fields and pastures, but is propagated by planting its spawn which is the mycelium of the plant, in hotbeds. Though this is the most widely used, many other species are equally excellent. The truffle (Tuber cibarium) grows beneath the ground, and is eaten with avidity by different animals. Dogs are trained to scent it out by those who collect truffles for market. Many species known to be at times poisonous are eaten in different countries in different ways. They are dried, pickled, salted, and cooked in an endless variety of fashions. Some of the most virulent poisons are found among fungi, and many fatal accidents have arisen from the eating of poisonous species. Rye meal containing large quantities of ergot produces a fatal gangrenous disease. Pickling and salting render many innocuous. Agarcus muscarius or fly mushroom is one of the most injurious; yet it is used as a means of intoxication by the natives of Kamchatka. The only fungus used at the present day in medicine is the ergot of rye. The Lycoperdons or puff balls have been used as styptics. Some Polypori make admirable razor strops when sliced with a sharp knife. Polyporus fomentarius and igniarius furnish amadou or German tinder. Agaricus muscarius is used as fly poison. Some fungi are among the greatest pests of the cultivator. The rusts, smuts, and bunt of grain are fungi of the families. Dryrot in timber is caused by a fungus. The exact classification of fungi is not yet settled, but generally they are divided into six principal orders, all formed on the mode in which the spores are borne, namely:—1. Ascomycetes, comprising a vast number of the black pustalar growths abundant on dead wood, bark, twigs, leaves, etc. Among these are the mildews (Erysiphe), the black mildews (Capnodium), and the whole great tribe of Sphæriæ. The truffles (Tuber), morels (Morchella), and Helvellæ also belong to this division. 2. Physomycetes, a small group comprising the true moulds. 3. Hyphomycetes, including the great host of minute moulds which cover almost every substance exposed to dampness. To it also belong the mould of the potato-rot (Botrytis infestans) and many which induce decay in fruit (Oidium), the bread and cheese moulds (Penicillium, Aspergillus), and the yeast and vinegar plants, which are submerged mycelia of Penicillium. 4. Coniomycetes, comprehending the whole family of rusts, smuts, and bunts (Puccinea, Uredo, Ustilago, Tilletia, Æcidium, etc. 5. Gasteromycetes, including the whole tribe of puff-balls, as well as the subterranean fungi which look like truffles, but are dusty and smutty within. 6. Hymenomycetes, typical and well-known examples of which are found in the mushrooms and sap-balls.

Funk, Isaac Kauffman, clergyman, editor, and publisher; born at Clifton, O., Sept. 10, 1839; graduated at Wittenberg College; filled several pastorates, founded and edited "The Metropolitan Pulpit," later "The Homiletic Review," in 1876; and became president of Funk & Wagnalls publishing house, and the moving spirit in the production of "The Standard Dictionary;" "The Jewish Encyclopedia;" "The Literary Digest;" etc. He died April 4, 1912.

Funston, Frederick, an American military officer; born at New Carlisle, O., Nov. 9, 1865; studied at the Kansas State University, and as reporter, explorer and botanist, was connected with the U. S. Department of Agriculture, in California and Alaska. He joined the insurgents in Cuba in 1896, and after over a year's adventurous service returned to Kansas, where he was commissioned Lieut.-Col. of the 20th Kansas Volunteers. With them he went to the Philippines, and for a series of daring exploits, including swimming the Bagbag River under a heavy fire, and carrying a rope to establish a ferry, he was made a Brigadier-General U. S. V. After his strategic and brilliant capture of Aguinaldo, he returned to the United States; was commissioned Brigadier-General, U. S. A., April 1, 1901; and subsequently was on duty in California, the Philippines, Hawaii, and Mexico, commanding the expedition to Vera Cruz in April, 1914. He was promoted Major-General, Nov. 17, 1914, and given command of the U. S. forces on the Mexican border and the operations in Mexico for the capture of Villa in 1916. He died Feb. 19, 1917.

Fur, the coated skins of wild animals, especially of those of high N. latitudes; such as the wolf, bear, beaver, etc. For wearing, the hair or fur is cleansed, and the skin is generally slightly tanned. See FURS.

Furies, in classical mythology, the three daughters of Nox and Achero, or of Pluto and Proserpine, also called the Eumenides. Sometimes they were represented young and beautiful, with or without serpents twining about their heads. These avenging deities of the ancients were called Alecto, Megara, and Tisiphone, to which some add Nemesis. They were supposed to be the ministers of the gods, to execute their irrevocable decrees; hence their stern aspect and inexorable will. Their sphere of action was consequently both in the infernal regions to punish condemned souls, and on the earth, to rack the guilty conscience and chastise by mental torments. The most usual mode of typifying the Furies was by giving them a grim and frightful aspect, black and bloody garments, serpents, instead of hair, twining round their heads, with a burning torch in one hand and a whip of scorpions in the other.

Furman, Richard, an American Revolutionary patriot; born in New York in 1755; preached in Baptist churches in South Carolina; was pastor at Statesburg, S. C., and president of the first Baptist convention of the United States in 1814. He died in 1825.

Furnes, an old-fashioned town of West Flanders, Belgium, 3 miles from the coast, 4 miles from the French border, 16 miles S. W. of Ostend; is noted for its spectacular pageant depicting the twelve events in the life of Christ, which has been kept annually since 1650. It has an extensive trade in field crops and dairy products. The town has frequently experienced the horrors of war. Pop. about 7,000. See APPENDIX; *World War.*

Furness, Horace Howard, an American Shakespearean scholar and editor; son of William H.; born in Philadelphia, Pa., Nov. 2, 1833; was graduated at Harvard in 1854; studied law, and was admitted to the bar in 1859. The honorary degree of Ph. D. was conferred on him by the University of Göttingen in recognition of his services to Shakespearean literature. He was the editor of the exhaustive "New Variorum Edition" of Shakespeare, the volumes of which began in 1871. He died Aug. 13, 1912.

Furness, William Henry, an American clergyman and author; born in Boston, Mass., April 20, 1802. He was educated at Harvard; studied theology at Cambridge, Mass., and was pastor of the First Unitarian Church in Philadelphia in 1825–1875. He died there Jan. 30, 1896.

Furniture. The various movable appliances or articles in the interior of a house.

Among the European States from A. D. 500 to 1500, the ecclesiastical style prevailed in furniture as in every other species of art, attaining its greatest eminence in the decorated Gothic of the 14th century. Articles of furniture previous to 1500 are very rare. The illuminations of MSS. supply more abundant details. For three centuries after the Conquest domestic furniture was very scanty. The hall was furnished with tables and benches, the furniture of a bedroom consisted of little more than a bed and a chest. The floors were usually of wood, strewed with rushes or something similar. Chairs were large and cumbrous, and were usually fixtures; wooden forms, sometimes with back rails, being placed against the walls. Carpets were first introduced in England by Eleanor of Castile, wife of Edward I., but were not generally used till the the 15th century. The furniture of the dining room was very limited. Boards on trestles were in general use as tables; the huge salt cellar was the chief ornament of the board. At royal and noble tables silver goblets, plates, and dishes were seen, but in ordinary houses wooden bowls and trenchers only were used. Earthenware, though made in the form of pitchers and jugs, does not seem to have been applied to the fabrication of plates and dishes. In the 14th and 15th centuries remarkable progress was made and a considerable degree of splendor in furniture was attained. Defense began to be not the only object studied in the construction of buildings. The apartments expanded in height and were hung with the newly invented tapestry of the Netherlands (the workshop and exchange of mediæval Europe), called "Arras" from the place of its origin. The Gothic paneling of tne carved bedsteads, chairs, screens, etc., was dazzling with scarlet, blue, and gold, and costly embroidered hangings and curtains heavy with heraldic symbolism, cabinets, reading-desks, prie-dieus, ivory and enameled coffers, fire dogs or andirons elaborately chased and gilded, began to appear, all harmonized to a rich glow of color by the gemmed and jeweled light that stole through the mullions of the storied windows of "bower and hall."

The progress of this decorative style was suddenly arrested by the "Renaissance," or revival of ancient classical art and literature, of which Italy was the earliest seat, and from whence the impulse was given that communicated itself speedily to the rest of Europe. A genuine and self-evolved style instantly went out of fashion, and was discarded for an imitation and counterfeit one based on the copying of understood classic models which were applied without consideration to the most incongruous objects. The classical temple was the dominant idea in the manufacture of furniture as well as in the construction of a palace or a cathedral, and columns were considered as necessary in one species of art as in the other. All the architectural details of Roman buildings were then applied to furniture; the lions, griffins, chimeras, etc., of the temple frieze encumbered the stately pillars of the Italian palaces, and caryatides and Roman trophies replaced the patron saint and the crucifix. With all its absurdities, it must be noted that this style was in the hands of great men, and their productions display a boldness and vigor of line, and a mastery over human and animal forms that give dignity to a licentious freedom of design in which all appropriateness is forgotten. Specimens of the Renaissance are still met with, though daily increasing in value. Gothic art never recovered its lost ground.

Various articles now of daily use were introduced about this time. Chamber clocks began to be part of the usual furniture of a room. The famous one of silver gilt designed by Holbein and presented by Henry VIII. to Anne Boleyn, was purchased by the queen for £110, at the sale of Horace Walpole's effects at Strawberry Hill in 1842, and is now at Windsor. The oldest clock that is supposed to go tolerably now in England is at Hampton Court, of the date of 1540. Looking glasses or mirrors were now made in Italy, to be suspended on the walls of rooms, and were among the most costly articles of furniture. A little later musical instruments, both a species of hand organ and the virginals, the earliest form of the modern harpsichord, appear. With various modifications the Renaissance style continued dominant for nearly two centuries. In England

it degenerated into positive ugliness, the furniture of the time of Elizabeth and James I. having very little to recommend it in tasteful design. It is distinguished by a mixture of overwrought heavy moulding, combined with thin spindly columns, twisted legs, and other inelegant characteristics. The United States have long taken the lead in the manufacture of fine furniture of all kinds and every European style is successfully imitated here.

Furnivall, Frederick James, an English historian of literature; born in Egham, Surrey, England, Feb. 4, 1825. A lawyer by profession, he became a socialist and reformer, and a student of debatable literary problems. He died July 2, 1910.

Furs. Under the name of furs may be included the skins of almost all those animals which, for the sake of protection against cold, have for a covering an under layer of soft woolly, or downy texture, through which grows in most instances an upper one of a more bristly or hairy nature; some by nature possess more of the under coat, and others more of the upper, the proportion varying considerably in different animals and countries. In winter the fur becomes thicker in its growth, thereby improving the quality and value for commercial purposes; young animals too possess thicker coats than full-grown ones. In some instances the under-fur alone is used in manufacturing, while the upper hairs are removed as in the fur-seal.

The more general use of furs in all civilized countries has made the fur trade of the present day of even greater importance than in those flourishing days when the fur traders were the chief pioneers of the North American continent; the quantities of many fur-bearing animals have vastly increased, especially of those rather small mammals which seem to thrive and breed quickly in the proximity of settlements; the larger ones, on the other hand, such as bears, beavers, etc. will in course of time, if not protected, become generally reduced in numbers, a fate which has overtaken the buffalo or North American bison.

The chief supply of furs is obtained from Siberia and the N. parts of North America, and, as these tracts are for the greater part of the year frostbound, the fur-bearing animals enjoy a comparatively unmolested life; the fur, therefore grows thickly during the winter season, and is in its best condition when the animal is trapped in the spring; large quantities also of the smaller sorts are found in the United States; Europe produces immense numbers of common furs, such as rabbits, hares, foxes, etc., besides the more valuable stone and baum (tree) martens, though the larger animals have almost disappeared as the countries have become more and more cleared and inhabited; South America yields nutrias and chinchillas; while Australia exports rabbits, opossums, and kangaroos, and Africa monkey and leopard skins. Nearly all fur-skins are brought to the market in the raw or undressed state.

The two leading companies are the Hudson Bay Company, established in 1670, and the Alaska Commercial Company in 1870; the American Fur Company of New York, the Northwest Company, and the Russo-American Company of Moscow once held important positions, but they have long since been broken up or amalgamated. The furs of the two first-named companies, together with large quantities consigned from numerous private traders, are annually offered in London for public auction in January and March, with a smaller sale in June; periodical sales during the year are held besides of Australian, African, and other fur skins. Many important fairs take place in Europe and Asia, of which the chief are at Leipsic in Germany (at Easter and Michaelmas), Nijni Novgorod and Irbit in Russia, and smaller ones at Frankfort (Germany), Ishim and Kiakhta (both in Siberia).

The usual mode of dressing furs is by steeping them in liquor for a short time, after which the pelts are "fleshed" over a sharp knife (to get rid of the excess of fat, etc.), and subsequently dried off; they are next trodden by the feet in tubs of warm sawdust and common butter, by which means the pelt or leather is rendered supple; the skin is finished in dry sawdust, and beaten out. Certain furs, such as beaver (now to a limited extent), nutria, hare, and rabbit, are

used in the manufacture of hats and other felted fabrics, for which purposes the under-fur alone is retained; it is cut off from the pelt, separated from the upper hair, and felted together by means of various machinery.

Furst, Julius, a Polish Orientalist; born in Zerkovo, Posen, May 12, 1805. His origin was Jewish. He obtained a marvelous mastery of the rabbinical literature, utilized in his great "History of Jewish General and Literary Culture in Asia," and "History of Biblical Literature and of Hellenico-Judaic Letters" (1867–1870), etc. He suffered many attacks from critics. Died in Leipsic, Feb. 9, 1873.

Furst, Walter, one of the founders of Swiss freedom and independence. Heading some brave men, he took and destroyed some forts belonging to the Austrians; which was the first step, in 1307, to the restoration of Switzerland as an independent nation. He was a fellow patriot of William Tell.

Fuse (a shortened form of fusee), a tube or casing filled with combustible material, and used for igniting a charge in a mine or a hollow projectile. The invention was undoubtedly contemporaneous with that of hollow projectiles.

Fusel Oil, an oily product formed during the fermentation of potatoes, corn, and the juice of grapes. This is separated in the rectification of the spirit, occurring in the last part of the distillate as an acrid, oily liquid, having a peculiar odor and burning taste; it is poisonous, producing headache and nervous depression.

Fusion, in ordinary language, the act of fusing, melting, or rendering liquid by means of heat; or the state of being melted or liquefied by means of heat. In politics, the term is used of the union of opposing parties for a common end. If a ticket should contain the names of members of two political parties with a view of securing for that ticket enough votes to defeat a nominee of a third party at an election, that would be a "fusion ticket."

Fust, see FAUST.

Fustel de Coulanges, Numa, Denis, a French historian; born in Paris, March 18, 1830; died in Paris, Sept. 12, 1889.

Fustian, a species of cotton cloth somewhat similar in manufacture to velvet, having, in addition to the warp and weft, a species of pile, consisting of other threads doubled together, which are thrown up in ridges and conceal the original warp and weft, which are the groundwork of the fabric.

Fustic, a name given to certain yellow woods employed in dyeing.

Future Life, a life to succeed this one; a life beyond the tomb.

Ethnic Faiths.—The belief in a future life is very widely spread, many observers who have denied that it is entertained among certain tribes indirectly confuting themselves by the facts which they put on record. In its early form no distinction is drawn between the souls of men and brutes; for both another state of existence is reserved. In the lowest form of Animism, a figure of a deceased friend appearing to a survivor in a dream is supposed to be the actual soul of the person dead, whence faith in another state of existence becomes natural and easy. Two distinct forms of belief now diverge, the one leading in the direction of the transmigration of souls, the other maintaining the independent existence of the personal soul after the death of the body. Among the lower races, the moral element in the doctrine of a future life is almost wholly wanting.

Judaism.—There are but few allusions to a future life in the Old Testament. The most notable one is, "And many of them that sleep in the dust of the earth shall awake, some to everlasting life, and some to shame and everlasting contempt. And they that be wise shall shine as the brightness of the firmament; and they that turn many to righteousness as the stars forever and ever" (Dan. xii: 2, 3), in which the doctrine seems to be not simply the immortality of the soul, but the resurrection of the body.

Christianity.—"Jesus Christ," says St. Paul, "hath abolished death, and hath brought life and immortality to light through the gospel" (II Tim. i: 10). The doctrine in this case is not merely that of the immortality of the soul, not transmigrated, but retaining its separate individuality. There is super-added to this the resurrection and transformation of the body. The

moral element in the doctrine of a future life is here all in all.

Fyffe, Charles Alan, an English historian; born in Blackheath, Kent, England, in December, 1845; was graduated at Oxford in 1868; and was called to the bar in 1876, but never practised. As correspondent of the "Daily News" during the Franco-Prussian War he is said to have sent to that journal the first account of the battle of Sedan that appeared in print. On account of a false charge, he became depressed and committed suicide. His historical works are distinguished by accuracy and a pleasing, perspicuous style. He died Feb. 19, 1892.

Fylfot, this symbol, like the cross of which it is in all probability a modification, is confined to no one religion, but is common to the great majority. In India the well-known sign of the fylfot is the Swastika of the Buddhists; in Greece we find it as stamped on coins and painted on urns; on the breast of an Etruscan sphinx it assumes a shape like the arms of Man, with a fourth leg added; four different forms of it are found on as many cinerary urns discovered under a bed of volcanic tufa on the Alban Mount; again we meet with it as the cruciform hammer of Thor, and sculptured on Runic monuments. In some of its forms it resembles the crux ansata of the Egyptians, and it was in use among the early inhabitants of South America. When the fylfot occurs in Asia Minor, Greece, Etruria, or Latium, it is probably connected with some system of phallic worship; but it has not, in all cases, a religious significance. Greenwell, speaking of pottery ornamented with crosses found in British barrows, considers this pattern to be the natural result of dividing a given space into four equal parts, though in one case, he says, the marking "almost assumes the form of the fylfot." Dawkins ("Early Man in Britain") figures pottery marked with this emblem, and says of the pottery of the late Bronze Age in France, that "sometimes it is ornamented . . . with the mystic fylfot."

G

G, the seventh letter in the English alphabet.

Gaal (Hebrew, contempt), son of Ebed (Judges ix: 26–41), perhaps a descendant of Hamor, the father of Shechem (Gen. xxxiv: 2–6). He joined the Shechemites when revolting against Abimelech, son of Gideon, inflamed their passions, and led them to battle, but was defeated and excluded from the city.

Gabbatha (Hebrew, high or elevated), the name of a place in front of Pilate's palace, whence he pronounced sentence against Jesus Christ (John xix: 13). It was not the usual judgment hall, which the Jews could not enter, but some place in the vicinity of the palace.

Gabelentz, Hans Conon von der, a German philologist; born in Altenburg, Germany, Oct. 13, 1807. Gabelentz knew upward of 80 languages. He died Sept. 3, 1874. His son, Hans Georg Conon, born in 1840, held the chair of Eastern Asiatic Tongues in Leipsic University, and wrote many books on Chinese, Melanesian, Basque, Berber, etc. He died in Berlin, Dec. 11, 1893.

Gabelle, in France, a term originally applied to any tax or impost laid on commodities, but which afterward came to be specially applied to a duty on salt. This salt tax was first established toward the end of the 13th century, in the reign of Philip IV. It was finally abolished in 1789.

Gabelsberger, Franz Xavier, the inventor of the system of shorthand most used in German-speaking countries; born in Munich, Bavaria, Feb. 9, 1789. He acted as ministerial secretary in the statistical office of the Bavarian finance department from 1826 till his death. The summoning of a parliament for Bavaria in 1819 led Gabelsberger to adapt the shorthand system which he had invented for his own private use to the purpose of reporting the proceedings of the parliament. His system is now used for reporting parliamentary proceedings in most of the countries in which German is the official language; and it has also been adapted to the languages of several countries outside of Germany. He died Jan. 4, 1849.

Gaberlunzie, an old Scotch term for a beggar, from his wallet.

Gabion, in fortification, a cylindrical basket, left open at the top and bottom, and used for revetting the interior slopes of a battery and other field works. It is 3 feet in height, 2 feet in diameter, and weighs 40 pounds. The wicker gabion is the most useful for battery purposes, being far superior to one of iron.

Gaboon, a French colony on the W. coast of Africa between the Atlantic and the middle Kongo. Its area is estimated at 173,700 square miles. The interior has not yet been fully explored; certain parts are fertile and rich in natural resources. Among the exports figure timber, gum, ivory, gutta-percha, palm oil and kernels, earth nuts, sesamum, and malachite; other products are brown hematite, quicksilver, sugar cane, cotton, and bananas. All agricultural operations are performed by the women. The coast tribes engage in trade, which is particularly active around Loango in the S. W. and on the Gaboon. Administratively the Gaboon districts belong to the colony of Senegambia.

Gaboriau, Emile, a French writer of detective stories; born in Saujon, Charente-Inferieure, France, Nov. 9.

1835. His early years were a succession of vicissitudes; the army, the law, and even the Church, were in turn the objects of his inconstant attentions till at last he wrote his way to fame and fortune in 1866. He died in Paris, Sept. 28, 1873.

Gabriac, Paul Joseph de Cadoine, Marquis de, a French diplomatist; born in Heidelberg, Baden, March 1, 1792; was consul-general in New York in 1812–1814; appointed minister to Stockholm in 1823; and minister to Brazil in 1826. While in Brazil he induced all the other States in South America to adopt the French maritime law. He was created a peer in 1841, and made a senator in 1853. He died in Paris, June 12, 1865.

Gabriel (hero or man of God), in Biblical history, the angel who announced to Zacharias the birth of John, and to Mary the birth of the Saviour. In Jewish mythology he is one of the seven archangels.

Gabrielle d'Estrees, the daughter of Antoine d'Estrees, 40 years grand-master of artillery in France; born in 1571. Henry IV., visiting her father's chateau in 1590 fell in love with her, and she became his mistress, retaining his affection for many years, and enjoying the honors though not the title of queen. She received the title of Duchess of Beaufort. At Easter, 1599, Gabrielle was sent to Paris, the king observing the Easter ceremonies at Fontainebleau. She there died suddenly April 10, 1599; it has been suspected that she was poisoned.

Gachard, Louis Prosper, a writer on Belgian history; born in Paris, France, March 12, 1800. He died in Brussels, Dec. 24, 1885.

Gad, the seventh son of Jacob by Zilpah, the handmaid of Leah, and founder of an Israelitish tribe numbering at the exodus from Egypt over 40,000 fighting men. Nomadic by nature, and possessing large herds of cattle, they preferred to remain on the E. side of Jordan, and were reluctantly allowed to do so by Joshua on condition of assisting their countrymen in the conquest and subjugation of Canaan. The men of Gad were a stalwart fighting race — 11 of its heroes joined David at his greatest need.

Gadames, or **Ghadames** (the Cydamus of the Romans), the name of an oasis and town of Africa, situated on the N. border of the Sahara. The entire oasis is surrounded by a wall, which protects it from the sands of the desert. The streets are narrow and dark, being covered in to shield them from the sun's rays. The town is the entrepot for manufactures and foreign goods from Tripoli to the interior.

Gadfly, one who is always gadding about for pleasure; a seeker after gaiety. In entomology, a name given to certain two-winged flies. Their mouth has six bristles, which constitute a formidable proboscis or sucker, with which they suck the blood of cattle or of man. Also a name sometimes given to flies which attack cattle and horses, but not man. These give the horse the "bots," but they differ from what are commonly called "horse flies."

Gadhelic, of or pertaining to that branch of the Celtic race which includes the Gaels of Scotland, the Erse of Ireland, and the Manx of the Isle of Man, as distinguished from the Cymric branch, which includes the Welsh, Bretons, and Cornish.

Gadsden, Christopher, an American patriot; born in Charleston, S. C., in 1724; was educated in England; returned to the United States in 1741 and later engaged in business in Philadelphia; was a member of the first Colonial Congress which convened in New York in October, 1765; was also a member of the first Continental Congress which assembled in Philadelphia in 1774. He joined the American army as colonel at the beginning of the Revolution; was promoted Brigadier-General in September, 1776; was a prisoner for 42 weeks in Fort Augustine; and was elected governor of South Carolina in 1782, but refused to serve, owing to old age. He died in Charleston, S. C., Aug. 28, 1805.

Gadsden, James, an American diplomatist; born in Charleston, S. C., May 15, 1788; was graduated at Yale College in 1806; served with distinction in the War of 1812; and afterward took part in the campaign against the Seminole Indians. He was appointed minister to Mexico in 1853, and on Dec. 30 of that year negotiat-

ed the Gadsden Purchase which fixed a new boundary between Mexico and the United States. He died in Charleston, S. C., Dec. 25, 1858.

Gadsden Purchase, a treaty negotiated Dec. 30, 1853, by James Gadsden, by which a tract of 45,000 square miles, now included in the S. part of Arizona and New Mexico, was purchased by the United States from Mexico for the sum of $10,000,000.

Gadshill, a hill 3 miles N. W. of Rochester, England, on the road to Gravesend. It is commemorated in Shakespeare's play "Henry IV.," as the place where Falstaff had his encounter with the robbers and an inn at the place is called Falstaff's Inn. It is interesting in modern times for Gadshill Place, opposite the hill, which was long the residence of Charles Dickens and was the home in which he died.

Gadwall, or **Gadwell,** a large duck, called also the gray. It is of variegated color. It inhabits the marshes of this country and also in the N. and E. of Europe.

Gael, the name of a branch of the Celts inhabiting the Highlands of Scotland, Ireland, and the Isle of Man.

Gaelic, or Erse, Language and Literature. The language spoken by the Highlanders of Scotland is termed by them the Gaelic; but the name frequently given to it by the Lowlanders is Erse, or Ersh, evidently a corruption of Irish. It is a dialect of that great branch of the Celtic languages termed the Gwyddelian or Gaelic, and to which belong also the Irish and Manx, or that spoken in the Isle of Man. At the time of the Roman invasion, Celtic was the language generally spoken in Western Europe. The dialects of the Celtic still spoken, besides the three already mentioned, are the Welsh and the language of Brittany; while the Cornish, another dialect, though not now spoken, is preserved in books. The three dialects, the Irish, the Scottish-Gaelic, and the Manx, approach each other so nearly as to form, in fact, but one language, the peculiarities which distinguish them from each other not being sufficiently broad or vital to constitute either of them a distinct language.

It was not so many years ago that Gaelic in the United States was practically an unknown language, and on its native heaths in Ireland and among the Highlands of Scotland, while the spoken tongue was handed down from father to son the written language was a closed book to all but a few scholars. In very recent years a remarkable revival has taken place in the study of the ancient tongue, which some scholars have claimed to antedate the Greek and Sanskrit. Gaelic books have been written, Gaelic periodicals are on sale at the news stands, Gaelic professorships have been founded in the leading Universities in the United States as well as in the great schools in England, France and Germany. Gaelic sermons are now preached in three churches in Boston and there are more than 50 clubs in New York, Boston, and San Francisco, the purpose of which is to study and propagate the study of the Gaelic language and literature, and a conservative estimate places the number of Gaelic speaking people in this country at not less than 1,000,000. A remarkable feature of the revival is that from the United States where the movement started, the desire to study the ancient language has spread to Ireland where it had almost gone into decay. The establishment of the Irish Free State in 1922 gave a marked impetus to the study and use of Gaelic.

Gaeta, a fortified seaport town of Southern Italy, province of Caserta. The town is regarded as one of the keys of Southern Italy, being strong from its natural position, which art has taken advantage of. In November, 1860, it withstood a siege of several weeks (as the last stronghold of Francis II., King of Naples, who had sought refuge within its walls) by the national troops commanded by General Cialdini.

Gage, Lyman Judson, an American financier; born in De Ruyter, N. Y., June 28, 1836, removed to Rome, N. Y., in 1848, and was educated at the Rome Academy. He worked in the Oneida Central Bank from 1853 to 1855, when he went to Chicago, becoming a clerk, and later, bookkeeper and cashier of a planing mill company. In 1868 he became cashier and

in 1891 president of the First National Bank of Chicago. He was the first president of the Board of Directors of the World's Columbian Exposition, and several times president of the American Bankers' Association and the Civic Federation of Chicago. On March 5, 1897, he was appointed Secretary of the Treasury, by President McKinley; in 1901 was reappointed; resigned in March, 1902; engaged in banking in New York City, 1902–6.

Gage, Thomas, a British general; born in 1721. He fought with the British troops in America in 1755, 1758, and 1760; was commander-in-chief in North America in 1775, and returned to England the same year. He was promoted general in 1782. The battles of Lexington and Bunker Hill took place during his generalship. He died April 2, 1787.

Gage, William Leonard, an American clergyman and author; born in Loudon, N. H., in 1832. He was the pastor of a Congregational Church at Hartford, Conn., from 1866 to 1884. He died in 1889.

Gagern, Heinrich Wilhelm August, Baron of, a German statesman; born in Beyrout, Bavaria, Aug. 20, 1799. On Napoleon's return from Elba he entered the army of Nassau, and served as lieutenant at Waterloo. After the peace he studied law at the universities of Heidelberg, Gottingen, Jena; and Geneva; in 1821 entered political life under the government of Grand-ducal Hesse. In 1850 he served as major in the Schleswig-Holstein War; when the campaign was over he retired to the Monsheim estate, which had come into his possession at his father's death. In 1852 he removed to Heidelberg. He died in Darmstadt, Germany, May 22, 1880.

Gaillard, Claude Ferdinand, a French painter and engraver; born in Paris, France, Jan. 7, 1834. Gaillard gained three medals for engraving and one for painting, and was decorated with the Legion of Honor in 1876. He died in Paris, Jan. 19, 1887.

Gaines's Mill, a locality near Richmond, Va., noted as being the scene of many balloon ascensions during the Civil War (1861–1865). Near here occurred the battle of Cold Harbor, called also battle of Gaines's Mill, June 27, 1862, between a part of Lee's army and a part of McClellan's. Here, too, Lee repulsed Grant's assault, June 3, 1864.

Gainsborough, Thomas, an English portrait and landscape painter; born in Sudbury, Suffolk, England, in 1727. He was sent to London, at the age of 14, to study art under Gravelot, the excellent French engraver and designer of book illustrations, under Frank Hayman, and in the St. Martin's Lane Academy. He returned to his native county about 1744, established himself as a portrait painter at Ipswich, and in 1745 married Margaret Burr, a lady with £200 a year. In 1761 he began to exhibit with the Society of Artists of Great Britain, in Spring Gardens, London, a body which he continued to support till 1768, when he became a foundation member of the Royal Academy. In 1774, after a deadly quarrel with Thicknesse, he removed to London, and there prosecuted his art with splendid success, being in portraiture the only worthy rival of Reynolds, and in landscape of Wilson. An exhibition of over 200 of his works was brought together in the Grosvenor Gallery, London, in 1885. He died in London, Aug. 2, 1788.

Gairdner, Sir William Tennant, a Scottish physician; born in Edinburgh, Scotland, Nov. 8, 1824. He was graduated M. D. at Edinburgh in 1845, becoming Fellow of the Royal College of Physicians there in 1850; was appointed by the crown in 1862 to the chair of practice of medicine in Glasgow University, was president of the Medical Association there in 1888, and was physician in ordinary to the queen for Scotland. He contributed many papers to the special medical journals. He died in 1907.

Gaius, a Roman jurist, who flourished between 130 and 180 A. D. Before the revision of the Roman laws, and the reform of legal studies by Justinian, the "Institutes" of Gaius, as well as four other of his treatises, were the received text-books of the schools of law. His "Institutes," moreover, formed the groundwork of the "Institute" of Justinian. The "Institutes" was almost completely lost, till in 1816 Niebuhr discovered it at Verona, under a palimpsest of the "Epistles" of Jerome. This discov-

ery threw a flood of light on the history of the early development of Roman law, especially on the forms of procedure in civil actions.

Gaius, in Scripture, (1) a Macedonian who accompanied Paul in his travels, and whose life was in danger at Ephesus (Acts xix: 29). (2) A Corinthian convert of Paul, who hospitably entertained the apostle while laboring at Corinth (Rom. xvi: 23; I Cor. i: 14). (3) Of Derbe; an attendant of Paul from Corinth, in his last journey to Jerusalem (Acts xx: 4). The third epistle of John is addressed "to the well-beloved Gaius," whose character for hospitality comports well with that of (2) above. The name was a common one wherever the Romans lived.

Galapagos (Spanish, "tortoises"), a group of 13 islands of volcanic origin in the North Pacific Ocean, about 600 miles W. of the coast of Ecuador, to which they belong; area, 2,950 square miles. The most important is Albemarle, 60 miles long by 15 broad, and rising 4,700 feet above the sea.

Galatea, or **Galathæa,** in Greek mythology, a sea-nymph, daughter of Nereus and Doris.

Galatia, in ancient geography, a country of Asia Minor, lying S. of Paphlagonia, W. of Pontus, and N. E. of Phrygia. It was originally a part of Phrygia, but the Gauls or Celts, having invaded Asia in several bodies, conquered and settled in this country about B. C. 241, whence the name.

Galatian, a native or inhabitant of Galatia. St. Paul's Epistle to the Galatians, a New Testament epistle, stated in ch. i: 1 to have been written by the Apostle Paul, a claim admitted by the ancient Church universally, and by nearly all the ablest modern critics. It is one of the four epistles considered by Ferdinand Baur as genuine. St. Paul, who generally, it appears, used an amanuensis, wrote this epistle with his own hand (vi: 11). It was penned just after a visit by the apostle to the Galatian Church (i: 6). Two such visits had taken place; the first, during which he founded the Galatian Church, was about A. D. 51 (Acts xvi: 6); and the second was about A. D. 55 (Acts xviii: 23). In ch. iv: 16–13 a first visit is alluded to, implying that there had been a second. The epistle, then, was not penned till at least A. D. 55, and probably not till A. D. 57 or 58, during the first part of the apostle's residence at Ephesus (Acts xix: 1, 10). The subscription at the end of the epistle which shows that it was written from Rome, though accepted by Baur, is rejected by most critics. The Galatian Church consisted mainly of Gentile converts. On these Paul did not impose the yoke of the Mosaic ritual, though he was willing to tolerate its use among the Jewish proselytes. No sooner had he departed, however, than Judaizing teachers appeared in the Galatian Church, represented that Paul was not on a level with the apostles originally chosen, but a mere subordinate agent whom they had sent forth; that his teaching with regard to the law of Moses was in conflict with that of Peter, and that circumcision was indispensably necessary to salvation. In reply to these teachers, Paul showed that he was a real apostle (i: 15, etc.), and that he met the other apostles on such a footing of equality that on one occasion he had withstood Peter to the face when he was to be blamed (ii: 11–14, etc.). He reproaches them for their fickleness in so quickly turning from the pure to the perverted gospel (i: 6–9; iii: 1, etc.), exhorts them not to relapse from Christian liberty into the bondage of Judaism (iii., iv., v.), and concludes with practical exhortations (vi.).

Galatz, or **Galacz,** a river port of Moldavia, the center of the commerce of Rumania, situated on the left bank of the Danube, 85 miles from its mouth. The town has frequently been taken in the wars between the Russians and the Turks since 1789, and was a strategic point in the great war, and the object of a Teutonic drive. Pop. (1914) 72,512. See APPENDIX; *World War.*

Galaxy, in astronomy, the Milky Way. It constitutes nearly a great circle inclined to the equinoctial at an angle of about 63°. The milky appearance of the great belt or zone now described arises from the blended light of countless multitudes of stars, each doubtless a sun to some system of planets. Sir William Herschel estimated that at one portion of the

Milky Way 110,000 stars passed through the field of the telescope in a quarter of an hour, and on another occasion 258,000 stars in 41 minutes. Here and there the Milky Way divides, especially at one spot, where there is a separation into two portions, somewhat resembling the projecting sides of a fish tail. Sir W. Herschel believes that stars are not scattered at tolerably uniform intervals through space, but are congregated at particular spots. Sometimes also called colloquially Jacob's Ladder.

Galba, Servius Sulpicius, a Roman emperor, successor of Nero; born Dec. 24, 3 B. C. After his election he soon made himself unpopular by cruelty and avarice, and he was slain in the forum, Jan. 15, A. D. 69.

Gale College, a coeducational institution in Galesville, Wis., founded in 1844 under the auspices of the Presbyterian Church.

Galen, or **Claudius Galenus,** a celebrated Greek physician; born in Pergamus, Mysia, in A. D. 131. In his 19th year he began the study of medicine, first at Pergamus, afterward at Smyrna, Corinth, and Alexandria.

He gathered up all the medical knowledge of his time and fixed it on such a firm foundation of truth that it continued to be, as he left it, the authoritative account of the science for centuries. His physiology does not, according to modern ideas, attain the same level of scientific excellence as his anatomy. He is said to have died in Sicily about A. D. 201.

Galena, the sulphide of lead, found both in masses and crystallized in cubes, but sometimes in truncated octahedra. In the United States it is very abundant, the deposit of galena, in which the mines of Illinois are situated being the most extensive and important hitherto discovered.

Galena, a city and county-seat of Jo Daviess co., Ill. It is noted as an early residence of General Grant and received its name from its numerous lead mines. Pop. (1920) 4,742.

Galenists, an Anabaptist sect, one of two into which the Waterlanders split in 1664. Galen, their founder, is said to have taught that the Christian religion was not so much a body of truths to be believed as of principles to be obeyed. His enemies accused him of having socinian proclivities, a charge from which the states-general acquitted him Sept. 14, 1663.

Galerius, or **Galerius Valerius Maximianus,** a Roman emperor; born of humble parentage near Sardica, Dacia. Entering the imperial army, he rose rapidly to the highest ranks. In 292 Diocletian conferred on him the title of Cæsar and gave him his daughter in marriage. On the abdication of Diocletian (305) he and Constantius Chlorus became joint rulers of the Roman empire, Galerius taking the E. half. When Constantius died in York (306) the troops in Britain and Gaul immediately transferred their allegiance to his son, Constantine (afterward Constantine the Great). Galerius, however, retained possession of the E. till his death. He died in 311 A. D.

Gales, Joseph, an American journalist; born in England in 1760; settled in Philadelphia, Pa., in 1793; became editor of the "Independent Gazetteer," in which he first issued shorthand reports of Congressional debates. He died Aug. 24, 1841.

Gales, Joseph, an American journalist; born in Eckington, England, April 10, 1786; son of Joseph Gales. Had it not been for the industry of Gales and his partner, William Winston Seaton, an important part of the proceedings of Congress which they reported would not have been preserved. Gales died July 21, 1860.

Galesburg, city and capital of Knox county, Ill.; on the Chicago, Burlington & Quincy and other railroads; 53 miles N. W. of Peoria; is in a rich farming and stock-raising section; has important manufactures; and is the seat of Knox College (non-sect.), Lombard University (non-sect.), Corpus Christi Lyceum, St. Joseph's Academy, Knox Conservatory of Music, Galesburg Kindergarten Normal School, and other institutions. Lake George, Highland Park, and several artificial lakes deserve mention. Pop. (1920) 23,834.

Galicia, formerly a kingdom and afterward province in Spain, bounded N. and W. by the Atlantic, S. by Portugal, and E. by Leon and Asturias. Galicia was a kingdom under the Suevi from 411 to 585, and

again from 1060 to 1071, at which date it was finally incorporated with Leon and Castile.

Galicia. Polish province, formerly Austrian, bounded by Russia, Bukowina, Hungary, and Moravia; area 30,321 square miles; pop., Polish in the W., Russniak in the E. (1920) 8,257,505. The great physical features of the country are, in a manner determined by the Carpathians, which form a long and irregular curve on the S. and send out branches into Galicia. Farther to the N. the hills subside rapidly and finally merge into vast plains. Distilleries exist in every quarter. The Roman Catholics and the Greek Catholics are the chief religious bodies. The chief educational establishments are the University of Lemberg and that of Cracow. The principal towns are Lemberg, the capital, and Cracow. Manufactures have not as yet made any great progress.

After being the field of continuous strife between Russians, Poles, and Hungarians, Galicia continued a Polish dependency from 1382 till the first partition of Poland, in 1772, when it was acquired by Austria. West Galicia was added to the district in 1795, and the further addition of Cracow was made in 1846. Galicia makes nearly 40 per cent. of the Austrian production of spirits, and also manufactures lumber, paper, sugar, and cloth. Polish is the official language. For its share in the great war, see APPENDIX: *World War.*

Galilean, or **Galilæan,** one of the followers of Judas the Gaulonite, who resisted the payment of the tax imposed by Quirinius, the Cyrenius of St. Luke (Luke ii: 1), and gave the Romans trouble till the capture of Jerusalem by Titus in A. D. 70. The Galileans, a name applied to Jesus and His disciples, from the intimate connection they had with Galilee (Matt. xxvi: 69; Mark xiv: 70); hence applied by pagans and Mohammedans, as a term of reproach to Christians generally.

Galilee, a Roman province, comprehending all the N. of Palestine W. of the Jordan. In the New Testament times the word had the more extended meaning, and we learn from Josephus that there were an Upper and a Lower Galilee.

Galilee, Sea of, called also in the New Testament Lake of Gennesaret and Sea of Tiberias, and in the Old Testament Sea of Chinnereth or Cinneroth, a large lake in the N. half of Palestine. Lying 626 feet below sea level, it is 13 miles long by 6 broad, and 820 feet deep. It occupies the bottom of a great basin, and is undoubtedly of volcanic origin. In the time of Jesus the region round about was the most densely populated in Galilee; now even its fisheries are almost entirely neglected.

Galilei, Galileo, commonly called **Galileo,** a distinguished Italian physicist; born in Pisa, Italy, Feb. 18, 1564. Later Cosmo III. invited him to Pisa, and soon after called him to Florence, with the title of principal mathematician and philosopher to the grand-duke. Galileo had heard of the invention of the telescope by Jansen; and making one for himself, a series of most important astronomical discoveries followed. He found that the moon, like the earth, has an uneven surface, and he taught his scholars to measure the height of its mountains by their shadow. A particular nebula he resolved into individual stars; but his most remarkable discoveries were Jupiter's satellites, Saturn's ring, the sun's spots, and the starry nature of the Milky Way. The result of his discoveries was his decided conviction of the truth of the Copernican system; though the blind and furious bigotry of the monks charged him with heresy for it, and he was twice persecuted by the Inquisition, first in 1615, and again in 1633. On both occasions he was compelled to abjure the system of Copernicus; but it is said that, in the last instance, when he had repeated the abjuration, he stamped his foot on the earth, indignantly muttering, "Yet it moves!" In the following year, when he was 70 years old, and his health was declining, a very heavy blow fell on him by the death of his beloved daughter, Maria, who would have sweetly soothed him in his enforced retirement. Two years later he became blind. He bore this affliction, to him of unusual severity, with great patience. His latter years were spent near Florence, devoting himself to the perfecting of his telescope. His greatest work is

the "Dialogue on the Copernican and Ptolemaic Systems." He died in Arcetri, near Florence, Italy, Jan. 8, 1642 (the year Newton was born). His remains were ultimately deposited in the Church of Santa Croce at Florence.

Galiot, Galleot, or **Galliot,** formerly a galley propelled by sails and oars, having one mast and 16 to 20 seats for rowers; used by most of the maritime nations of continental Europe, and called by substantially the same name in the Romance languages. Now a strong and cumbrous, bluff-bowed, two-masted vessel, used in the Dutch service.

Galitzin, Gallitzin, Galyzin, or **Golyzin,** one of the most powerful and distinguished Russian families, whose members have been equally prominent in war and diplomacy from the 16th century downward. Prince Dimitri Alexeievitch, a Russian diplomat and statesman; born Dec. 21, 1738; was ambassador to the court of France in 1763, and to The Hague in 1773. He was in correspondence with Voltaire and other literary men of his day and was the author of several works relating to geology. He died in Brunswick, Germany, March 21, 1803. Dimitri Augustine, son of the foregoing; born in The Hague, Dec. 22, 1770; became a Roman Catholic in his 17th year; and was ordained a priest in the United States by Bishop Carroll of Baltimore in 1795; He declined to return to Russia on his father's death, and as a Catholic priest was adjudged to have lost his right of inheritance. He wrote various controversial works. He died in Loretta, Pa., May 6, 1841.

Gall, a morbid excrescence on the leaf or leaf-bud of any plant, arising probably from the puncture of a cynips. In the hole made by the insect, an egg is deposited, in due time to be developed into a larva, which eats its way out when it comes to the perfect state. One variety is white or yellow, another green, gray, or black. The best galls come from Smyrna and Aleppo. With the salts of iron they should yield a fine black color, and are used in the manufacture of ink.

Gall-nuts are useful on account of the tannin and gallic acid contained in them. Tannin is a powerful astringent, and is useful in affections of the alimentary canal, also applied locally to suppress hemorrhage from the gums, lips, nose, etc.

Gall, Franz Joseph, founder of phrenology; born in Tiefenbronn, Baden, Germany, March 9, 1758. He studied medicine at Strasburg and Vienna, and settled in the latter city in 1785 as a physician. In 1796 he began to give courses of lectures on Phrenology in Vienna; but the lectures were prohibited in 1802 by the Austrian government as being subversive of the accepted religion. With Spurzheim, who became his associate in 1804, he quitted Vienna in 1805, and began a lecturing tour through Germany, Holland, Sweden, and Switzerland. He reached the height of his fame when in 1807 he settled as a physician in Paris. He continued to practise medicine and pursue his researches at Montrouge, near Paris, till his death, Aug. 22, 1828.

Gall, St., an Irish monk of the 6th and 7th centuries; born in Ireland, about 550. He was educated at the monastery of Bangor, accompanied St. Columba to France about 585, and took part with him in all his missionary labors. Banished from France, they went together into the wilder regions of Switzerland, and near the Lake of Constance they founded the monastery which bore the name St. Gall and gave name to the town and canton of St. Gall. He died in St. Gall, Switzerland, about 645.

Gall, St., a canton in the E. part of Switzerland, entered the confederation in 1803; area, 779 square miles; pop. (1921) 295,543. It is one of the principal Swiss manufacturing cantons; as many as 60,000 of its inhabitants are stated to be employed in its manufactures of cotton fabrics, thread, linens, glass, wax, etc. Chief town, St. Gall, the capital; pop. (1921) 70,437.

Gallstone, in man, a biliary concretion, chiefly consisting of cholesterine and coloring matter, forming in the gall-bladder. They occur most frequently in advanced life.

Gallait, Louis, a Belgian historical painter; born in Tournai, Belgium, May 10, 1810; died in Brussels, Nov. 20, 1887.

Galla Ox, or **Sanga,** a remarkable species or variety of ox inhabiting Abyssinia. The chief peculiarity is the extraordinary size of the horns, which rise from the forehead with an outward and then an inward curve, producing a lyre-shaped figure.

Gallardo, Aurelio Luis, a Mexican poet; born in Leon, Guanajuato, Mexico, Nov. 3, 1831. He wrote many comedies. He died in Napa, Cal., Nov. 27, 1869.

Gallas, a race of people inhabiting that part of Africa which lies to the S. and W. of Harar and S. of Shoa, between lat. 9° and 3° S. and lon. 34° and 44° E. The best authorities regard them as belonging to the Ethiopic branch of the Hamites, and their language as a descendant of the ancient Geez of Abyssinia. Individually they are of average stature, with strong, well-made limbs, skin of a light chocolate brown, hair frizzled but not woolly. Though cruel in war they are of frank disposition, and faithfully keep their promises and obligations. They are distinguished for their energy, both physical and mental. They are mostly heathens, though Mohammedanism is rapidly making way among them. The more N. tribes who dwell about Harar profess a form of Christianity, derived from Abyssinia. The total Galla population, who call themselves Argatta or Oromo, is estimated at about 3,000,000. Politically they are divided into a great number of separate tribes, which are frequently at war with one another. But their inveterate foes are the Somali, who have gradually driven back the Gallas from the shores of the Red Sea and the extremities of the Somali peninsula, regions which were occupied by them in the 16th century. The country they now inhabit is a plateau that slopes to the Indian Ocean, and has a hilly, well-timbered surface. Its average elevation is 7,200 feet. Among all the W. tribes inhabiting this region slavery is a recognized institution.

Gallatin, Albert, an American financier; born in Geneva, Switzerland, Jan. 29, 1761. He was graduated at the university there in 1779. In 1780 he came to the United States. In 1786 he removed to Pennsylvania, became a member of the State Legislature, and in 1793 he was elected to the United States Senate, but was declared ineligible. From 1795 to 1801 he served in the House of Representatives, and from 1801 to 1813 he was Secretary of the Treasury, in which post he showed himself one of the first financiers of his day. He took an important part in the negotiations for peace with England in 1814, and signed the treaty of Ghent. From 1815 to 1823 he was minister at Paris, and in 1826 he was sent to London as ambassador extraordinary. On his return in 1827 he settled in New York, and devoted much of his time to literature. He was one of the founders and the first president of the Ethnological Society of America; and from 1843 to his death he was president of the New York Historical Society. He died in Astoria, N. Y., Aug. 12, 1849.

Gallaudet, Edward Miner, an American educator; born in Hartford, Conn., Feb. 5, 1837; son of Thomas Hopkins Gallaudet; was graduated at Trinity College in 1856. He organized the Columbia Institute for the Deaf, Dumb and Blind in Washington, D. C., in 1857, and from it developed the Gallaudet College for the Deaf, in 1864 becoming its first president.

Gallaudet, Thomas, an American clergyman; born in Hartford, Conn., June 3, 1822; a son of Thomas Hopkins Gallaudet; was graduated at Trinity College in 1842; teacher in the New York Institution for Deaf Mutes in 1843–1858; ordained in 1851; founded and became rector of St. Ann's Church, New York, for deaf-mutes in 1852; appointed general manager of the Protestant Episcopal Church Mission to Deaf-Mutes in 1872; pastor of the Sisterhood of the Good Shepherd in 1869; chaplain of the Midnight Mission in 1871; founded the Gallaudet Home for Deaf-Mutes, near Newburg, N. Y., in 1885.

Gallaudet, Thomas Hopkins, an American educator; born in Philadelphia, Pa., Dec. 10, 1787. In 1817 he founded at Hartford, Conn., the first deaf-mute institution in America, and was president of the same till 1830. In 1838 he became chaplain of the Insane Asylum at Middletown, Conn., where he remained till his death, in Hartford, Conn., Sept. 9, 1851.

Galle, or **Point de Galle,** a fortified town and seaport of the S. W. extremity of the island of Ceylon, on a low rocky promontory of the same name.

Galle, Johann Gottfried, a German astronomer; born in Pabsthaus, Prussia, June 9, 1812; studied natural sciences and mathematics. He was the first to observe the planet Neptune (Sept. 23, 1846).

Gallego, Juan Nicasio, a Spanish lyric poet; born in Zamora, Spain, Dec. 14, 1777; died in Madrid, Jan. 9, 1853.

Gallegos, a river of Patagonia entering the Atlantic Ocean opposite the Falkland Islands. It is small but very rapid, and at its mouth or estuary the tide rises 46 feet.

Gallenga, Antonio Carlo Napoleon, an Italian publicist and author; born in Parma, Italy, Nov. 4, 1810. He left Italy in 1831 by reason of political disturbances, and lived abroad. He died in 1895.

Galleon, a large kind of vessel, with three masts and three or four decks, formerly used by the Spanish in their commerce with South America, to transport the precious metals.

Gallery, in architecture, a long, narrow room, the width of which is at least three times less than its length. Galleries are not destined to be occupied as sitting rooms, but for dancing, music, dining on festival occasions; and are generally decorated with pictures in oil or fresco. The term is also applied to a platform projecting from the walls of a building supported by piers, and in churches, theaters, and similar buildings, to the upper floors going around the building next the wall. Also applied to a collection of pictures.

Galley: (1) A low, flat-built vessel with one or more rows or banks of oars, said to have been invented by the Corinthians in 700 B. C. (2) A clinker-built boat for ship's use, from 28 to 36 feet long, and with a beam equal to one-fifth of its length. It is light and sharp, carrying from 10 to 12 oars, and is used for speedy rowing on expeditions. It usually has six alternate oars rowed by a picked crew. (3) The cook house on board ship, which is on deck, or in a forward part of the vessel. (4) In printing, an oblong tray which receives matter from the composing-stick, and on which it is arranged in a column or page.

Gallfly, or **Gallwasp,** names generally applied to any member of a large family of hymenopterous insects, most of the females of which lay their eggs in plants and by the associated irritation produce galls. The insects are not unlike little wasps with straight, thread-like antennæ, laterally compressed abdomen, and long wings.

Gallican Church, the distinctive title of the Roman Catholic Church in France. The Christian faith was widely diffused in France or Gaul, even during the lifetime of the apostles; and it especially flourished among the descendants of the Greek colonies of the S., and in the numerous towns and cities on the Rhone and its confluent rivers. In the persecutions to which the early professors of Christianity were subjected, the Christians of these churches had their full share. The hierarchical organization also of the Church of Gaul was, at a very early period, among the most complete and regular throughout the churches of Western Christendom.

Galli-Curci, Amelita, born 1889. An Italian coloratura soprano. One of the world's greatest singers. Has had great success, both in grand opera and on concert stage.

Gallieni, Joseph Simeon, a French military officer; born in St. Beat, April 24, 1849; was graduated at the military academy of St. Cyr in 1868; entered the Franco-Prussian War two years afterward; was sent on a diplomatic mission to the Niger in 1879; took possession of Madagascar and deposed Queen Ranaloo in 1899; and after holding several important commands was appointed to the Superior War Council in 1908. When, in August, 1914, the Germans began their unsuccessful march on Paris, he was made the supreme authority at the capital. On taking command as military governor he said in a proclamation: "I have received the mission of defending Paris against the invader. I shall accomplish that mission to the end." And he did. He died May 27, 1916.

Gallifet, Gaston Alexandre Auguste, Marquis de, a French general; born in Paris, France, Jan. 23, 1830. He joined the army in April, 1848, and became colonel in December, 1867. He served in the Crimea, Mexico, and Algeria. He commanded the 3d Regiment of Chasseurs d'Afrique, took part with the Army of the Rhine during the Franco-German War. During the second siege of Paris he commanded a brigade of the Army of Versailles. In 1872 he was sent to Africa and placed at the head of the subdivision of Batna. He took charge of the expedition on El-Goliah, and executed a rapid march through a desert country and severely punished the revolted tribes (December, 1872–March, 1897). On the general reorganization of the army, he was named to the command of the 3d Brigade of Infantry of the 8th Army Corps. Promoted to the rank of General of Division, May 3, 1875, he obtained the command of the 1st Division of Cavalry, and in February, 1879, that of the 9th Regiment. He was decorated with the Legion of Honor in June, 1855, made officer, April, 1863, and commander, April, 1873. He was Member of the Council of War in 1885, Minister of War in 1899–1902. He died July 8, 1909.

Gallinger, Jacob H., an American statesman; born at Cornwall, Ont., Can., March 28, 1837; graduated at Dartmouth College in 1858; practiced medicine at Concord, N. H.; and entered politics in 1872. He was elected U. S. Senator for the terms 1891–1921.

Gallio, Junius Annæus, the Roman pro-consul of Achaia under Claudius when St. Paul was at Corinth A. D. 53. He was brother of the famous Seneca, and a protegé of Gallio the rhetorician.

Gallipoli, a town of Southern Italy, built on a steep rock in the Gulf of Taranto, connected with the mainland by a bridge, and 59 miles S. of Brindisi. The town is remarkable for its oil tanks, excavated in the solid rock, in which olive oil is deposited for exportation.

Gallipoli, a seaport of Turkey, on the peninsula of the same name (the ancient Thracian Chersonesus), at the N. E. extremity of the Dardanelles, 90 miles S. of Adrianople, and 130 W. S. W. of Constantinople. It was formerly the most important commercial town on the Hellespont, and still retains considerable trade. It is headquarters for the Turkish fleet, and was conspicuous in the disastrous and abandoned campaign of the Entente Allies in the Dardanelles against Constantinople early in the great war. See APPENDIX: *World War.* The town was taken by the Turks in 1356.

Galliwasp, a small lizard found in the West Indies. It is an object of terror to the inhabitants, but is really harmless.

Galloway, Joseph, an American lawyer; born near West River, Md., in 1731; was admitted to the bar in Philadelphia; member of the Pennsylvania Assembly in 1757–1774. He held a seat in the Congress of 1774, where he suggested a plan of government headed by a president-general to be appointed by the king and to hold office during the latter's pleasure, and a grand council elected every three years by the assemblies of the several colonies. Before the conclusion of the Revolutionary War he removed to England; and in 1788 was charged with high treason by the Assembly of Pennsylvania, which ordered his estates to be sold. He died in Herts, England, Aug. 29, 1803.

Galloway, Mull of, a bold headland of precipitous rock, the extreme S. point of Scotland. It rises to a height of 210 feet at its E. extremity, on which stands a lighthouse 60 feet high, whose intermittent light is visible at a distance of 23 nautical miles.

Gallows, an instrument or apparatus on which criminals are executed by hanging.

Galop, a lively dance in 2-4 time, originally a separate and independent dance, but now also forming a portion of a set of quadrilles; also the music to which this dance is performed.

Galoparo, or **Capo di Faro,** the Charybdis of the ancients. It forms the whirlpool on the outside of the harbor of Messina, in the strait separating Italy from Sicily. Opposite, on the Italian coast, is the rock Scylla.

Gally, Merritt, an American inventor; born near Rochester, N. Y.,

Aug. 15, 1838. His inventions include a printing press; a machine for making linotypes; electric, telegraphic and philosophical apparatus; etc.

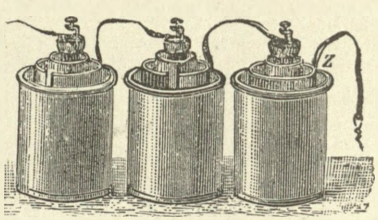
Galt, a town and port in Waterloo district, Ontario, Canada; on the Grand river and the Canadian Pacific and Grand Trunk railroads; 25 miles N. W. of Hamilton; is chiefly engaged in manufacturing; has the noted Preston mineral springs nearby.

Galt, Sir Alexander Tilloch, a Canadian statesman; born in London, England, Sept. 6, 1817; went to Canada while a boy; Canadian minister of finance in 1858–1862, 1864–1866 and 1867; Canadian High Commissioner to England in 1880–1883. He died Sept. 19, 1893.

Galton, Sir Francis, English scientist; grandson of Erasmus Darwin, and cousin of Charles Darwin; born in Duddeston, England, in 1822. Having traveled in North Africa, he explored in 1850 lands hitherto unknown in South Africa, publishing his experiences in his "Narrative of an Explorer in Tropical South Africa." Later he devoted himself to the problem of heredity. In 1905 he established a Research Fellowship in Eugenics in the University of London, and in 1909 was knighted. He died Jan. 17, 1911.

Galvani, Luigi, an Italian anatomist; born in Bologna, Italy, Sept. 9, 1737. He studied theology and subsequently medicine at the university there, and was elected Professor of Anatomy. His lectures enjoyed much popularity, and two treatises on the organs of hearing and on the genito-urinary tract in birds added to his reputation. But Galvani owes the wide celebrity attached to his name to his discoveries in animal electricity. He died in Bologna, Dec. 4, 1798.

Galvanism, the branch of electric science to which an experiment by Galvani gave birth. His wife, who was making soup from frogs, put them in proximity to a charged electrical machine. On touching them with a scalpel their legs became greatly convulsed. Galvani was told what had occurred, and repeated the experiment. He united the lumbar nerves of a dead frog with its crural muscles by a metallic circuit, and came to the erroneous conclusion that animal electricity existed in the nerves and muscles of frogs, etc., ignoring the connecting wire. His contemporary, Volta, gave attention to this, and



GALVANIC BATTERY.

found the contraction of the limbs more energetic when the connecting arc is made of two metals instead of one. He inferred that the metals took the active part in producing the contraction, and the electricity was due to their contact, and the animal parts constituted only a conductor. In 1793 he published these views, and in 1800 first described and constructed what has since been called after him the voltaic pile. Febroni, observing that the disks of zinc in the pile became oxidized in contact with acidulated water, considered that the oxidation was the chief cause why electricity was produced. Now voltaic plates have nearly given place to voltaic or galvanic batteries, of which there are many varieties.

Galvanized Iron, iron coated with zinc.

Galvanometer, an instrument for detecting the presence and measuring the intensity of feeble galvanic currents. A differential galvanometer is an instrument designed to ascertain a difference in the intensity of two galvanic currents.

Galveston, city and county-seat of Galveston co., Tex., on Galveston Island, between Galveston Bay and the Gulf of Mexico. It has the largest and deepest harbor on the Gulf coast, with two miles of wharf front. The commerce of the city is very extensive, the chief export being cotton. Galveston was settled in 1837; captured by the Federal forces in 1862; and retaken by the Confederates in

1863. It was nearly destroyed by fire in 1885, and Sept. 8, 1900, a tornado destroyed $30,000,000 of property and 7,000 lives. The new buildings, public grounds, and great sea wall are now attractive features. Pop. (1920) 44,255.

Galway, a municipal and parliamentary borough of Ireland, a seaport and county of itself, on the N. shore of Galway Bay. Pop. of county (1921) 183,000; town, 13,500.

Galway Bay, a large bay on the W. coast of Ireland, about 30 miles in length and from 20 to 7 miles in breadth. Across its entrance lie the Aran Islands, and there are numerous small islands in the bay itself.

Gama, Dom Vasco da, a Portuguese navigator; born in Sines, a small seaport of Portugal, in 1450; was the first navigator who made the voyage to the East Indies by the Cape of Good Hope. On July 8, 1497, he set sail from Lisbon and on Nov. 22 doubled the Cape. In the beginning of 1498 he reached the E. coast of Africa, and March 10 entered the harbor of Mozambique. He left Mozambique on March 29, and arrived on April 24 at Mombaza. He reached Melinda on April 15, where the king gave him an experienced pilot and all the nautical information at his command. Holding his course straight across the Indian Ocean toward the coast of Malabar, Gama arrived in May at Calicut. On his arrival he was favorably received; but the Mohammedan merchants found means to disturb this amicable understanding. Gama restored it by his resolution and prudence. The Zamori, the Hindu sovereign of Calicut, afterward sent him a letter for King Emmanuel. In August he set out on his return journey, which occupied one year. On his arrival at the capital Gama was named Admiral of the Indies and received the title of Dom, with an annual pension and extensive privileges in Indian commerce. After he had remained 20 years in obscurity Gama was appointed Viceroy of India in 1524. He left the harbor of Lisbon with 14 vessels; he visited several small colonies, using all means in his power for their defense and the preservation of the authority of the Portuguese arms among the natives; but he had scarcely administered his office for the space of three months when he died in Goa, Dec. 24, 1524. In 1538 his body was brought to Portugal.

Gamaliel, the name of two persons mentioned in Bible history, of whom the first, Gamaliel, the son of Pedahzur (Num. i: 10), was prince or head of the tribe of Manasseh. The other and better known Gamaliel is mentioned twice in the Acts of the Apostles, as a learned doctor of the law, of the sect of the Pharisees. From Acts xxii: 3 we learn that he was the preceptor of St. Paul; the other reference (Acts v: 34) records his famous advice to the Sanhedrim as to their treatment of the apostles.

Gambetta, Leon Michel, a French statesman; born in Cahors, France, April 3, 1838. He was educated for the Church; but decided in favor of the law, and repairing to Paris became a member of the metropolitan bar in 1859. In November, 1868, he gained the leadership of the republican party. In 1869, having been elected by both Paris and Marseilles, he chose to represent the S. city; and in the Chamber of Deputies showed himself an irreconcilable opponent of the empire and its measures. On the downfall of the empire, in 1870, a government for national defense was formed, in which Gambetta was nominated Minister of the Interior. The Germans having encircled Paris, he left that city in a balloon, and set up his headquarters at Tours, from which, he for a short time organized a fierce but vain resistance against the invaders. After the close of the war he held office in several short-lived ministries, and in November, 1881, accepted the premiership. The sweeping changes proposed by him speedily brought a majority against him, and after a six weeks' tenure of office he had to resign. The accidental discharge of a pistol caused his death near Sevres, France, Dec. 31, 1882.

Gambia, a river of West Africa, rising in a mountainous district in Futa Jallon and flowing N. W. and W. to the Atlantic; length about 1,400 miles. It is navigable for 600 miles during seven months of the year, but from June to November the river becomes a torrent, rising from 20 to 50

feet and leaving a rich alluvial deposit on its shores.

Gambier, James Baron, an English naval officer; born in New Providence, the Bahamas, Oct. 13, 1756. He entered the navy, and attained the rank of Admiral of the Fleet in 1830, and died near Uxbridge, England, April 19, 1833.

Gambier Islands, a group of small coral islands in the South Pacific belonging to France. A French mission station was formed on the largest island, Mangareva, in 1834.

Gambling, playing at games of hazard or chance for money. Strictly speaking, gambling may be understood as gaming in its worst sense, and as implying professional play for a money stake by men who are unscrupulous adepts at so-called games of chance. In the United States statutes have been passed in most, if not in all the States, forbidding gambling for money.

Gamboge, or **Camboge** (a corruption of Cambodia, the name of the district in Annam where it is found), a gum resin obtained by piercing the bark of a tree growing in Cambodia, Siam, and the S. part of Cochin China. The juice is allowed to harden in bamboo reeds, hence it occurs in commerce in the form of pipes which are striated externally.

Gambrinus, a mythical king of Flanders, to whom is ascribed the invention of beer.

Game, any contrivance, arrangement, or institution designed to afford recreation, sport, or amusement.

Game Laws, laws relating to the killing of certain wild animals pursued for sport, and called game. In the United States the chief restrictions are in regard to killing wild animals during the breeding season. Formerly in Great Britain certain qualifications of rank or property were needed to constitute the right to kill game; but by the Game Act of William IV. the necessity for any qualification except the possession of a game certificate was abolished.

Gandhi, Morandes Karamchand, born 1869. Indian lawyer and agitator. He inaugurated in India the "passive resistance" movement for self government. Imprisoned, 1922.

Gando, a former kingdom of the Western Sudan, lying W. of Sokoto, and on both sides of the Niger as far S. as the mouth of the Benue; area, estimated, 78,457 square miles. Pop., estimated, 5,500,000. In 1900 it became a province of the Northern Nigeria Protectorate. The inhabitants are mostly Haussa, but the ruling class are Fulahs; nearly all are Mohammedans. Gando, the capital, lies in a narrow valley surrounded and commanded by hilly chains, but the chief commercial town is Egga.

Ganges, a river of Hindustan, one of the greatest rivers of Asia, rising in the Himalaya Mountains, in Garhwal State, and formed by the junction of two head streams, the Bhagirathi and the Alaknanda, which unite at Deoprag, 10 miles below Srinagar, 1,500 feet above sea-level. The Ganges is navigable for boats of a large size nearly 1,500 miles from its mouth. It is an imperative duty of the Hindus to bathe in the Ganges, or at least to wash themselves with its water, and to distribute alms, on certain days. The Hindus believe that whoever dies on its banks and drinks of its water before death is exempted from the necessity of returning into this world. The total length of the river to its mouth in the Bay of Bengal is 1557 miles.

Ganges Canal, The, an important irrigation work and navigable channel, extending, on the right of the Ganges, from Hardwar to Cawnpur and Etawah. The main canal is 700 miles in length, and is navigable throughout; and there are 2,634 miles of distributaries.

Ganghofer, Ludwig, a German dramatist and novelist; born in Kaufbeuren, Bavaria, July 7, 1855. At first engaged in mechanics, he later embarked at Vienna, in literature.

Ganglion, in human anatomy, a small mass of vascular neurine, situated in the course of a nerve, and distinct both from the brain and from the spinal cord.

Gannal, Jean Nicolas, a French chemist; born in Saarlouis, Prussia, July 28, 1791; noted for his invention of the method of embalming by injection. He died in Paris in January, 1852.

Gannet, a bird found from the Arctic Sea to the Gulf of Mexico, about the size of a tame goose. It breeds in immense numbers on the islands near the coast of Labrador.

Gannett, Henry, an American geographer; born in Bath, Me., Aug. 24, 1846; was graduated at the Lawrence Scientific School in 1869; became geographer of the United States Geological Survey in 1882; was geographer of the 10th, 11th, and 12th censuses, and assistant director in Cuba and Porto Rico (1899), the Philippines (1903), and Cuba (1907). He died Nov. 5, 1914.

Gannett, William Channing, an American clergyman and author; born in Boston, Mass., March 13, 1840; was graduated at Harvard in 1860; held pastorates of several Unitarian churches throughout the West and East.

Gansevoort, Peter, Revolutionary soldier; born in Albany, N. Y., in 1749; died in 1812. His defense of Fort Stanwix is famous. He became brigadier-general, and later commissioner of Indian affairs.

Ganymede, in Greek mythology, the cup-bearer of Zeus. Ganymede was a favorite subject of ancient art, and in modern time has prompted the genius of Carstens and Thorwaldsen.

Garcia de Quevedo, Jose Heriberto, a South American author; born in Coro, Venezuela, in March, 1819. Educated in France and Spain, he settled in Paris, and was killed in the communard insurrection, 1871.

Garcia, Calixto, a Cuban patriot; born in Holguin, Cuba, Oct. 14, 1836; and took up the profession of law. In 1868 he organized the revolution which has since been called the "Ten Years' War." In the early part of that struggle the Cubans won great success and captured many towns. In recognition of his services Garcia was appointed a Brigadier-General and subsequently commander-in-chief of the Cuban army. On Sept. 3, 1873, he with 20 men was surrounded by 500 Spaniards. When he saw that he would fall into the hands of the enemy he placed a revolver in his mouth and fired. The ball came out through his forehead, which always showed a scar. On his recovery he was sent to Spain, where he was pardoned in 1878. Returning to Cuba, he again took up arms against Spain in what is known as the "Little War." Later he was forced to surrender and a second time sent to Madrid, where for 17 years he remained under the espionage of the police. He escaped in September, 1895, by crossing into France and took passage for New York. On Jan. 26, 1896, he led a successful filibustering expedition to Cuba. Later, while planning a second expedition, he was arrested by United States government officers, gave bail, which he forfeited, and again landed in Cuba. When Santiago was taken by the Americans in 1898 he withdrew from the Cuban army. While visiting Washington as chairman of a commission on Cuban affairs, he died Dec. 11, 1898.

Garcia, Manuel, inventor of the laryngoscope and vocal teacher, born at Madrid, Mar. 17, 1805. His father was the celebrated tenor Garcia, and the famous soprano Malibran was his sister. He was long the leading vocal teacher of the world, and died at London in his 102d year, July 1, 1906.

Gard, a department in the S. of France, on the Mediterranean, bounded on the E. by the Rhone river; area, 2,270 square miles, one-third of which is arable; pop. (1911) 413,458. It is watered mainly by the Rhone, and by its tributaries. The famous grapes of Gard have almost disappeared before the ravages of the phylloxera; and the production of wine has sunk to less than a fourth of what it was before 1875. Chief city, Nimes; pop. (1911) 80,437.

Garda, Lake of (the Lacus Benacus of the Romans), the largest lake of Italy, between Lombardy and Venetia, its N. end extending into the Austrian Tyrol. Situated 226 feet above sea-level, it has an area of 115 square miles, a length of 37 miles, a breadth of 2 to 11 miles, and a maximum depth of 967 feet. Its chief tributaries are the Sarca and Ponale, and it is drained by the Mincio, a tributary of the Po. The mild climate in the district of the lake, and the beauty of its vicinity, have caused its shores to be lined with beautiful villas; and the district between Garguano and Salo, called by the people La Riviera, passes for the warmest

point in Northern Italy. Arco, near the head of the lake, is a favorite winter resort.

Garde Nationale, a guard of armed citizens instituted in Paris, July 13, 1789. At first it numbered 48,000 men, but was increased to 300,000 when it was organized throughout the whole country. Marquis de Lafayette was its first commander. It was reorganized by the Directory and by Napoleon, and again under the Bourbons and was dissolved in 1827. Under Louis Philippe it was resuscitated and contributed to his overthrow. In 1851 the national guard was again reorganized, but in 1855 dissolved. In 1870 the national guard of Paris was formed for the defense of the city against the Prussians. The resistance of a section of the guard to the decree of disarmament led to the communal war, at the close of which the guard was declared dissolved by the National Assembly (1871).

Garden City, a village on Long Island, N. Y., 18 miles E. of New York city. It was founded by Alexander T. Stewart as a residential town. It is the seat of the Protestant Episcopal bishop of Long Island, and contains the Gothic Cathedral of the Incarnation, erected as a memorial to Mr. Stewart by his widow. The schools of St. Paul and St. Mary are noted, and Garden City is a fashionable summer resort for its many attractions, including golfing. Permanent pop. 1,100.

Garden of the Gods, one of the scenic wonders of America, near Colorado Springs, Col., and presented to that city in 1908; celebrated for the fantastic forms of its eroded red and white sandstone rocks. Some of its chief features are the "Cathedral Spires;" "The Seal and Bear;" and "The Gateway" formed by bright red rocks over 300 feet high, between which the entrance road passes.

Gardes Suisses, a body of guards under the French kings. Both officers and men were Swiss. The guards followed in order of precedence after the French guards. Their attachment to the king made them obnoxious to the people during the revolution, and during the defense of the Louvre in August, 1792, they were massacred without mercy.

Gardiner, Stephen, an English prelate, believed to have been a son of Lionel, Bishop of Salisbury; born in Bury St. Edmunds, Suffolk, England, in 1483. He became secretary to Wolsey and a favorite with the king, was appointed secretary of state, and in succession Archdeacon of Norwich and Leicester, and Bishop of Winchester. He was successful in contriving the fall of Cromwell, but failed to injure Catherine Parr. He died in London, Nov. 12, 1555.

Garfield, Harry Augustus, an American educator; born in Hiram, O., Oct. 11, 1863; eldest son of President Garfield; practised law in Cleveland, O., in 1888–1903; was Professor of Politics at Princeton University in 1903–1908; then became president of Williams College (Mass.). On Aug. 10, 1917, President Wilson signed an act of Congress providing for the control of food, coal, and other commodities by the Federal Government, and under it appointed Dr. Garfield chairman of a commission to determine the price for the 1917 wheat crop, and (Aug. 23) Coal Administrator.

Garfield, James Abram, an American statesman, 20th President of the United States; born in Orange, O., Nov. 19, 1831. He was the youngest of four children, left by his father's death to be reared by his mother, from the age of infancy. The family home was a small log cabin in the Ohio "wilderness," a region now known as the Western Reserve. He went to school winters, and became an omnivorous reader, especially of the Bible. In the winter of 1849–1850 he attended a seminary at Chester, O., learned the trade of a carpenter during vacations, and was able to support himself in school from that time by his own exertions. In 1851 he entered an institute at Hiram, O. (now Hiram College), and went thence in 1854 to Williams College, having earned and saved $350 toward college expenses, and graduated in 1856. In 1857 he was made president of Hiram College, where he won reputation as an educator. In 1859 he was elected to the Ohio State senate. In 1861 he was commissioned lieutenant-colonel of the 42d regiment of Ohio volunteers, and handled the regiment so well that he was made a Brigadier in a few

months. During the war he distinguished himself more or less at Middle Creek, Shiloh, Corinth, and Chickamauga. In 1863 he left the army to enter Congress, declining the offer of a division command under Thomas. He remained in Congress 16 years, taking active part in many important measures. In 1880 he was elected United States Senator from Ohio, but in June the Republican National Convention nominated him to the presidency, and he was elected in November. A controversy arose early in his administration over the Federal offices in New York, especially the office of collector of the port of New York city, which led to the resignation from the United States Senate of Roscoe Conkling and Thomas C. Platt, of New York, after a bitter and heated contest in the Senate over the confirmation of Garfield's appointees. On July 2, 1881, when passing through the Baltimore and Potomac passenger station in Washington, in company with Mr. James G. Blaine, to go on board a train, Garfield was shot by Charles J. Guiteau, a disappointed office-seeker, whose mind had been inflamed by the controversies described above. Garfield lived till Sept. 19, being cared for in a seaside residence at Elberon, N. J. His funeral was a state affair of great solemnity and pomp. In February, 1882, Mr. Blaine delivered a eulogy of Garfield before Congress. A beautiful monument was raised over his remains in Lake View cemetery overlooking Lake Erie, at Cleveland, O.

Garfield, James Rudolph, lawyer and statesman, born at Hiram, O., Oct. 17, 1865, the son of President Garfield. He graduated from Williams College and Columbia Univ. Law School, and admitted to the bar in 1888 began practice in Cleveland. He joined the U. S. Civil Service Commission and in Feb., 1903, became Commissioner of Corporations. He exposed the dissatisfaction existing over the abuses of corporate laws, but his plea for centralized power was opposed as an invasion of state rights. He was Secretary of the Interior in 1907–1909.

Garfish, Seapike, or **Garpike,** a fish, known also as the sea needle, making its appearance a short time before the mackerel in their annual visit for spawning. The name garfish is also given to other species of Belone, and to a ganoid fish found in the fresh waters of America. The billfish or gar-pipe (Lepidosteus osseus) is the most common species.

Gargoyle, Gargoil, or **Gurgoyle,** in architecture, a quaintly-formed head of a man or animal, employed as a decorative spout for the rain water from a roof.

Garhmukhtesar, an ancient town in the new United Provinces of India, on the Ganges, 26 miles S. E. of Meerut, with four shrines dedicated to Ganga, and a great fair which attracts 200,000 pilgrims. Pop. 7,305.

Garhwal, a native State in the new United Provinces of India, on the borders of Tibet; area, 4,180 square miles; pop. (1911) 300,819. Also the name of a district in the United Provinces, next to independent Garhwal; area, 5,500 square miles; pop. 407,818. The native State is the cradle of both the Jumna and the Ganges.

Garibaldi, Giuseppe, an Italian patriot; born in Nice, France, July 4, 1807. His father being a poor fisherman he obtained little education, and for a number of years was a sailor on various trading vessels. In 1834, being condemned to death for his share in the schemes of Mazzini, he escaped to Marseilles and finally went to South America. In 1848 he returned to Italy, raised a band of volunteers, and harassed the Austrians till the reestablishment of Austrian supremacy in Lombardy. He then retired to Switzerland, but in the spring of 1849 proceeded to Rome to support Mazzini's republic. He was appointed to command the forces, but the odds were overwhelming, and after a desperate defense of 30 days Garibaldi escaped from Rome with 4,000 of his followers. In the course of his flight his wife Anita died from fatigue and privations. He came to the United States where at first he made candles in Staten Island, N. Y., for a living; afterwards commanding a merchant vessel on the Pacific coast. He purchased a farm on Caprera, off Sardinia, the rest of the island later being presented to him by his admirers.

In the war of 1859, in which Sardinia recovered Lombardy, Garibaldi did splendid service; and on the revolt of the Sicilians in 1860 he crossed to the island, wrested it after a fierce struggle from the King of Naples, recrossed to the mainland and occupied Naples, where he was proclaimed dictator of the Two Sicilies. He readily acquiesced in the annexation of the Two Sicilies to Italy, and declining all honors retired to his island farm. In 1864 he received an enthusiastic welcome in Great Britain. In 1866 he commanded a volunteer force against the Austrians in the Italian Tyrol, but failed to accomplish anything of consequence. Next year he attempted the liberation of Rome, but was defeated by the French and pontifical troops, and was imprisoned by the Italian government, but soon pardoned. In 1870 he gave his services to the French republican government against the Germans. At the end of the war he was elected a member of the French assembly, but resigned and returned to Caprera. Rome now became the capital of united Italy, and here in January, 1875, Garibaldi took his seat in the Italian parliament. The latter part of his life was spent quietly at Caprera, where he died June 2, 1882.

Garigliano (ancient Liris; in its upper course now called Liri), a river of Southern Italy, rising in the Abruzzi, W. of the former Lake of Fucino, and flowing after a generally S. course of 90 miles, into the Gulf of Gaeta.

Garland, Augustus Hill, an American lawyer; born near Covington, Tenn., June 11, 1832. He opposed secession as a policy, but was afterward elected to the Confederate Senate, which office he held till the close of the war; in 1874 was elected governor under the new constitution of Arkansas. In 1885 he became attorney-general in the cabinet of President Cleveland. He died in Washington, D. C., Jan. 26, 1899.

Garland, Hamlin, an American story-writer; born in La Crosse, Wis., Sept. 16, 1860.

Garlic, a species of onion cultivated in Europe since the year 1551. The leaves are grass-like and differ from those of the common onion in not being fistulous. The root is a compound bulb, consisting of several small bulbs enveloped by a common membrane. It differs from the onion only by being more powerful in its effects. It is much used as a seasoning in warm climates.

Garlic Pear, or **Garlick Pear,** a tree 30 or 40 feet high, bearing a fruit which has a smell of garlic. It grows in Jamaica.

Garman, Samuel, an American naturalist; born in Indiana Co., Pa., June 5, 1846; was graduated at the Illinois State Normal University in 1870; made assistant in herpetology and ichthyology in the Museum of Comparative Zoölogy, in Cambridge, Mass., in 1873.

Garnet, a beautiful mineral classed among the gems. It is generally of some shade of red, but is often brown, and sometimes green, yellow or black. Coarse garnets reduced to a powder are substituted for emery in some cases.

Garnet, Henry Highland, an Afro-American clergyman; born a slave in 1815, in New Market, Md., whence his parents escaped with him in 1826 to New York city. He graduated at Oneida Institute, Utica, N. Y., in 1840, and after a career as pastor, missionary and as a valued lecturer on the slavery question, he was appointed United States Minister Resident in Liberia. He died Feb. 13, 1882.

Garnett, James Mercer, an American philologist; born in Aldie, Va., April 24, 1840; was graduated at the University of Virginia in 1859; served in the Confederate army; was Professor of English Language and Literature, University of Virginia, in 1882–96. Died Feb. 18, 1916.

Garnett, Richard, an English philologist; born in Otley, Yorkshire, England, July 25, 1789. He had already tried commerce and the Church, when in 1838 he was appointed assistant keeper of printed books at the British Museum. One of the founders of the Philological Society, he contributed many striking papers to its "Proceedings." He died Sept. 27, 1850. RICHARD, his son, born Feb. 27, 1835, and connected with the British Museum from 1851, was a famous librarian and author. He died Apr. 13, 1906.

Garonne (ancient Garumma), the principal river in the S. W. of France, rising within the Spanish frontier at the base of Mount Maladetta, in the Pyrenees, enters the Atlantic at the Pointe de Grave. The estuary, the largest in France, is nearly 50 miles long. The total length of the river is about 346 miles. The valley is liable to destructive inundations, the most memorable being that of 1875, when damage to the amount of about $17,000,000 was caused.

Garonne, Haute, a department in the S. of France, embracing portions of ancient Gascony and Languedoc; area 2,457 square miles; pop. (1911) 432,126.

Garrard, Kenner, military officer born in Cincinnati, O., in 1828, graduated at West Point in 1851; and while on frontier topographical duty in 1861 was made a prisoner by the Texan troops for 15 months. As colonel of volunteers during the Civil War, he took part in the battles of Fredericksburg, Chancellorsville, and Gettysburg, and received rapid promotion. He commanded the Second Cavalry Division of the Army of the Cumberland at Chattanooga, and in the invasion of Georgia; and the Second Division of the Sixteenth Army Corps in the battle of Nashville, the capture of Blakely, and the movement upon Montgomery. In 1865 he was brevetted brigadier-general in the regular army. He died in 1879.

Garrett, Alexander Charles, Protestant Episcopal clergyman; born at Ballymote, Co. Sligo, Ireland, in 1832; graduated at Trinity College, Dublin, in 1855; for 10 years was a missionary in British Columbia; and after pastorates in San Francisco, and Omaha, was appointed Bishop of Northern Texas in 1876. He is the author of theological treatises.

Garrett, Thomas, philanthropist and reformer; born in Upper Darby, Pa., in 1789, of Quaker stock; became a hardware merchant at Wilmington, Del., where pity for the negroes led to the bold enunciation and practice of anti-slavery views. He helped to freedom over 3,000 slaves during 40 years. For the alleged abduction of two slave children in 1848, a heavy fine which would have left him penniless, was met by popular subscription. Died 1871.

Garrett, William Robertson, educator; born in Williamsburg, Va., Apr. 12, 1839, graduated at William and Mary College in 1858; studied law at the University of Virginia; served as captain of cavalry in the Civil War; and after several academic appointments, became professor of American history at the Peabody Normal College in 1895, and dean of the college in 1899. He is the author of historical, geographical, and other educational works. He died in 1904.

Garrick, David, an English actor, born in Hereford, Feb. 19, 1717; studied with Dr. Samuel Johnson; and after provincial training with Giffard, in 1741 commenced the brilliant metropolitan career in London and Dublin, which placed him at the head of his profession. He was best in Shakespearian roles. He died Jan. 20, 1779, was buried with great pomp in Westminster Abbey.

Garrigan, Philip Joseph, an American clergyman; born in Ireland about 1842; ordained in the Roman Catholic Church at Troy, N. Y., in 1870; vice-rector, Catholic University of America in 1888-1902; then became bishop of Sioux City, Ia.

Garrison, Lindley Miller, an American jurist; born in Camden, N. J., Nov. 28, 1864; acquired a university education; was admitted to the bar in 1892; Vice-Chancellor of New Jersey in 1904-1913; Secretary of War in 1913—.

Garrison, William Lloyd, an American reformer; born in Newburyport, Mass., Dec. 12, 1805. He was apprenticed to a shoemaker, but became a compositor on the Newburyport "Herald." In 1827 he became editor of the "National Philanthropist," the first American temperance journal, and afterward of a journal in support of the election of John Quincy Adams. With Mr. Lundy, a Quaker, he then started the paper called the "Genius of Universal Emancipation" (1829), his denunciations of slave-traders leading to his imprisonment for libel. On his release he commenced lecturing in Boston, started the "Liberator" (1831), published weekly with the aid of one assistant and a negro boy. In 1832 appeared his "Thoughts on African Colonization," and in the same year he established the Ameri-

can Anti-Slavery Society. He subsequently visited England. In 1835 he was saved with difficulty from a Boston mob; but his principles made steady progress till 1865, when the Anti-Slavery Society was dissolved with its work accomplished. He died in New York city May 24, 1879.

Garrote, or **Garrotte,** a Spanish instrument of execution. The victim, usually in a sitting posture, is fastened by an iron collar to an upright post, and a knob operated by a screw or lever dislocates the spinal column, or a small blade severs the spinal cord at the base of the brain.

Garshin, Vsevolod Michailovich, a Russian novelist; born in Bachmut, Yekaterinoslav, Feb. 14, 1855. He took part in the Russo-Turkish war, and was wounded at Charkow. He soon after finished his great work "Four Days," in which the sufferings and hallucinations of a wounded soldier are strikingly set forth. He had intervals of sheer mental blankness, and died in St. Petersburg, April 5, 1888.

Garter, Order of. The most Noble Order of the Garter, was instituted at Windsor by Edward III. about August, 1348. The order consists of the sovereign and 25 companions, of whom the Prince of Wales is always one. Knights are distinguished by the initials K. G. after their names, which take precedence of all other titles except those of royalty. The insignia of the order is the garter, bearing the jewel, the star of eight points, inclosing the cross of St. George, the collar, and the lesser George or jewel. The ribbon, originally black, was changed to sky-blue by Elizabeth, and at the accession of the house regnant, the present dark blue ribbon was adopted.

Gary, Elbert H., an American financier; born in Wheaton, Ill., Oct. 8, 1846; studied at Wheaton College; and was graduated at the Law School of Chicago University in 1867, being admitted to the bar of the Illinois Supreme Court the same year, and to that of the United States Supreme Court in 1878. He early applied himself to the practice of corporation law, and it was largely through his legal work that his talents as an organizer of large industries first came into recognition. These talents were given full scope in the formation of the American Steel and Wire Company. He retired from law practice in 1898 to become president of the Federal Steel Company, which in 1901 was merged into the United States Steel Corporation. He was also county judge of Du Page Co., Ill.

Gary, James Albert, an American statesman; born in Uncasville, Conn., Oct. 22, 1833; was educated at Allegheny College, Meadville, Pa. He was postmaster-general in 1897–1898, when he resigned.

Gary, an industrial town of Indiana, founded in 1906, at the mouth of the Calumet River on the shores of Lake Michigan, a few miles southeast of Chicago. It is named after Elbert H. Gary (q. v.), and is reached by numerous railroads. Pop. (1920) 56,378.

Gary School System, a plan recently originated and worked out by William Wirt at Gary, Ind. It has been applied with modifications to numerous schools in the East, especially those located in foreign sections of large cities. It provides supervised work, play, and study, for a large number of pupils, for a longer period of time, at a lower cost, and in a greater variety of subjects, including, besides the academics, training along lines of ability of the child and its environment. The pupils are arranged in groups which change frequently, thus allowing a child more freedom in following up his own individual tendencies. Special teachers are engaged for special subjects, and classes are small to render the instruction as individual as possible.

Gas, in chemistry, a substance possessing the condition of perfect fluid elasticity, and presenting under a constant pressure a uniform rate of expansion for equal increments of temperature, but when reaching its maximum density behaving like a vapor. All gases can be condensed into liquids by cold and pressure.

Gascoigne, Caroline Leigh, an English novelist and poet; born (Smith) May 2, 1813. She died June 11, 1883.

Gascoigne, Sir William, an English astronomer; born about 1612. He

is noted through his inventions, including the micrometer and various methods of grinding glasses; he was the first to employ two convex glasses in the telescope. He was killed in the battle of Marston Moor, July 2, 1644.

Gas Engine, an engine in which motion is given to the piston by the compression and expansion or explosion of a mixture of a combustible gas and air.

Gaskell, Elizabeth Cleghorn, an English author; born in Chelsea, London, England, Sept. 29, 1810. She married in 1832 the Rev. William Gaskell, a Unitarian clergyman. Her novels chiefly of a social and economical order, are based on the lives of the industrial poor of Manchester. She died Nov. 12, 1865.

Gas Light, in the most common meaning the light given by coal gas as employed in the lighting of buildings and streets. In 1792 W. Murdoch residing in Redruth in Cornwall made extensive experiments on the illuminating properties of gases obtained by distilling coal, wood, peat, and other combustible substances, which led him to the idea of collecting these gases in vessels, and expelling them through jets for light, and on this principle he lighted his own house and offices in Redruth. In 1798, having by this time returned to Birmingham, he erected a gas apparatus on a large scale at Soho Foundry. On the rejoicing for the peace of Amiens in 1802 the whole front of the Soho works was illuminated by Mr. Murdoch's gas apparatus. In the same year M. Le Bon lighted his house in Paris by gas obtained from wood and coal and made a proposal to supply the whole city. In 1805 a gas-lighting apparatus was erected in Manchester. The first gas company, the National Light and Heat Company, was established, and in 1809 Pall Mall was lighted. Gas was introduced in the United States first at Baltimore in 1821, in Boston in 1822, and in New York between 1823 and 1827. Gas is now largely used for cooking purposes; as an illuminant it is being superseded by electricity.

Gasoline, a light grade of petroleum.

Gasometer, or **Gas Holder,** an inverted cylindrical vessel of sheet-iron, placed in a tank of cast-iron, stone, or brick containing water. A pipe ascends from the bottom of the tank through the water, to admit the gas to the space between the surface of the water and the crown of the gas holder. Sometimes a second pipe descends through the water and the bottom of the tank, for the issue of the gas to the main pipe. Frequently only one pipe is used for the inlet and outlet alternately. The water is for the purpose of retaining the gas within the vessel. The pressure of the gas raises the gas holder; and the weight of the holder impels the gas through the pipes.

Gasparin, Agenor Etienne, Comte de, a French author; born in Orange, France, July 12, 1810. Elected to the Chamber in 1846, he attracted attention by his advocacy of religious liberty, prison reform, abolition of slavery, and social purity. At the outbreak of the American Civil War he published two books maintaining the justice of the Federal cause. He died near Geneva, Switzerland, May 4, 1871.

Gasparin, Valerie Boissier, Comtesse de, a French author; wife of A. E. de Gasparin, born in Geneva, Switzerland, in 1813. Two of her works obtained the Montyon prize at the Academie Francaise: "Marriage from the Christian Point of View" and "There are Poor in Paris and Elsewhere." She died near Geneva, Switzerland, June 19, 1894.

Gaspe, a peninsula on the E. of Quebec province, comprising the counties of Gaspe and Bonaventure, and projecting into the Gulf of St. Lawrence, between the estuary of that name on the N. and the Bay of Chaleurs on the S.; area nearly 8,000 square miles. Pop. 63,111. Gaspe Basin, where Cartier landed in 1534 is a port of entry in Gaspe Bay.

Gaspee, a British revenue schooner, destroyed in Narragansett Bay by Abraham Whipple and other patriots on the night of June 9, 1772. A reward of $5,000 was offered for the arrest of the leader, but Whipple was never betrayed, and afterward became a commodore in the American navy.

Gassendi, or **Gassend Pierre,** a French philosopher and mathematician; born in Champercier, Provence, France, Jan. 22, 1592. While going back to the ancients in his philosophy, Gassendi marched to the van of the moderns in natural and physical science. Kepler and Galileo were numbered among his friends. His "Astronomical Institute" (1647) is a clear and connected representation of the state of the science in his own day; in his "Lives of Tycho Brahe, Copernicus, Regiomontanus, etc.," (1654) he gives not only a masterly account of the lives of these men, but likewise a complete history of astronomy down to his own time. He died in Paris, Oct. 14, 1655.

Gasteropoda, in zoölogy, gasteropods. Its essential character is that the under side of the body constitutes a single muscular foot, on which the animal creeps or glides. Some breathe air, such as snails, slugs, etc.; others water as whelks, periwinkles, etc.

Gaston de Foix. See FOIX, GASTON DE.

Gaston, William, jurist and orator; born in Newbern, N. C., in 1778, of French Huguenot lineage. He graduated at Princeton in 1796, became a lawyer, and was elected State Senator in 1799. He became famous as an orator, and after an active political career, was judge of the Supreme Court of North Carolina from 1834 until his death in 1844.

Gastornis (named after Gaston M. Plante, its discoverer, and Greek ornis = a bird), a huge fossil bird from the Eocene.

Gastric Fever, sub-acute inflammation of the stomach; also a term in common use to denote enteric fever.

Gastric Juice, a colorless liquid secreted by the stomach containing about 98.5 per cent. of water; when evaporated to dryness and burnt, the ashes consist chiefly of sodium chloride. The gastric juice also contains a free acid, probably hydrochloric acid, and a peculiar substance called pepsin to which the power of digesting food possessed by the gastric juice appears to be due.

Gastric System, the parts of the body by means of which digestion is carried on.

Gastritis, inflammation of the stomach, either acute or chronic, usually most severe at the pyloric orifice, generally caused by corrosive or irritant poisons, but chiefly from the use of raw spirits, accompanied by nausea, sickness, etc., and in severe cases followed by congestion. It seldom occurs in persons of temperate habit.

Gaszynski, Konstantin, a Polish poet and novelist; born in Iezíorno, near Warsaw, March 30, 1809. He wrote in both Polish and French, and the literary studies to which he devoted himself in Provence are widely quoted as authorities on its language and people. He died in Aix, Provence, Oct. 8, 1866.

Gatacre, Sir William Forbes, an English military officer; born in 1843; joined the British army in 1862. He commanded the Mandalay Brigade in 1889-90; and in 1898 commanded the forces in the first march against Atbara in the Sudan; and in the advance against Khartum. When the war in South Africa broke out he was given an important command, but was defeated with heavy losses. He died Mar. 6, 1906.

Gataker, Thomas, an English clergyman; born in London, England, in 1574. He was educated at St. John's College, Cambridge, and was in succession preacher at Lincoln's Inn, rector of Rotherhithe, and member of the Assembly of Divines at Westminster. He opposed the imposition of the Covenant, and was one of the 47 London clergymen who condemned the trial of Charles I. He died in 1654.

Gate City, The, Keokuk, Ia., situated at the foot of the lower rapids on the Mississippi; also Atlanta, Ga., a great railroad center, so named by Jefferson Davis during the Civil War, it being, in his estimation, the most important inland position, from a military point of view, in the South.

Gate of Asia, Kazan, a fortified city of Russia; it is the entrepot of commerce between Siberia, Bokhara, and Russia.

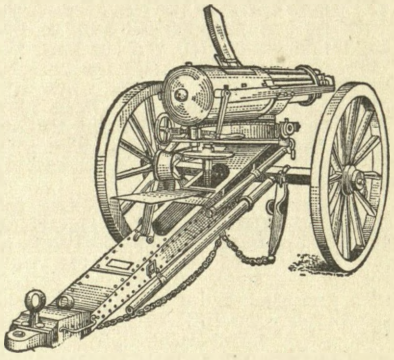
Gates, Horatio, an American military officer; born in Malden, England, in 1728; joined the British army early in life. In July, 1775, after offering his services to Congress, that body appointed him adjutant-general; in

1776 he was given command of a portion of the Northern army, and Aug. 2, 1777, assumed command of the Northern department. He met and captured Burgoyne with his whole army at Saratoga, Oct. 7, 1777, for which he received a gold medal and a vote of thanks from Congress. The credit of this victory, however, was largely due to Benedict Arnold. In November of the same year he was appointed president of the new board of war and ordnance; and in 1778, while holding that post, sought with the aid of his friends in Congress to supersede Washington as commander-in-chief. This action soon brought him into discredit, and after fighting a duel with Wilkinson, his former adjutant, he resigned from active service. In June, 1780, he again entered the army, becoming commander of the troops in North Carolina. On Aug. 16, of that year, his army was defeated near Camden, S. C. He was soon afterward suspended from duty, but reinstated in his command in 1782 after the capture of Cornwallis. Died in New York city, April 10, 1806.

Gates, Sir Thomas, a colonial governor of Virginia. He sailed from England in May, 1609, in charge of a colony of 500 emigrants to the New World. His vessel, the "Sea Venture," was stranded on the rocks of Bermuda. Here the passengers built two new ships and finally reached Virginia in May, 1610. Gates went to England in the meantime and returned in 1611 with 300 more emigrants. He was made governor the same year and held that office till 1614, when he returned to England, and there died in 1621, or soon after.

Gathmann Gun, a gun invented by Louis Gathmann, a Chicago mechanician and inventor, which is capable of throwing great masses of high explosives by means of gunpowder. Its bore is 13 inches, 1 inch larger than in any cannon heretofore made by the government. The shell is 7 feet long and contains 400 pounds of wet guncotton. There is a plunger at the end which, when it strikes an object, explodes the percussion cap which sets fire to some dry powder, that in turn sets off some dry guncotton, which on bursting lets loose the terrible force imprisoned in the 400 pounds of wet guncotton. One such projectile striking a battleship would blow it into fragments, and no fortification could for a moment withstand its assault. A satisfactory trial was made with this gun at Indian Head in the presence of navy and government officers, and in the early part of 1899 the Navy Department made an appropriation of $75,000 for the building of a gun after this model.

Gatling Gun, a machine gun, invented by Richard J. Gatling. The gun consists of a series of barrels in combination with a grooved carrier and lock cylinder. The operation of the gun is very simple. One man places a feed case filled with cartridges



GATLING GUN.

in the hopper; another man turns the crank, which, by the agency of the gearing, revolves the main shaft, carrying with it the lock cylinder, carrier, barrels, and locks. As the gun is rotated, the cartridges, one by one, drop into the grooves of the carrier from the feed cases, and instantly the lock, by its impingement on the spiral cam surfaces, moves forward to load the cartridge, and when the butt end of the lock gets on the highest projection of the cam, the charge is fired, through the agency of the cocking device, which at this point liberates the lock, spring, and hammer, and explodes the cartridge. As soon as the charge is fired, the lock, as the gun is revolved, is drawn back by the agency of the spiral surface in the cam acting on a lug of the lock, bringing

with it the shell of the cartridge after it has been fired, which is dropped on the ground. Thus, it will be seen, when the gun is rotated, the locks in rapid succession move forward to load and fire, and return to extract the cartridge shells. In other words, the whole operation of loading, closing the breech, discharging, and expelling the empty cartridge shells, is conducted while the barrels are kept in continuous revolving movement. It must be borne in mind that while the locks revolve with the barrels, they have also, in their line of travel, a spiral reciprocating movement; that is, each lock revolves once and moves forward and back at each revolution of the gun. The main features of the gun are: (1) Each barrel in the gun is provided with its own independent lock or firing mechanism. (2) All the locks revolve simultaneously with the barrels, carrier and inner breech, when the gun is in operation. The locks also have, as stated, a reciprocating motion when the gun is rotated. The gun cannot be fired when either the barrels or locks are at rest.

Gatling, Richard Jordan, an American inventor; born in Hertford co., N. C., Sept. 12, 1818. While a boy he assisted his father in perfecting a machine for sowing cotton seed, and another for thinning out cotton plants. In 1861 he conceived the idea of the revolving battery gun which bears his name. Of these he constructed six at Cincinnati, which were destroyed by the burning of his factory. Afterward he had 12 manufactured elsewhere, which were used by General Butler on the James river. In 1865 he improved his invention, and in the year following, after satisfactory trial, it was adopted into the United States service. It was used by the Canadian government in putting down the halfbreed rebellion. It has also been adopted by several European governments. He died Feb. 27, 1903.

Gatschet, Albert Samuel, an American linguist; born in Berne, Switzerland, Oct. 3, 1832; was educated at the Universities of Berne and Berlin; removed to New York city in 1868; studied the languages of the American Indians. In 1879 he became connected with the Bureau of American Ethnology. Died March 16, 1907.

Gatshina, a town of Russia, 30 miles S. S. W. of Petrograd, is especially worthy of mention for its royal palace, surrounded by one of the finest pleasure gardens in Europe, which was the favorite summer seat of the Emperor Paul I., and the winter residence of Alexander III.

Gatti-Casazza, Giulio, an Italian operatic manager; born in Ferrara, Italy, in 1869; undertook to become a naval engineer, but substituted music; succeeded his father as director of La Scala in 1893, and Heinrich Conried as director of the Metropolitan Opera House, New York city, in 1908.

Gaucho, a native of the pampas of La Plata, and of Spanish descent. The Gauchos live by cattle-breeding, and are noted for their skill in horsemanship and the use of the lasso and the bolas.

Gaul, or **Gallia,** the country of the ancient Gauls. It extended at one time from the Pyrenees to the Rhine, and included also a part of Italy. Hence it was divided into Gaul on this side (the Roman side) of the Alps, or Gallia Cisalpina, and Gaul beyond the Alps, or Gallia Transalpina. Latterly the former was regarded quite as part of Italy, and the name Gallia was restricted to Transalpine Gaul, or the country nearly corresponding to modern France. Julius Cæsar, about the middle of the 1st century B. C., found Transalpine Gaul divided into three parts: (1) Aquitania, extending from the Pyrenees to the Garonne, chiefly occupied by Iberian tribes; (2) Gallia Celtica, Celtic Gaul, from the Garonne to the Seine and Marne; (3) Gallia Belgica, Belgic Gaul, in the N., extending to the Rhine.

Gaul, Alfred Robert, an English composer and organist; born in Norwich, England, in 1837. A number of his compositions including "The Holy City," "Ruth," and "The Ten Virgins" (1890) have wide popularity. He died in 1913.

Gauls, the chief branch of the great original stock of Celts. Migrations among the Gauls about 397 B. C., and their passage of the Alps, first bring the Gallic nation into the region of history. Having crossed the Alps

they fell on the Etruscans, defeated the Romans at Allia (390 B. C.), and sacked and burned Rome, the capitol, however, being saved by Camillus. More than a century after the burning of Rome, the E. Gauls, in 280-287 B. C. made three destructive irruptions into Macedonia and Greece. Several tribes pursued their course into Asia Minor, where, under the name of Galatians, they long retained their national peculiarities. After these migrations the Gauls along the banks of the Danube and in the S. of Germany disappear. Tribes of German origin occupy the whole country as far as the Rhine, and even beyond that river. The Belgæ, who were partly German, occupied the N. part of Gaul, from the Seine and Marne to the British Channel and the Rhine, from whence colonists passed over into Britain, and settled on the coast districts. The Celts in Gaul had attained some degree of cultivation by intercourse with the Greeks and Carthaginians before they came in contact with the Romans. Those of Cisalpine Gaul continued formidable to Rome till after the first Punic war, when the nation was compelled as the result of a war of six years to submit to the Romans (220 B. C.). When Hannibal marched on Rome, they attempted to shake off the yoke; but the Romans, victorious over the Carthaginians, reduced them again to submission. Thirty-one years later (189 B. C.) their kindred tribes in Asia, the Galatians, met with the same fate; they also were vanquished, and their princes (tetrarchs) became tributary. In the years 128-122 B. C. the Romans conquered the S. part of Gaul along the sea from the Alps to the Pyrenees, and here established their dominion in what was called the Province (Provincia), a name that still exists as Provence. Not long after Gaulish tribes shared in the destructive incursions of the Cimbri and Teutones on the Roman territory, which were ended by Marius in the battles of Aquæ Sextiæ (Aix) in 102, and Vercelli in 101 B. C. On the appointment of Julius Cæsar to the proconsulship over the countries bordering on Gaul, he resolved to subject all Gaul, and executed his purpose in less than nine years (58-50 B. C.), in eight bloody campaigns. The dominion of the Romans in Gaul was confirmed by colonies, and the liberal grant of the Roman citizenship to several Gallic tribes. The religion of the Druids, being suppressed in Gaul by Tiberius and Claudius, gradually retreated into Britain, soon also conquered by the Romans. After the extinction of the Cæsars, the Gauls once more attempted to recover their liberty by aid of the Germans, but after this last effort became entirely Romanized, even their ancient language, the Celtic, being supplanted by a corrupt Latin dialect. About the year 486 the Franks subdued the greater part of Gaul, and put an end to the dominion of the Romans in that country.

Gaur, the mediæval capital of Bengal, also called Lakhnauti; said to have been founded by the Vaidya King Lakshmanasena, at the close of the 11th century. The ruins of Gaur still cover a space of 7 miles by 2, on a branch of the Ganges.

Gaur, a very large, fierce, and untamable ox, found in the Ramghur jungles in India. The adult male is 6 feet high at the shoulder, 12 feet long to the end of the tail, and above 7 feet 6 inches in girth; the eyes are said to be blue; the forehead more arched than in the common ox, covered with whitish wool; hair on the other parts, smooth, shining brown; tail short, tufted.

Gauss, Karl Friedrich, a German mathematician and astronomer; born in Brunswick, Germany, April 30, 1777. In 1807 he received the appointment of ordinary professor and director of the observatory at Gottingen, which situation he held for nearly 48 years. During this long period he gave to the world a host of treatises on pure mathematics, geodesy, astronomy, and the cognate sciences, besides contributing largely to scientific journals and making valuable observations on terrestrial magnetism. He died Feb. 23, 1855.

Gautama, the celebrated religious reformer of India, who lived in the 6th century B. C., and founded Buddhism. See BUDDHA; BUDDHISM.

Gautier, Theophile, a French poet and prose writer; born in Tarbes, France, Aug. 31, 1811. He applied himself at first, but without much suc-

cess, to painting; and then turned to literature. Merimee alone contests with him the palm as the prince of short-story writers. He was drawn early to feuilleton writing, and for more than 30 years contributed to the Paris newspapers criticisms on the theater and the salon. He died in Paris, Oct. 23, 1872.

Gauze, a light transparent silk or cotton stuff. In gauze weaving the weft-threads are separated from each other, and a light, transparent texture produced. Gauzes have been occasionally made of thread, but the name has always signified a silk fabric.

Gavarnie, Cascade de, a waterfall in the Cirque de Gavarnie, Pyrenees. It is the second highest in Europe, being 1,385 feet in height.

Gavarnie, Cirque de, a natural amphitheater in the Pyrenees, 14 miles S. S. E. of Cauterets. It is 2¼ miles in width and 5,380 feet in height.

Gavazzi, Alessandro, an Italian reformer; born in Bologna, Italy, March 21, 1809. At the age of 16 he became a monk of the Barnabite order. On the ascension of Pius IX. to the papal chair, he repaired to Rome, and devoted himself to the diffusion of political enlightenment and patriotic aspirations among the masses of the Roman population. The Pope sanctioned his political labors, and appointed him almoner of a body of about 16,000 Roman troops. He was called Peter the Hermit of the national crusade. On the establishment of the republic at Rome he was appointed almoner-in-chief to the national army. Under his superintendence efficient military hospitals were organized and attended by a band of Roman ladies, who volunteered their services and cooperation in the care of the wounded. Rome having fallen, Gavazzi went to England, where he delivered numerous addresses and lectures illustrative of the political and religious aims of his country. He twice visited the United States. He was president of the evangelization committee of the Free Italian Church. He died in Rome, Jan. 9, 1889.

Gavial, or **Gavialis,** the Gangetic crocodile called also the common gavial. It has a large cartilaginous protuberance containing the nostrils at the end of the snout. The gavial is about 25 feet long; it feeds chiefly on fish, and does not as a rule attack man. It is not confined to the Ganges, but is found in some other large Indian rivers. The fossil is found also in the Eocene of the United States, though it is now confined to Asia.

Gavotte, or **Gavot,** originally a dance of the gavots, or people of Gap, in the department of the Upper Alps. A dance tune of a lively yet dignified character, of French origin, in common time.

Gawelghur, an elaborately fortified stronghold of Hindustan, in the N. part of the Nizam's dominions, on the crest of a high and rocky hill, 11 miles N. W. of Ellichpore. In 1803 it was taken by storm by the British under General Wellesley, afterward Duke of Wellington.

Gay, Delphine, a French poet and novelist; born in Aix-la-Chapelle, Rhine Province, Prussia, Jan. 26, 1804. Carefully educated by her mother, Sophie Gay, she won fame with her poetry at the age of 15, an academic prize at 18, and a royal pension at 20. After her marriage with the famous Emile de Girardin in 1831, she began to write romances, which proved very popular. She died in Paris, June 29, 1855.

Gay, John, an English poet; born near Barnstaple, Devonshire, England, in 1685. He died in London, Dec. 4, 1732.

Gay, Sidney Howard, an American journalist and author; born in Hingham, Mass., May 22, 1814. He was a descendant of Governor Bradford of Plymouth Colony; entered Harvard at the age of 15, and studied law in the office of his father, Ebenezer Gay. Unwilling to take the oath to support the Constitution of the United States, which fostered and protected slavery, he gave up a legal career and devoted himself to anti-slavery journalism and lecturing. He became, in 1842, editor of "The Antislavery Standard," a position he retained till he joined, in 1857, the editorial staff of the New York "Tribune," of which he was managing editor from 1862 to 1866. From 1867 to 1871 he occupied the same position on the Chicago "Tribune," and for another two years

was managing editor of the "Evening Post." He died in New Brighton, Staten Island, June 25, 1888.

Gay, Walter, an American artist; born in Hingham, Mass., Jan. 22, 1856; was educated in Boston; studied art under Bonnat in Paris, where he was in frequent exhibitions. His paintings won many medals in America and Europe.

Gaya, the chief town of Gaya district, in Bengal, India, on the Phalgu, 57 miles S. of Patna. It is a place of the greatest sanctity, from its associations with the founder of Buddism and is annually visited by about 100,000 Hindu pilgrims, who, under the guidance of the Brahman priests, pray for the souls of their ancestors at the 45 sacred shrines within and without the walls. Pop. (1911) 49,921.

Gayal, or **Gyal,** an ox, with horns depressed at the base and directed outward. It is wild on the mountain ranges between Bengal and Further India. It is a dull, heavy animal, of gentle disposition, lowing like a buffalo rather than a common ox, but not wallowing in the mire like the former.

Gayarre, Charles Etienne Arthur, an American lawyer, politician, and historian; born in New Orleans, La., Jan. 9, 1805. He was admitted to the bar in 1829; was several times a member of the Louisiana Legislature; deputy State Attorney-General (1831); Secretary of State of Louisiana (1846–1853). His works deal largely with the history of his native State. He died Feb. 11, 1895.

Gay Head, a promontory and lighthouse on the S. W. extremity of Martha's Vineyard, Mass.

Gayler, Charles, an American dramatist; born in New York city, April 1, 1820. He wrote over 200 plays, and at one time had five produced simultaneously at New York theaters. He also wrote the first drama on the Civil War, entitled "Bull Run." He died in Brooklyn, May 28, 1892.

Gayley, Charles Mills, an American educator; born in Shanghai, China, Feb. 22, 1858; was graduated at the University of Michigan in 1878; became Professor of the English Language and Literature in the University of California in 1889.

Gay-Lussac, Louis Joseph, a French physicist; born in St. Leonard, Haute-Vienne, France, Dec. 6, 1778. In 1804 he was the first to make balloon ascensions for purposes of scientific investigation. He died May 9, 1850.

Gaynor, William J., an American jurist; born in Whitestown, N. Y., in 1851; began law practice in Brooklyn, N. Y., in 1875; elected judge of the New York Superior Court for the terms of 1893–1907 and 1907–1921; elected mayor of New York in 1909; was conspicuous and successful in fighting rings and election frauds in the Democratic party; and escaped death from the bullet of a disappointed officeholder in 1910. He died Sept. 10, 1913.

Gaza, one of the five chief cities of the ancient Philistines, situated in the S. W. of Palestine, about 3 miles from the sea. It is often mentioned in the history of Samson, and was the scene of constant struggles between the Israelites and the Philistines. In 333 B. C. it was taken after a five months' siege by Alexander the Great, and from that time down to 1799, when the French under Kleber captured it, it witnessed the victories of the Maccabees, the Calif Abubekr, the Templars, and the heroic Saladin.

Gazelle, a kind of antelope. It lives in North Africa, is gentle in character, but when a herd is attacked, it forms a circle presenting an array of horns, so as to leave no safe means to allow the assailant to break the ring of defense. Nevertheless, the gazelle is largely preyed on by the lion. It furnishes a constant theme for Arabic poetry.

Gean, the wild **cherry.** It occurs in Europe, in North Africa, and in Western Asia to the Himalaya Mountains. The fruit is excellent.

Geary, John White, an American military officer and politician; born in Mount Pleasant, Westmoreland co., Pa., Dec. 30, 1819. He was a lieutenant-colonel in the Mexican War; went to California and was appointed postmaster at San Francisco in 1849, being the first to hold that position in the city. In 1850 he was elected the first mayor of San Francisco, and in 1856 was made territorial

governor of Kansas. When the Civil War broke out he enlisted in the Union army and became Brigadier-General of volunteers April 25, 1862. He was in the battle of Cedar Mountain, Aug. 9, 1862, and commanded a division at Chancellorsville, Gettysburg and Lookout Mountain. He was governor of Pennsylvania from 1867 till two weeks before his death, Feb. 8, 1873.

Gebhardt, Oskar von, a German theologian; born in Wesenberg, Esthonia, June 22, 1844; studied theology, and after 1875 was engaged as librarian at Strasburg, Leipsic, Halle, Göttingen (1880), and Berlin (1884). D. 1906.

Gebhart, Emile, a French critic and essayist; born in Nancy, France, July 19, 1839. His numerous writings have to do mostly with the poetry and art of antiquity. D. in 1908.

Gebweiler, a town in Alsace-Lorraine, on the Lauch, at the foot of the Vosges Mts. 15 miles N. W. from Mulhausen. It is mentioned as early as 774, and suffered severely in the revolution of 1789. The town is noted for its white wines and its spinning and dyeing industry.

Gecko, a name applied to each of the species of a group of lizards. There are nearly 300 species found in the warmer regions of the earth's surface. Almost all are nocturnal in their habits and are of rather small size. A peculiar acrid mucus is secreted by glands on the under surface of the toes which is said to possess a slight blistering property when applied to the skin, and to be otherwise poisonous. The ends of the toes are usually flattened into disk-like bodies, by means of which the animal is enabled to exhaust the air under the foot, and thus adhere forcibly to any flat surface on which it may be placed. In this manner it courses over perpendicular walls and walks in perfect safety inverted on a ceiling. During the day it lies hidden in damp and obscure places, sallying forth in the evening to prey upon insects which it pursues with great rapidity, uttering from time to time a short, sharp chirp.

Geddes, Alexander, a Scottish Biblical critic; born in Ruthven, Banffshire, Scotland, in September, 1737. He was educated for a priest first in Scalan, in the Highlands, next at the Scots College, Paris, where he acquired a knowledge of Hebrew, Greek, Italian, French, Spanish, German, and Dutch. Through the munificence of Lord Petre he published a translation of the Bible into English for the use of Roman Catholics (1792–1800), the last volume containing his "Critical Remarks on the Hebrew Scriptures." These volumes, especially the last, are startlingly heretical, offending Catholics and Protestants alike, and exposed Geddes to the charge of infidelity. He died in London, Feb. 26, 1802.

Geddes, Andrew, a Scottish painter and etcher; born in Edinburgh, Scotland, April 5, 1789. He ranks high as an etcher. In 1831 he was elected A. R. A. He died in London, May 5, 1844.

Geefs, Guillaume, a Belgian sculptor; born in Antwerp, Sept. 10, 1806. He became professor at the Academy of Antwerp in 1834; died 1883. He produced many works of merit. His brothers Joseph (died 1885) and Aloys (died 1841) were also sculptors of reputation.

Geffroy, Mathieu Auguste, a French historian; born in Paris, France, April 21, 1820. He became Professor of Ancient History at Paris in 1872; and three years later was appointed director of the French school at Rome. He died in Paris, Aug. 15, 1895.

Gegenbaur, Karl, a German anatomist. In 1855 he was called to a medical professorship at Jena, but from 1858 to 1873 he taught anatomy. He removed to Heidelberg in 1873. His fame rests on his "Outline of Comparative Anatomy." D. in 1903.

Gehenna (Hebrew Ge Hinnom, the Valley of Hinnom), in Scriptural geography a valley anciently belonging to a man, Hinnom, of whom nothing is known, and inherited by his son or sons, whence it is called the Valley of the Son of Hinnom, or of the children of Hinnom. In Joshua it is described as lying S. of Jebusi, the Jebusite capital, which afterward became Jerusalem. Here, during the latter period of the Jewish kings, men made their sons and daughters pass through the fire to Molech or Moloch, the Ammonite fire-god, or actually burnt them in the fire. Josiah put an end to these cruel

practices, and defiled the place. It was doomed afterward to become an overcrowded cemetery. When the Jews outgrew all love of human sacrifice, they regarded the place with horror, the rabbis deeming it the gate of hell. The valley, which the Arabs call Gehennam, is thoroughly known. It is narrow and deep, with rugged limestone cliffs excavated for tombs, and the mountain sides overtopping all.

Gehrt, Karl, a German artist; born in Hamburg, Germany, May 11, 1853; died in Enderich, Germany, July 17, 1898.

Geibel, Emanuel von, one of the most popular of modern German poets; born in Lubeck, Germany, Oct. 17, 1815. At the beginning of 1843 a pension of 300 thalers was bestowed on him by the King of Prussia. In 1852 he was appointed Professor of Æsthetics in the University of Munich by the King of Bavaria — a post he retained till 1868, when he retired to Lubeck. He died in Lubeck, April 6, 1884.

Geiger, Abraham, a German Orientalist; born in Frankfort-on-the-Main, Prussia, May 24, 1810. His prize essay, "What Does Mohammed Owe to Judaism?" was published in 1833. In November, 1832, he was called as rabbi to Wiesbaden, and there he devoted himself with great zeal and in a scientific spirit to Jewish theology, especially in its relation to practical life. In 1838 he was called as second rabbi to Breslau, and here he came into serious conflict with the more conservative Jews, but carried with him all men of learning and thought. He died in Berlin, Oct. 23, 1874.

Geiger, Lazarus, a German philologist; born in Frankfort-on-the-Main, Prussia, May 21, 1829. He wrote much on the relation of language and thought, affirming that without language man must have been without reason. He died in Frankfort-on-the-Main, Aug. 29, 1870.

Geijer, Erik Gustaf, a Swedish historian; born in the province of Wermland, Jan. 12, 1783. He sat in the national Parliament for some years, and was distinguished for his eloquence. His "History of the Swedish People," "History of the State of Sweden from 1718 to 1882," and various contributions to the history of philosophy, theology, and æsthetics, are epoch-making in Swedish letters. He died in Stockholm, April 23, 1847.

Geikie, Sir Archibald, a Scottish geologist; born in Edinburgh, Scotland, Dec. 28, 1835. From 1870 to 1881 he was Murchison Professor of Geology in Edinburgh University; and in 1881 was appointed director-general to the survey of the United Kingdom, being at the same time placed at the head of the Museum of Practical Geology, London.

Geikie, James, a Scottish geologist; born in Edinburgh, Scotland, Aug. 23, 1839. He received an education similar to that of his brother Archibald, and succeeded him as Murchison Professor of Geology in Edinburgh University. D. in 1915.

Geiler von Kaiserberg, Johannes, a famous German pulpit orator; born in Schaffhausen, Switzerland, March 16, 1455. He was one of the most learned and original men of his age; his sermons, usually composed in Latin and delivered in German, are marked by great eloquence and earnestness, nor do they disdain the aids of wit, sarcasm, and ridicule. He died in Strasburg, March 10, 1510.

Geiregat, Pieter, a Flemish novelist and dramatist; born in Ghent, Feb. 25, 1828. He began as a journalist, but soon became known as a writer of sketches and stories and plays. He is happy in delineating the national character, and successful also as a historical novelist.

Geissler, Heinrich, a German mechanician; born in Igelshieb, Germany, May 26, 1814. He became known as a maker of physical and chemical apparatus and principally as the inventor of Geissler's tubes, an apparatus for producing light by an electric discharge in vacuo. He died in Bonn, Prussia, Jan. 24, 1879.

Geissler's Tubes, tubes made of very hard glass, and containing highly rarefied gases. Each end of the tube has a platinum wire sealed into it to serve as electrodes. When a discharge of electricity is caused to take place in these tubes by connecting the electrodes to the terminals of a Ruhmkorff's coil or a Holtz's machine, very brilliant effects may be produced.

Gela, one of the most important ancient Greek cities of Sicily, situated on the S. coast of the island between Agrigentum and Camarina; founded in 690 B. C. by a colony of Cretans and Rhodians. The colony was remarkably prosperous, and in 528 B. C. sent out a portion of its inhabitants, who founded Agrigentum. In 280 Phintias, the tyrant of Agrigentum, utterly destroyed Gela.

Gelada, a singular Abyssinian baboon, remarkable for the heavy mane which hangs over the shoulders, and which only grows when the animal is adult.

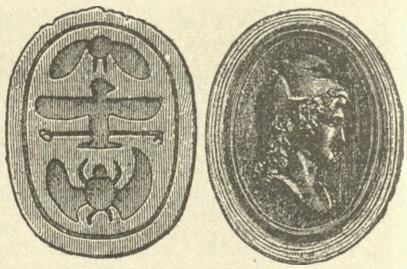
Gelatine, or **Gelatin,** so named from the tendency which the substance has to congeal and become to a certain extent solid. Animal glutin is obtained by treating bones with dilute hydrochloric acid, which dissolves the mineral constituents of the bone, and leaves the bone cartilage. This, when boiled for a long time with water, dissolves, and forms gelatine, which can be purified by dissolving in hot water and precipitating by alcohol. Impure gelatine, called glue, is prepared by boiling down pieces of hide, horn, hoof, cartilage, etc., with water under pressure. Pure gelatine is amorphous, transparent in thin plates, of a yellowish-white color; it has neither taste nor smell, and is neutral to vegetable colors. In contact with cold water it swells up, and is soluble in hot water. It is insoluble in alcohol and ether.

Gellert, Christian Furchtegott, a German poet; born in Saxony, July 4, 1715. After spending some years in teaching, in 1751, he received a professorship at Leipsic, where he lectured on poetry, eloquence, and morals, to large and enthusiastic audiences. Gellert came to occupy this position partly on account of his writings, but more on account of his personal character. He died in Leipsic, Dec. 13, 1769.

Gellius, Aulus, a Latin author; flourished in the 2d century of our era. His well-known work, "Attic Nights," is a collection of miscellaneous matter on language, antiquities, history, and literature, in 20 books, of which the 8th is wanting. It contains many extracts from Greek and Latin authors no longer extant.

Gelon, tyrant of Gela and afterward of Syracuse. He was a scion of a noble family of the former city, and succeeded its tyrant, Hippocrates, in 491 B. C. Six years later he made himself master of Syracuse also, which then became the seat of his government, and to which he transferred the majority of the inhabitants of Gela. He became embroiled with the Carthaginians because of their attack on his ally, Theron of Agrigentum, and defeated them in a great victory at Himera, on the same day, according to tradition, on which the Greeks won the battle of Salamis. The clemency and wisdom of Gelon rendered him so generally beloved that when he appeared unarmed in an assembly of the people, and declared himself ready to resign his power, he was unanimously hailed as the deliverer and sovereign of Syracuse. He died about 478 B. C.

Gem, a precious stone. Gems are sometimes found crystallized in regular shapes and with a natural polish,



Intaglio. Cameo.

GEMS.

more commonly of irregular shapes and with a rough coat. The term gem often denotes more particularly a stone that is cut, polished, or engraved, and it also includes pearls and various artificial productions. The first and most valuable class of gems includes diamonds, emeralds, rubies, sapphires, and a few others; the second class includes the amethyst; topaz, garnet, etc.; while agate, lapis-lazuli, carnelian, etc., though much used for ornament, can scarcely be called gems. The fabrication of artificial gems is now prosecuted with skill and has become an important art.

Gemara, that portion of the two Talmuds which contains the annotations, discussions, and amplifications of the Mishnah.

Gemini, the third of the zodiacal constellations. The name is given from two conspicuous stars, Alpha and Beta Geminorum, the former named, after the example of the Greeks, Castor; the latter Pollux.

Gemmation, in botany: (1) The act of budding; specifically, the production of buds in the axils of the floral leaves, the former developing into new flowers or inflorescences. (2) The manner in which young leaves are folded up in a bud before it opens; vernation. (3) The time when buds come forth.

In zoölogy, generation by the development of buds, which in some species grows out of the forepart of the body, and in others from the hind part near the stem, or from the stem itself, from which the young animal soon detaches itself.

Gem Sculpture, the glyptic art, or lithoglyptics; the art of representing designs on precious stones, either in raised work (cameos) or by figures cut into or below the surface (intaglios).

Genast, Karl Albert Wilhelm, a German poet and dramatist; born in Leipsic, Saxony, July 30, 1822. He died in Weimar, Germany, Jan. 18, 1887.

Gendarme, one of the armed police of France. They are divided into horse and foot gendarmes. They are all picked men, and are usually selected from the military forces for their courage and good character. They are divided into brigades, and a number of brigades form a departmental company. The gens-d'armes were originally the king's horse-guards only, but afterward the king's gardes-du-corps (body-guard); the musketeers and light-horse were reckoned among them. There was also a company of gentlemen (in number about 250) bearing this name.

Genealogy, the systematical investigation and exhibition of the origin, descent, and relations of families (or their "pedigree"). Persons descended from a common father constitute a family. Under the idea of "degree" of relationship is denoted the nearness or remoteness of relationship in which one person stands with respect to another. A series of several persons descended from a common progenitor is called a "line." A line is either "direct" or "collateral." The collateral lines comprehend the several lines which unite in a common progenitor. For illustrating descent and relationship genealogical tables are constructed, the order of which depends on the end in view. The common form of genealogical tables places the common stock at the head, and shows the degree of each descendant by lines. Some tables, however, have been constructed in the form of a tree, in which the progenitor is placed beneath, as if for a root.

Genee, Rudolf, a German author; born in Berlin, Prussia, Dec. 12, 1824. As a reader and interpreter of Shakespeare he attained distinction; but his plays raised him to the front rank. His works in criticism, treating of German poetry, the drama, and kindred themes, are standard. D. 1914.

General, the title of a military office of varying importance in different countries. In the United States this office was created by Congress for General Grant and that of lieutenant-general for General Sherman. After the death of General Grant the office was conferred on General Sherman and General Sheridan was promoted to lieutenant-general, and on the death of General Sherman the office was revived for General Sheridan. With the latter the offices of lieutenant-general and general expired by law. That of lieutenant-general was revived in 1895 for Maj.-Gen. John M. Schofield, and again in 1901, when Maj.-Gen. Nelson A. Miles was appointed its incumbent. Lieutenant-General Miles retired in 1903. When the office of lieutenant-general has expired by law the senior major-general becomes the commanding officer of the army.

At the beginning of 1917 the U. S. army had on the active list 10 major-generals and 28 brigadier-generals. After the country was forced into the great war and there was a general mobilization of troops for foreign service, the President revived the rank of General. John Joseph Pershing became General in 1917.

General Education Board, an organization incorporated by Congress in 1903 and endowed by John D. Rockefeller with gifts aggregating (1921) $126,788,094, to promote education in the United States without distinction of race, sex, or creed and to make effective educational gifts.

Genesis. In Scripture, the first book of the Pentateuch, of the Old Testament, and of the Bible. It is called in Hebrew bereshith, which is its initial word, correctly translated in the authorized English version, "In the beginning."

The Jewish and, following it, the early Christian Church almost unanimously pronounced Moses the author of the work, deriving his knowledge of the events prior to his time either from direct revelation or from prior documents consulted under divine guidance.

Geneva, a city in Ontario county, N. Y.; on Seneca lake and two railroads; 48 miles S. E. of Rochester; is the seat of Hobart College (P. E.) and a State Agricultural Experiment Station; a farming trade center for six counties; has large fruit-tree nurseries, noted mineral springs, and manufactures of optical instruments, radiators, steam heaters, stoves, and canned goods. Pop. (1920) 14,648.

Geneva, a town of Switzerland; capital of the canton of the same name; at the W. extremity of the Lake of Geneva, where the Rhone issues, here crossed by several bridges, and dividing the town into two portions, the larger and more important of which is on the left or S. bank. In literature and science Geneva has long occupied a distinguished place, and it has been the birthplace or the residence of many eminent men, including Calvin, Beza, Knox, Le Sage, Necker, De Candolle, Rousseau, Sismondi, etc. Geneva early adopted the principles of the Reformation, and chiefly through the teaching of Calvin the town acquired an important influence over the spiritual life of Europe, and became the center of education for the Protestant youth of Great Britain, France, and Germany. Pop. (1920) commune, 135,059, including suburbs.

The canton is bounded by the canton of Vaud and the Lake of Geneva, and by France; area, 108 square miles; pop. (1910) 154,159. The territory of Geneva having, through the Congress of Vienna, obtained an accession of 15 communes, detached from France and Savoy, was admitted a member of the Swiss Confederation in 1814, and ranks as the 22d canton. Its constitution of 1848 is the most democratic in the federation. All religious denominations are declared to have perfect freedom, but two of them are paid by the State — the Roman Catholics, amounting to rather more than a third of the population, and the Protestant National Church. Language French.

Geneva Award, the settlement of the Alabama claims by five arbitrators, appointed by the President of the United States, the Queen of Great Britain, the King of Italy, the President of the Swiss Confederation, and the Emperor of Brazil. These rulers in the above order, named as arbitrators Charles Francis Adams, Lord Chief-Justice Sir Alexander Cockburn, Count Federigo Sclopis, Mr. Jacques Staempfli, and Baron Itajuba. J. C. Bancroft Davis and Lord Tenterden, respectively, represented as agents the United States and Great Britain. The tribunal met at Geneva, Switzerland, Dec. 15, 1871, and Count Sclopis was made president. The United States claimed damages both for direct and for indirect losses, and for injuries occasioned by 13 vessels. The tribunal decided to allow only direct losses caused by the "Florida" and the "Alabama," with their tenders, and by the "Shenandoah" during part of her cruise. Various rules of international law were laid down which supported most of the contentions of our government. On Sept. 14, 1872, the tribunal "awarded to the United States a sum of $15,500,000 in gold as the indemnity to be paid by Great Britain to the United States as the satisfaction of all the claims referred to the consideration of the tribunal." The English representative cast the only dissenting vote, but Great Britain accepted the decision and paid the award within a year.

Geneva Bible, a translation of the Bible into English, made and published at Geneva, chiefly by English Protestant refugees. It was the first English Bible which adopted the Roman

instead of the old style black type, and the first which recognized the division into verses; it was the first also which omitted the Apocrypha. From its stating, in Gen. iii: 7, that our first parents made themselves "breeches," it is sometimes known as the Breeches Bible.

Geneva College, a coeducational institution in Beaver Falls, Pa., founded in 1848 under the auspices of the Reformed Presbyterian Church.

Geneva Convention, a convention signed by the chief European continental powers in 1864, providing for the succor of the sick and wounded in war. It has since been ratified by the United States, Great Britain, Japan, and about 40 other nations. The chief provisions are:

1. The neutrality of ambulances and military hospitals.

2. The personnel of such ambulances and hospitals, including sanitary officers and naval and military chaplains, to be benefited by the neutrality.

3. The inhabitants of a country, rendering help to the sick and wounded, are to be respected and free from capture.

4. No distinction to be made between the sick and wounded, on account of nationality.

5. A flag and uniform to be adopted, and an armlet for the personnel of ambulances and hospitals. The flag and armlet to consist of a red Greek cross on a white ground. The Turks use a red crescent in place of the cross.

Other provisions have since been added intended to mitigate the severity of naval combat, and cover cases of capture and sinking of vessels. To carry out the terms of this convention, the International Society for the Aid of the Sick and Wounded has been organized, with committees in the chief towns in the United States and in Europe. It first played an important part in the Franco-German War, every nation sending its contingent of ambulances, surgeons, etc. In the Spanish American War the Cuban Central Relief Committee used the Red Cross Society as an agency in the distribution of relief, and Dr. A. M. Lesser, chief surgeon of the Red Cross, made a splendid record in aiding the wounded of both armies at Santiago.

Geneva, Lake of, or **Lake Leman,** (Latin, Lacus Lemanus), the largest of the Swiss lakes, extending in the form of a crescent, with its horns pointing S., between France on the S., and the cantons of Geneva, Vaud, and Valais; length, measured on the N. shore, 55 miles; and on the S. shore 40 miles; central breadth, about 6 miles; area, 331 square miles; greatest depth, 900 feet. It is 1,150 feet above the sea. The water is remarkably pure and of a beautiful blue color.

Genghis Khan, or **Jenghis Khan,** a Mongol conqueror; born near the Onon river, Mongolia, in 1162. His father was chief over 30 or 40 clans, but paid tribute to the Tartar Khan. He succeeded his father when only 14 years of age, and made himself master of the neighboring tribes. A great number of tribes now combined their forces against him. But he found a powerful protector in the great Khan of the Karaite Mongols, Oung, or Ung, who gave him his daughter in marriage. After much intestine warfare with various Tartar tribes Genghis was proclaimed Khan of the United Mongol and Tartar tribes.

He now professed to have a divine call to conquer the world, and the idea so animated the spirit of his soldiers that they were easily led on to new wars. The country of the Uigers, in the center of Tartary, was easily subdued, and Genghis Khan was now master of the greatest part of Tartary. In 1209 he passed the great wall of China, the conquest of which country occupied him more than six years; the capital, Yenking, now Peking, was taken by storm in 1215 and plundered. The murder of the ambassadors whom Genghis Khan had sent to the King of Kharism (now Khiva) occasioned the invasion of Turkestan in 1218 with an army of 700,000 men; and the two cities of Bokhara and Samarcand were stormed, pillaged, and burned. Seven years in succession was the conqueror busy in the work of destruction, pillage, and subjugation, and extended his ravages to the banks of the Dnieper. In 1225, though more than 60 years old, he

marched in person at the head of his whole army against the King of Tangut (Southwestern China), who had given shelter to two of his enemies. A great battle was fought, in which the King of Tangut was totally defeated with the loss of 300,000 men. The victor remained some time in his newly-subdued provinces, from which he also sent two of his sons to complete the conquest of Northern China. At his death in Mongolia, in 1227, his immense dominions were divided among his four sons.

Genii, fabulous beings regarded by the Arabians as intermediate between angels and men, and capable of assuming any form or of becoming invisible at pleasure.

Genius, in Roman mythology, a tutelary deity. According to the belief of the Romans, which was common to almost all nations, every person had his own genius; that is, a spiritual being, which introduced him into life, accompanied him during the course of it, and again conducted him out of the world at the close of his career. The genii of women were called Junones.

Genlis, Stephanie Felicite Ducrest de St. Aubin, Comtesse de, a noted French writer; born in Champceri, Burgundy, Jan. 25, 1746. At the age of 16 she was married to the Comte de Genlis, and in 1770 was made lady-in-waiting to the Duchesse de Chartres. In 1782 the Duc de Chartres, afterward known as Egalite, appointed her "governor" of his children, including Louis-Philippe. She wrote a variety of works for her pupils. She died in Paris, Dec. 31, 1830.

Genoa (ancient Genua), a city of Italy, situated on the Gulf of Genoa, at the foot of the Apennines, the capital of the province and the most important seaport; 801 miles S. E. of Paris. While worthy of its title, "Genoa the Superb," as viewed from the sea, it is in reality built awkwardly on irregular rising ground, and consists of a labyrinth of narrow and intricate lanes, accessible only to foot-passengers or pack-mules. The dark thoroughfares are lined with tall buildings, some of them of marble and handsome architecture, but now in many cases hotels or business places.

Genoa is the commercial outlet of a wide extent of country, of which the chief exports are rice, wine, olive oil, silk goods, coral, paper, macaroni, and marble. The annual exports of Genoa are valued at nearly $20,000,000, the imports are returned at more than $75,000,000. The principal industries are iron works, cotton and cloth mills, macaroni works, tanneries, sugar refineries, and vesta-match, filigree, and paper factories. Pop. (1915 est.) 300,139.

After the downfall of the empire of Charlemagne, Genoa erected itself into a republic, and till the 11th century shared the fortunes of the cities of Lombardy. The situation of the city was favorable to commerce, and it pursued the trade of the Levant even earlier than Venice.

At the beginning of the 12th century Genoa carried on an extensive commerce with the different nations of the Levant and had extensive foreign possessions. Little by little these were lost. When the neighboring countries submitted to the French in 1797 the neutrality which the republic had strictly observed did not save the fluctuating government from ruin. Bonaparte gave to them a new constitution formed on the principles of the French representative system. On the overthrow of the French empire Genoa was occupied by the British, with whose permission the ancient constitution was reëstablished. But the Congress of Vienna in 1815 assigned Genoa with its territories to Sardinia, stipulating that it should have a sort of representative constitution. In 1821 it joined for a moment the revolutionary movements of Italy. In the spring of 1849, after the defeat of Charles Albert at Novara and the conclusion of a truce with the Austrians, a revolutionary outbreak took place, the national guards occupied the forts, and the garrison was compelled to withdraw. A provisional government was formed and the independence of the republic was proclaimed. But a large body of Sardinian troops under Gen. Della Marmora, soon appeared before the city; a bloody struggle ensued and the forts and principal points of the city were taken by the royal soldiery. Meanwhile a deputation was sent to Turin,

which returned with the amnesty of the king, excluding the chief leaders of the movement, who, however, escaped on board an American vessel. In April the city was disarmed and the monarchical government restored. Following the fortunes of the Sardinian States, Genoa became a portion of the kingdom of Italy.

Gentiles, in Scripture, all the nations of the world, excepting the Jews. In the Old Testament it is the rendering of the Hebrew word goim = peoples, nations. At first it was used as a mere ethnological word, and quite respectfully, but as the Jews became more conscious of their privileges they employed it more and more scornfully of the nations around.

Gentleman, in English law, every men above the rank of yeomen, including noblemen; in a more limited sense, a man who without a title bears a coat of arms, or one who is "a gentleman by reputation," though belonging to some liberal profession or holding some office giving him this rank. In the United States every man of honor and high principles, especially if also well-bred.

Gentleman Commoner, a privileged class of commoners in the English University of Oxford; they wear a special gown and a velvet cap.

Gentlemen-at-arms, a body of 40 gentlemen, headed by a captain, lieutenant, and standard-bearer, whose duties are to form a body-guard to the British sovereign on state occasions. The corps was established by Henry VIII. in 1509, under the name of the Band of Gentlemen Pensioners.

Gentz, Friedrich von, a German politician and writer; born in Breslau, Prussia, May 2, 1764. He died near Vienna, June 9, 1832.

Genung, John Franklin, an American educator; born in Willseyville, N. Y., Jan. 27, 1850; was graduated at Union College in 1870 and at the Rochester Theological Seminary in 1875; became Professor of Rhetoric in Amherst College.

Genus, a class, a kind, a species, in zoölogy and botany, an assemblage of species or of sub-genera closely agreeing together in all essential characteristics, not found in any others of the sub-family or family to which they belong.

Genzano, a town of Italy on the Via Appia, 16 miles S. E. of Rome, near the lake of Nemi. It contains the Cesarina palace, and is noted for its annual flower festival, held on the eighth day after Corpus Christi, which attracts many visitors.

Geoffrey of Monmouth, a famous English chronicler; born probably in Monmouth about 1100. He was the author of a famous chronicle or history of the first British kings, often quoted by men of letters, and remarkable for its curious legends. Geoffrey was successively archdeacon of Monmouth, bishop of St. Asaph, and abbot of Abingdon, where he died in 1152 or 1154.

Geoffroy St. Hilaire, Etienne, a French naturalist; born in Etampes, France, April 15, 1772. At the age of 21 he obtained the chair of zoölogy in the Parisian Jardin des Plantes. As a member of the Egyptian expedition in 1798 he founded the Institute of Cairo, and returned about the end of 1801 with a rich collection of zoölogical specimens. In 1807 he was made a member of the Institute, and in 1809 Professor of Zoology at the Faculty of Sciences. He devoted himself especially to the philosophy of natural history. He died in Paris, June 19, 1844.

Geoffroy St. Hilaire, Isidore, a French physiologist and naturalist, son of the preceding; born in Paris, Dec. 16, 1805. He devoted himself to natural history, and in 1824 was appointed assistant to his father at the Jardin des Plantes. He was elected to the Academy of Sciences in 1833, and afterward became successively inspector-general of the university, member of the council of instruction, and Professor of Zoölogy at the Academy of Sciences. He was the means of founding the Acclimatization Society of Paris. He died in Paris, Nov. 10, 1861.

Geography (from the Greek ge, earth, and grapho, I write), the description of the earth, of the condition of our globe. The earth may be considered as a world, in relation to the other worlds; or as a body of different parts, properties, and phenomena, which at the same time is inhabited by

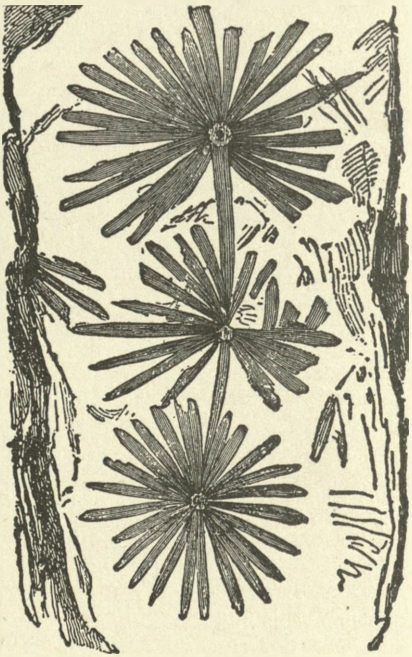
beings of different natures; or as the residence of free moral agents among whom its surface is divided and through whose influence it undergoes many changes. Geography, therefore, is commonly divided into mathematical or astronomical, physical, and political. The first two taken together are also called general geography.

Mathematical or astronomical geography has for its object the determination of the form and dimensions of the earth and its relations with the celestial bodies; it treats of the earth's motion and the laws by which that motion is governed. Physical geography describes the principal features of the earth's surface, as consisting of land and water; the extent and configuration of the continents and islands; the elevation and direction of the mountain chains; the conformation of the plains and valleys, their altitude above the sea level; the soil, climate, and animal and vegetable productions of the different countries. Political geography embraces, in the first instance, the description of the political or arbitrary divisions and limits of empires, kingdoms, and states; and in the second, that of the laws, modes of government, and social organization which prevail in different countries.

Geological Survey, United States, a bureau of the Interior Department created for the purpose of preparing a map of the United States, classifying the public lands, examining the geological structure, mineral resources, and the products of the country. To these duties have since been added those of investigating the extent to which the arid lands of the West can be redeemed by irrigation, segregating the irrigable from the non-irrigable lands, and the selection of cites for reservoirs and canals for the purposes of irrigation. The maps made by the Geological Survey are all on a large scale, and have a degree of accuracy and a minuteness in detail incomparably greater than ordinary maps.

There are three principal branches of the geological survey: (1) Geology proper; (2) Topography; (3) Irrigation surveys. The geological branch investigates the stratigraphy, the geological structure and history, the lithology, mineralogy, and palæontology, the ores and mines, and in general the natural economics, resources, and physical geography of the country. The topographic branch prepares the maps; the irrigation branch investigates the possibilities of irrigation and selects the irrigable lands and sites available for reservoirs and canals. The work of the topographic branch is the basis of the work of the other two, and all the results of the latter are projected on the maps.

Geology, the science which investigates the bygone history of the earth with the view of accounting for its



FOSSIL PLANT FROM COAL MEASURES OF PENNSYLVANIA.

present condition. It inquires into the successive changes which have taken place in the organic and inorganic kingdoms of nature, seeks out the causes of these changes, and traces the influence which they have exerted in modifying the surface and the external appearance of the earth.

Geometry (Greek ge, earth, and metron, measure), as its name implies, is primarily the mathematical science which has for its object the measurement of portions of the earth's surface. According to the Greek historians geometry originated in Egypt from the necessity of measuring off portions of the land, or of readjusting the boundaries of landed property after the inundations of the Nile. Since that epoch its scope has been widely extended.

Geometry according to the present meaning of the word may be defined as the science whose object is the consideration of the relations of magnitude and of position or form of any conceivable portion of space. Thus the principal object of geometry is the study of the relations which must exist between the parts of the same definite figure, that is, constructed, or supposed constructed, according to a given law, and the comparison together of figures so constructed.

George, Henry, an American political economist; born in Philadelphia, Pa., Sept. 2, 1839; received a common school education; went to California in 1859; worked as a newspaper compositor for a number of years; became an editor in 1867, and later was connected with several California periodicals; removed to New York city in 1880. He was nominated by the Labor Party for mayor of New York in 1886; received 67,000 votes; but was defeated. In 1897 he was again nominated for mayor by several organizations united under the name of the "Democracy of Thomas Jefferson." Though urged to use caution against overwork, he began the campaign with great enthusiasm. During the night of Oct. 28. he made four addresses and retired about midnight, but soon had a stroke of apoplexy and died before morning. His publications include "Progress and Poverty"; "The Land Question"; "Social Problems"; etc.

George I., King of England; born in Hanover, March 28, 1660. He was a son of Ernest I., first Elector of Hanover, and of the Princess Sophia, granddaughter of James I., King of England, and succeeded his father in the electorate, in 1698. On the death of Queen Anne, in 1714, he was called to the throne of England, as the nearest heir in the Protestant line, and this was the beginning of the English dynasty of Brunswick. Unfortunate in his family relations, George was obliged to divorce his wife Sophia of Zell, charged with an intrigue, and imprison her in the castle of Ahlen, where she ended her days in 1726, after a confinement of 32 years. He died in Osnabruck, June 11, 1727.

George II., King of England, son of the preceding; born in Hanover, Nov. 10, 1683. He succeeded his father in 1727. He retained as his prime minister the celebrated Sir Robert Walpole, who preserved the country from war during the first 12 years of his reign. After the dismissal of Sir Robert, he undertook some expeditions which resulted disastrously. In the war of the Austrian Succession he declared himself on the side of the Empress Maria Theresa, and against France. His armies, successful at Dettingen (1743), failed signally at Fontenoy (1745), and at Laffeld (1747), but the campaign was closed by the treaty of Aix-la-Chapelle (1748). Meantime, however, his throne had been strengthened by the victory of Culloden, gained over Prince Charles Edward Stuart and his adherents in 1746. War having in 1755 again broken out on the continent of Europe, England experienced fresh reverses in Germany and lost her Hanoverian dominions, but these losses were more than compensated by brilliant and valuable conquests in the East Indies, and in America. George was the founder of the British Museum. He died in London, Oct. 25, 1760.

George III., King of England, son of Frederick Louis, Prince of Wales; born in London, June 4, 1738. He succeeded his grandfather George II., in 1760. In the early part of his reign he gained brilliant successes over France and Austria in the Seven Years' War, and in 1763 concluded an advantageous peace. In 1764 George Grenville succeeded to Lord Bute as premier, and began those measures in relation to the American colonies the consequences of which proved so momentous; and the American Stamp Act was passed the following year. After a long and fruitless war, the independence of the United States

was acknowledged. The death of his youngest and darling child, the Princess Amelia, which happened toward the close of 1810, gave the king a shock from which he never recovered. The insanity which already more than once had visited him returned and assumed a violent character. The remaining years of the king's life are little more than a blank, and he died in Windsor, Jan. 29, 1820.

George IV., King of England; born in London, Aug. 12, 1762. He succeeded his father George III. in 1820. During his regency occurred the final overthrow of Napoleon. He caused the passage of numerous laws against the liberty of the press, and had incessant troubles in Ireland to put down. In 1829, the bill granting Catholic emancipation was passed. George IV. married, in 1795, the Princess Caroline of Brunswick, whom he afterward caused to be tried before the law courts on a charge of adultery, in regard to which the most generally received opinion is that it was baseless. He died June 26, 1830.

George V., born 1865, son of Edward VII. Succeeded his father to the throne of Great Britain May 6, 1910. He entered the British Navy in 1877. In 1891 he became a commander. After his brother's death he took his seat in the House of Lords as Duke of York. He was married July 6, 1893, to Princess Victoria Mary of Teck. Six children have been born of this marriage. Prince Edward, Prince Albert, Princess Victoria, Prince Henry, Prince George and Prince John. On Jan. 22, 1891, he succeeded his father as Duke of Cornwall. On Nov. 9, 1901, birthday of the late Edward VII., he was created Prince of Wales. On July 17, 1917, by a royal decree he changed the name of the British Royal House from the House of Saxe-Coburg and Gotha to the House of Windsor. During the great war he was a frequent visitor to the different battle fronts and the naval bases, and took the keenest interest in all works for the comfort of his forces.

George, Lake, called also **Horicon,** a beautiful lake, 32 miles long, near the E. border of New York State. It forms the head-waters of Lake Champlain, is studded with hundreds of picturesque islands, and its shores contain several favorite summer resorts. Here was fought the battle of Lake George, in which the French and Algonquins under Baron Dieskau were utterly defeated by the English and Iroquois under Sir William Johnson, Sept. 8, 1755.

George, Order of St., the name of numerous orders which have been founded in honor of St. George.

George, Prince, 2nd son of George I., King of the Hellenes, born in Corfu, Ionian Islands, June 24, 1869; was appointed lieutenant in the Greek navy, July 19, 1889. While traveling in Japan, in 1891, with his cousin, the Grand Duke (afterward Nicholas II.) of Russia, he rescued the latter from death at the hands of a religious fanatic. He was High Commissioner of the Powers in Crete in 1898–1906.

George, St., the especial patron of chivalry, and tutelary saint of England. The story is that he was born of noble Christian parents in Cappadocia, became a distinguished soldier, and after testifying to his faith before Diocletian, was tortured and put to death at Nicomedia, April 23, 303.

George, St., one of the Bermudas. It is about 3 miles long and ½ mile broad, is fortified, and contains a port of the same name, which is a British military station.

George's Channel, St., the arm of the sea which separates Ireland from Wales S. of the Irish Seas. From Holyhead and Dublin on the N. to St. David's Head and Carnsore Point it extends about 100 miles, with a breadth varying from 50 to 70 miles. Its depth in the middle varies from 40 to 70 fathoms. The bottom is chiefly sand and gravel.

Georgetown, capital of British Guiana; on the Demerara river, not far from its mouth. It is handsomely built. Pop. (1911) 53,955.

Georgetown College, a coeducational institution in Georgetown, Ky., founded in 1829 under the auspices of the Baptist Church.

Georgetown University, an educational institution in Washington, D. C., founded in 1789 under the auspices of the Roman Catholic Church.

Georgia, a State in the South Atlantic division of the North American Union; bounded by North and South Carolina, Tennessee, Alabama, Florida, and the Atlantic Ocean; area, 59,265 square miles; one of the original 13 States: number of counties, 148. Pop. (1910) 2,600,121; (1920) 2,895,832; (1925 Est.) 3,058,260.

The surface of the State is irregular, rising in terraces. The coast for about 20 miles inland is low and swampy; from here it rises about 100 feet in 20 miles till, in Baldwin county, about 200 miles from the sea, an elevation of 600 feet is reached. The foot hills and mountains begin here and extend toward the W. and N. W. reaching an altitude of 2,500 to 4,000 feet.

The State is rich in mineral resources, especially in the mountain regions N. of the Chattahoochee, and ranks second in the United States in the production of manganese; silver, emery, bituminous coal, antimony, granite, graphite, marble, magnetic and specular iron ore, zinc, limonite, tellurium, galena, mica, roofing slate, pyrites, and potter's clay abound. Gold is found in seams of quartz, in veins, and in the disintegrated sands and gravel. Petroleum is also found, as are amethysts, beryl, diamonds, and other precious stones. The value of all mineral products in 1921 was $5,462,088, clay products ($2,000,000) and quarry products ($1,800,000) leading.

In the N. part of the State the principal crops are wheat, corn, potatoes, apples, peaches, and other temperate fruits, grains, and vegetables, while Middle and Southern Georgia are devoted chiefly to upland cotton and sugar-cane. Oranges, lemons, pineapples, bananas, pecans, English walnuts, and olives are grown to perfection in the S., and the watermelons of Georgia are considered the best in the world. In the calendar year 1920 the estimated value of all farm crops was $540,613,610, cotton leading with $69,720,000.

The manufacturing is principally carried on in Atlanta, Augusta, Savannah, Macon, and Columbus. The chief articles of manufacture are cotton goods, lumber mill products, flour and grist, cotton-seed oil and foundry and machine shop products. In 1919 there were 4,803 plants, having a capital of $260,000,000, and products valued at $693,556,000

Georgia has a large and growing commerce, the imports of merchandise in 1916 being valued at $1,684,241; exports, $68,637,653. The assessed valuation of taxable property in 1915 was $953,542,882, and the net State debt, $6,504,202.

The governor is elected for a term of two years and receives a salary of $5,000 per annum. Legislative sessions are held annually beginning in June and are limited to 50 days each. The Legislature has 44 members in the Senate and 186 in the House. Representatives in Congress 12; State government Democratic.

Georgia was settled by a colony of 120 persons in 1733, under a patent granted to Oglethorpe, Whitefield, and the Wesleys, June 9, 1732. It was established as a barrier between the Spanish and Indians on the S. and the Carolinas on the N., and to provide a refuge for debtors, orphans, and other needy and destitute persons. In the war between England and Spain in 1739–1743, Oglethorpe made an alliance with the Creek Indians and led the combined troops of Carolina and Georgia in an invasion of Florida, and in 1742 he drove off the Spanish fleet that had attacked the forts on the Altamaha. After the peace, the Georgians demanded slaves, which had previously been prohibited. In 1752 the trustees surrendered the colony to the crown and negro slavery was introduced. At the outbreak of the Revolutionary War Georgia, having few claims for redress and no charter on which to base them, hesitated to join the other colonies, and was not represented in the Continental Congress in 1774. In March, 1775, St. John's parish sent a delegate to the Continental Congress, and in July all the parishes sent representatives. On July 10, 1775, a schooner commissioned by Congress captured a British ship laden with powder off Savannah. In 1778 Georgia ratified the Articles of Confederation, and in the same year the British captured Savannah, and held it till the close of the war, despite attempts by the Americans and French to retake it. In 1779 Augusta was taken by the British.

The first State constitution was framed in February, 1777, and on Jan.

2, 1788, Georgia unanimously ratified the Constitution of the United States. The second State constitution was adopted in 1789, and a third, by which the importation of slaves was prohibited, in 1798. There was some difficulty with the Creeks and Cherokees in 1783–1790, but treaties of peace were concluded with them in 1790 and 1791. In 1802 the Creeks ceded what is now Southwestern Georgia to the United States, which in turn ceded it to the State, receiving in exchange all the State's claims W. of the Chattahoochee, or what is now Alabama and Mississippi. The first steamship that ever crossed the Atlantic Ocean left Savannah in 1819.

In November, 1860, a State convention was called to consider the subject of secession. On Jan. 21, 1861, an ordinance of secession was unanimously passed, and Georgia ratified the Constitution of the Confederate States and adopted a new State constitution. In January, 1861, Forts Pulaski and Jackson, below Savannah, were seized by State troops, and from the battle of Chickamauga, in September, 1863, to the winter of 1864–1865 the State was constantly the scene of conflict. Atlanta was captured by General Sherman, Sept. 2, 1864, and he began his famous march thence to the sea, Nov. 15, occupying Savannah Dec. 21. Columbus, West Point, and Macon were taken in April, 1865, by General Wilson and on May 10, 1865, Jefferson Davis was captured at Irwinsville. One of the most noted Confederate prisons was located at Andersonville in this State. Here many thousands of Northern soldiers perished.

Georgia repealed the act of secession Oct. 30, 1865; adopted a new constitution; and ratified the Thirteenth Amendment to the Constitution of the United States. Congress, dissatisfied with the new constitution, put the State under military rule till another constitution was ratified in 1868; and the State was restored to the Union on its ratification of the Fourteenth Amendment in 1869. On the refusal to ratify the Fifteenth Amendment the State was again placed under military rule, but reinstated on its compliance with this demand. The recent prosperity and development of Georgia's resources has been due in large measure to the Cotton Exposition, in 1881, the Piedmont Exposition, in 1887, and the Cotton States and International Exposition, in 1895, all at Atlanta.

Georgia (by the Russians called Grusia, by the natives Karthli), formerly a kingdom, but now a republic in the Soviet government of Tiflis, though the name is sometimes loosely employed to designate a much larger portion of the territory possessed by Russia S. of the Caucasus. Area, in the latter sense, about 25,760 square miles; of Georgia proper, about 15,000 square miles. The natives are a fine-looking race, the Georgian women, like the Circassians, being celebrated for their beauty. The history of the Georgians first becomes trustworthy about the time of Alexander the Great, to whom they became subject. About 324 B. C. they gained their independence under Pharnavas. They became Christianized toward the end of the 4th century. After yielding for a time to the supremacy of the Arabian caliphs Georgia regained its independence toward the end of the 10th century, which it retained till 1799, when Heraclius, successor of George XI., formally ceded his dominions to the Emperor Paul. Pop. 2,372,413.

Georgia Bark, a small tree of the Southern United States closely resembling the cinchona or Peruvian bark. The wood is soft and unfit for use in the arts. The inner bark is extremely bitter, and is employed in medicine.

Georgia, Gulf of, a large gulf of the North Pacific Ocean, between the continent of North America and Vancouver's Island; about 120 miles in length from N. to S.; the breadth varies greatly in its different parts, from 6 miles to 20. It communicates with the ocean on the N. by Queen Charlotte's Sound and on the S. by the Strait of Juan de Fuca.

Georgia, South, an island in the South Atlantic. It is 90 miles long, and has high and rocky coasts, inaccessible from ice during a great part of the year. It abounds with seals and sea-fowl.

Georgia, University of, a coeducational non-sectarian institution in Athens, Ga.; founded in 1734.

Georgian Bay, formerly Lake Manitoulin, the N. E. part of Lake Huron, partly separated from the main body of the lake by the peninsula of Cabot's Head and the island of Great Manitoulin. It is about 120 miles long and 50 broad.

Geosaurus, the remains of a reptile which, if entire, would probably have been 9 or 10 feet long. They were found by Sœmmering in white lias, at Monheim in Franconia, and are now in the British Museum.

Gepidæ, a people of Germanic origin, first read of as settled about the mouth of the Vistula in the 3d century. Before the 5th century they had migrated to the Lower Danube, where they were subjugated by the Huns; but, revolting against Attila's son, they recovered their freedom and established themselves in Dacia. There their power grew so great that they levied tribute from the Byzantine emperors down to Justinian's days. In the end of the 5th century a powerful enemy arose against them in the Ostrogoths; and after them came the Longobards, who, in alliance with the Avars, inflicted a crushing defeat on the Gepidæ in 566. A part submitted to the Avars, while a part accompanied the Longobards to Italy, and finally became assimilated.

Gera, the capital of the Principality of Reuss, Germany, on the White Elster, 44 miles E. S. E. of Weimar. Its woolen industries are considerable. Pop. (1910) 49,276.

Geranium, brightly flowering plants of various species, including the pelargonium and erodium.

Gerar, an ancient town or place of the Philistines in the times of Abraham and Isaac, in the S. of Judah, not far from Gaza.

Gerard, Baron Francois Pascal, a French portrait and historical painter; born of French parentage in Rome, March 11, 1770. The grandest of his works are his historical pictures, the "Battle of Austerlitz" (1810) and the "Entry of Henry IV. into Paris" (1814). Gerard was appointed first court painter and raised to the rank of baron by Louis XVIII. He died in Paris, Jan. 11, 1837.

Gerard, Comte Etienne Maurice, a French marshal; born in Damvillers, Meuse, France, April 4, 1773. He died in Paris, April 17, 1852.

Gerard, James Watson, an American diplomat; born in Geneseo, N. Y., in 1867; was graduated at the New York Law School; admitted to the bar in 1902; an Associate Justice of the Supreme Court of New York in 1908–11; and Ambassador to Germany in 1913–17. When the United States declared the existence of a state of war against the Imperial German Government (April 6, 1917) he returned to the United States. On Aug. 22 following, King George conferred on him the Order of Knight Grand Cross of the Bath in recognition of his courageous efforts to ameliorate the condition of British prisoners in Germany. About the same time he began publishing in installments "My Four Years in Germany," a narrative of his experiences with astounding revelations.

Gerard de Nerval, pseudonym of Gerard Labrunie, a French poet, dramatist, and novelist; born in Paris, France, May 21, 1808. He was one of the most imaginative and graceful writers of his country, but the splendid career and fortune within his reach were ruined by improvidence and recklessness. He died Jan. 25, 1855.

Gerhardt, Karl, an American sculptor; born in Boston, Mass., Jan. 7, 1853; studied in Paris. His works include busts of Gen. U. S. Grant, Henry Ward Beecher, Samuel L. Clemens, etc.

Gerhardt, Karl Friedrich, a French chemist; born in Strasburg, Aug. 21, 1816. In 1855 he became Professor of Chemistry at Strasburg. He died in Strasburg, Aug. 19, 1856.

Gerhardt, Paul, a German hymnwriter; born in Grafenhainichen, Saxony, March 12, 1607. The last 7 years of his life he was pastor of Lubben, Prussia, where he died, June 6, 1676. He wrote 123 hymns, all excellent, and many of them worthy to be placed among the choicest productions of Protestant sacred poetry.

Gerizim and **Ebal,** the two highest mountains in the central Palestine chain (3,000 feet), separated from each other by a deep narrow valley, in which stands the town of Nablus. The valley between them is very fertile.

Jacob's well stands where the vale joins the plain of Moreh. Mount Gerizim, along with Mount Ebal, was the scene of a grand and impressive ceremony, in which the whole people of Israel took part after crossing the Jordan. The half of the tribes standing on Gerizim responded to and affirmed the blessings, those on Ebal the curses as pronounced by the Levites. The Samaritans built a temple on Mount Gerizim as a rival to that of Jerusalem. And, though the Samaritan temple was destroyed by Hyrcanus about 200 years after, the mountain on which it stood continued to be held sacred by the Samaritans.

Germain-en-Laye, St., a town in the department of Seine-et-Oise, France, on a hill adjoining the Seine, 6 miles N. of Versailles, and 9 W. by N. of Paris. It is chiefly noted for its noble palace, originally built by Charles V. in 1370; reconstructed by Francis I.; and embellished by many succeeding sovereigns, especially Louis XIV. It is now used as barracks and a military prison. Pop. commune, (1901) 17,297.

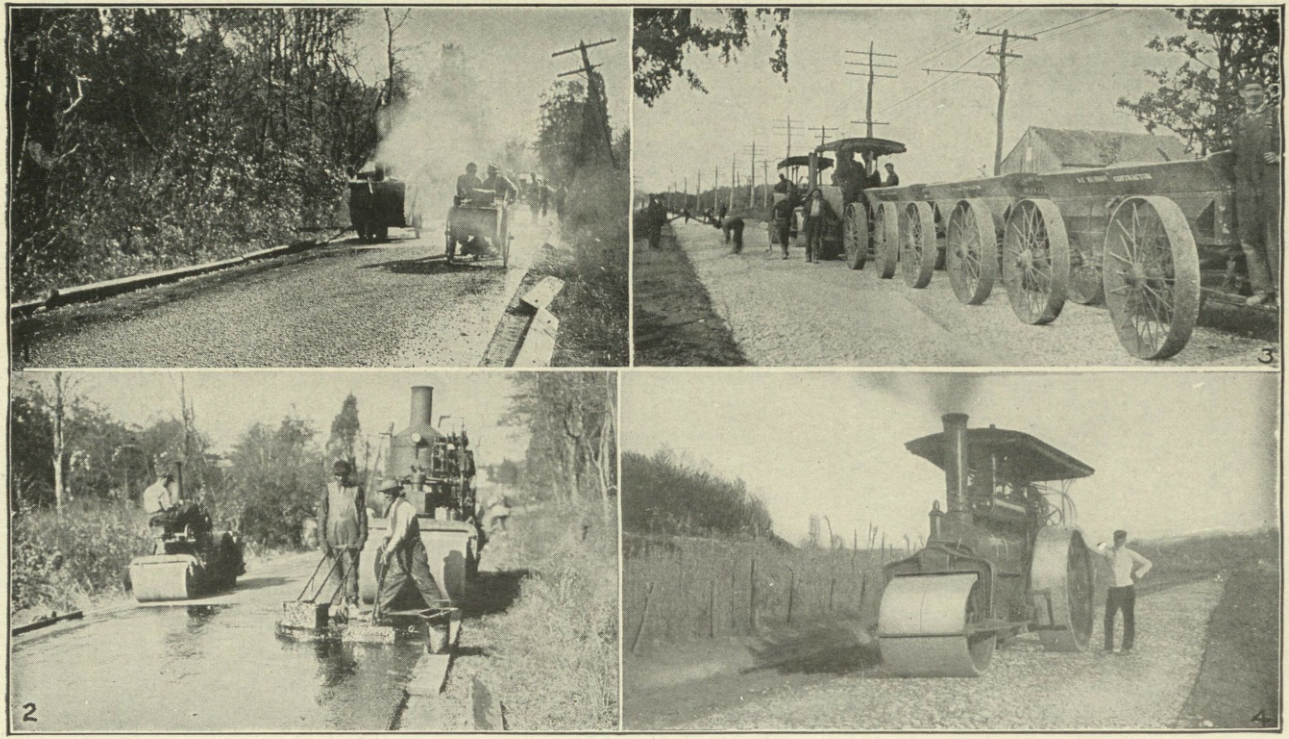
German, pertaining or relating to Germany; or a native or inhabitant of Germany. Also the language of the higher and S. parts of Germany; the literary language of the whole country.

German Catholics, a religious sect which sprang up in Germany about the close of 1844, which rapidly increased during the four or five following years and then as rapidly declined. The immediate cause of the formation of this sect was the exhibition by Arnoldi, Bishop of Treves, of the holy coat preserved in the cathedral of that city and said to be the coat of Christ. The bishop accompanied the exhibition of the holy coat by a promise of plenary indulgence to whoever should make a pilgrimage to Treves to worship it. The announcement of this proceeding on the part of the Bishop of Treves produced a feeling of general astonishment in Germany and drew from a Silesian priest called J. Ronge, who had already been suspended from his charge on account of his independent views, a letter protesting against the exhibition of the holy coat and denouncing the projected pilgrimage as idolatry. This letter was published in the "Sachsische Vaterlandsblatter" on Oct. 16, 1844, and produced an amount of excitement that was quite unanticipated by the writer. Ronge was excommunicated, but this only increased the general enthusiasm in his favor and when he entered into relations with Czerski, another independent priest who had seceded from the Church, and made along with him an appeal to the lower grades of the clergy to unite in founding a National German Church independent of the Pope and governed by councils and synods, the appeal received a ready answer from a considerable number of those to whom it was addressed. A number of congregations belonging to the new body were formed in the more important towns, under the teacher Kote. In the spring of 1845 there were already about 100. At this time (March, 1845), a council was summoned to meet in Leipsic to deliberate on the affairs of the body. Only 20 congregations were represented there, but these proceeded to arrange a system of doctrine and practice. The Bible was recognized as the sole standard of faith, and its interpretation was left to reason, "penetrated and animated" by the Christian idea. Only two sacraments were admitted, baptism and the Lord's Supper. In matters of ritual each congregation was left free to carry into practice its own views. On the subject of purgatory nothing was declared either for or against it. The constitution of the new Church was thus a Protestant one, but in some respects the German Catholics went even further than the majority of Protestants in a liberal direction, inasmuch as they claimed for all, complete religious liberty and declared their religion to be capable of development and modification with the progress of the human mind.

The Church established on this basis had at first, great success. The most eminent men of the liberal party and the deepest thinkers of the time regarded the movement with sympathy. But it was not long before the spirit of opposition began to show itself. The majority of the governments in Germany at the instigation both of the Protestant and the Roman Catholic clergy began to use repressive mea-

NORTH SEA
BALTIC SEA
SWEDEN
COPENHAGEN
SEELAND
FUNEN
MOEN
LAALO
FALSTER
BORNHOLM
Horsens
Esbjerg
Malmo
Ronne
Memel
Rossieny
Niemen R.
Tilsit
Eydtkuhnen
Pregel R.
Insterburg
Konigsberg
Pillau
Gulf of Danzig
DANZIG
EAST PRUSSIA
Suwalki
Lyck
Grajevo
Allenstein
Deutsch-Eylau
Marienburg
Elbing
Korschen
Stolp
Rugenwalde
Danzig
Kolberg
Koslin
Rugen
Stralsund
Greifswald
Swinemunde
Rostock
Wismar
Lubeck
Kiel
Flensburg
Schleswig
Tondern
Nyköbing
Ronne
Helgoland
Cuxhaven
Bremerhaven
Wilhelmshaven
FRISIAN ISLANDS
Leeuwarden
Groningen
Emden
Altona
Hamburg
Luneburg
Bremen
Oldenburg
Meppen
Osnabruck
Minden
Hanover
Celle
Brunswick
Stendal
Uelzen
Schwerin
MECKLENBURG
Neu Strelitz
Neu Ruppin
Neu Brandenburg
Stettin
Swinemunde
Gulf of Stettin
Stargard
Schneidemuhl
Neu Stettin
Pyritz
Prussian Homer
Bromberg
Thorn
Alexandrovo
Graudenz
Mlava
Ostrolenka
Bug R.
Vistula R.
Plock
WARSAW
POLAND
Siedlce
Ivangorod
Lublin
Radom
Kielce
Czenstochowa
Sandomir
Vistula R.
Skierniewice
Lodz
Piotrkov
Kalisz
Jarotschin
Ostrowo
Kempen
Posen
Gnesen
Warthe R.
Netze R.
Oder R.
Breslau
Oppeln
Schweidnitz
Neisse
Glatz
Koniginhutte
Sosnovitz
Trzebinia
Rattibor
Troppau
Oderberg
Bielitz
Krakow
Tarnov
Neu Sandec
Kasmark
Olmutz
Prerau
Brunn
Iglau
Tabor
Kolin
Pardubitz
Konigratz
Pilsen
Carlsbad
PRAGUE
Eger
Eger R.
Elbe R.
Dresden
Chemnitz
Zwickau
Tepitz
Aussig
Reichenberg
Hohenfriedberg
Gorlitz
Hochkirch
Kottbus
Guben
Glogau
Lissa
Leipzig
Lutzen
Altenburg
Gera
Weimar
Halle
Torgau
Dessau
Coethen
Magdeburg
Halberstadt
Frankfort
Saxony
Kustrin
Landsberg
Cuxhaven
Bremerhaven
Wilhelmshaven
Emden
Leeuwarden
Groningen
Zwolle
Zuider Zee
Amsterdam
HAGUE
Rotterdam
Utrecht
Arnheim
Meuse R.
Rhine R.
Munster
Lippe R.
Wesel
Ruhr R.
Breda
Antwerp
BRUSSELS
BELGIUM
Liege
Namur
Aachen
Ardennes
Dortmund
Essen
Barmen
Elberfeld
Dusseldorf
Cologne
Siegen
Bonn
Coblenz
Wiesbaden
Giessen
Fulda
Marburg
Eder R.
Werra R.
Gotha
Erfurt
Nordhausen
Gottingen
Hoxter
Cassel
WALDECK
Paderborn
Detmold
Hameln
Hanover
Celle
Brunswick
Stendal
Potsdam
Berlin
Kustrin
Frankfort
Saxony
Magdeburg
Halberstadt
Dessau
Coethen
Torgau
Halle
Leipzig
Lutzen
Altenburg
Gera
Weimar
Hochkirch
Gorlitz
Guben
Glogau
Lissa
Kuttbus
Jarotschin
Kalisz
Ostrowo
Kempen
Posen
Gnesen
Lodz
Breslau
Hohenfriedberg
Schweidnitz
Neisse
Glatz
Oppeln
Koniginhutte
Sosnovitz
Trzebinia
Rattibor
Troppau
Oderberg
Bielitz
Krakow
Tarnov
Neu Sandec
Kasmark
Olmutz
Prerau
Brunn
Iglau
Tabor
Kolin
Pardubitz
Konigratz
Pilsen
Carlsbad
PRAGUE
Eger
Eger R.
Elbe R.
Dresden
Chemnitz
Zwickau
Tepitz
Aussig
Reichenberg
Zittau
Lausitz
Oder R.
Vistula R.
Warthe R.
Netze R.
Bug R.
Niemen R.
Pregel R.
Memel
Rossieny
Tilsit
Eydtkuhnen
Insterburg
Konigsberg
Pillau
Gulf of Danzig
DANZIG
EAST PRUSSIA
Suwalki
Lyck
Grajevo
Allenstein
Deutsch-Eylau
Marienburg
Elbing
Korschen
Stolp
Rugenwalde
Danzig
Kolberg
Koslin
Rugen
Stralsund
Greifswald
Swinemunde
Rostock
Wismar
Lubeck
Kiel
Flensburg
Schleswig
Tondern
Nyköbing
Ronne
Helgoland
Cuxhaven
Bremerhaven
Wilhelmshaven
FRISIAN ISLANDS
Leeuwarden
Groningen
Emden
Altona
Hamburg
Luneburg
Bremen
Oldenburg
Meppen
Osnabruck
Minden
Hanover
Celle
Brunswick
Stendal
Uelzen
Schwerin
MECKLENBURG
Neu Strelitz
Neu Ruppin
Neu Brandenburg
Stettin
Swinemunde
Gulf of Stettin
Stargard
Schneidemuhl
Neu Stettin
Pyritz
Prussian Homer
Bromberg
Thorn
Alexandrovo
Graudenz
Mlava
Ostrolenka
Bug R.
Vistula R.
Plock
WARSAW
POLAND
Siedlce
Ivangorod
Lublin
Radom
Kielce
Czenstochowa
Sandomir
Vistula R.
Skierniewice
Lodz
Piotrkov
Kalisz
Jarotschin
Ostrowo
Kempen
Posen
Gnesen
Warthe R.
Netze R.
Oder R.
Breslau
Oppeln
Schweidnitz
Neisse
Glatz

NEWEST METHODS IN GOOD ROAD CONSTRUCTION



1—Applying Pea Gravel to Seal Coat.
2—Putting on the Seal Coat.
3—Tractor hauling crushed stone cars.
4—U. S. object lesson road.

Photos by Brown Bros.

sures against the new body. At Baden the adherents of the sect were deprived of their political rights. Austria took the course of banishing them from her dominions. But persecution from without did less hurt than the divisions within the body. Czerski and Ronge, the two originators of the sect, became the leaders of two opposing parties within it, one of which, that headed by Czerski, clung to the traditions and doctrines of the Roman Catholic Church, rejecting only the supremacy of the Pope and the union between Church and State; while the other sought for more freedom, converted religion into a sort of popular philosophy and began to mix up with it questions of politics.

From the year 1850, however, there were several attempts to reëstablish the unity of the body. A council held at Gotha in June, 1859, proposed the formation of a religious association or confederation into which all free Protestant and even Jewish congregations were to be admitted. But the association consisted of too heterogeneous elements, and the plan failed. According to recent statistics there are still some 100 congregations with about 6,200 German Catholics in Germany.

German Colonies in Africa, possessions which before the great war had an area of 1,000,000 square miles and an estimated population of 13,000,000, including about 12,500 Europeans. Nearly all of GERMAN EAST AFRICA was conquered during 1916 by an expeditionary force largely composed of South African mounted and infantry brigade under the command of Lieut.-General Smuts. While General Smuts and the South Africans were sweeping the German protectorate from the north, assistance was rendered by the Portuguese operating from their own territory to the south and by the Belgians from the Kongo. On April 10 the Portuguese reoccupied the Kongo district at the mouth of the Rovuma river, a portion of the former Zanzibar Sultanate which the Germans had seized in 1894 in spite of Portuguese protests. See EAST AFRICA, GERMAN.

GERMAN SOUTHWEST AFRICA was conquered by South African forces under General Botha, July 15, 1915, and was renamed the Protectorate of Southwest Africa. Its area was estimated at 322,450 square miles, and the population at 79,556, besides 14,816 Europeans. Copper and diamond mining are the most profitable industries.

The Kamerun territory, in the Bight of Biafra, West Africa, was annexed by Germany in 1884; area, 191,130 square miles; pop. estimated at 2,500,000. It was conquered in February, 1916.

TOGOLAND, between the Gold Coast Colony on the W. and Dahomey on the E., was the smallest of the German colonies, and surrendered to a British force, Aug. 27, 1914. Area, 33,660 square miles; pop. estimated at 1,500,000.

German Evangelical Protestant Church, in the United States, a religious body, liberal in doctrinal belief, having no confession of faith. Its ministers are associated in district unions.

German Evangelical Synod of North America, a religious body, accepting the symbolical books of the Lutheran and Reformed Churches, representing in the United States the State Church of Prussia, which is a union of the Lutheran and Reformed bodies. It celebrated, Oct. 12, 1890, the semi-centennial anniversary of its organization in the United States.

Germania, an extensive country of ancient Europe, situated E. of Gaul, from which it was separated by the Rhine. Its inhabitants were warlike and uncivilized, and always proved a watchful enemy against the Romans. Cæsar first entered their country; but he rather checked their aggressions than conquered them; and they continued for some time to be more or less troublesome to his successor.

Germanicus Cæsar, a Roman general, the son of Nero Claudius Drusus, and of Antonia, daughter of Mark Antony and niece of Augustus; born in 15 B. C. By desire of Augustus he was adopted in the year 4 A. D. by Tiberius. In 14 news came of the death of the Emperor Augustus and of the mutiny for more pay and shorter service among the soldiers in Germany and Illyricum. Germanicus hastened to the camp and quelled the tumult by his personal popularity; and at once led his soldiers against the enemy,

Crossing the Rhine below Wesel, he attacked and routed the Marsi, and next year marched to meet the redoubtable Arminius whom he completely overthrew in two desperate battles. Tiberius, jealous of the glory and popularity of Germanicus, recalled him from Germany in the year 17, and sent him to settle affairs in the East. Germanicus died, probably of poison, in Epidaphnæ, near Antioch, Oct. 9, 19. His wife, Agrippina, and two of her sons, were put to death by order of Tiberius; the third son, Caligula, was spared.

German Silver, a white alloy for tableware, consisting of nickel, copper, and zinc in various proportions. The best quality consists of four parts copper, two parts nickel, and two parts zinc.

Germantown, a former village, since 1854 the 22d ward of Philadelphia, Pa. It was settled by Germans in 1684, and is celebrated for the severe struggle and defeat of the Americans under Washington, by the British who were under Howe, Oct. 4, 1777.

Germany, the name given to those states which constitute the German empire. Taken in this sense Germany is bounded on the N. by the Baltic, Denmark, and the North Sea; W. by Holland, Belgium, and France; S. by Switzerland and Austria; E. by Russia. The following shows the elements of the republic in 1919.

	Area Sq. M.	Population 1919
States of the Republic:		
Prussia	113,149	36,094,944
Bavaria	22,506	7,140,340
Saxony	5,789	4,663,298
Wurttemberg	7,532	2,518,773
Baden	5,819	2,208,503
Thuringia	4,542	1,508,025
Hesse	2,968	1,290,988
Hamburg	168	1,050,359
Mecklenburg-Schwerin	5,068	657,330
Oldenburg	2,482	517,765
Brunswick	1,418	480,599
Anhalt	888	331,258
Bremen	99	311,266
Lippe	469	154,318
Lubeck	115	120,568
Mecklenburg-Strelitz	1,131	106,394
Waldeck	401	55,999
Schaumburg-Lippe	130	46,357
Total German Republic	182,271	59,858,284

German territory still occupied by the Allies (1925):

Saar Basin	742	652,818
Occupied territory (about)	12,338	7,000,000
The Ruhr	965	4,000,000

Germany lost to France the provinces of Alsace-Lorraine with area of 5,604 sq. m. and a population of 1,874,014. Eupen and Malmedy, ceded to Belgium, 386 sq. m., and 60,924 population; part of Eastern and Upper Silesia, ceded to Poland, 17,787 sq. m., and 3,853,354 population; Memel ceded to the Allies 1,057 sq. m., 140,746 population. Danzig, made a free city, 794 sq. m. and 330,252 population. Schleswig, northern zone, ceded to Denmark, 1,537 sq. m., and 166,895 population; part of Upper Silesia, ceded to Czecho-Slovakia, 610 sq. m., and 45,395 population.

The whole country is more or less mountainous, with a great alluvial plain about 550 miles long and 200 miles wide. To all appearances this plain was covered formerly by the sea, alluvial deposits of great depth being spread over almost every part of its surface, and generally with so large a proportion of sand, as to make it largely unfertile. Dykes are required in many places along the coast to protect from inundation. The complicated mountain region with its ramifying ranges, nowhere exceeding 5,000 feet in height, forms part of the great European watershed, and in it rise the Danube, the Rhine, the Elbe, the chief river of Germany; the Oder, Weser, Main, Neckar, Mosel, Ems, and Eider—all of which are navigable and important.

Germany possesses numerous and varied mineral riches, the most important of which are common coal and brown coal, iron, zinc, lead, and salt. The Prussian republic takes a prominent place among the States of Europe, especially in the production of zinc. Gold and silver are obtained in the Harz Mountains and in the kingdom of Saxony; gold to a limited extent also in Bavaria. Iron is chiefly obtained in Prussia, Alsace-Lorraine, Bavaria, Brunswick, and also in Saxony. Copper, lead, and zinc are found chiefly in Prussia. Tin is found only in the republic of Saxony; quicksilver, antimony, and sulphur are mainly confined to Prussia; nickel and alum are obtained chiefly in the same

State; arsenic chiefly in Saxony, graphite in Bavaria, and blue and green vitriol in Prussia and Saxony. The most extensive coal beds lie in the republics of Prussia and Saxony. Brown coal is obtained also in the duchy of Anhalt. Rock salt is obtained in considerable quantities in Prussia, Anhalt, and Wurtemberg. Marble, alabaster, kaolin, calamine, molybdenum, cinnabar, lime, asbestos, slates, millstones, freestones, trass and sundry precious stones — as amethysts, garnets, etc.— are also found in various localities. Germany is likewise extremely rich in mineral waters, including chalybeate, sulphurous, alkaline, saline, and warm of all kinds.

The climate of Germany is fairly uniform throughout, the lower latitude of the S. portions being compensated by greater elevation above the level of the sea. About a quarter of the surface is under forest, the largest proportional amount being in Hesse-Nassau. The chief trees are the beech and oak, manly in the W.; pines, chiefly on the N. plain; firs, in the mountainous districts; birch and alder, chiefly in the N.; larch, on the S. mountains; and chestnut in the Upper Rhine valley. The fauna is mainly a forest one, and includes 65 mammals and 225 birds. Notable species are the wolf, badger, mink, beaver, wild cat, wild boar, elk, bear, and one kind of tortoise.

Germany is becoming less and less an agricultural and more and more a manufacturing nation, but in many parts agriculture is still the main business of the population. About 65 per cent. of the total area is under cultivation, and of this more than half is under the chief cereals, fully a 16th under other corn crops and leguminous plants, nearly a sixth under potatoes, turnips, sugar beets, cabbages, etc., while rather less than a 50th represents orchards and gardens. The empire does not now grow the cereals in sufficient quantity to meet its own requirements but is becoming increasingly dependent upon imports, especially of wheat and barley. Of the chief cereals, rye occupies the largest area, and next in order come oats, wheat, barley.

The areas under cultivation in 1924 were considerably less than in 1913. Production per acre has also decreased due in part to the inability to use fertilizers to any great degree owing to their high prices. A census of stock taken in 1922 showed 3,650,804 horses; 16,316,275 cattle; sheep, 5,566,970; goats, 4,140,275, and swine, 14,679,250.

The official returns for 1922 place the total arable land at 55,160,073 acres, of which grass, meadow and pasture was 19,119,297; orchards, 122,212; vineyards, 225,468; woods and forests, 31,769,686, and all others, 11,335,639. Other manufacturers of importance are: Plate and bottle glass, earthenware, porcelain, boots and shoes, gloves, fur goods, gold and silver, brass, and bronze wares; toys, optical, medical, mathematical, musical, and other apparatus and instruments; telegraphic and electrical apparatus and machinery; calcium carbide and acetylene; drugs; aniline and alizarine dyes; soap and candles; beet sugar; brewing; distilling; furniture; cigars; lithographic stones, etc. The German Mercantile Marine, which in 1914 had a total gross tonnage of 5,238,541, has been making a steady recovery since the World War, in which it practically ceased to exist. On Jan. 1, 1924, it consisted of 1,306 ships of over 100 tons with a total tonnage of 2,614,462. Of this tonnage 1,129 were steamers. Vessels entering German ports in 1922 numbered 51,840, of 16,876,940 tonnage with freight and 7,097 of 2,202,145 tonnage in ballast. The railway mileage of Germany in 1922 totalled 34,543, of which over 32,000 was government owned and operated. The foreign trade of Germany in 1923, calculated upon a basis of German gold marks, was, imports, 6,081,391,000, while the exports were 6,079,154,000. The metric tons were, imports, 46,472,515, and exports, 12,726,618. Trade with the United States was in 1924, exports, $146,816,067; imports, $378,350,363. For the years 1922 and 1923 the imports from the United States were $350,500,000 and $294,000,000 respectively. The imports came mainly from the United States, Great Britain, Austria-Hungary, Russia, France, and Belgium, and the exports were sent chiefly to Great Britain, Austria-Hungary, Russia, the United States, Netherlands, Switzerland, and France. The mercantile marine stead-

ily increased in numbers, up to the World War, when a great tonnage was interned or seized in various ports of the world. On Jan. 1, 1914, it comprised 4,935 vessels, of which 2,170 were steamers. The chief ports are Hamburg, Bremen, and Kiel.

The constitution of the German empire is based on the decree of April 16, 1871. The presidency of the empire is the privilege of the King of Prussia, to whom belongs the hereditary title of German emperor. The legislative authority its vested in the Bundesrath, or Federal Council, and the Reichstag, or Imperial Diet. The prerogatives of the emperor are to represent the empire in its relation to other States, to declare war and conclude peace in the name of the empire, to contract alliances and conclude treaties with foreign States, to accredit and receive ambassadors. The assent of the Bundesrath is, however, necessary to a declaration of war, unless the imperial territory be invaded, or its coasts attacked. The emperor has also the supreme command of the army and navy, summons, opens, prorogues, and concludes the Bundesrath and Reichstag, appoints and dismisses officials of the empire, and superintends the consulate.

The Bundesrath consists of 61 representatives of the members of the empire. The Reichstag, 397 members, is elected by universal manhood suffrage and ballot for the term of five years. The electors of the Reichstag in 1912 numbered 14,442,387; actual voters, 12,260,731. Soldiers and sailors cannot vote during their period of service. Anyone may be returned to the Reichstag who has the right of voting and who has belonged for at least a year to one of the States. Proposals of laws are laid before the Reichstag by members of the Bundesrath, or by commissaries appointed by it. Every member of the Bundesrath has the right of appearing in the Reichstag, and has a right to be heard there at any time to represent the view of the government. No one can at the same time be a member of the Bundesrath and the Reichstag. The Reichstag lasts for five years. To dissolve it within that period a decree of the Bundesrath and the assent of the emperor are necessary. In case of a dissolution new elections must take place within 60 days, and the new Reichstag must meet within 90 days. To render an imperial law valid there must be a majority of votes in its favor both in the Bundesrath and in the Reichstag, and nothing else is required. Changes in the constitution may be effected in the same way. The empire has the sole right of legislating on all matters connected with the army and navy, the finances of the empire, commerce, posts and telegraphs (except in Bavaria and Wurtemberg), railways, in so far as they are deemed necessary for the defense of the country, and proposed modifications of the constitution of the empire. Certain other matters are left largely to the management of the individual States.

Service in the army or navy is obligatory on every German capable of bearing arms from the age of 17 to that of 45. Within this period seven years must be passed in the standing army or in the fleet (generally the years between 20 and 28), two of them in active service. The remainder of the seven years are passed in the reserve. The next five years are passed in the first class or "ban" of the Landwehr or Seewehr (land or sea defensive forces); service continuing in the second class or ban up to the age of 39. The peace establishment, Jan. 1, 1914, comprised 36,088 officers and 769,938 non-commissioned officers and men, besides a colonial force of about 340 officers, 2,250 non-commissioned officers and men, and 3,830 native soldiers. The military budget for 1914–15 was $302,148,525.

By the terms of the Treaty of Versailles the strength of the German army after March 1, 1920, was reduced to a total strength of 100,000 men. At the end of 1922 the navy consisted of one battleship, three light cruisers, three large and two small torpedo boats and a tender. The personnel is about 15,000 men.

By a decree of Dec. 21, 1923, in force Jan. 1, 1924, an eight-hour law was re-established with many exceptions. Government employees, for instance, were placed on a nine-hour day.

By the law of Dec. 4, 1871, a uniform gold standard was introduced for the whole German empire. The same law ordered the adoption of the mark as the general unit of the German

coinage, commencing Jan. 1, 1875. By the supplementary law of May 6, 1873, it was enacted that two-mark and five-mark pieces should also be issued, the former in silver and the latter partly in gold and partly in silver. A mark is equal to 23 cents in United States gold.

Since Jan. 1, 1872, the French metrical system of weights and measures has been in force throughout the German empire.

Germany, especially the S. part, was covered in the time of the Romans by extensive marshes and forests which were inhabited by the elk, the urus, the bear, the wolf, the boar, the wild cat, and the deer. The population was large, however, particularly in the N. and E., the chief indication of which is the number of the armies, or rather of the armed tribes which these districts from time to time sent out, and by which at length the Roman empire was overwhelmed.

From language and other indications the Germans are supposed to have migrated from Upper Asia, passing by the Caucasus and the N. of the Caspian and Euxine seas, to Europe. This immigration must have taken place in non-historical times. There is no mention of it in the national legends and the people considered themselves autochthones, as they were also regarded by the Romans.

The ancient Germans bore the greatest resemblance to the Celts. They are described as tall, handsome, fair, with blue eyes, which are said to be fierce in expression, and light or red hair, which they rendered bright with a soap which they used as a dye. Both men and women, except slaves, whose hair was cut for distinction, wore the hair long, and red hair which became fashionable among the Roman ladies, was made an article of export. The women are said to have been almost equal in size and strength to the men. The Germans cultivated the land, but some tribes were half nomad, and the chief occupations of all were war and the chase together with the breeding of cattle.

The accounts of the religion of the Germans are considerably obscured by the Roman habit of giving their own names to foreign gods. They worshiped Woden or Odin; Thor, the god of Thunder; Freir, the wife of Woden; Tuisco, the ancestor of their race; Mannus, his son, and other deities, besides the sun, moon, and stars. Their worship was conducted to a great extent in the open air in mountains, forests, rocks, and caves. Their priesthood, though they had a distinct caste, seems to have possessed a patriarchal character. A father was the priest of his family. Each tribe had its peculiar secondary deities, both benevolent and malignant. The priests possessed considerable power. From their religious rites they told the will of the deity in regard to public undertakings, which means that they dictated their own will or the orders of their chief to the people. They presided in the popular assemblies. There were also priestesses who possessed the gift of prophecy. Sometimes human sacrifices were offered. The booty taken in war, and sometimes prisoners, were sacrificed to the gods.

The Germans overran the Roman empire in its decline, and a Germanic empire arose, which existed down to recent times. The creation of the present German empire was largely the work of Prince Bismarck, who became the first imperial chancellor. He successfully sought to secure Germany from attack, so as to enable her to develop her industries in peace, partly by the maintenance of a powerful, well-trained army, and partly by alliances with other powers. In 1879 he formed an alliance with Austria, and three years later with Italy. This Triple Alliance, as it is called, has been renewed in several subsequent years. During the earlier years of the reconstituted empire he was engaged, with the support of the powerful National Liberal party, in a contest with the papacy regarding the relations between the imperial government and the Roman Catholic religious societies of Germany. The Jesuits and similar orders were expelled in 1872, and a law was passed in 1874 making marriage a civil contract; but in 1880 and the years immediately following he found it expedient to open negotiations with papal representatives. Ultimately he admitted defeat by practically repealing the "Falk laws," as the anti-papal legislation was called after a Prussian minister of worship, and with

this repeal the long so-called "Kulturkampf" ended. It was Bismarck who in 1884 inaugurated German colonial development by declaring a protectorate over territories in Southwest Africa. Since then Germany acquired Togoland, the Kamerun region, German East Africa, part of New Guinea, the Marshall, Caroline, Pelew, and other island groups in the Pacific, beside one of the Samoan Islands. In his campaign against social democracy which has become an important factor in German politics, Bismarck did not rely exclusively on force and repression. He sought to destroy the social discontent in which much of the strength of Socialism lay by passing measures intended to improve the condition of the working classes. In this respect his policy has also been maintained to the present time.

The history of Germany since Aug. 1, 1914, when she declared war against Russia, is practically a history of the World War that followed. Much of this is noted in appropriate places in this cyclopedia, and a general summary of the various events is given in the APPENDIX, under the title of *World War*.

Germinal, the 7th month of the first French republican calendar, March 21–April 19.

Germination, in botany, the first act of growth which takes place in an embryo plant.

Germ Theory of Disease, the theory that certain diseases are caused by the entrance into the body of germs of a vegetable nature which during their growing and multiplying in the body they invade, produce chemical changes and create chemical products, that like other poisons alter functions, disturb the processes of nutrition and repair, and cause disease. These microorganisms are infectious; the period during which they retain their vitality, like the rate of their growth and multiplication, varies in different cases, but it is limited in all. Few, if any, resist the destructive influence of a temperature of 300° F., while most succumb at the temperature of 200° or even less, particularly if exposed for some time. Animal poisons generally are destroyed by boiling, and clothes, sheets, etc., infected, may be rendered pure by being exposed to a temperature of 300° F. These living organisms are grouped together as microbes or micro-organisms. Dr. Koch of Berlin, published in 1876 a paper giving a full account of the life history of the bacillus organism which had been observed in animals dead of splenic fever; and in 1877 the great French chemist, Pasteur, proceeded to investigate the subject, and his investigations conclusively support the germ theory of disease. In 1882, Dr. Koch, of Berlin, announced the discovery of a micro-organism in tuberculosis, a disease believed to be the chief, if not the only, cause of consumption of the lungs. These microbes are found not only in the lungs of persons who have died of tubercle, but also in the spit of tubercular and consumptive patients, and multiply also by spores. Thus it is that the spit of a consumptive patient, even after it has dried up, may be capable of imparting the disease, owing to spores being scattered in the air.

All investigation seems to point to the fact that every infectious or contagious disease is due to some form of micro-organism for each particular disease. Each organism produces its own disease and none other; and the special disease cannot arise unless its germ has gained entrance to the body. The channels through which these germs obtain entrance are innumerable, but they have one origin and one only, and that is a preceding case of disease. The "germ theory" affords the hope and suggestion of a method of diminishing, if not of getting rid of, such diseases altogether, and to some extent also indicates the direction in which their cure is to be sought. If the particular microbe of each contagious disease were known, the condition of its life and activity understood, there is great probability that its multiplication in the living body could be arrested, and the disease thus cured. Even without such knowledge, however, the germ theory indicates that the means for arresting the spread of contagious diseases and diminishing their occurrence consist in preventing the spread of the germs from an existing case of disease.

Gerok, Karl, a German religious poet; born in Vaihingen, Wurtemberg, Jan. 30, 1815. He is the author of

many collections of verse, mostly of a deeply religious and devotional character. He died in Stuttgart, Wurtemberg, Jan. 14, 1890.

Gerome, Leon, a French artist; born in Vesoul, France, May 11, 1824. Outside of his superb pictures, he won repute also as a sculptor. Died, 1904.

Gerona, a city and capital of the province of Gerona, Spain; 65 miles N. E. of Barcelona. It contains a beautiful Gothic cathedral of the 14th and 15th centuries. The town was formerly a place of great strength, and has undergone several notable sieges, particularly in 1653, 1684, 1694, 1706, and 1809, on each occasion by the French. Pop. 15,407.

Gerrish, Theodore, an American author; born in Houlton, Me., June 19, 1846; received an academic education; served during the Civil War in the 20th Maine regiment, and was wounded four times; later became a Methodist Episcopal clergyman.

Gerry, Elbridge, an American statesman; born in Marblehead, Mass., July 17, 1744; was a member of the Continental Congress in 1776–1780 and 1783–1785; delegate to the Constitutional Convention in 1789; member of Congress from Massachusetts, in 1789–1793; commissioner to France in 1797–1798; governor of Massachusetts in 1810–1812; and Vice-President of the United States in 1813–1814. It was during his term as governor that an unsatisfactory redistricting of the State took place, in which he was supposed to have taken part, whence arose the term "gerrymander," now generally applied to the process of so arranging electoral districts as to give a majority of Congressmen, or State Legislators, as the case may be, to the party having the minority in the total popular vote of the State. He died in Washington, D. C., Nov. 23, 1814.

Gerster, Etelka, a Hungarian singer; born in Kaschen, Hungary, June 16, 1857; was a pupil of Madame Marchesi in Vienna. She made her first appearance in Venice in 1876, as Gilda, in "Rigoletto." She has made successful tours in the United States and Europe.

Gerstacker, Frederick, a German author; born in Hamburg, Germany, May 10, 1816. He emigrated while an apprentice to New York. He traveled on foot through the United States and Canada, performing any work that was offered to him. About 1842 he returned to Germany and published his travels, which became very popular and were translated into several languages. In 1849–1852 he journeyed around the world, and in 1862 explored in South America. He died in Brunswick, Germany, May 31, 1872.

Gerstenberg, Heinrich Wilhelm von, a German author; born in Tondern, Schleswig, Jan. 3, 1737. As a critic he paid special attention to Shakespeare and to the old dramatists of England. He died in Altona, Holstein, Nov. 1, 1823.

Gervas, a small verbenaceous shrub of the West Indies and tropical America. It has been introduced as Brazilian tea, and it is also frequently employed as an adulterant of tea proper.

Gervase of Canterbury, an English monk; born about 1150. He wrote a chronicle of the reigns of Stephen, Henry II., and Richard I., and a history of the archbishops of Canterbury down to Hubert Walter. These works are valuable especially as elucidating the contemporary relations between Church and State. He died in the early part of the 13th century.

Gervinus, Georg Gottfried, a German historian; born in Darmstadt, Hesse, May 20, 1805; died in Heidelberg, Baden, March 18, 1871.

Gesenius, Friedrich Heinrich Wilhelm, a German Orientalist; born in Nordhausen, Saxony, Feb. 3, 1786; died in Halle, Saxony, Oct. 23, 1842.

Gesner, Abraham, a Canadian geologist; born in Cornwallis, N. S., May 2, 1797; studied medicine in London, and returned to Nova Scotia. Later he became interested in scientific researches. In 1838 he was appointed to examine and report on the geological resources of the lower provinces of British North America. Afterward he discovered how to produce oil suitable for lamps from bituminous shale and cannel coal. He thus originated the discovery of "kerosene" (which name he gave his oil) in the United States. He died in Halifax, N. S., April 19, 1864.

Gesner, Konrad von, a Swiss naturalist; born in Zurich, Switzerland, March 26, 1516. He collected more than 500 plants undescribed by the ancients, and appears to have been the first who made the great step toward a scientific classification of distinguishing genera by the fructification. He died in Zurich, Switzerland, Dec. 13, 1565.

Gesta Romanorum, "Deeds of the Romans," title of a collection of short tales, legends, etc., in Latin, very popular in the Middle Ages. After the Reformation the book fell into oblivion.

Gessler, Albrecht, or **Herman,** called also Gessler von Bruneck (in Swiss legendry), was in 1300 appointed joint-governor along with Berenger von Landenberg, of the Waldstadten or forest cantons (Schwytz, Unterwalden, and Uri), by Albrecht I. of Austria. According to the traditions connected with William Tell his oppressive edicts and wanton cruelty so enraged the inhabitants that a conspiracy was formed against him, and he was shot by Tell in a narrow pass near Kussnacht in 1307.

Gestation, in physiology, the act of carrying young from the time of conception to that of partiurition. The average time of a woman's pregnancy is 9 solar months, or about 280 days, though it may be as few as 7 or as many as 10. The period of gestation is shorter in carnivorous than in herbivorous animals, varying from 21 days, in the case of the guinea pig, to 21 months that of the elephant.

Getæ, a people of Thracian extraction, first mentioned as dwelling on the right bank of the Danube, but in the middle of the 4th century B. C. they crossed that river and settled in Transylvania and Wallachia. In A. D. 106 the Dacians and Getæ were subdued by Trajan, their country being added to the empire. Subsequently the Getæ became fused with the Goths, who invaded their lands, and afterward carried many of them with them in their W. migrations.

Gethsemane, an olive garden or orchard near Jerusalem, memorable as the place to which our Lord retired, with his disciples, on the night before he was crucified. It is near the base of Mt. Olivet. There he suffered extreme agony. Later, led by Judas, one of his disciples, a band of soldiers arrested him. A number of ancient trees still identify the hallowed site.

Gettysburg, Battle of, fought July 1–3, 1863, between the Union army under General Meade, and the Confederates under General Lee. During May the armies lay fronting each other upon the Rappahannock. Early in June Lee began his movement for the invasion of Pennsylvania, crossing the Potomac on the 24th and 25th, and reaching Chambersburg, Pa., on the 27th. General Hooker, then in command of the Army of the Potomac, moved in the same general direction, but on the 28th was relieved, and the command given to Meade. In order to prevent his communications from being severed, Lee turned back toward Gettysburg to give battle. Meade had intended to give battle at a spot several miles from Gettysburg, near which was, however, a small portion of his army. This came into collision a little before noon, July 1, with the advance of Lee, and was forced back, taking up a strong position on Cemetery Hill, in the rear of Gettysburg. Hancock, who had been sent forward to examine the position, reported that Gettysburg was the place at which to receive the Confederate attack, and Meade hurried his whole force to that point. The action on the second day, July 2, began about noon with an attempt made by Lee to seize Round Top, a rocky hill from which the Union position could be enfiladed. When this day's fighting closed Lee was convinced that he had greatly the advantage, and he resolved to press it the next day. On the morning of July 3 an attempt was made upon the extreme Union right, but repelled. The main attack on the center was preluded by a cannonade from 150 guns, which was replied to by 80, little injury being inflicted by either side. About noon the Union fire was slackened in order to cool the guns, and Lee, thinking that the batteries were silenced, launched a column of 15,000 or 18,000 against the Union lines. Some of this column actually surmounted the low works, and a brief hand-to-hand fight ensued. But the column was practically annihilated, only a small portion escaping

death or capture. The forces on each side were probably about 80,000, though all were not really engaged. No official report of the Confederate loss was ever published; the best estimates put it at about 18,000 killed and wounded, and 13,600 missing, most of them prisoners. The Union loss was 23,187. Pop. borough of Gettysburg (1920) 4,439.

Gevaert, Francois Auguste, a French composer; born in Huysse, near Oudenarde, France, July 30, 1828, He composed several successful operas, and was inspector of music at the Academy of Music, Paris, in 1867–70; then devoted himself to the history of music. He died in 1908.

Geyser, an intermittent hot spring, the most notable specimens being those in the Yellowstone region of the Rocky Mountains and those of the S. W. division of Iceland, about 30 miles from Mount Hecla. Nearly 100 of the latter are said to break out within a circle of 2 miles. Few of them play longer than five or six minutes at a time, though sometimes they go on for half an hour. The largest is called the Great Geyser. It has a pipe 78 feet in vertical depth, and from 8 to 10 feet in diameter, but gradually widening as it rises into the basin. The latter is 56 feet long by 46 feet broad, and is lined with an incrustation of silica deposited from the hot water, the process being aided by the alkali soda, which, with minute quantities of various salts, exists in the water. When the geyser is about to act, subterranean noises are heard like the distant firing of cannon, and the earth is slightly shaken; then a column of the liquid element is thrown up to the height of 100 to 200 feet. Steam after a time makes its way out of the rent, and the fountain ceases to play. The second in size is the Strokkur. If stones or turf be thrown down its pipe, an eruption will follow in a few minutes, and eject them with great force. Geyser action is produced by the heating of the lower part of the geyser tube. There are also some remarkable geysers in New Zealand, in the Northern Island.

Geyter, Julius de, a Flemish poet; born in Lede, Belgium, May 25, 1830. He was in early life a schoolteacher and later a law-court official, but for many years he has been connected with a bank in Antwerp. His songs, which deal with national heroic topics, and his cantatas, are exquisitely melodious and metrically perfect. He died in 1905.

Gfrorer, August Friedrich, a German historian; born in Calw, in the Black Forest of Wurtemberg, March 5, 1803. All his works are learned, often perversely so; his conclusions are too often more ingenious than sound. He died in Carlsbad, Bohemia, July 6, 1861.

Ghats, or **Ghauts, Eastern** and **Western,** two converging ranges of mountains, which run parallel with the E. and W. coasts of Southern India, and meet at Cape Camorin, enclosing the ocean.

The name Ghats is also applied to the flights of steps, whether intended as landing places or as bathing stairs, which line the river banks in towns and places of pilgrimage in Northern and Central India. Most great rivers, and especially the Ganges, possess many ghats; but they are also built on the margins of lakes, as at Pushkar and Sagar, or even of tanks. The uniformity of the long lines of steps is often broken by shrines or temples, built either close to the water's edge or at the top; and on these steps are concentrated the pastimes of the idler, the duties of the devout, and much of the necessary intercourse of business.

Ghazni, a town of Afghanistan, below a spur of a range of hills, at an elevation of 7,729 feet, 84 miles S. W. of Kabul. It is a place of considerable commercial importance. In the neighborhood of Ghazni there are several ruins and monuments of its former greatness, such as the tomb of Mahmud, Mahmud's dam in the Ghazni river, and many Mohammedan shrines. The celebrated gates of Somnath were kept at Ghazni from 1024 to 1842. Pop. 10,000.

It was under Mahmud (997–1030) that the Ghaznevids reached their highest point of splendor and renown. This prince repeatedly invaded India, and carried his conquering arms as far as Kurdistan and the Caspian on the W. and to Samarkand on the N. He was the first monarch in Asia to assume the title of sultan. Bahram

Shah, ruler of Ghazni from 1118 to 1152, was at length driven from his capital. The Ghaznevid dynasty came to an end in 1186.

Ghee, or **Ghi,** a kind of butter in use among the Hindus; made from the milk of the buffalo or the cow. The milk is boiled for an hour or so, and cooled, after which a little curdled milk is added. Next morning the curdled mass is churned for half an hour; some hot water is then added, and the churning continued for another half hour, when the butter forms. When, after a few days, it becomes rancid, it is boiled till all the water is expelled, and a little more curdled milk added, with some salt or betel leaves, after which it is put into pots. It is a favorite article of consumption among rich Hindus.

Gheel, a colony for the insane in Belgium, 26 miles E. S. E. of Antwerp, in a comparatively fertile spot, in the midst of an extensive sandy waste, called the Campine. About 1,300 insane persons are lodged with the citizens of this community, and are controlled and employed by them, and this without recourse to walls or other asylum appliances, and with little coercion of any kind. The quieter sufferers reside generally one in each family in the village, the more excited in separate farmhouses at some distance on the confines of the commune, while those requiring medical treatment are temporarily accommodated in the infirmary in Gheel. The support of the patients is in most cases by the State. Pop. (1919) 15,000.

Ghent (French, Gand; Flemish Gend or Gent), a town in Belgium, capital of the province of East Flanders, at the confluence of the Lys with the Scheldt. It is upward of 6 miles in circumference, and is divided by canals into a number of islands connected with each other by bridges. Except in some of the older parts, it is well built, and has a number of fine promenades and many notable buildings. Among the latter are the cathedral of St. Bavon, dating from the 13th century; the church of St. Nicholas, the oldest in Ghent; the church of St. Michael, with a celebrated Crucifixion by Vandyk; the university, a handsome modern structure, with a library of about 100,000 volumes and 700 manuscripts; the City Hall, the belfry, a lofty square tower surmounted by a gilded dragon, and containing chimes of 44 bells; the new Court House; the Marche du Vendredi, an extensive square, interesting as the scene of many important historical events; and Les Beguinages, extensive nunneries founded in the 13th century, the principal occupation of whose members is lace-making. Ghent has long been celebrated as a manufacturing town, especially for its cotton and linen goods and lace. Ghent was mentioned as a town in the 7th century. In the 9th century Baldwin, the first Count of Flanders, built a fortress here against the Normans. Under the counts of Flanders Ghent continued to increase. Two great revolts took place under the leadership of the Van Arteveldes (1338 and 1369) against Burgundy, and again in the 16th century against Charles V., and the citizens of Ghent, besides losing their privileges, had to pay for the erection of a citadel intended to keep them in bondage. In 1792 the Netherlands fell under the power of France, and Ghent became the capital of the department of Escaut (Scheldt). In 1814 it became, along with Flanders, part of the Netherlands, till the separation of Belgium and Holland. Americans gratefully remember the sympathy expressed by the magistrates of Ghent at the time of the treaty of peace of 1812. Pop. (1921) 165,110. . See APPENDIX: *World War.*

Ghent, Treaty of, a treaty between the United States and Great Britain, concluded at Ghent, Dec. 24, 1814, which terminated the War of 1812.

Gherardi, Bancroft, an American naval officer; born in Jackson, La., Nov. 10, 1832; he entered the navy as midshipman from Massachusetts in 1846, and was at the Naval Academy in 1852. He was lieutenant on the "Lancaster," of the Pacific squadron, at the commencement of the Civil War, and in 1862 was made lieutenant-commander. During the war he commanded the "Chocorua," and "Port Royal," being on the latter vessel in the battle of Mobile Bay, in which he was distinguished for bravery and gallantry. He became com-

mander in 1866; captain in 1874; commodore in 1884; and rear-admiral in 1887; he was commandant of the Brooklyn navy yard in 1886; commanded the North Atlantic Squadron; and directed the Columbian naval review in New York harbor in 1893. He retired in 1894; died Dec. 10, 1903.

Gherardi del Testa, Tommaso, an Italian comedy-writer; born in Terriciuola, near Pisa, Italy, 1815. Died near Pistoja, Italy, Oct. 13, 1881.

Ghetto, the term employed in Italian and other cities, to indicate the quarters set apart for the residence of the Jews.

Ghibellines, a political party in Italy of the 12th to the 15th centuries. On the death of Lothaire II., Emperor of Germany, Dec. 4, 1137, Conrad, Duke of Franconia and Lord of Weiblingen (which by corruption became Ghibelline), was elected his successor. His right to the imperial throne was, however, disputed by Henry the Proud, Duke of Saxony and Bavaria, who was in consequence declared an outlaw and shortly afterward died. His adherents transferred their allegiance to his son, Henry the Lion, at that time a boy of 10 years old, and the whole empire was divided into the partisans of Conrad, who assumed the name of Ghibellines, and those of Henry, or the Guelphs. The strife between the two parties subsided in Germany, but continued in Italy, resulting in war in 1159. The supporters of the Popes were termed Guelphs and those of the emperors Ghibellines. Charles of Anjou expelled the Ghibellines from Italy in 1268; but the contest between the two factions continued till the French invasion in 1495 united them against a common enemy.

Ghiberti, Lorenzo, an Italian sculptor; born in Florence about 1378. He was engaged in painting in fresco at Rimini, in the palace of Prince Pandolfo Malatesta, when the priori of the society of merchants in Florence invited artists to propose models for one of the bronze doors of the baptistery of San Giovanni. The offering up of Isaac was to be executed in gilt bronze, as a specimen of the work. The judges selected the works of Donatello and Ghiberti as the best, but the former voluntarily withdrew his claims, giving the preference to Ghiberti. After 21 years' labor Ghiberti completed the door and at the request of the priori executed a second after almost as long a period. Michael Angelo said of these, that they were worthy of adorning the entrance to paradise. During these 40 years Ghiberti also completed a statue of John the Baptist for the Church Or-San-Michele, two bas-reliefs for the baptistery of the Cathedral of Sienna, and a number of other works, all of which are still preserved. He died in Florence about 1455.

Ghica, Elena, a Rumanian author. See DORA D'ISTRIA.

Ghika, or **Ghica,** a princely family of Moldavia and Wallachia, whence sprang some of the most celebrated hospodars of the country.

Ghilan, a province of Persia, on the south-west shore of the Caspian Sea; area, about 4,250 square miles. The lofty range of the Elburz Mountains forms its southern boundary. The whole province, except where cleared for cultivation and on the mountain summits, is covered with woods; much of the level country is marshy and the climate consequently unhealthy. The province is rich in metals. The capital is Resht. Pop. about 200,000.

Ghirlandajo II., Domenico Curradi, nicknamed Il Ghirlandajo ("the garland maker"), an Italian painter; born in Florence, Italy, in 1449; died in Florence, Italy, Jan. 11, 1494.

Ghislanzoni, Antonio, an Italian dramatist; born in Lecco, Italy, in 1824. He died in Lecco, Italy, July 18, 1893.

Ghost Dance, a religious ceremony which originated among the Piute Indians in Nevada about 1889, so named from the fact that the dancers wear a white shirt over the ordinary dress. It was the outcome of a religious belief which maintained that a messiah was soon to appear, who would rid the land of the white man and restore to the Indians all their rights. The ghost dance is held at night, men and women joining hands and circling around singing the ghost songs, which are principally chants in the form of messages from their spirit friends. Sometimes the participants appear to fall into a trance during which they

are supposed to commune with residents of the other world. The Sioux outbreak of 1890–1891 was due indirectly to the ceremonies of this dance and the United States government sought to suppress it. Since that time no trouble has arisen, though it is still practised by the Indians.

Ghost Moth, the British hepialus humuli; the male with snowy white wings, brownish costæ and fringes; the female having the fore wings deep dull yellow, with a streak and some spots brick red. The males, the sex with the ghostly appearance, have a peculiar flight, oscillating backward and forward like a pendulum, but remaining for some time at one spot.

Ghurkas, or **Ghoorkas.** See GOORKHAS.

Ghuri, so named from the Afghanistan district of Ghur, a Mohammedan dynasty of ten kings that flourished from about A. D. 1148 to 1215. Mohammed Ghuri founded the Delhi Kingdom.

Giacosa, Giuseppe, an Italian dramatist; born in Colleretto-Parella, Piedmont, Oct. 21, 1847. He is the author of both dramas and comedies, and his treatment of contemporary Italian social life is irresistibly satirical. He died in 1906.

Giannone, Pietro, an Italian author; born in Ischitella, Italy, May 7, 1676. He studied law in Naples, and after winning a high place as an advocate retired to give himself up to the execution of his great work, the "Civil History of the Kingdom of Naples" (1723). The severity with which Giannone treated the Church drew upon him the persecutions of the court of Rome. The offensive publication was burned, and the author excommunicated. Giannone therefore quitted Naples, 1723, was later driven successively from Vienna and Venice, and finally took refuge in Geneva. Here he wrote his "Triregno" a bitter attack on the papal pretensions. In 1736, having been enticed by a government emissary to enter the Sardinian States, he was seized and imprisoned in the citadel of Turin, where he died March 7, 1748.

Giauque, Florien, an American lawyer; born near Berlin, O., May 11, 1843; was graduated at Kenyon College in 1869; served in the Union army in 1862–1865; was admitted to the bar in 1875 and began practice in Cincinnati. His publications include "Present Value Tables"; "Drainage Laws"; "Naturalization and Election Laws of the United States"; "Ohio Election Laws"; etc.

Giant Beds, tumuli in Germany, the graves of the ancient inhabitants of the country. They are of different sizes and sometimes very large, generally inclosed with stones of such weight as would seem to have required machinery to move them. Earthen vessels, metallic ornaments, sacrificial stones, knives, battle-axes, etc., are sometimes found in them; and sometimes also human skeletons in the last stage of decay; sometimes they are entirely empty.

Giants, people of extraordinary stature. We find in history mention made of giants, and even of whole races of remarkable stature, but this in general occurs only at an early stage of civilization when the national mind is apt to exaggerate anything unusual. The first mention of giants in the Bible is in Gen. vi. 4, where the Hebrew word is nephilim, a word which occurs only in one other passage, where it is applied to the sons of Anak, who dwelt about Hebron, and who were described by the terrified spies as of such size that compared with them they appeared in their own sight as grasshoppers. The giants of old Greek or of Norse mythology have, of course, merely a symbolic existence, representing benignant or adverse forces of nature on which man might count in his struggle to reduce the world around him into some kind of order. The tales of old writers regarding gigantic human skeletons have now no importance, it being mostly certain that these bones do not belong to giants, but to animals of the primitive world which, from ignorance of anatomy, were taken for human bones. A gigantic human skeleton, however, the largest ever recorded, was found in 1899, near Miamisburg, O., in a locality which contains many relics of the mound builders. It is of prehistoric age and is fossilized. It must have belonged to a man 8 feet 1½ inches high, and extremely well proportioned. The skull is of an extremely low order and resembles that

of the gorilla, the jaws projecting beyond the face. The teeth are remarkably strong and beautiful in form, and their owner must have lived on a vegetable diet.

The following are among authentic instances of persons who attained to the stature of giants: The Roman Emperor Maximin, a Thracian, nearly 9 feet high; Queen Elizabeth's Flemish porter, 7 feet 6 inches; C. Munster, a yeoman of the guard in Hanover, who died in 1676, 8 feet 6 inches high; Cajanus, a Swedish giant, about 9 feet high, exhibited in London in 1742; C. Byrne, who died in 1783, attained the height of 8 feet 4 inches; Patrick Cotter O'Brien, who lived about the same time, was 8 feet 7¾ inches; a Swede in the celebrated grenadier guard of Frederick William I. of Prussia stood 8½ feet. In 1844 died Pauline Wedde (called Marian), over 8 feet 2 inches at the age of 18. The following are still or were quite recently exhibiting: Anna Swan, a native of Nova Scotia, above 8 feet high; her husband, Captain Bates, a native of Kentucky, of the same height; Chang-wu-gon, the Chinese giant, 7 feet 9 inches high.

Giants' Causeway (deriving its name from a legend that it was the commencement of a road to be constructed by giants across the channel to Scotland), a natural pier or mole of columnar basalt, projecting from the N. coast of Antrim, Ireland, into the North Channel, 7 miles N. E. of Portrush. It is part of an overlying mass of basalt from 300 to 500 feet in thickness, which covers almost the whole county of Antrim, and the E. part of Londonderry.

Gibbet, a gallows on which the bodies of criminals were suspended after execution, sometimes encased in an iron frame, near the spot where the crime was committed. This was done for the purpose of striking terror into the evil-minded, and of affording "a comfortable sight to the relations and friends of the deceased." The practice was first recognized by law in 1752, was abolished in 1834.

Gibbon, a genus of tailless anthropoid apes, natives of the East Indies. They are nearly allied to the orangs and chimpanzees, but are of more slender form, and their arms so long as almost to reach to the ground when they are placed in an erect posture. The gibbons are inhabitants of forests, their long arms enabling them to swing themselves from bough to bough, which they do to wonderful distances and with extreme agility. They cannot, however, move with ease or rapidity on the ground. The conformation of the hinder extremities adds to their difficulty in this, while it increases their adaptation to a life among the branches of trees, the soles of the feet being much turned inward. None of the gibbons are of large size. There are some 8 or 10 species.

ACTIVE GIBBON.

Gibbon, Edward, an English historian; born in Putney, April 27, 1737; studied at Westminster School, Magdalen College, Oxford, and Lausanne. In 1763 he went to Italy; and while sitting amid the ruins of the Capitol at Rome, he conceived the idea of writing the history of the decline and fall of that city. In the meantime he joined M. Deyvurdun, a Swiss scholar, in publishing a journal called "Literary Memoirs of Great Britain," which met with no success. In 1770 he began his celebrated history of the "Decline and Fall of the Roman Empire." He died in London, Jan. 16, 1794.

Gibbons, James, an American clergyman; born in Baltimore, Md., July 23, 1834; was taken to Ireland by his parents early in life. Returning to the United States in 1848 he

settled in New Orleans; was educated at St. Charles College, Maryland, and at Mary's Seminary, Baltimore; was ordained to the Roman Catholic priesthood in June, 1861; and appointed as assistant in St. Patrick's Church, Baltimore. Later he became the private secretary of Archbishop Spalding, and chancellor of the diocese. In 1868 he was made vicar-apostolic of North Carolina, with the rank of bishop; and in 1877 became Archbishop of Baltimore. He was elevated to the cardinalate in 1886, being the second Roman Catholic in the United States to receive that promotion. He went to Rome in the summer of 1903, and took part in the election of Pius X. as successor to Leo. XIII.

Gibbons, James Sloane, an American banker; born in Wilmington, Del., July 1, 1810; early became a strong abolitionist. In 1863 his house in New York was sacked by a mob, during the draft riots, because he had illuminated it in honor of Abraham Lincoln. His fame rests chiefly on his patriotic song, which was very popular during the Civil War, "We Are Coming, Father Abraham, Three Hundred Thousand More." He died in New York city, Oct. 17, 1892.

Gibbs, John Blair, an American physician; born in Richmond, Vt., about 1858; was graduated at Rutgers College in 1878 and at the New York College of Physicians and Surgeons in 1882. In 1898 he decided to enter the navy, and was made assistant surgeon on the monitor "Miantonomoh," but a little later was assigned to the "Panther," which landed 600 marines at Guantanamo Bay, Cuba. On June 12, after the landing, when the Spaniards made an attack on the Americans he was one of the four men killed in the action.

Gibbs, Oliver Wolcott, an American chemist; born in New York city, Feb. 29, 1822; was graduated at Columbia College in 1841 and at the New York College of Physicians and Surgeons in 1845; was Professor of Physics and Chemistry in the College of the City of New York in 1849–1863; and Rumford Professor in Harvard University in 1863–1887. He has made many valuable chemical researches, and contributed largely to scientific periodicals, principally "The American Journal of Science and Arts," of which he was an editor for many years. He was the only American honorary member of the German Chemical Society, and one of the original members of the National Academy of Sciences. He died Dec. 9, 1908.

Gibeon, a city of ancient Palestine on a hill among the mountains of Benjamin, 5 miles N. W. of Jerusalem. When the five kings of the Amorites besieged Gibeon for having entered into a traitorous compact with the common enemy of all the Canaanites, Joshua hastened to its help, and overthrew the besiegers with great slaughter. It was there that Joshua in the words quoted from the book of Jashar (Josh. x: 12), commanded the sun to stand still upon Gibeon, and the moon in the valley of Ajalon.

Gibing, or **Jibing,** in sailing with fore and aft sails, the act of shifting over the boom, when the wind is astern or at any point abaft the beam, so that the wind may be brought to bear on the sail on the reverse side of the vessel to that in which it was felt previous to the operation. This maneuver may be described as the reverse of that of tacking.

Gibraltar, a town and strongly fortified rocky peninsula near the S. extremity of Spain, belonging to Great Britain. It is connected with the mainland by a low sandy isthmus, 1½ miles long and ¾ miles broad, known as the "neutral ground," with Gibraltar Bay on W., the open sea on the E. and S. The highest point of the rock is about 1,400 feet above sea-level; its N. face is almost perpendicular, while its E. side exhibits tremendous precipices. On its S. side it is almost inaccessible, making approach from seaward impossible; the W. side, again, although very rugged and precipitous, slopes toward the sea; and here the rock is secured by extensive and powerful batteries, rendering it apparently impregnable. Vast sums of money and an immense amount of labor have been spent in fortifying this celebrated stronghold, which, as a coaling station, depot for war material, and a port of refuge in case of war, would form one of the most important points of support for British naval operations and commerce. The town is also on the W. of the peninsula.

The town of Gibraltar is situated on the W. side of the peninsula, terminating in Europa Point, and thus fronts the bay. It consists chiefly of one spacious street about half a mile in length, lined with shops, and paved and lighted. The principal buildings are the governor's and lieutenant-governor's houses, the admirality, naval hospital, victualing office, and barracks, and a handsome theater. Its water supply is derived from the rainfall. Gibraltar is a free port, and has a considerable shipping trade, being an entrepot for the distribution of British manufactures. The chief export is wine. The administration is vested in the governor, who is also commander-in-chief of the troops. Every precaution is taken to prevent the immigration into the town of new residents. It was ultimately taken by the Spaniards from the Moors in 1462, fortified in the European style, and so much strengthened that the engineers of the 17th century considered it impregnable. It was taken, however, after a vigorous bombardment in 1704 by a combined English and Dutch force under Sir George Rooke and Prince George of Darmstadt, and was secured to Great Britain by the peace of Utrecht in 1713. Since then it has remained in British hands, notwithstanding some desperate efforts on the part of Spain and France to retake it. In 1779, Great Britain being then engaged in a war with the United States and with France, a last grand effort was made by Spain to recover Gibraltar. The siege lasted for nearly four years. It was heroically and successfully defended, however, by General Elliott (afterward Lord Heathfield) and the garrison. Since that time, in the various British and Spanish, and also French wars, Gibraltar has only been blockaded on the land side.

Gibraltar, Strait of, the strait connecting the Mediterranean Sea with the Atlantic Ocean. It narrows toward the E. with a width varying from 15 to 24 miles. Length E. to W., about 36 miles. Through the strait a constant current runs so strongly from the Atlantic that sailing vessels bound W. can pass them only by the aid of a Levanter, or strong breeze from the E. It is believed that the waters of the Mediterranean find an outlet here by an under-current.

Gibson, Charles Dana, artist, born in Roxbury, Mass., Sept. 14, 1867. After early training in New York city, he finished his studies in Paris under Julian. The "Gibson girl," an American type, was his creation.

Gibson, John Morison, a Canadian official; born in Toronto, Jan. 1, 1842; admitted to the bar in 1867; became Provincial Secretary of Ontario in 1889, Commissioner of Crown Lands in 1896, Attorney-General in 1899, Colonel commanding the 15th Brigade of Canadian militia in 1903, and Lieutenant-Governor of Ontario in 1908.

Gibson, William Hamilton, an American artist and author; born in Sandy Hook, Conn., Oct., 5, 1850; died in Washington, Conn., July 16, 1896.

Giddings, Franklin Henry, an American educator; born in Sherman, Conn., March 23, 1855; accepted the chair of sociology in Columbia University in 1894.

Giddings, Joshua Reed, an American statesman; born in Athens, Pa., Oct. 6, 1795; admitted to the Ohio bar in 1820; elected a member of its Legislature in 1826, and of Congress in 1838, where he was prominent as an opponent of slavery. In 1861 he was appointed consul-general to British North America. He died in Montreal, May 27, 1864.

Gideon, a judge of Israel. During his youth Israel was sunk in idolatry and sloth, and was oppressed by the plundering incursions of the Amalekites and Midianites. Confident in the assurance of supernatural direction, he mustered the people, reduced the unwieldy host to a handful of resolute men, fell suddenly upon the enemy in the neighborhood of Mount Gilboa, and routed them with great slaughter.

Giers, Nicholas Carlovitch de, a Russian statesman; born May 21, 1820. After holding various posts, he became minister of foreign affairs in 1882. His policy in general is understood to be of peaceful tendencies, and in particular opposed to Panslavistic ideas of development. In Central Asia, however, M. de Giers continued the policy of advance, and in 1885 the Russian occupation of positions with-

in the Afghan frontier nearly brought about a war with Great Britain. He died in St. Petersburg, Jan. 26, 1895.

Giesebrecht, Wilhelm von, a German historian; born in Berlin, March 5, 1815; became Professor of History at Konigsberg in 1857, and in 1862 at Munich; died Dec. 18, 1889.

Gieseler, Johann Karl Ludwig, a German historian; born in Petershagen, near Minden, March 3, 1793; died in Gottingen, July 8, 1854.

Giffen, Sir Robert, an English editor and economist; born in Strathaven, Scotland, in 1837. He was the author of a number of reports, papers, and essays which gave him a high rank. He died April 12, 1910.

Gifford, Adam, a Scotch philanthropist; born in Edinburgh in 1820; studied at the university there, and was called to the Scotch bar in 1849. He died in Granton, near Edinburgh, Jan. 20, 1887. By his will he left $125,000 to the University of Edinburgh, $100,000 each to Glasgow and Aberdeen, and $75,000 to St. Andrews, to endow lectureships in natural theology, subject to no dogmatic tests whatsoever.

Gifford, Robert Swain, an American artist; born in Naushon Island, Mass., Dec. 23, 1840; received a common school education; studied with Albert Van Beest in Rotterdam, Holland; traveled through California and Oregon 1869, Europe and north Africa 1870–71. He died Jan. 15, 1905.

Gifford, Sanford Robinson, an American artist; born in Greenfield, N. Y., July 10, 1823; died in New York city, Aug. 29, 1880.

Gihon, Albert Leary, an American sanitarian; born in Philadelphia, Pa., Sept. 28, 1833; was graduated at the Philadelphia High School in 1850; Professor of Chemistry and Toxicology in the Philadelphia College of Medicine and Surgery in 1853–1854; appointed assistant surgeon in the United States navy in 1855; took part in the attack and capture of the barrier forts, near Canton, China, in 1856; and served throughout the Civil War. He was promoted medical director U. S. N., May 1, 1895, and was retired with the rank of commodore, Sept. 28, following. He died in New York city, Nov. 17, 1901.

Gila, Rio, a river of North America, an affluent of the Colorado of the West, origin in New Mexico; length, 450 miles. Its upper course is through mountains, with many deep and precipitous canons; further S. it flows through an open and comparatively level country, the valley being productive when irrigated.

Gila Monster, a poisonous lizard also called Sonoran heloderm. It is one of the largest lizards of North America, and is found in the sandy deserts of New Mexico, Arizona, and Texas. Its scales are brilliant orange and jet black. It has grooved teeth and highly developed salivary glands at their bases. Its bite is rapidly fatal to small mammals and birds, and very injurious, though seldom fatal, to man. The heloderms are the only lizards ascertained to be venomous.

Gilbert, Charles Henry, an American educator; born in Rockford, Ill., Dec. 5, 1859; was graduated at Butler University, Ind., in 1879; became Professor of Zoölogy in the Leland Stanford University in 1891.

Gilbert, Mrs. George H., an English actress; born in Rochdale, England, Oct. 21, 1821. She settled in the United States in 1849; for many years was connected with the Daly company. While on tour, she died suddenly at Chicago, Dec. 2, 1904.

Gilbert, Sir Humphrey, an English navigator; born in Dartmouth, Devonshire, in 1539. In 1578 he obtained a royal patent to "discover and occupy remote heathen lands not actually possessed of any Christian prince or people." With his younger half-brother, Sir Walter Raleigh, he sailed in quest of the "Unknown Goal"; but his expedition in 1578–1579 was frustrated by internal dissensions, tempests, and a smart brush with the Spaniards. He set sail from Plymouth in June, 1583, and in August landed in Newfoundland, of which he took formal possession for Queen Elizabeth. But, sailing S. he lost off Cape Breton the largest of the three vessels left out of five, so was forced to start for home, but was shipwrecked and drowned Sept. 9, 1583.

Gilbert, Sir John, an English painter; born in Blackheath, near London, in 1817. In 1852 he was elect-

ed an associate, in 1853 a member, in 1871 the president of the Society of Painters in Water-colors, receiving soon after the honor of knighthood. He also became, in 1876, a Chevalier of the Legion of Honor. He died in Villers-sur-Mea, France, Oct. 6, 1897.

Gilbert, John Gibbs, an American comedian; born in Boston, Mass., Feb. 27, 1817. His professional tours, both in the United States and Europe, were eminently successful. He died in Boston, Mass., June 17, 1889.

Gilbert, John Thomas, an Irish historian; born in Dublin, Ireland, 1829. To his enterprise and energy is largely due the revival of interest in Celtic studies. He died in 1898.

Gilbert, Rufus Henry, an American inventor; born in Guilford, N. Y., Jan. 26, 1832; was graduated at the New York College of Physicians and Surgeons; served as surgeon in the Union army in the Civil War; and was appointed superintendent and medical director of the United States army hospitals. Owing to the failure of his health after the war he abandoned his profession and engaged in the railroad business, making a special study of the needs of rapid transit in New York city. The result was the erection of the first elevated railroad in that city, the motive power being an endless wire cable. He died in 1885.

Gilbert, Sir William Schwenck, English librettist; born in London in 1836; graduated at London University; and while a Privy Counsel clerk, wrote his "Bab Ballads," on which he afterwards founded many of his comedies and opera libretti. His great success was achieved as collaborator with Sir Arthur Sullivan in operas, including "Pinafore," "Pirates of Penzance," "The Mikado," etc. He died May 29, 1911.

Gilboa, a chain of hills between 500 and 600 feet high, overhanging the site of the ancient city of Jezreel, and rising between the fertile plain of Esdraelon on the W. and the green valley of the Jordan on the E. It is memorable as the scene of the defeat and death of King Saul and his three sons at the hands of the Philistines.

Gilchrist, Alexander, an English author; born in Newington Green in 1828; died in Chelsea, Nov. 30, 1861. His chief work are biographies of William Blake, and of William Etty.

Gilchrist, Anne, an English author; born in London in 1828. In 1851 she married Alexander Gilchrist. On her husband's death she undertook the completion of his "Life of Blake" (1863), to the second edition of which (1880) is appended a memoir of Alexander Gilchrist. She spent three years in the United States in 1876–1879, when she wrote for "Blackwood's" "Glimpses of a New England Village." She died in 1885.

Gilder, Jeannette Leonard, journalist, critic; born in Flushing, N. Y., Oct. 3, 1849; at 18 became reporter for Newark, N. J. newspapers; was associated with her brother, R. W. Gilder in editorial department "Scribner's Monthly" (now "The Century"); with brother, J. B. Gilder, started, in 1881, "The Critic;" also wrote plays and stories. She died Jan. 17, 1916.

Gilder, Richard Watson, American editor and author; born in Bordentown, N. J., Feb. 8, 1844. After leaving school entered railroad work, and later (with Newton Crane) established the "Newark Register;" became managing editor "Scribner's Monthly" in 1870; editor-in-chief, 1881, under its present name of "The Century." He was the author of several volumes of poems. Died Nov. 18, 1909.

Gildersleeve, Basil Lanneau, classical scholar; born in Charleston, S. C., Oct. 23, 1831. In 1876 he was appointed Professor of Greek at Johns Hopkins University. He is the founder and editor of the "American Journal of Philology."

Gildersleeve, Virginia Crocheron, an American educator; born in New York city in 1877; graduated at Barnard College in 1899; A. M. and Ph. D. of Columbia University; assistant, tutor, and lecturer in English at Barnard in 1900–1910; then became Dean of the college; author "Government Regulation of the Elizabethan Drama" (1908), etc.

Gilfillan, George, a Scotch author; born in Perthshire, Jan. 30, 1813; died in Arnhalt, Aug. 13, 1878.

Gills, the branchiæ of fishes; a double row of long, compressed, slender-pointed processes, extending, like

the teeth of a comb, from the convex side of a branchial arch, and supported by a delicate membrane. Gills may be free or fixed.

Gill, Sir David, a Scotch astronomer; born Aberdeen, June 12, 1843; educated at Marischal College. He was in charge of Lindsay's expedition to Mauritius in 1874 to observe the transit of Venus and the opposition of Juno, by means of the heliometer, for the determination of the solar parallax. In 1877 he was in charge of the expedition to Ascension to observe the opposition of Mars for parallax; and in 1879–1907 was director of the Cape Observatory. He was a delegate to the International Astrophotographic Congress; was knighted in 1900; died Jan. 24, 1914.

Gill, Henry Z., an American physician; born in Richboro, Pa., Oct. 6, 1831; was graduated at the Jefferson Medical College, Philadelphia, in 1857; was a surgeon in the Union army during the Civil War; and was Professor of Chemical and Operative Surgery in Wooster University in 1883–1886; removed to Kansas in 1886. D. 1907.

Gill, Theodore Nicholas, an American educator; born in New York city, March 21, 1837; received a common school education; studied natural history; and became Professor of Zoölogy in Columbia University in 1884.

Gillette, William Hooker, a playwright; born in Hartford, Conn., July 24, 1853. He is the author of several successful plays, in many of which he has assumed the leading parts.

Gillies, John, a Scotch historian; born in Brechin, Forfarshire, Jan. 18, 1747; died in Clapham, Feb. 15, 1836.

Gillis, James Melvin, an American astronomer; born in Georgetown, D. C., Sept. 6, 1811; entered the navy in 1827, soon obtained leave of absence and was graduated at the University of Virginia, and then spent six months in Paris. He was in charge of the observation of occultations and transit observations made in connection with the Wilkes exploring expedition, Gillis making the observations at the Washington end at a little observatory on Capitol Hill. He had charge of the United States astronomical expedition to the Southern hemisphere, and in 1861 was appointed superintendent of the national observatory at Washington, D. C. He died in Washington, D. C., Feb. 9, 1865.

Gillman, Henry, an American botanist; born in Kinsale, Ireland, Nov. 16, 1833; settled in Detroit, Mich., in 1850; was United States consul at Jerusalem in 1886–1891. During his consulate he so strongly opposed the Turkish government in its expulsion of Jews from Palestine that several European countries supported him, and the exclusion laws were modified. He died July 30, 1915.

Gillmore, Quincy Adams, an American military officer; born in Black River, Lorain co., O., Feb. 28, 1825; graduated at West Point in 1849. He was promoted captain in 1861, and Brigadier-General of volunteers early in 1862. He displayed skill as an engineer by the capture of Fort Pulaski in April, 1862, and was appointed commander of the Department of the South in June, 1863. He made a successful attack on Morris Island in July, 1863, began to bombard Fort Sumter and Charleston in August, and took Fort Wagner in September; Fort Sumter was reduced to a ruinous condition, but its garrison continued to hold it till Feb. 17, 1865. General Gillmore commanded the 10th Corps near Richmond in 1864, and was brevetted Major-General U. S. A., in 1865. He died in Brooklyn, N. Y., April 7, 1888.

Gill Net, a net suspended in a stream, having meshes which allow the heads of the fish to pass, and which catch in the gills to prevent the fish from detaching itself.

Gilman, Daniel Coit, an American educator; born in Norwich, Conn., July 6, 1831; was graduated at Yale College in 1852; Professor of Physical and Political Geography in Yale in 1856–1872; president of the University of California in 1872–1875. When Johns Hopkins University was founded in Baltimore, Md., in 1875, he was elected its first president and served in that capacity till 1901. In 1896–1897 he was a member of the commission to settle the boundary line between Venezuela and British Guiana, and in the latter year also served on the commission to draft a new charter for

Baltimore, and in 1901–1904 was the first president of the Carnegie Institution. He died Oct. 13, 1908.

Gilman, Nicholas Paine, educator; born in Quincy, Ill., Dec. 21, 1849; was graduated at Harvard Divinity School in 1871; editor of the Boston "Literary World" in 1888–1895; then became Professor of Sociology and Ethics in the Meadville Theological School. Died Jan. 23, 1912.

Gilm zu Rosenegg, Hermann von, a German poet; born in Innsbruck, Nov. 1, 1812. His poems did much to maintain among the Tyrolese the spirit that prompted their uprising for independence in 1809. He died in Linz, May 31, 1864.

Gilolo, or **Jilolo,** an island of the Molucca group in the Indian Archipelago.

Gilthead, a fish having golden colored eyebrows, whence its English name. The back is silvery gray shaded with blue, the belly polished steel-blue, with golden bands along the sides. It is abundant in the Mediterranean.

Gimp, silk twist interlaced with wire or a coarse cord. It is now principally used in upholstery, though it has at times been fashionable for trimming wearing apparel.

Gin, a compounded spirit, prepared either by redistilling plain spirit with juniper berries, coriander seeds, angelica root, etc., or by adding various essential oils to rectified spirit. Also, a machine for separating cotton fiber from the seeds.

Ginevra, a young Italian bride, who hid in a trunk with a spring lock. The lid fell on her, and she was never discovered till the body had become a skeleton.

Gingal, an East Indian breech-loading firearm, carrying a ball from four to eight ounces. It is fired from a rest.

Ginger, in botany, common or narrow-leaved ginger. It is a native of India, but is cultivated in most tropical countries. There is a broad-leaved ginger, also a native of India. It is used externally for cataplasms and fomentations, but is not eaten.

In ordinary language, the dry, wrinkled rhizomes of the ginger-plant. The pieces, or as they are called races, are usually from 2 to 4 inches long, branched, flat, and of a pale buff color. Ginger is known in commerce under two forms, coated and uncoated or scraped, the latter having been deprived of its epidermis when in the green state, and sold as white ginger. The chief varieties imported into the United States are Jamaica, Cochin, Bengal, Japan, and African. Ginger is an agreeable aromatic, and a valuable stomachic; but is more largely used as a condiment than as a medicine. Preserved ginger, so largely imported from China in jars, consists of the young rhizomes boiled in syrup. Ground ginger is frequently adulterated, the chief adulterants being sago flour, wheat flour, ground rice, and arrowroot. These are added, not only to increase the weight but to whiten a dark-colored variety, which is then sold as a first-class ginger.

Gingko, the Japanese name of a coniferous tree of the yew alliance, with very characteristic leaves, in form and variation recalling the leaflets of the maiden-hair ferns. The yellow, drupe-like seeds reach the size of a walnut, and are largely eaten throughout China and Japan. The Japanese esteemed the tree as sacred, and planted it round their temples.

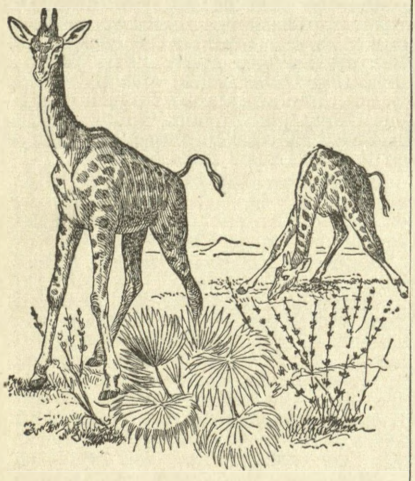
Ginsburg, Christian D., a Polish author; born in Warsaw, in 1830. He was one of the scholars engaged on the revised version of the Old Testament.

Ginseng (Chinese Gensen, "that which resembles a man"), a root used in China as a medicine, and exported from North America to China to the amount of about 500,000 pounds annually. Ordinary ginseng is prepared by simply drying the root over a charcoal fire; the red or clarified ginseng is steamed in earthenware vessels with holes. The root is mucilaginous, sweetish, also slightly bitter and aromatic.

Gioverti, Vincenzo, an Italian writer; born in Turin, April 5, 1801; died in Paris Oct. 26, 1852.

Gipsies (from Egyptians, the name by which they were called in the English statutes), a wandering nation whose physical characteristics, language, and customs differ much from those of European nations. Gipsies are remarkable for the yellow brown, or rather olive color, of their skin; the

jet-black of their hair and eyes, the extreme whiteness of their teeth, and for the symmetry of their limbs, which distinguishes even the men, whose general appearance, however, is repulsive and shy. The gipsies have much elasticity and quickness; they are seldom of a tall or powerful frame; their physiognomy denotes carelessness and levity. They rarely settle permanently anywhere. Wherever the climate is mild enough they are found living in forests and waste places in companies. Their common shelter is a tent. Gipsies first appeared in Europe about five hundred years ago. At first they were well received, but afterward shunned and prosecuted as outlaws. Many were executed in Scotland and England. Nevertheless, they mingled with the natives and many well known families have gipsy blood. Considerable numbers have made their way to the United States.



GIRAFFE.

Giraffe, the camelopard. It has an affinity to the camel; but its resemblance to the leopard, which is only in its color and spots, is an analogy and no more. It has two small frontal horns and one central horn. The neck is very long, but has only the normal number of cervical vertebræ. The tongue is long and prehensile, and is used for stripping leaves off trees. The forelegs are very long, making the animal stand 15 to 18 feet high. It lives in small herds, and gallops in a ludicrously clumsy manner. The animal is inoffensive when unmolested, but will try to kick its assailant if it be attacked. Its flesh is good; when old it becomes coarse; the hide makes excellent leather. It is found in Nubia, Abyssinia, and the Cape of Good Hope; probably also in every part of the intermediate region. Species of giraffe have been found in Miocene strata in India, Greece, and France.

Girard, Stephen, an American philanthropist; was born near Bordeaux, France, May 24, 1750. In 1769 he settled as a trader in Philadelphia, where he established the Second National Bank, and advanced several millions to the United States treasury during the War of 1812. In the yellow fever epidemic in 1793 he nursed many of the sick in the hospitals; and in public matters his generosity was remarkable. Among other bequests he left $2,000,000 for the erection and maintenance in Philadelphia of a college for male white orphans. He died in Philadelphia, Pa., Dec. 26, 1831.

Girard College, an institution in Philadelphia, Pa., for the education of poor white orphan boys; founded under the will of Stephen Girard, and opened Jan. 1, 1848. By a provision in the will no ecclesiastic, missionary, or minister of any sect whatever is to have any connection with the college.

Girardin, Emile de, a French politician; born in Paris, June 22, 1806, and educated there. In 1836 he founded the "Presse," an Orleanist journal with Conservative leanings. Its rivals accused it of being subsidized by the government, and one of the unfortunate results of the quarrels thus fastened on Girardin was his duel with Armand Carrel, editor of the "National" in which the latter fell. In 1874, he founded the "France," and both in its pages and in the "Petit Journal" supported the republic. He wrote a few pieces for the stage; his political ideas he gave to the world in a host of brochures. He died in Paris, April 27, 1881.

Girasol, a precious stone, exhibiting in strong lights a peculiar and beautiful reflection of bright red or yellow light, which seems to come from the interior of the stone.

Girdler, an American longicorn beetle, which deposits its eggs in twigs of hickory and then girdles the twigs, thus killing them and rendering them fit food for their larvæ.

Girgashites, a tribe of the ancient Canaanites.

Girnar, a sacred mountain in India. It is a bare and black rock of granite rising to the height of 3,500 feet above the sea; and, as a holy place of Jainism, is covered with ruined temples. One group contains 16 temples, nearly 3,000 feet above the sea.

Girodet, Anne Louis, a French painter; born in Montargis, Jan. 5, 1767; was a pupil of David. He painted "Napoleon Receiving the Keys of Vienna"; and "St. Louis in Egypt," which was his last great work. He was a member of the Academy of Painting, and of the Institute. He died in Paris, Dec. 19, 1824.

Girondist, or **Girondin,** the name of a great political party in France; one of the most powerful factors in the earlier part of the first French Revolution. When the Legislative Assembly met in 1791, it was found to contain representatives of the upper, the middle, and the lower classes. The Girondists were the party of the middle classes, and were republican in sentiment. Their followers were the burgess class, the professionals, and the smaller agriculturists. In 1791 they were the most powerful party in the Assembly, and for a time shaped the policy of their country. When conservative Europe, in the interests of monarchy, threatened France with invasion, it was the Girondists who, in April, 1792, declared war, the Jacobins deprecating hostilities, as fearing the result. To overcome their monarchic rivals, the Girondists coquetted with the last-named party, and found that they had gained, not a servant, but a cruel and exacting master. The quarrel between the two arose after the massacres perpetrated in August and September, 1792, and the extreme revolutionists ultimately prevailing, an armed mob on May 31, 1793, assailed the Convention, and demanded the imprisonment of 29 Girondist deputies. These were arrested on June 2, and 21 of them were guillotined on Oct. 31. Others were subsequently put to death; a few escaping, reappeared in the Convention after the fall of Robespierre.

Girton College, a noted college for women in England, instituted at Hitchin in 1869, but removed to Girton, near Cambridge, in 1873.

Giseke, Robert, a German dramatist; born in Marienwerder, Jan. 15, 1827. Early an accomplished theologian and an authority on philosophy and history, his prospects were destroyed by his political utterances in 1848, and he was driven to journalism for a livelihood. After some years he began to write novels, but his original and striking plays gave him his greatest renown. He died in Leubus, Dec. 12, 1890.

Gisors, a town in France, 43 miles N. W. of Paris. Its double-aisled church, whose choir dates from the 13th century, has a splendid flamboyant portal; and the octagonal donjon of the ruined castle was built by Henry I. of England. Here Richard I. defeated the French in 1198; his watchword, "Dieu et mon Droit," has ever since been the motto of the royal arms of England. Pop. 5,000.

Gissing, George, an English novelist; born in Wakefield in 1857. He made a remarkable study of the London masses. He died in 1904.

Gitschin, a town of Bohemia, 60 miles N. E. of Prague. Gitschin was once the capital of the duchy of Friedland, and here Wallenstein built a splendid palace in 1630. On June 29, 1866, the Austrians were defeated here by the Prussians. Pop. 10,000.

Gittith, an instrument of music among the ancient Hebrews. Buxtory calls it a stringed instrument, and derives the name from Gath, a city of the Philistines, whence King David, on his return, brought it to Jerusalem.

Giulio Romano, properly Giulio Pippi de' Giannuzzi, an Italian artist; born in Rome about 1492; assisted Raphael in the execution of several

of his finest works. Giulio died in Mantua Nov. 1, 1546.

Giurgevo, a town of Rumania, on the Danube. It imports iron and textile goods, coal, and spirits, and exports corn, salt, and petroleum. Since 1771 the town has played an important part in all the wars between the Turks and the Russians. Pop. 14,000.

Glace Bay, a town in Cape Breton county, N. S., Canada; on Cape Breton island and the Sydney & Louisburg railway; 14 miles N. E. of Sydney; chief interest, coal.

Glacial Period, a period or epoch during which ice largely prevailed, the climate, in what are now temperate latitudes, being polar. It commenced during the Newer Pliocene, and terminated before the close of the Post-Pliocene age.

Glaciers. The summits and sides of mountains above the limit of perpetual snow are covered with a crust which is harder than common snow, yet not like common ice. More ice is formed on the sides of mountains than on their summits, but this does not constitute the glaciers properly so called. The glaciers are vast fields of ice extending from the declivities of the mountains down into the valleys below the snow line, and bearing a considerable resemblance to a frozen torrent. They take their origin in the higher valleys above the limit of perpetual snow, where they are formed by the congelation of large masses of snow in that particular condition called by French writers neve, by German authors firn. The ice of which glaciers are formed is different from that produced by the freezing of still water, and is composed of numerous thin layers filled with countless bubbles of air. It is likewise both more brittle and less transparent than common ice.

The glaciers continually move downward into the valleys, and not infrequently reach the borders of cultivation, sometimes even descending so far as to sweep away villages in their course. The rate at which a glacier moves varies from 18 to 24 inches in 24 hours. At its lower end it is generally very steep and inaccessible, the nature of the ground in some cases producing a solid cascade of ice of 1,000 feet in height. In the middle part of its course it is more level but gradually becomes steeper in the ascent toward its source. The appearance presented by a glacier in the middle part of its course is that of a frozen stream with an undulating surface more or less broken up by fissures or crevasses of varying length and width. As it descends it experiences a gradual diminution from the action of the sun and rain and likewise from the heat of the earth in the valley which forms its bed. This last circumstance produces a phenomenon which is universally attendant on glaciers — the issue of a stream of ice-cold turbid water from its lower extremity.

Glaciers are found in Greenland, Alaska, and other parts of North America; in the Himalaya, Hindu Kush, Karakorum, and other mountains of Asia; in Africa, high up on Kilima-Njaro; in the Southern Alps of New Zealand; in the Andes of South America, and in Switzerland and Scandinavia. The glaciers of Greenland are usually regarded as constituting a type distinct from the Alpine and the Norwegian. They are simply tongues of ice projected down the ice fiords to the coast from the immense expanse of ice which covers the whole interior of the country, and they travel at a much quicker rate than those of Europe. The two largest are the Jacobshavn glacier in Disko bay, which is 13 miles long and over 1½ miles in breadth at its end; and the Humboldt glacier at Smith sound, which is over 60 miles broad. Several of the many glaciers of Alaska are of immense size; notably the Malespina glacier near Mount St. Elias, "a plateau of ice having an area of between 500 and 600 square miles," and the Muir glacier on Glacier Bay, to the S. E. of the former with an area of about 350 square miles. Icebergs, as is well known, are simply huge pieces detached from glaciers that flow into the sea in the Arctic and Antarctic regions.

Glacis, in fortifications, the superior slope of the rampart of the covered way, or, where the rampart does not exist, the declivity immediately in front of the ditch of a work, forming a

gentle slope toward the country, and protecting the reventment of the escarp from the fire of an enemy.

Gladden, Washington, an American author; born in Pottsgrove, Pa., Feb. 11, 1836; was graduated at Williams College in 1859; ordained in the Congregational Church; pastor of the First Congregational Church in Columbus, O., in 1882–1914. He was widely known as a writer on social reforms.

Gladiator, one of the class of men whose profession was to fight in public for the entertainment of the people. They were armed with deadly weapons and usually fought in pairs. The numbers of these men were principally recruited from prisoners of war, or refractory slaves sold by their masters to the lanista, or trainer. Malefactors also were occasionally forced into fighting as gladiators, and occasionally Roman citizens offered themselves voluntarily for hire, and to such the specific term "auctorati" was applied, their pay being called "auctoramentum." Under the more worthless and dissolute emperors, equites, priests and senators did not scruple to contend in the arena, in the hope of attracting the attention and gaining the favor of the prince; and even high-born women were found who consented to pander to the appetite for novelty, by fighting with each other or with dwarfs. Gladiators were divided into classes according to the manner in which they were equipped, and were in many cases named from the nation whose characteristic arms they bore. The representatives of different nations were frequently matched against each other, and the comparative efficiency of their weapons, offensive and defensive, was thus put to the test. If one of the combatants was wounded so as to be unable to continue the fight, the life or death of the wounded man, who held up his finger in token of submission, depended upon the pleasure of the president, who usually, as a matter of courtesy, referred it to the spectators, who signified their decision by raising or depressing their thumbs, according as they wished him to be killed or saved.

Gladiolus, a genus of plants with beautiful spikes of flowers, sword-shaped leaves and corms or bulbous rhizomes. The hardy forms are well adapted to the mixed border, wild garden or shrubbery in dry and sunny situations.

Gladstone, Herbert John, 1st Viscount, a British statesman; born in London, England, Jan. 7, 1854; youngest son of William E. Gladstone (see below); became a Lord of the Treasury, Financial Secretary of the War Office, Under-Secretary of the Home Office, and chief whip of the Liberal party; and was raised to the peerage and appointed the first Governor-General of the South African Union in 1910.

Gladstone, William Ewart, a British statesman; born in Liverpool Dec. 29, 1809, of Scottish parents. His political career began in 1833, and up to the time of his death in 1898, he held a prominent, and often leading place in public affairs as Prime Minister. He brought about the gradual enfranchisement of the masses, equal taxation, popular education, free trade, financial reform, etc., and almost succeeded in obtaining home rule for Ireland. But his foreign policy was weak, and lacking in foresight; the maintenance of peace was dearer to him than national prestige, and his vacillation was the cause later of the Sudan and South African troubles. Still, as "The Grand Old Man," his memory is cherished among the English masses. Died May 19, 1898, at Hawarden Castle, his Welsh residence; buried in Westminster Abbey.

Glammis, a village of Scotland, five miles S. W. of Forfar. Near it is Glammis Castle, in which is still shown the chamber in which Malcolm II. was assassinated in 1034. It was one of the castles of Macbeth, and gave him his hereditary title of Thane of Glammis.

Gland, a term at first vaguely applied to any smooth, round viscus, but which is now limited to such of these as secrete — i. e., separate by a process of cell growth, certain constituents of the blood which are afterward poured out from the gland by means of a duct.

Lymphatic glands are bodies resembling glands in form, but not possessing ducts for secretion, so that their products must be conveyed to them by

lymphatic or sanguiferous vessels. Examples, the spleen, the thyroid body, the thymus gland, the suprarenal capsules, the pituitary body, the follicular glands at the root of the tongue and the lymphatic glands.

Glanders, a disease among horses, indicated by a discharge of purulent matter from one or both nostrils, with a hard enlargement of the submaxillary glands. In acute glanders the discharge, by its copiousness, impedes respiration and ultimately produces suffocation. The disease is highly infectious, and may even be communicated to man by the purulent matter coming in contact with any part where the skin is broken. The disease is rarely if ever cured.

Glarus, a town and capital of the Swiss canton of Glarus; 43 miles S. E. of Zurich. It was founded by an Irish monk, Fridolin, in the end of the 5th century. Zwingli was pastor here from 1506 to 1516. Glarus, having been peopled by German settlers, passed after various changes into the possession of the dukes of Austria, but ultimately secured its independence by the victories of Nafels in 1352 and 1388. In 1450 it joined the Swiss Confederation.

Glasgow, the largest city in Scotland, and the second largest in the United Kingdom of Great Britain and Ireland, is situated in the countries of Lanark and Renfrew, on both banks of the Clyde. Though having some unlovely features, Glasgow as a whole is excelled by few cities in the kingdom in architectural beauty and general amenity of appearance. It possesses few squares worth mention, the chief being George Square, in the heart of the city and Cathedral Square toward the N. E. The city also possesses botanic gardens, with extensive ranges of hothouses, greenhouses, "crystal palace," etc.

Preëminent among edifices stands the Cathedral, Glasgow's only ancient building, in the N. E. quarter of the city, on the edge of a ravine separating it from the Necropolis (the chief public cemetery). It is a large Gothic edifice in the early pointed style, with tower and spire rising from the center, but without transepts; length of interior, 319 feet; width, 63 feet; height of nave, 90 feet; of choir, 85 feet; spire, 225 feet. It is especially distinguished for the beauty of its crypt (or under-church), which is one of the most beautiful in Great Britain. The windows have been filled by private munificence with painted glass on a uniform plan, those in the nave and choir being by Munich artists, those in the crypt, chapter house, and lady chapel, by British artists. The cathedral as it at present stands is supposed to have been begun before 1197, and completed within the 15th century.

The manufacturing industries of Glasgow, including also those of the surrounding and dependent districts, are unequaled for variety by any manufacturing town in the kingdom, with the exception, perhaps, of London. Among the older industries of importance are those connected with cotton, linen, and wool, including spinning and weaving, dyeing and bleaching, calico printing, and Turkey-red dyeing in particular. But the Glasgow of today is most largely dependent on iron and coal, and the importance of its textile industries is relatively less than formerly. It is the leading market for the whole iron production of Scotland and there are blast furnaces and collieries within the city boundaries. The manufacture of malleable iron and steel, and of machinery and metal goods of all descriptions, is immense. The most important industry is shipbuilding and the connected trades, the Clyde, which was the birthplace of steam navigation in Europe, having ever since been closely associated with the growth and development of steam shipbuilding and marine engineering. Some 300,000 tons of shipping are usually built yearly. Locomotive engines constitute another great industry. There are also extensive chemical works, potteries, glass works, brick works, breweries, distilleries, tanneries, tobacco works, confectionery works, carpet works, printing, publishing, and lithographic works, and a multitude of other industries of greater or less importance.

The commerce of Glasgow is commensurate in extent with the importance of its manufactures, and is closely associated with these. The consigning trade, that is, the con-

signment by manufacturers of their own goods to foreign markets for sale, has consequently here acquired dimensions unusual in English manufacturing towns of the first class, and many wealthy mercantile houses have grown up in the East Indian, American, and other branches of foreign trade. The river itself, the chief highway of this commerce, from being a shallow stream, has by dredging been made navigable for large vessels. The progress of Glasgow will be seen from the following figures of population: 1610, 7,644; 1660, 14,678; 1708, 12,766; 1740, 17,034; 1763, 28,300; 1785, 45,889; 1801, 77,385; 1811, 100,749; 1841, 255,650; 1871, 477,732; 1881, 511,415; 1891, 565,714. Since the last year the boundaries have been extended several times, giving the city a population of 775,594 in 1901, 1,034,069 in 1921. It is supposed to date from 560.

Glasgow University, a corporate body founded by a bull of Pope Nicholas V., dated Jan. 7, 1450–1451, with the power of creating masters and doctors, who, together with the readers and students, were to enjoy the same privileges and immunities with the University of Bologna.

The University of Glasgow comprises five faculties, namely, arts, science, medicine, law, and theology, the faculty of science having been recently added. The oldest chairs are those of moral philosophy, 1577; natural philosophy, 1577; logic and rhetoric, 1577; Greek, 1581; divinity, 1630; Latin, previous to 1637; mathematics, revived 1691. In the first 20 years of the 18th century six professorships were either originally founded or revived, namely, Latin, Oriental languages, civil law, medicine, Church history, anatomy; astronomy was added in 1760. The remaining 18 professorships were founded in the 19th century. The university was reconstituted by the Scottish University Act, 1858, and a similar revolution was effected under the act of 1889.

Glass, a hard, brittle, transparent substance, formed by fusing together mixtures of the silicates of potash, soda, lime, magnesia, alumina, and lead in various proportions, according to the quality or kind of glass required.

Of the origin of glass manufacture we cannot speak with certainty. Pliny states that the ancient Phœnicians discovered by a happy accident how to make it. He relates that certain Phœnician merchants preparing a meal upon the seashore set their cooking vessel on a mass of natron (subcarbonate of soda) and the union of the sand and alkali, when subjected to the fire, resulted in vitrification that drew the men's attention and led to subsequent efforts at imitation. According to Egyptologists the Egyptians made sham jewels of glass at least 5,000 or 6,000 B. C. In some of the most ancient tombs scarabs of glass have been found imitating rubies, emeralds, sapphires, and other precious stones, and the glass beads found broadcast in three parts of the globe were quite possibly passed off by traders on confiding barbarians as jewels of great price. As a medium of trade, beads are evidently of great antiquity. Those known as aggry have been attributed to both Egyptian and Phœnician sources. The beads vary greatly in color and pattern and some of them show fine workmanship and marked beauty. During the period when Egypt was part of the Roman empire much glass was produced in the Nile valley.

It is uncertain whether glass was made in England before the 16th century, as that mentioned may have been imported from Flanders or Vénice. In 644 Benedict Biscop introduced makers of glass windows into Northumbria; but window glass was not in general use for windows till the 15th century. Attempts were made to establish glass works at Jamestown, Va., in 1608–1622; at Salem, Mass., in 1639–1640; in New York city before 1664; and in Pennsylvania before 1683. Subsequently works were established in 1780 at Temple, N. H.

Stained glass is an art which arose in Europe in the Twelfth Century. In Italy mosaics were used more extensively for decoration of churches so that the finest examples of stained glass are found in the Cathedrals of France, Belgium and England.

Glass Blowing, a mode of manufacturing various articles by taking a mass of viscid glass from the melting

pot on the end of the blowing tube, and then inflating the mass by blowing through the tube, rolling on the marver, and exposing it at the furnace opening where its contained air is expanded and itself enlarged.

Glassites, a religious sect which sprang up in Scotland about 1819, and was so called after its founder, the Rev. John Glass. He was opposed to all national establishments for the support of religion, and advocated a system of independent Church government. The leading tenets of the Glassites relate to the efficacy of the atonement and the nature of faith. They hold that "the bare death of Christ, without a deed or thought on the part of man, is sufficient to present the chief of sinners spotless before God"; and that "faith is no more than a simple assent to the divine testimony, passively received by the understanding." They also observed certain peculiar practices, supposed by them to have been prevalent among the primitive Christians; such as weekly sacraments, love-feasts, washing each other's feet, the kiss of charity, the use of lots; and in general, they attempted to carry out literally, the rules of Scripture.

Glass Painting, the art of producing pictures on glass with vitrifiable colors, in contradistinction to the use of colored glass, in which the color forms part of the composition of the glass itself. Originally there was but one method of making ornamental glass windows, which was by the latter process; the pieces of stained or colored glass were cut to the desired shape, and let into the grooves of finely made leaden frames which formed the pattern in outline, so that the pictures resembled tables of mosaic work, on which there was no attempt at shading or modification of the tone. It was not till the 13th century that the mosaic patterns gave way to elaborate designs, not only in beautiful arabesque and other styles of decorative art, but even in pictorial composition. In all of these the figures, with the exception of the faces and hands, were made up of pieces of colored glass combined with great skill and taste. The faces and hands were painted in enamel colors, and burned in. Shading, properly so called, and half tints, are not attempted. Gradually the art of shading by removing certain portions of the colored surface and other improvements were effected and the 15th century may be called the culminating point in the history of the first period of the art. The present period of glass painting began contemporaneously with the revival of Gothic architecture in the 19th century.

Glass Snake, a lizard. From the absence of feet, they look like serpents. The name glass snake is supposed to allude to the brittleness of their tail.

Glastonbury, a town of Somersetshire, England, 25 miles S. W. of Bath. It was the seat of the most magnificent and wealthy abbey in England, the last abbot of which was hanged for refusing to surrender it to Henry VIII. Its ruins are still extensive.

Glatz, a town of the province of Silesia, Prussia, on the left bank of the Neisse, 52 miles S. S. W. of Breslau. During the Thirty Years' and Seven Years' War, Glatz was frequently besieged and taken. Pop. 17,000.

Glauber, Johann Rudolph, a German chemist; born in Karlstadt, in Franconia, in 1603. In 1648 he discovered hydrochloric acid while experimenting with oil of vitriol and common salt; he was probably the first to procure nitric acid; and his name has been transmitted in Glauber's salt, which he likewise discovered. He died in Amsterdam in 1668.

Glauber's Salt, sulphate of sodium, so called because of the importance attached to its chemical and medicinal properties by Glauber. It forms large colorless monoclinic prisms which effloresce on exposure to the air. It is soluble in water, and when heated melts in its water of crystallization. It is found in many localities, both dissolved in the water of mineral springs and of salt lakes, round which it effloresces.

Glaucoma, an opacity of the vitreous humor of the eye, characterized by a bluish tint seen from without, and the absence of the peculiar characters of cataract, which, in some respects, it resembles as regards the

gradual obscuration of vision. It is an almost incurable disease.

Glazier Lake, a body of water in Minnesota, S. of Lake Itasca, into which it empties through a swift and permanent stream about six feet wide; named for Capt. Willard Glazier, who claimed for it a geographical importance as the true source of the Mississippi. Lake Glazier is 1½ miles in greatest diameter; and has an area of 255 acres. It is estimated to be 1,582 feet above the Atlantic, and 3,184 miles from the Gulf of Mexico. The Minnesota State Historical Society sent an expedition to the region and disproved Glazier's claims.

Gleaning, the act of gathering after reapers or gatherers, as the gleanings of grapes. Gleaning was an established practice among the Jews, and was sanctioned by the law of Moses, who enjoins them, when they reap the harvest, not wholly to reap the corners of the field, nor gather the gleanings, which were to be left for the poor and the stranger.

Gleason, Elliott Perry, an American inventor; born in Westmoreland, N. H., June 27, 1821; received a common school education; was one of the first to manufacture gas burners; and invented the regulating argand burner, etc. He died Sept. 26, 1901.

Gleaves, Albert, an American naval officer, born in Nashville, Tenn., Jan. 1, 1858; was educated at the U. S. Naval Academy; commissioned captain on July 1, 1909, and rear-admiral on July 29, 1915. He commanded the torpedo-boat "Cushing" in the Spanish-American War (1898), and the "Dolphin" and "Mayflower" on special service in 1901–4; was in charge of the Naval Torpedo Station in 1904–8; and was appointed commander of the destroyer squadron of the Atlantic fleet on Nov. 22, 1915. In June, 1917, he was assigned to the command of the destroyer squadron which subsequently convoyed the transports carrying the first large United States military force into French waters, without the loss of a single life.

Glebe, in the established Churches of England and Scotland, the land possessed as part of the revenue of an ecclesiastical benefice.

Glee, a musical composition for voices in harmony, consisting of two or more contrasted movements, with the parts so contrived that they may be termed a series of interwoven melodies. It may be written for three or more voices; but it is necessary that there should be only one voice to a part. It may be designed with or without instrumental accompaniment, and set to words in any style.

Gleemen, itinerant minstrels, so called by the Anglo-Saxons. The name appears to have been supplanted by the Norman minstrels shortly after the Conquest.

Gleig, George Robert, an English writer; born in Stirling, April 20, 1796; entered the army, and served in Spain in 1813 and in America in 1814. He deserves mention as the author of the story "The Subaltern" (1825), founded on incidents of the Peninsular war. He died near Winchfield. in Hampshire, July 9, 1888.

Gleim, Johann Wilhelm Ludwig, a German poet; born in Ermsleben near Halberstadt, April 2, 1719; died in Halberstadt, Feb. 18, 1803.

Glen, William, a Scottish songwriter; born in Glasgow, Nov. 14, 1789. His "Wae's me for Prince Charlie," a Jacobite song, is widely known. He died in Glasgow, December, 1826.

Glenalmond, a valley of Perthshire, Scotland, much visited for its scenery, and for Ossian's grave — the subject of Wordsworth's verses on the "Narrow Glen." It is the seat of Trinity College, Glenalmond (1847), whose buildings have been to some extent reproduced in those of Trinity College, Hartford, Conn.

Glencoe, a valley in the county of Argyle, near the head of Loch Etive, Scotland. It is bounded on both sides by almost perpendicular mountains over 3,000 feet high, and is traversed by a mountain stream, Ossian's "dark torrent of Cona." The valley was the scene of a tragedy known as the massacre of Glencoe. The state of the Highlands after 1690 was a subject of great anxiety to the government. Although the Highlanders had ceased any important operations since the death of Dundee at Killiecrankie, they had not laid down their arms. In

1691 a proclamation was issued promising pardon to all who should swear allegiance on or before Dec. 31, 1691. All the chiefs, with the exception of one Ian of Glencoe, complied. The latter had unfortunately exceeded the prescribed period, and a certificate which he produced to prove that he had offered to take the oaths at Fort William was suppressed, as is thought, by Stair. The king's signature was obtained to an order to extirpate the MacDonalds. On Feb. 1 a party of soldiers, 120 in number, commanded by Captain Campbell of Glenlyon, marched up the glen and took quarters as friends. The soldiers belonged mostly to the clan Campbell, enemies of the MacDonalds; but they were well treated, and all went merrily for 12 days. At 5 in the morning of the 13th Glenlyon and his men suddenly fell on the MacDonalds. Thirty-eight men were murdered, but many who had escaped perished in the snow, sank into bogs, or died for lack of food.

Glendower, or **Glendwr, Owen,** a Welsh chief; born in Montgomeryshire about 1354. Shortly after the accession of the new king part of Glendower's lands were seized by his neighbor, Lord Grey of Ruthin. Thereupon the Welshman, being unable to obtain redress from the English king, took up arms in his own cause, and in 1400 commenced operations by seizing the estates of Lord Grey. The king ordered his subjugation, and granted his estates to his brother, the Earl of Somerset. Then for two years Glendower carried on a guerrilla warfare against the English marches. In 1402 he drew Lord Grey into an ambush, and took him prisoner. In this same year Sir Edmund Mortimer, the uncle of the Earl of March, was also captured by Glendower. Both Grey and Mortimer married daughters of the Welsh chieftain and with him formed the coalition with Harry Percy (Hotspur) against Henry of England. That coalition ended in the battle of Shrewsbury in July, 1403, in which the English king gained a decisive victory, Hotspur being among the slain. In June of the following year Glendower entered into a treaty with Charles VI. of France, who in 1405 sent a force to Wales to act against the English. Meantime, in the spring of 1405, Glendower had been twice severely defeated by Prince Henry of England. The Welsh prince nevertheless kept up a desultory warfare during the remaining years of his life. He never submitted to English rule, and is believed to have died peacefully in Monmouthshire after 1416.

Glenfinnan, a Highland glen in Inverness-shire, Scotland; 18 miles W. of Fort William. Here, on Aug. 19, 1745, the clans gathered under Prince Charles Edward's banner, and here in 1815 a tower was erected to him.

Glens Falls, a city in Warren county, N. Y.; on the Hudson river and the Delaware & Hudson railroad; 61 miles N. of Albany; is noted for its beautiful falls and scenery; has black marble quarries, a State armory, St. Mary's and Glens Falls academies, and important manufactures. Pop. (1920) 16,638.

Gliddon, George Robbins, an American archæologist; born in Devonshire, England, in 1809. In early youth he was sent out to Egypt, where his father was established as a merchant, and also United States Consul at Alexandria. He ultimately succeeded his father as United States Consul, and resided for many years in Egypt and the Levant, actively prosecuting researches in the antiquities and ethnology of those countries. About 1840, he returned to Europe, whence he came to the United States, where he lectured in all the principal cities on Oriental archæology and was appointed agent for the Honduras Interoceanic Railroad Company. He died in Panama in 1857.

Globe, a sphere, a round solid body which may be conceived to be generated by the revolution of a semicircle about its diameter. Globe, or artificial globe, in geography and astronomy, is more particularly used to denote a globe of metal, plaster, paper, pasteboard, etc., on the surface of which is drawn a map or representation of either the heavens or the earth, with the several circles which are conceived on them, the former being called the terrestrial globe, and the latter the celestial globe. The celestial globe is intended as a representation of the

heavens, on which the stars are marked according to their several situations. The terrestrial globe is an artificial representation of the earth, exhibiting its great divisions. The axis of the earth is an imaginary line passing through its center, and the wire on which the artificial globe turns represents this line. The poles of the earth are the extremities of this axis; that on the N. is called the arctic, that on the S. the antarctic pole. The brazen meridian is the circle in which the artificial globe turns, divided into 360 degrees. Great circles, as the equator, ecliptic, and the colures, divide the globe into two equal parts; small circles, as the tropics, polar circles, parallels of latitude, etc., divide the globe into two unequal parts. Meridians, or lines of longitude, are semicircles extending from the N. to the S. pole, and cutting the equator at right angles.

Every place on the globe is supposed to have a meridian passing through it. When the sun comes to the meridian of any place (not within the polar circles) it is noon or midday at that place. The first meridian is that from which geographers begin to reckon the longitudes of places. The equator, a great circle of the earth, equidistant from the poles, divides the globe into two hemispheres, Northern and Southern. The latitudes of places are reckoned from the equator N. and S., and the longitudes are reckoned on it E. and W. The equator, when referred to the heavens, is called the equinoctial, because when the sun appears in it the days and nights are equal all over the world. namely, 12 hours each.

Horizon when applied to the earth is either apparent or real. The sensible or visible horizon is the circle which bounds our view, where the sky appears to touch the earth or sea. It extends only a few miles. The real or true horizon is an imaginary plane passing through the center of the earth parallel to the sensible horizon. The wooden horizen circumscribing the artificial globe represents the true horizon on the earth. The cardinal points of the horizon are E., W., N. and S.

The latitude of a place on the terrestrial globe, or its distance from the equator in degrees, minutes, or geographical miles, etc., is reckoned on the brass meridian from the equator toward the N. or S. pole. The longitude of a place on the terrestrial globe is the distance of the meridian of that place from the first meridian, reckoned in degrees and parts of a degree, on the equator. Longitude is either E. or W. according as a place is either E. or W. of the first meridian. No place can have more than half the circumference of the globe.

Glossary, a vocabulary or dictionary of glosses, or explanations of words obsolete or rare, or occurring only in works of a special class as technical terms, or of provincial dialectal forms or words.

Glottis, the mouth of the windpipe. It constitutes a narrow aperture covered by the epiglottis when one holds his breath or swallows. It contributes by dilatation and contraction to the modulation of the voice. It is sometimes called the rima glottis, that is, the fissure or chink of the glottis.

Gloucester, a city and parliamentary borough, river port and county-seat of Gloucester co., England. The most remarkable public edifice is the cathedral; it was originally the church of a Benedictine abbey, dating from 1058, and was converted into a cathedral at the Reformation. It is cruciform, 444 feet in length, 154 in breadth, and 85½ in height, with a tower 230 feet high. It exhibits a great variety of styles, the choir with its roof of fan tracery being a fine example of Perpendicular Gothic. Pop. (1921) 51,330.

Gloucester, a city and port of entry of Essex co., Mass., and Massachusetts Bay, near the extremity of Cape Ann, and on the Boston and Maine railroad; 32 miles N. E. of Boston. It is one of the most important fishing ports and fish markets in the world, having over 500 vessels and 6,000 men engaged in the fisheries. Cod, haddock, halibut, herring, and mackerel are the principal catches. The city has considerable historical interest. It was founded in 1623, principally by settlers from Gloucester, England, from which it received its name; was incorporated as a town in 1642; and became a city in 1874. It has the oldest Universalist Church in the United States, founded in 1770. Pop. (1920) 22,947.

Glover, John, colonel of the Revolutionary "Marine Regiment;" born in Salem Mass., 1732; died 1797.

Gloversville, a city in Fulton co., N. Y.; on the Fonda, Johnstown, and Gloversville railroad; 50 miles N. W. of Albany. It is celebrated for its manufacture of gloves, producing about two-thirds of the entire output in the United States. Pop. (1920) 22,075.

Glow Worm, a beetle of which the male flies and does not shine, while the female shines and does not fly. It is from the latter sex, therefore, that the name glow worm has been derived. Probably the phosphoric light, which is intermittent, and can be displayed or withheld at the will of the insect, is used by the female to attract the male.

Gluck, Christoph Willibald, a German composer; born in Weidenwang, July 2, 1714; studied music at Milan, under San Martini, and presented soon afterward several operas in theaters in Italy. Judging that his want of success was partially due to the weakness of the libretti, he conjoined with himself in his labors the poet Ranieri di Calzabigi, and his next subsequent opera, " Helena and Paris," was received with tumults of applause. In 1774 he went to Paris, and presented there successively several masterpieces. He died in Vienna, Nov. 15, 1787.

Glucose, a fermentable sugar, which occurs in two modifications, called dextro-glucose, or dextrose, and lœvo-glucose, or Levulose, according as it turns the plane of polarization to the right or left. A solution of cane sugar warmed with dilute acids, or left in contact with yeast, is converted into dextrose and levulose.

Glue, an impure gelatine. It is prepared from the clippings of hides, hoofs, and horns. These are steeped for several days in lime-water, to remove the hair and blood, and then drained and dried in a current of air for some days, that the lime may absorb carbonic acid, and thus prevent the injurious effects of the alkali upon the gelatine. They are then boiled in water until the solution is found to gelatinize firmly on cooling. The impurities are allowed to settle, after which it is allowed to gelatinize in shallow wooden boxes, cut into slices and dried upon nets. Good glue is semi-transparent, and free from spots and clouds. When wanted for use, it is broken in pieces and steeped in cold water till it softens and swells. It is then melted over a gentle fire, or, what is better, in a water bath, and applied in a liquid state with a brush. As the stiffening of glue depends on the evaporation of its superfluous moisture, it will not harden in a freezing temperature. Marine glue is a composition used for cementing materials that are exposed to moisture. It is made by dissolving 1 part of india-rubber in 12 parts of mineral naphtha, and adding 20 parts of powdered shellac. It not only resists wet, but cements glass and metals as well as wood. White fish glue, or diamond cement, is made of isinglass dissolved in alcohol.

Gluten, an albuminous substance, obtained from wheat-meal. It is a tenacious, yellowish-gray, elastic mass, which dries into a horny, semi-transparent mass, resembling glue.

Glutton, a genus of carnivorous quadrupeds distinguished by the head being but moderately elongated and the body long in proportion to its height from the ground. The ears are rounded and very short. There is a simple fold of the skin below the tail, instead of the pouch observable in the badger, to which animal it bears some resemblance. Desmarest describes four species, one of which, the wolverene, is an inhabitant of the N. parts of America. The wolverene is about 28 inches in length from the tip of the nose to the origin of the tail, which latter is about 8 inches, if the hair at the extremity be included, which is from 3 to 4 inches long. The whole body is covered with very long and thick hair, which varies in color according to the season or other circumstances. Its summer coat is generally as follows: Face blackish as high as the eyebrows, and between these and the ears whitish or brownish; ears covered with coarse hairs; the lower jaw and the inside of the fore legs spotted with white; upper part of the back, thighs, and under part of the belly, brown or brownish black; sides, chestnut color. Its fur is of considerable value and is much used. It is one of the most destructive of quad-

rupeds found in the N. part of America, destroying great numbers of young foxes and other animals; it is also a great enemy to the beaver, watching them as they come out of their houses, or even breaking into their habitations.

Glycerin, or **Glycerine,** a thick colorless, inodorous, neutral syrup, which has a very sweet taste; it mixes with water in all proportions, is soluble in alcohol and in chloroform, but insoluble in ether. Glycerin was discovered in 1778 by Scheele, who obtained it in the preparation of lead plaster by saponifying lard with oxides of lead. Glycerin occurs in most natural animal and vegetable fats in combination with fatty acids, from which it can be obtained by saponifying with alkalies. It is also formed during the alcoholic fermentation of sugar. Glycerin is used for preserving fruits, also as a solvent for various salts, and in preparing copying-ink; also as a lubricator for machinery and clockwork, and is placed over water in gas meters to prevent freezing, and is used for filling floating compasses. It is employed in the form of nitroglycerin in the preparation of dynamite, and for mixing with soap to form glycerin soap, which tends to soften the skin. Glycerin is often used to adulterate wine, beer, milk, etc.

Glycerin is used on account of its physical properties as an adjunct to lotions in skin diseases to prevent the surface becoming dry.

Glycon, an Athenian sculptor known by his colossal marble statue of Heracles, commonly called the "Farnese Hercules," now in the museum at Naples. He probably lived in the 1st century B. C.

Glyptodon, a huge fossil mammal, family armadillos. It was encased in armor, there being bony plates on the head, and nearly hexagonal bony scutes on the body. It belongs to the Post-pliocene of South America. Including the tail, it was more than nine feet long.

Gnat, a genus of insects represented by numerous widely distributed species, and specially abundant in marshy districts. The male gnat sips nectar from the flowers and passes his days in dancing in the sunlight; the female spends her days and nights in pursuit of men and cattle from whom she may suck her more nutritious, if less delicate, diet. The proboscis, whose double function of piercing and sucking was noticed even by Pliny, is an extremely complex structure composed of representatives of the three usual mouth appendages. The humming sound produced by the female in flying, the deeper notes of which are due to the rapid vibration of the wings (computed at 3,000 per minute), the higher to membranes on the thoracic openings of the air tubes, serves in part, doubtless, to attract the males. Several generations of gnats follow one another in a season. Gnats occasionally swarm together in such numbers that they present the appearance of dense clouds of smoke.

Gneisenau, August Wilhelm Anton, Graf Neithardt von, a Prussian general; born in Schildau, Prussian Saxony, Oct. 27, 1760. In 1782 he accompanied the German auxiliaries of England to the American colonies. On his return he joined (1786) the Prussian army, and 20 years later fought at Saalfeld and in the battle of Jena. His most meritorious work was his share in the Waterloo campaign, in which he was chief of Blucher's staff, and principally directed the strategy of the Prussian army. He had been 15 years on the retired list when, in 1831, on the outbreak on the Polish rebellion, he was made field-marshal and given command of the Prussian army on the Polish frontier. He died in Posen, Aug. 24, 1831.

Gneiss, a metamorphic rock, consisting of orthoclase, quartz, and mica.

Gneist, Heinrich Rudolf Hermann Friedrich von, a German jurist; born in Berlin, Aug. 13, 1816. He entered official life as assessor in the Superior Court in 1841, and was successively assistant-judge of the same court and of the supreme tribunal, till in 1850 he resigned this position in order to devote himself exclusively to teaching; for since 1844 he had held the chair of jurisprudence in Berlin University. From 1858 he sat in the Prussian Lower House as a National Liberal, and was also elected a member of the Imperial Par-

liament. He was ennobled in 1888, and died July 21, 1895.

Gnesen (Polish Gniezno), a Prussian town, in a region of hills and lakes, 31 miles E. N. E. of Posen. It has a Catholic cathedral, dating from 965, and till 1320 was the coronation place of the Polish kings. It passed to Prussia in 1814.

Gnome, in mediæval mythology, the name given by cabalistic writers to one of the classes of imaginary beings which are supposed to be the presiding spirits in the mysterious operations of nature in the mineral and vegetable world. They have their dwelling within the earth, where they preside specially over its treasures, and are of both sexes, male and female. Also a small and ill-favored person; a dwarf; a person of outlandish appearance; a misshapen being.

Gnomon, in astronomy, a rod, style, or pillar erected perpendicularly to the horizon, from whose shadow the altitudes, declinations, etc., of the sun and stars may be determined. Such styles were in use in ancient Egypt, in China, and similar contrivances were found at Quito by the invading Spaniards. Also the style or pin, which, by its shadow on the dial plate of a sun dial, shows the hour of the day.

Gnosticism, a system of philosophy professedly Christian, devised to solve the great questions, such as the origin of evil, which have perplexed the ablest minds in every age. Gnosticism accepted beliefs in an eternal God of infinite power, wisdom, and goodness. Matter was eternal, and from the first essentially evil; there was then no bygone time when the "origin of evil" took place. Nor was the world created by the Supreme Being; it was framed by an exalted spirit, called in consequence the Demiurge, whom many identified with the God of the Jews. He had shining qualities, but was selfish and arrogant. He wished men to worship, not the Supreme Being, but himself. The former was the purest Light, and pervaded that boundless space which the Greeks called pleroma. He did not remain forever alone, but brought into existence two holy and happy spirits of different sexes, called Æons, from whose marriage came others of the same order, till there was a whole family of them in the pleroma. The chief of these Æons was Jesus Christ, who was sent to the world to win it back from the Demiurge to its proper allegiance. The germs of gnosticism existed in the 1st century; it did not, however, reach maturity till the reign of Adrian in the 2d. The system had declined by the 3d century, but was not extinct till about the 6th.

Gnu, a species of antelope. The adult male is about 5 feet 6 inches long, and 3 feet 10 inches high at the shoulder; horns, dark, broad, upon the summit of the head, tapering out sideways over the eyes, and turning up into a pointed hook, legs long. The gnu lives in small herds in the karroos of Southern Africa. When alarmed it flings up its heels and capers like a restive horse; then the herd goes off in single file, following a leader, with amazing speed. A gnu brought to bay or wounded turns on its assailant.

Goa, a maritime city of India, chief city of the district of the same name, and formerly capital of all the Portuguese settlements in India, on an island of the same name, at the mouth of the Mandona, 250 miles S. S. E. of Bombay. Goa consists of Old Goa and New Goa. The old city, now almost deserted, contains some splendid churches and other specimens of architecture. New Goa, or Panjin, at the mouth of the river within the forts, is the residence of the viceroy and of the principal inhabitants. It carries on trade with Portugal, China, and the coast of Africa, and is principally engaged in the salt industry.

Goal, the winning post in a race; the point or mark set to bound a race. in football, the space marked by goal posts and a cross bar to define the required path of the ball in order that a "goal" may be scored.

Goat, the domestic goat, which exists, in a wild or semi-wild state, in all the European mountain ranges. The males fight furiously with each other in the rutting time. They have an offensive smell. A most important variety, formed into a breed by artificial selection, is the Angora goat, where almost the whole body is enveloped in that long, silky, white hair which is so familiarly valuable and comfortable. The Angora goat has

been introduced into the United States. The Kashmir goat, from Tibet and Bokhara, is almost equally valuable, furnishing the white to brown hair used in making Kashmir wares. It has been successfully acclimatized in France. A third variety, utilized in the same way, is the Mamber goat from Asia Minor and Tartary, distinguished by its long pendent ears. The Syrian goat, which also has long ears, is trained in the East to all manner of tricks — especially to balance itself on a slender pile of small wooden blocks, built up to a height of several feet. The Alpine ibex is a magnificent goat, without beard, but with very strong, slightly divergent, much-ridged horns. It used to be abundant, but through over-

BIG HORN GOAT.

hunting, both for sport's sake and on account of supposed medicinal virtues, has become nearly extinct. In its native haunts it is said "to surpass even the chamois in the certainty with which it estimates distances for extraordinary leaps."

The goat is capable of the most perfect domestication, and becomes extremely attached and familiar. It is apt, indeed, to prove a troublesome pet, and makes use of its horns, though not angrily, much more freely than is at all agreeable. The uses of the goat are numerous. The flesh is good; that of the kid, or young goat, is in most countries esteemed a delicacy. Requiring but little attention, and able to subsist on rough diet, the goat is in many countries "the cow of the poor." The milk is very rich and nutritious, more easy of digestion than that of the cow, and often useful to consumptive patients. Some goats yield as much as four quarts of milk daily, though the average quantity is more nearly two. Both cheese and butter are made of goats' milk; they have a peculiar but not disagreeable flavor. Goats' milk is still very much used in Syria and other parts of the East, as it was in the days of the patriarchs. The skin of the goat was early used for clothing, and is now dressed as leather for many uses, particularly for making gloves and the finer kinds of shoes. The hair, which may be advantageously clipped annually, is used for making ropes which are indestructible in water, and for making wigs for judges, barristers, and other functionaries. The horns are used for making knife handles, etc. The goat ruins young plantations, and makes reforesting in some cases impossible. The Rocky Mountain goat is an antelope rather than a goat.

In Christian art the goat is an emblem of impurity. It sometimes occurs in the carving under seat or choir-stalls, and is put there as a mark of dishonor.

Goat Moth, a large moth, with a black head and an offensive odor, supposed to bear, as to the head, a resemblance to a goat.

Gobelin, a family of French tapestry-makers and dyers who became famous for the exquisite tapestries they manufactured. They were descended from Jean Gobelin, who founded the establishment in Paris and died in 1476. About 1667 the manufactory was turned into a royal establishment under Louis XIV. The factory still produces the finest tapestry in the world.

Gobi, Desert of, the Shamo, or "sand-sea" of the Chinese, an immense tract of desert country, occupying nearly the center of the high tableland of Eastern Asia, and extending over a large portion of Mongolia and Chinese Turkestan. Its length is probably about 1,800 miles; mean breadth, between 350 and 400 miles; area, 300,000 square miles. Its gen-

eral elevation is over 4,000 feet above sea-level. The East Gobi is occupied by different tribes of the Mongolian race, who have numerous herds of camels, horses, and sheep. In the West Gobi are some nomadic tribes of the Tartar race. This tract is supposed at one time to have been a great inland sea.

Gobineau, Joseph Arthur, Comte de, a French diplomatist, ethnologist, and romance-writer; born in Bordeaux, France, in 1816. During a long diplomatic career he held important positions at Athens, Copenhagen, and Rio Janeiro; was a member of the embassy to Persia, 1855; and Imperial Commissary to the United States, 1861. He died in Paris, Oct. 17, 1882.

Gockingk, Leopold Friedrich Gunther von, a German poet; born in Groningen, Halberstadt, July 13, 1748. He died in Wartenburg, Silesia, Feb. 18, 1828.

God. The Supreme and Omnipotent Creator and Lord of the Universe.

Godavari, one of the principal rivers of India, rises from the Western Ghats, within 50 miles of the Indian Ocean and crosses the Deccan in a S. E. course. After passing through the Eastern Ghats it separates into several arms and falls into the Bay of Bengal, which it enters by seven mouths, after a course of 898 miles, its total drainage area being estimated at 112,000 square miles. It has been called the Indian Rhine. The Godavari is one of the 12 sacred rivers of India, and the great bathing festival, called Pushkaram, is held on its banks once in 12 years.

Goddard, Arabella, an English pianist; born near St. Malo, Brittany, Jan. 12, 1836. She took her farewell of the British public in 1873, and then made a tour to the United States, returning to England in 1876.

Godefroy, Frederick, a French lexicographer; born in Paris, Feb. 13, 1826. His monumental effort is the voluminous "Dictionary of the Old French Languages and of All Its Dialects from the Ninth to the Fifteenth Century." He died in 1897.

Godet, Philippe Ernest, a Swiss author; born in Neuchatel, April 23, 1850. He was bred to the law, but abandoned it for journalism. As a poet he pleases, without stirring any profound depths. In prose he wrote: "The Literary History of French Switzerland," his greatest work, which won the French Academy's Guerin prize.

Godfather and **Godmother** (also called sponsors), the persons who, by presenting a child for the sacrament of baptism, which is regarded as a new spiritual birth, are reputed to contract toward the newly baptized the relation of spiritual parentage. In the Roman Catholic Church this spiritual relationship is regarded as a species of kindred, and constitutes an impediment of marriage between the sponsors on the one hand and the baptized and the parents of the baptized on the other.

In the Anglican Church, by whose rule two godfathers and a godmother are required at the baptism of a male, and two godmothers and a godfather at that of a female, no impediment of marriage arises from the relation of the sponsors to the baptized. The parents of the baptized are not permitted to act as sponsors in the Roman Catholic Church, one of the objects of the institution being to provide instructors in case of the death of parents; but the present rule of the Church of England, following the rubric of the American Prayer Book, does so allow.

Godfrey of Bouillon, leader of the first crusade, son of Eustace II., Count of Boulogne; born near Nivelles, in 1061. He distinguished himself while fighting for the Emperor Henry IV. in Germany and Italy, and was made Duke of Bouillon. In order to expiate his sin of fighting against the Pope, he took the cross for the Holy Land in 1095, and led 80,000 men to the East by way of Constantinople. The town of Antioch fell into their hands in 1098, and in the following year Godfrey took Jerusalem itself, after five weeks' siege. The leaders of the army elected him king of the city and the territory; but Godfrey would not wear a crown in the place where Christ was crowned with thorns; and contented himself with the title of Duke and Guardian of the Holy Sepulcher. The defeat of the

Egyptians at Ascalon placed him in possession of all the Holy Land, excepting two or three places. Godfrey now turned his attention to the organization of his newly-established government, and promulgated a code of feudal laws called the Assize of Jerusalem. Godfrey was a favorite subject of mediæval poetry, and is the central figure of Tasso's "Jerusalem Delivered." He died in Jerusalem, July 18, 1100.

Godfrey of Strassburg, a German poet, who flourished about 1200. Besides many lays, we are indebted to him for the great chivalric poem, "Tristan and Isolde," derived from the legends of the Round Table.

Godfrey, Thomas, an American poet; born in Philadelphia, Pa., Dec. 4, 1736. He wrote in 1759 "The Prince of Parthia," a tragedy, believed to be the first dramatic work written in the United States. His poems were collected in 1767 by his friend, Nathaniel Evans. He died near Wilmington, N. C., Aug. 3, 1763.

Godiva, the wife of Leofric, Earl of Mercia and Lord of Coventry in the reign of Edward the Confessor. Tradition says that, in 1040, she rode on her palfrey naked through the town of Coventry on her husband's promise that if she would do so he would relieve the inhabitants of certain exactions which bore heavily on them. She had first proclaimed that no one should leave his house before noon, that all windows and other apertures in the houses should be closed, and that no one should even look out till noon was past. Only one person, "Peeping Tom," the story says, attempted to look out, and he was immediately struck blind. A yearly pageant, in which a young woman enacted the part of Godiva, was long kept up at Coventry, and still occasionally takes place. Tennyson based one of his poems on this incident.

Godkin, Edwin Laurence, an American journalist and essayist; born in Moyne, Ireland, Oct. 2, 1831. He graduated from Queen's College, and came to the United States in early manhood. After 1865 he was prominent in journalism, and especially as editor of the "Evening Post." He had a trenchant and even a bitter style, and provoked vigorous antagonism. He died May 20, 1902.

God's Acre, a burying-ground attached to a church or place of worship.

Godsche, Hermann, a German author; born in Trachenberg, Silesia, Feb. 12, 1815; died in Warmbrunn, Nov. 8, 1878.

God's Truce, in the Middle Ages, a means introduced by the Church to check in some measure the hostile spirit of the times, by establishing certain days or periods during which all private feuds were to cease. It seems to have taken its rise about the latter part of the 10th or beginning of the 11th century. At first the Church forbade all feuds on those days of the week which were especially consecrated by the death and resurrection of Christ; namely, from Thursday evening to Monday morning, and threatened with excommunication any who transgressed that order. Afterward the period was extended so as to include the whole of Thursday, the whole of the period from the beginning of Advent to the Epiphany, and certain other times and saints' days. The precincts of churches, convents, and graveyards were also interdicted from any hostile encounters.

Godwin, Parke, an American journalist and author; born in Paterson, N. J., Feb. 25, 1816; was graduated at Princeton College in 1834; studied law and was admitted to practise, but preferred literary pursuits. He married a daughter of William Cullen Bryant, and from 1837 was for many years connected with the New York "Evening Post."

Goethals, George Washington, an American military engineer; born in Brooklyn, N. Y., June 29, 1858; was graduated at the U. S. Military Academy in 1880, and at the Army War College in 1905, promoted Major-General, March 4, 1915. He was chief engineer of the Panama Canal, 1907–14; then first civil governor of Panama Canal Zone till his retirement from the army. In 1917 he was appointed State Engineer of New Jersey, and for a short time was head of the Naval Emergency Shipping Board, resigning on a controversy over methods of speeding new shipbuilding.

Goethe, Johann Wolfgang von, a German poet, dramatist, and prose writer; born in Frankfort-on-the-Main, Prussia, Aug. 28, 1749. His father was a counsellor of State. Goethe has described his own life in which he gives us the key to the most important periods of his life and consequently to the productions by which they were respectively distinguished. The Seven Years' War broke out when Goethe was eight years old, and Count de Thorane, lieutenant du roi of the French army in Germany, was quartered in the house of his father. The count was a man of taste and a patron of art. He encouraged the youth in his artistic aspirations; and some pictures relating to the story of Joseph, which were produced at this time, were actually painted from his suggestions. At the same time he learned the French language practically; and a French company, then performing at Frankfort, awakened his taste for dramatic performances. Drawing, music, natural science, the elements of jurisprudence, and the languages, occupied him alternately. By his study of Hebrew Goethe became more intimately acquainted with the Old Testament, and the "History of Joseph" was his first poetical work.

Goethe very early fell in love, and as often happens in the case of boys of an ardent temperament, with a girl older than himself. Her name was Margaret, the name which Goethe afterward gave to the mistress of Faust. In 1765 he went by his father's desire to Leipsic, but did not follow any regular course of studies. German poetry was then in a critical state. Precision and conciseness were then the great desiderata. Goethe, however, at this period as throughout his life embodied in a poetical form, whatever delighted or grieved, pleased or displeased him; in a word, whatever occupied his mind intensely. Several dramatic pieces were also projected by him at this period. He subsequently went to the University of Strasburg to pursue the study of law according to the wish of his father, but gave in fact more attention to the study of chemistry and anatomy than to that of law. In 1771 he took the degree of Doctor of Jurisprudence and wrote a dissertation on a legal subject. The attention of the public was first attracted to him by his "Gotz von Berlichingen" (1773). "Werther" appeared in 1774. Not long after the publication of "Werther," Charles Augustus, the hereditary Duke of Saxe-Weimar, made the acquaintance of Goethe on a journey and when in 1775 he took the government into his own hands, he invited Goethe to his court. Goethe accepted the invitation, and on Nov. 7, 1775, arrived in Weimar. Shortly before he had made a tour in Switzerland with the brothers Stolberg. In 1776 he was made privy councillor of legation, with a seat and vote in the privy council. In the same year he made a second journey to Switzerland, on this occasion in company with the duke. In 1782 he was made president of the chamber and ennobled. In 1786 he made a journey to Italy, where he remained two years, visited Sicily, and remained a long time in Rome.

This residence in Italy had the effect of still further developing his artistic powers, by the contemplation of the treasures of art in that country, by intercourse with the society he met there, and by practice. In 1790 was published the earliest form of the first part of "Faust," with the title "Dr. Faust, ein Trauerspiel," a poem in a dramatic form, which belongs rather to Goethe's whole life than to any particular period of it. The subject of this work had engaged the attention of Goethe very early, and continued to occupy his mind during his whole life; and the poem, even in its first form, was the result of many years' intermittent labor. It was made the depository of the author's most general views on the problems of existence; all that is highest and deepest, most beautiful and most touching in human life is here contained, along with what is tame and commonplace; and it is this universality of content, combined with the never-dying interest belonging to the general conception of the poem, the representation of the perpetual opposition between the demands of materialism and the demands of spiritualism, which makes this drama of Goethe's a true world poem.

If we survey the variety of the productions of this great man, not only in all branches of poetry, but also in natural science, we cannot help admiring the activity and versatility of his genius — his manysidedness. His

genius appears most wonderful if we throw a glance at what German literature was when he found it, and what it is now that he has left it, and how it has been affected by him. Goethe was born at a period when the modern German literature was far from having acquired independence and consistency; and in the different periods of his life it is easy to discover the influence at one time of French literature, at another of classic literature, etc.; but these influences, though sufficient to destroy the vigor and energy of many a genius, rather served to develop his powers more fully. It cannot be denied, however, that even he sometimes was led astray, as, for instance, in his polished and cold "Eugenie." But in what branch has Goethe most excelled? Is it the epic? He enriched German literature with some of the most popular epic productions; but his epic descriptions cannot rival the best descriptive compositions of English literature. Is it the drama? He produced some beautiful dramas, and his "Iphigenia" will always be considered as a masterpiece; but, generally speaking, his dramas do not give us sketches of great, important, or interesting characters, nor the picture of a great action — the two chief points of dramatic poetry; and he stands in this respect very far below Shakespeare. Is it didactic poetry? He wrote several didactic poems, but he cannot be said to have excelled in this branch. Is it the novel? He presented German literature with some novels which will always rank among the best; but their excellence is not in the plot, nor particularly in the characters described. In short, what is the prominent feature of Goethe's excellence? We think Goethe must be called, preëminently, the poet of philosophy. It is the philosophy of life and of individual character pervading his works which places them among the first ever produced. Hence his greatest production is his "Faust," emphatically a philosophical poem, which will long remain unrivaled; for it is the best of Goethe's productions in a department for which he seems to have been born.

His beautiful songs and shorter poems, elegies, distichs, etc., have the same peculiar character; for though many or most of them cannot be called preëminently philosophical, yet they are tinged with the profound reflections of his philosophical mind, and continually remind us of the deep wells from which our griefs and joys, fears and hopes spring. The circumstance that there was in Goethe's time in Germany no national life, that no grand ideas affected the whole mass with a common impulse, that there are few historical recollections which are sources of a common pride to the whole nation — all this had a great influence on Goethe. It was one of the reasons of his universality, and also the reason that his genius directed itself to the delineation of the character of the individual man, considered apart from the influences which act so strongly upon the mind in communities more strongly imbued with a common spirit. In this respect he resembles not a little the poets and wise men of the East, who, under a despotism which crushes freedom of action, concentrate their thoughts on the inward man. In 1806 Goethe married Christiane Vulpius, with whom he had lived since 1788, and to whom he was strongly attached. Goethe died at Weimar, March 22, 1831.

Goffe, William, an English parliamentary soldier, one of the judges of Charles I.; born about 1605. He became a major-general in the Parliamentary army, sat in the House of Commons and in Cromwell's "other house," and was one of the judges who signed Charles I.'s death-warrant. In 1660, with his father-in-law, Edward Whalley, he fled to America; they lay in hiding about New Haven from 1661 to 1664, when they went to Hadley, Mass. There they lived for many years in seclusion. According to tradition, when the townsmen were called from the meeting-house to repel an Indian attack, and were standing irresolute, Goffe put himself at their head and drove off the redskins, and then disappeared as suddenly as he had come. He died in Hadley, Mass., in 1679.

Gog and Magog, names several times used in the Bible, and given to the famous figures of giants in the Guildhall, London. Magog is spoken of by the writer of Genesis as a son of Japhet; Ezekiel speaks of Gog, Prince of Magog, as a terrible ruler in the

far N., united with the Persians, Armenians, and Cimmerians against Israel; Gog and Magog in the Apocalypse appear as coördinate terms comprehending all future enemies of the kingdom of God.

Gogol, Nikolai, a Russian novelist and miscellaneous writer; born in the government of Pultowa, March 31 (N. S.), 1809. He is the author of a novel entitled "Dead Souls" (which was received with great enthusiasm by his countrymen, and was translated into English with the title of "Home-life in Russia"). The reputation of Gogol was seriously impaired by his subsequent writings, but some years after his death renewed interest was taken in his work; especially in the United States, where his books were largely translated. He spent some years abroad, returned to Russia in 1849, and died in Moscow, March 4 (N. S.), 1852.

Goiter, or **Goitre** (Latin, guttur = the throat), same as bronchocele. It arises from a morbid enlargement of the thyroid gland, causing an unsightly but painless deformity. It is more common among women than among men. See CRETINISM.

Golconda, an extensive fortress of the Nizam, India. In its immediate neighborhood are the ruins of an ancient city, once the metropolis of the powerful kingdom of Golconda, which reached its height at the close of the 16th century and endured till 1687. The fort is now held by a small garrison from Hyderabad, and serves as the Nizam's treasury, and also as a state prison. Golconda is proverbially famous for its diamonds, which, came from the South of the kingdom, and were cut and polished here.

Gold, a metal distinguished from other common metallic elements by its beautiful characteristic yellow color which it preserves untarnished on exposure to the atmosphere under nearly all conditions. Pure gold has a high metallic luster, but is inferior in this respect to steel, platinum, and silver. The metal possesses a higher specific gravity than any common metal, but is exceeded in this respect by platinum. The metal is thus 1½ times heavier than lead and nearly twice as heavy as silver, bulk for bulk. Gold melts at 1045° C., being somewhat more infusible than silver and more fusible than copper.

The pure metal is somewhat harder than lead, but softer than copper, silver, platinum, zinc, or iron. It is consequently too soft, in the pure state, for the purposes to which it is generally applied. For practical application it is alloyed with copper or silver, and both these metals are often present. The former renders the gold redder and the latter paler than its true color.

Gold is very widely distributed, smaller or larger quantities being found in nearly every country. The ancients obtained gold from the Spanish Peninsula, Greece, Asia Minor, and India. The Ophir of the Bible has been variously located. Possibly it was in East Africa. In more modern times Peru, Bolivia, Brazil, Chile, Mexico, and other countries of South and Central America furnished immense supplies of gold after the discovery of America until about 1850. By far the greatest discoveries of gold have been made during the 19th century. The discovery of the Californian placers in 1848, and of the Australian placers in 1851, produced a mad rush to the diggings. In 1858 gold was found in New Zealand, and in 1861 the Otago district became a large producer. Since then immense developments have taken place. Besides California, Montana, Arizona, Colorado, Nevada, Idaho, and others of the United States have furnished, and still furnish large supplies, and Alaska must also be added. British Columbia is an important source, both alluvial and quartz mining being followed. Canada has also entered the lists as a gold-producer, and the phenomenal discoveries of rich alluvial deposits in the Klondike region in the Yukon basin still furnish excitement. The rich finds in Western Australia, in the Calgoorlie and Coolgardie districts, have recently placed that colony in the front rank as a gold-producer, while Victoria, South Australia, and New South Wales have long been large gold-producing countries. In Victoria much energy in the development, more specially of "deep lead" mining is being put forth. The Witwatersrand district of the Transvaal has sprung into importance since 1886, and Johannesburg is now perhaps the largest

gold-mining center of the world. Russia is also an important producer, the gold being obtained beyond the Ural mountains. India also produces a considerable amount. Of prospective gold fields the most likely are British Guiana, the hinterland of the Gold Coast, certain parts of China, and E. Africa.

The year 1909 was a red-letter one in the history of gold production, not only in the United States but in all the world's producers, as its output exceeded that of any previous year. According to the best American and British authorities, the total output of the year was valued at $460,299,200, of which Africa was credited with $168,830,000, the United States with $99,232,000, and Australia with $71,980,000. The world's production from the discovery of the metal in the United States to the end of 1915 was estimated at 16,144,635,274 in value.

In the period of 1849–1909 the world's gold-mining showed a remarkable development. In 1849 the output was valued at $27,100,000; 1850, $44,450,000; 1860, $93,415,000; 1870, $92,250,000; 1880, $106,436,000; 1890, $118,848,000; 1900, $254,556,000; and 1909, $460,299,200. The most prolific year in the United States was 1915, when the production was 4,887,602 fine ounces, valued at $101,035,700. In 1922, 2,363,075 troy ounces were produced with value of $48,849,100. In 1923 the production was 2,502,632 troy ounces with a value of $51,734,000. California in amount produced led all states in both years. Colorado was second in amount produced.

Gold Beating, the art of hammering gold into thin leaves.

Gold Coast Colony, a British possession which, with Ashanti and the Protected Northern Territories, is situated on the Gulf of Guinea, West Africa; total area of the colony, 24,200 square miles, of Ashanti 20,000, of the Territories 35,800; pop. of the three divisions (1921) 2,078,043; chief town, Acora, pop. 19,585. The largest output of gold in recent years was in 1914, when it reached a value of $8,722,490.

Golden Age, in mythological history, the earliest period of almost all nations, in which those then existing were supposed to live in perfect innocence and the enjoyment of every pleasure, and when the earth produced all things necessary for their support, comfort, or enjoyment in the fullest abundance, and all animals were at peace with each other. The Egyptians believed in successive conflagrations and deluges occurring at uncertain intervals. These were designed by the gods to purify the earth from guilt. After each of these judgments man was again so regenerated as to live for a time in a state of virtue and happiness, after which degeneracy again established itself, continually gaining strength till the next catastrophe.

Golden Beetle, the name popularly given to many beetles. None are of large size, but many are distinguished by their metallic splendor of color.

Golden Bull, a bull having a golden seal, issued by the German emperor, Charles IV., at the Diet of Nuremberg in 1356, and which became the fundamental law of the empire over which he ruled. Other bulls have also been called golden for a similar reason.

Golden Calf, cast by Aaron from the earrings of the people, while the Israelites were encamped at the foot of Sinai, and Moses was absent on the Mount. Ages after, Jeroboam, king of Israel, set up two idols in the form of a calf, the one in Dan and the other in Bethel.

Golden-crested Wren, Golden-crested Regulus, or **Kinglet,** a beautiful bird, distinguished by an orange crest. It is the smallest of British birds, being only about 3½ inches in length. The most usual haunts of the golden-crested wren are tall trees, particularly the oak, the yew, and the various species of pine and fir.

Golden Eagle, or **Ring-tailed Eagle,** a North American bird. It is 32 to 40 inches long, and the wing 35. The head and neck behind are light-brownish fulvous, the tail at base white, terminal portion glossy black, and all other parts purplish-brown. It has great power of flight, but not the speed of many of the falcons and hawks. The nest of the golden eagle is placed on a shelf of a rugged and generally inaccessible precipice. It is flat and very large, and consists of dry sticks. The golden

eagle preys on fawns, hares, wild turkeys, and other large birds. It does not attain its full beauty of plumage till the 4th year. The so-called ring-tailed eagle is the golden eagle before it has reached maturity. The European golden eagle is so nearly like the American one, that there is a question whether it is not the same species.

Golden Fleece, in Greek mythology, the fleece of the ram Chrysomallus, in quest of which Jason undertook the Argonautic expedition (see ARGONAUT). It has given its name to an Austrian and Spanish order of knighthood.

Golden Gate, a channel two miles wide, forming the entrance to the Bay of San Francisco, and washing the N. shore of the peninsula on which San Francisco is built. It is defended by Fort Point, at the N. W. extremity of the peninsula, and by a fort on Alcatraz Island, inside the entrance.

Golden Horde, originally the name of a powerful Mongol tribe, but afterward extended to all the followers of Genghis Khan, and of Batu, his grandson, who invaded Europe in the 13th century. They founded the empire of the Kiptshaks, or the Golden Horde, which extended from the banks of the Dniester to the Ural, and from the Black Sea and the Caspian to the mouth of the Kama and the sources of the Khoper. This empire lasted till toward the close of the 15th century, when it was overthrown by Ivan III.

Golden Horn, the harbor of Constantinople, an inlet of the Bosporus, so called from its shape and beauty.

Golden Legend, a work written by James de Voragine, Archbishop of Genoa, in the end of the 13th century. It is a collection of lives of saints, and descriptions and histories of festivals. A translation of it was made and printed by Caxton in 1483. Longfellow made a portion of it popular by his poem of the same name.

Goldenrod, a genus closely allied to aster. Most belong to North America, where their bright coloring lightens up the autumn scenery. The leaves of a fragrant North American species have been used as a substitute for tea. They are mildly astringent and tonic.

Golden Rose, a rose of gold, or gilded, supposed to represent by its gold, its odor, and its balm, the Godhead, the body, and the soul of the Redeemer. It was sent at intervals by the Pope to sovereigns supposed to be more loyal than others to the Holy See.

Golden Rule, a rule, so called on account of its excellent use in arithmetic, and especially in ordinary calculations, by which numbers are found in certain proportions — viz., having three numbers given to find a fourth number in proportion. In morals, the rule laid down by Jesus in the Sermon on the Mount, and stated by Him to be the law and the prophets — i. e., a summary of their teaching: "Therefore all things whatsoever ye would that men should do to you, do you even so to them" (Matt. vii: 12).

Golden State, California, so named on account of its rich auriferous deposits.

Golden Wedding, the 50th anniversary of a wedding, which is usually observed with more than ordinary festivity. The presents given to the couple should all be of gold.

Goldfinch, a well-known bird. Bill pale horn colored, the tip black, the circumference at its base crimson, nape of the neck white; the top of the head, carpal portions of the wing, the smaller wing coverts, and part of the surface of the primaries black; back and rump dusky brown, greater wing coverts, and part of the expanse of the others, gamboge yellow; under surface of the body dull white. It feeds on the seeds of thistles and other plants. It sings very sweetly.

Goldfish, the trivial name of a beautiful species of carp, found in the fresh waters of China. It is greenish in color in the natural state, the golden yellow color being found only in domesticated specimens, and retained by artificial selection. These fishes are reared by the Chinese in small ponds, in basins, or porcelain vessels, and kept for ornament. They are now distributed over nearly all the civilized parts of the world, but in large ponds they readily revert to the color of the original stock.

Gold Lace, a kind of lace made of gold wire, flattened between two pol-

ished steel rollers, into a ribbon which is twisted round a core of silk. The "gold wire" used in the manufacture of gold thread is nearly always in India, where a great deal is made, composed of pure silver with a thin coating of gold. Gold wire for thread is generally drawn down to a size measuring 1,100 to 1,400 yards to the ounce of metal. Finer sizes reach the length of 1,800 to 2,000 yards to the ounce, and to attain this fineness the wire is drawn through perforated gems, such as diamonds or rubies.

The only difference between gold and silver thread is that the thin coating of gold is wanting on the latter. Gold thread is used in the manufacture of military lace. This, however, is a woven substance and not true lace; but some real lace is made both of gold and silver thread. Both kinds of thread are also used for facings of liveries, and for ecclesiastical robes, altar cloths, and banners. These and other fabrics are either embroidered or woven, but often only in part, with the thread. Much of the "gold thread" used for theatrical dresses and decorations has only a covering of Dutch metal and the "silver thread" in these is spun with a covering of a cheap white alloy, having a mere film of silver on the surface.

Goldman, Emma, an anarchist; born in Russia about 1868; emigrated to the United States and joined various anarchist societies; was arrested several times because of her teachings; in 1917 for obstructing the National war policies. Deported in 1919.

Goldmark, Karl, an Austro-Hungarian composer; born of Jewish parents in Keszthely, Hungary, May 18, 1832. He resided in Vienna. He became known in the United States by his operas, "The Queen of Sheba" and "Merlin," which was performed for the first time on any stage at the Metropolitan Opera House, New York, in 1887, and by very effective overtures. Picturesque originality and very skillful orchestration were the best features. He died Jan. 2, 1915.

Gold Mining, the process of extracting gold from the earth.

The metal occurs in (1) alluvial deposits or "placers." These are deposits of gravel, sand, clay, or loam, consisting of the debris of weathered rocks, generally transported by running water from hillsides to valleys and plains. They mark and follow the courses of existing rivers or of rivers belonging to former ages. Gold is found in them in all degrees of coarseness, from minute specks or "colors" to masses weighing many ounces.

These larger masses of gold have usually a more or less rugged and lumpy exterior, and are described as "nuggets." The largest usually occur near the source from which the gold in the alluvium has been derived. This source almost always consists of veins of quartz, or other material, occurring in one of the older rocks. Alluvial deposits vary in character from pipe clay to coarse gravel. The gravel is usually loose, but sometimes in working the deposits intervening layers are met with which are cemented together. These are known as "false bottoms." River sands also frequently contain gold. Alluvial deposits are often very rich, particularly in nuggets. This is largely due to the force of the water carrying forward the light earthy material, while the larger and heavier particles, owing to their greater resistance, accumulate nearer the source.

Goldoni, Carlo, a celebrated Italian writer of comedies; born in Venice, Italy, Feb. 25, 1707. He became reader and master of the Italian language to the daughters of Louis XV.; and received latterly a pension of 3,600 livres. At the breaking out of the revolution the poet lost his pension, and the decree of the National Convention of Jan. 7, 1793, restoring it and making up the arrears, found him already in the arms of death. His widow received the arrears and a pension for herself. Many of his pieces still appear on the stage. He died in Paris, France, Jan. 6, 1793.

Goldsborough, Louis Malesherbes, an American naval officer; born in Washington, D. C., Feb. 18, 1805. He distinguished himself in 1827 by rescuing the English brig "Comet" from a Greek pirate whose men numbered five times his own. In September, 1861, he commanded the North Atlantic blockading squadron, and gave the advice which resulted in the Burnside expedition and the capture of Roanoke Island. He became

rear-admiral July 16, 1862, and died Feb. 20, 1887.

Goldschmidt, Madame, maiden name Jenny Lind, a famous Swedish vocalist; born in Stockholm, Sweden, Oct. 6, 1820. At 3 years of age she could sing correctly any piece she had once heard, and at 9 she was placed under Croelius, a famous teacher of music. Later she studied in Paris and in 1844 she went to Dresden, and afterward to Frankfort, Cologne, Vienna, and London. She visited New York in 1850, under the auspices of P. T. Barnum, and was enthusiastically received, but dissolved the engagement prematurely in 1851, was married to M. Otto Goldschmidt, a skillful pianist and conductor, and retired from the stage. She reappeared in 1855, in 1861, in 1863, and in 1880, for a limited period. She was Professor of Singing at the Royal College of Music, 1883–1886. She died in Wynd's Point, Malvern, England, Nov. 2, 1887.

Goldschmidt, Meier Aaron, a Danish novelist; born of Jewish parents, in Vordingborg, Oct. 26, 1819. In 1840 he founded what became the most famous of Danish newspapers, "The Corsair," celebrated for its brilliant wit and audacious satire. His style is said to be the most graceful in the language. He died in Copenhagen Aug. 15, 1887.

Goldsmith, Oliver, a British author; born in Pallas, Longford, Ireland, where his father, the Rev. Charles Goldsmith, held the living of Kilkenny West in connection with the Established Church, Nov. 10, 1728. In June, 1744, he was entered as a sizar at Trinity College, Dublin. In 1749, shortly after his father's death, he left Dublin, and was advised by an uncle to prepare for holy orders. When the requisite two years of probation were over, Goldsmith made application to the Bishop of Elphin, but his application was refused. He then became tutor in a family, but soon lost his situation on account of a dispute with the master of the house over a game of cards.

After this episode he thought of sailing for America, but after taking out his passage allowed the vessel to set sail without him. The same uncle who had given him assistance before now gave him £50 to go to Dublin to study law, but he had scarcely arrived in the city when he lost the whole sum in gaming. In spite of his repeated imprudences he was once more succored by his uncle, who supplied him with means to go to Edinburgh to study medicine. Here he remained 18 months, during which he acquired some slight knowledge of chemistry and natural history. At the end of this period he removed to Leyden, again at the expense of his uncle. After studying in that university for about a year he left it in February, 1755, and with only one clean shirt and no money in his pocket, to make the tour of Europe on foot, and actually traveled in this way through Flanders, part of France, Germany, Switzerland, and Italy. It was probably at Padua that he took a medical degree, as he remained there six months; but his uncle dying while he was in Italy he was again obliged to travel on foot to England, and reached London in 1756 with a few pence in his pocket. The story of George Primrose in the "Vicar of Wakefield" has been supposed to be autobiographical and perhaps too much stress has been laid upon this theory by those who have attempted to construct a narrative of Goldsmith's travels. Certainly we owe many lines in the "Traveler" to the poet's own experiences.

A fellow collegian, Dr. Sleigh, assisted him and recommended him as an usher to a school. He remained but a short time in this situation and then took lodgings in London to follow the profession of an author. In 1764 he appeared as a poet by the publication of his "Traveler." The celebrity which this poem procured its author was the cause of his introduction to the most eminent literary characters of the day. In 1766 appeared his well-known "Vicar of Wakefield," which at once secured merited applause. His poetical fame was greatly enhanced by the publication of his "Deserted Village" in 1770, for which he could hardy be induced to take the proffered recompense of £100 ($500), till satisfied that the profits of the bookseller could afford it. In debt for upward of $10,000, and more truly lamented than any literary man of his generation, he died in London, England, April 4, 1774.

Golf, a game of ball, in which the bats are loaded sticks with a little curve at the end for striking the ball on the ground, or elevated on a little mound or tee as it is called in the language of the game. Golf clubs are of varying weights and forms, according to the taste and requirements of the players. The balls are made of composition, and when skillfully driven seem to fly like bullets through the air, making a free field absolutely necessary to the safety of players.

The chief requisites of the game are thus set forth by Thomas Bendelow, who did much to make it popular in the United States: The prime necessity for golf is plenty of room. The course, called "links," should not be less than 3 miles round nor more than 5. Throughout it are distributed 18 artificial holes at any distance from 1 to 500 yards apart. The holes are 4½ inches in diameter, and each is surrounded with a "putting green," a space 60 feet square and as smooth as possible. The other requisites are two small balls about two inches in diameter and made of gutta-percha, and a number of "clubs" adapted to the various contingencies likely to arise. The object of the game is to knock the ball with the sticks into the series of holes in the least number of strokes. The game can be played either by two persons, each having his own ball and counting by holes, not by the strokes taken for the whole round — this is called singles, or foursomes, two persons playing against another two, the partners playing alternate strokes, each side having its own ball. At the beginning of the game the player puts a little pat of sand down on the "teeing ground" (the pat is the "tee"), sets the ball on the top, and strikes it as far as he can in the direction of the first hole. After that, until he holes the ball, he must play it strictly from the place it happens to be. Here is where the bunkers come in, for a ball may land in a ditch or under a bank, where it may take him many strokes to get it into open ground again, and he may be called upon to use many different kinds of clubs, according to the nature of the ground and his distance from his object. The object of the putting green which surrounds the hole is to give the player a smooth space, enabling him to aim with accuracy. Having "holed" his ball, the player takes it out, tees it again, and starts out for the next hole. A good driving stroke from a tee would be 200 yards. But a record of 280 yards has been made at St. Andrews, Scotland.

There are two styles of clubs, the wood and the iron, the latter having the head shod with steel. Altogether there are 19 shapes of clubs, but six are usually sufficient for a man's needs. The different clubs are used under different circumstances; for example, a putter for playing short strokes on the putting green; a cleek for drives; the driving iron when it is advisable to make a long drive, lifting the ball moderately high, the lifting iron when it is required to pitch the ball very high; the niblic for raising a ball out of ruts; the driver for long drives from a tee.

Goliath, a giant of Gath slain by David (I Sam. xvii.). His height was "six cubits and a span," which, taking the cubit at 21 inches, would make him a little over 11 feet. The Septuagint and Josephus read, "four cubits and a span."

Goliath Beetle, a genus of tropical beetles. They are distinguished by their large size, by the horny processes on the heads of the males, and by the toothed lower jaws or maxillæ. Several species frequent tropical and South Africa.

Golomynka, a fish found in Lake Baikal; is about a foot long; destitute of scales; and abounds in oil.

Goltz, Field Marshal Baron von, a German military officer; born in East Prussia in 1844; served under Prince Frederick Karl in the Franco-Prussian War (1870–1); was engaged in reconstructing the Turkish army in 1883–96; commanded the Russian border legions in 1902–7; and in 1914 became governor of the part of Belgium the Germans occupied.

Gomarites, the followers of Francis Gomar, who was born in Bruges, Jan. 30, 1563. Gomar was strongly Calvinistic, and the leader of the movement expelling the Arminians from the Reformed Church.

Gomato, or **Gomuti Palm,** a species of trees found in the Moluccas

and Philippines, which supplies abundance of sugar. Palm sugar is generally obtained from the juice which flows from different palms on wounding their spathes and adjacent parts. It is commonly known in India by the name of jaggery. The juice of the gomuti palm, when fermented, produces an intoxicating liquid or toddy. From the trunk of this palm, when exhausted of its saccharine juice, a good deal of our commercial sago is obtained. A single tree will yield from 150 to 200 pounds of sago. The juice of the fruit is very acrid. The stiff strong fiber known under the name of gommuti, or ejow fiber, is obtained from the leaf-stalks, and is extensively used for cables and ropes.

Gomez, Jose Miguel, a Cuban statesman; born in Santa Clara Province, Cuba, about 1855; was well educated; early joined the insurgent forces; became a division commander in the revolution of 1895–1898, governor of his native province, and member of the Assembly and the Constitutional Convention after the Spanish-American war, was defeated for the presidency of the republic in 1905 and elected in 1908.

Gomez, Maximo, a Cuban military officer; born in Bani, San Domingo, in 1838; served as a lieutenant of cavalry in the last Spanish army sent to occupy that island. During the war with Haiti he won distinction at the battle of San Tome, in which action at the head of 20 men he conquered a much superior number. When the freedom of San Domingo was declared he accompanied the Spanish force to Cuba; but later, when General Villar maltreated some Cuban refugees, he became angry, and after personally assaulting that officer left the Spanish army. In 1868 he joined the Cuban insurrection known as the Ten Years' War. He aided in the capture of Jugnani, Bayamo, Tunas, and Holguin, and was a leading actor in many other successful engagements; was promoted Major-General and later succeeded General Agramonte as commander-in-chief. At the beginning of the war of 1895–1898 he again took up arms with the Cubans and fought with marked distinction till the Americans occupied Cuba. On Feb. 25, 1899, after marching through Havana with 2,500 of his soldiers, he was given a reception and banquet in that city by the United States military authorities. Died in Cuba, June 16, 1905.

Gompers, Samuel, an American labor leader; born in London, Eng., Jan. 29, 1850. He came to the United States in 1863; became a cigar-maker; and entered on the career of labor reform which has made him widely known. From 1882 (excepting 1894) he was President of the American Federation of Labor. He heartily supported the Government in the war against Germany. Died, 1924.

Goncourt, Edmond and Jules de, French novelists and brothers; the former born in Nancy, France, May 26, 1822, the latter in Paris, Dec. 17, 1830. They became celebrated as the joint authors of a number of famous writings, including "History of the French Society During the Revolution" (1865). Jules died June 20, 1870; Edmond, July 16, 1896.

Gondar, the capital of Amahara in Abyssinia, on a basaltic hill 23 miles N. of Lake Tzana. It was formerly the residence of the emperor, and at one time had about 50,000 inhabitants. The hill is crowned by the ruin of the old castle, built by Indian architects under Portuguese direction; burned by Theodore in 1867. Pop. 4,000.

Gondola, a Venetian boat. A gondola of middle size is 30 feet long, 4 feet beam, and is rowed by one man, known as a gondolier, standing at the stern and using one oar, or by two men, one at each end, each using a single oar. It has seats amidships, some of which have covers. In Venice, they are all painted black.

Gonds, a Dravidian people, the most important of the non-Ayran or aboriginal hill races of the Central Provinces of India. Today they number about 1,500,000, and, while the wilder tribes cling to the forest, the rest have made some advances in civilization. Most of the upper classes are of mixed blood, and many of the race have embraced Hinduism. Each village worships the three or four deities it knows best. Cholera and smallpox are deified by them, and the Gonds people the forest, the rivers, and every rock with evil spirits.

Gonfalon, or **Gonfanon,** a small flag fixed to the pole of a lance, with two or three streamers or tails. The object of the gonfalon was principally to render great people more conspicuous to their followers, and to terrify the horses of their adversaries.

Gonfalonier, a standard-bearer; the person intrusted with the public gonfalon in mediæval Italian cities.

Gong, a musical instrument used principally in the East. It is tambourine-shaped, a disk of thin bronze with an upturned flange forming a rim. Also a stationary bell, whose tongue is moved by a wire.

Gonsalvo, or **Gonzalo of Cordova, Hernandez D'Aquilar,** a Spanish general, called "The Great Captain"; born near Cordova, Spain, March 16, 1453. He was of noble family, and at an early age entered the army. He first distinguished himself in the great war of Ferdinand and Isabella with the Moors, which ended with the conquest of Granada in 1492. When Louis XII. renewed the invasion of Italy, Gonsalvo took command there, and after a temporary division of the country between France and Spain, he again expelled the French, established the Spanish rule, and was named viceroy of Naples. Through the jealousy of Ferdinand, and the calumnies of the courtiers, he was deprived of his office in 1507, when he retired to Granada, and died there Dec. 2, 1515.

Gonville and Caius College, a college of Cambridge University, England, founded in 1358 by Edmund Gonville, of Terrington, Norfolk. In 1558 Dr. Caius obtained the royal charter by which all the former foundations were confirmed and his own foundation was established. By this charter the college was thenceforth to be called Gonville and Caius College.

Gonzaga, a princely family which gave a line of dukes to Mantua and Montferrat. The sway of this race over Mantua extended over a period of three centuries, and many of its members were magnificent promoters and cultivators of art, science, and literature.

Gonzalez, Manuel, a Mexican military officer; born near Matamoros about 1833; fought with distinction in the war against the French and Maximilian. He participated with Diaz in various revolts; was his secretary of war in 1877–1880; and succeeded him as president in 1880. After his retirement he was governor of Guanajuato. He died in Mexico City May 8, 1893.

Good, James Isaac, an American clergyman and author of historical religious works; born in York, Pa., Dec. 31, 1850; was graduated at Lafayette College in 1872, and later at Union Theological Seminary. In 1893 he was made Professor of Dogmatics and Pastoral Theology in Ursinus College, Philadelphia, Pa.

Goodale, Elaine, (Mrs. Eastman), poet, author, and educator; born in Mt. Washington, Mass., Oct. 9, 1863. With her sister Dora, she published poems in her eighth year. She was supervisor of Indian Schools (1883-91), and is a prolific writer on Indian and other subjects. She married Dr. C. A. Eastman of Sioux descent, in 1891.

Goodale, George Lincoln, an American botanist; born in Saco, Me., Aug. 3, 1839. He was graduated at Amherst in 1860, and at the Harvard Medical School in 1863. For some time he was a lecturer in medical schools in Maine. In 1871 he was appointed Professor of Natural Sciences in Bowdoin College. After 1872 he was connected with Harvard University, at first as instructor and later as Professor of Botany.

Goodall, Frederick, an English painter; born in London, Sept. 17, 1822. He was only 17 years of age when he exhibited his first picture at the Royal Academy, "French Soldiers Playing Cards in a Cabaret." A visit to Venice and Egypt in 1857–1859 led him to turn his attention to Italian and Oriental subjects. He died July 29, 1904.

Goode, George Brown, an American naturalist; born in New Albany, Ind., Feb. 13, 1851: was graduated at Wesleyan University in 1870. He became connected with the scientific staff of the United States National Museum in 1873; was made assistant secretary of the Smithsonian Institution in 1887. He died in Washington, D. C., Sept. 6, 1896.

Good Friday, the name applied to the Friday before Easter, sacred as commemorating the crucifixion of our Lord.

Good Hope, Cape of, the cape at the S. end of the narrow peninsula running S. from Cape Town, South Africa. The name is a translation of the Portuguese name given by King John II., of Portugal, because its doubling in 1487 by Bartholomew Diaz who called it Stormy Cape, afforded good hope of the discovery of the long-sought-for sea-way to India.

Goodrich, Charles Augustus, an American clergyman and author, brother of Samuel Goodrich; born in Ridgefield, Conn., in 1790. He was graduated at Yale in 1812. He held the pastorates of Congregational churches in Worcester, Mass., and Berlin and Hartford, Conn. He died in Hartford, Conn., Jan. 4, 1862.

Goodrich, Frank Bott, pseudonym Dick Tinto, an American author; born in Boston, Mass., Dec. 14, 1826; graduated at Harvard in 1845. His Paris letters to the New York "Times" first brought him into notice. He died in Morristown, N. J., March 15, 1894.

Goodrich, Samuel Griswold, pseudonym Peter Parley, an American author; born in Ridgefield, Conn., Aug. 19, 1793. He edited the "Token," published in Boston from 1828 till 1842. From 1841 till 1854 he edited "Merry's Museum and Parley's Magazine." His "Peter Parley" books won great popularity, evidenced by the fact that the pen-name was attached to more than 70 spurious volumes. He died in New York city, May 9, 1860.

Goods and Chattels, the legal and popular denomination for personal property as distinguished from things real, or lands, tenements, or hereditaments.

Good Templars, Independent Order of, an association organized at Utica, N. Y., in 1851, by Daniel Cady and others; first name Good Templars merely. The Grand Lodge of New York was instituted Aug. 11, 1852, and the order spread into many other States and Canada. No restriction was placed on membership on account of color or sex. It has no beneficiary system. Its platform consists of total abstinence from all intoxicating liquors as a beverage, no license, prohibition of manufacture and sale, and the election of good men to enforce the laws. Its secrecy is guarded by signal raps and passwords. The motto of the order is "Faith, Hope, and Charity." It is an outgrowth of the Sons of Temperance.

Goodwill. (1) The custom of any trade or business; (2) the influence of the seller of any business to secure his successor the custom already existing; (3) the right or title to keep up and continue the business purchased from an outgoing tenant; (4) the money paid for such right or title.

Goodwin, Mrs. Maud Wilder, an American historical novelist; born in New York State in 1856.

Goodwin, William Watson, an American educator; born in Concord, Mass., May 9, 1851; was graduated at Harvard College in 1851; became Professor of Greek Literature in Harvard in 1860; died June 16, 1912.

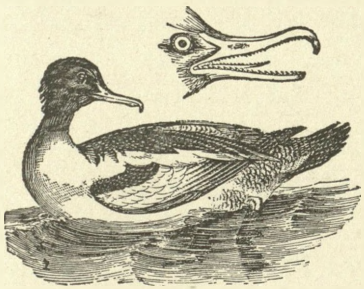
Goodwin Sands, dangerous sandbanks in the Strait of Dover, off the S. E. coast of Kent, England. The roadstead termed the Downs lies between them and the mainland. Length, about 10 miles.

Goodyear, Charles, an American inventor; born in New Haven, Conn., Dec. 29, 1800. He failed as an iron manufacturer in 1830, but in 1834 turned his attention to india-rubber, the manufactured products of which had hitherto proved failures because of their liability to soften in the heat of summer. Amid poverty and ridicule, sometimes in prison for debt, he patiently pursued the experiments which, after he had obtained a fresh idea from his assistant Hayward's use of sulphur, ended, in 1844, in the issue of his patent for vulcanized rubber. This process he afterward perfected, discovering new uses to which his product could be applied, till it required 60 patents to secure his inventions. He received medals at London (1851) and Paris (1855), as well as the cross of the Legion of Honor; though kept in continual litigation and consequent poverty by shameless infringements of his rights, he yet lived to see his material applied to

nearly 500 uses, and to give employment, in the United States, England, France, and Germany, to 60,000 persons. He died in New York city, July 1, 1860.

Goorkhas, or **Gurkhas,** the dominant race in Nepal, descended from Hindu immigrants and claiming a Rajput origin. They overran the Khatmandu valley, and extended their power over Nepal, in 1767–1768. The Goorkhas, who are a short, thick-set race, are brave and faithful soldiers, and lent valuable aid to the British in the suppression of the mutiny and subsequently.

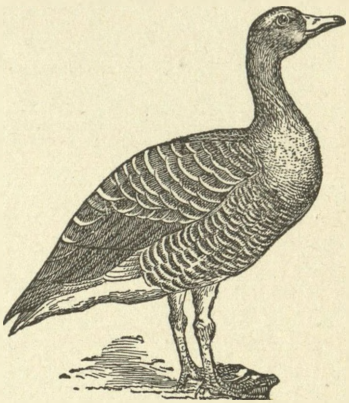
Goosander, a web-footed bird in the duck family. The adult male, which measures 26 inches in length, has the head and upper part of the neck of a rich shining green, the feathers of the crown and back of the head elongated, the back black and gray, the wings black and white, the breast and belly of a delicate reddish-buff color. The bill, legs, and feet are orange-red. The female, which is rather smaller, has the head reddish-brown, with a less decided tuft than the male,



GOOSANDER.

and much grayer plumage. The goosander is a native of the Arctic regions, extending into the temperate parts of America, Europe and Asia.

Goose, the name of a well-known family of natatorial birds. The domestic goose is believed to have descended from the greylag goose. It is valued for the table and on account of its quills and fine soft feathers. The body is large and heavy, the neck long, the head small, and the bill conical, the wings long and powerful, the feet somewhat long, with small toes. In summer the wild goose inhabits the polar regions, migrating south in flocks on the approach of winter. The nest, which is of coarse grass, is generally situated in marshy places.



WILD GOOSE.

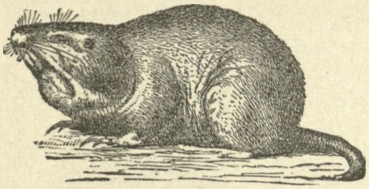
Gooseberry, a succulent berry, very wholesome and agreeable, of various colors — whitish, yellow, green, and red. It is a popular fruit for preserving, and is extensively cultivated. New varieties are obtained from the seeds, and the same kind from cuttings.

Gooseberry Caterpillar, a name applied to the larvæ of two very different insects, both injurious to gooseberry and currant bushes.

Goosefish, a common name in the United States for the Angler Fish. The American goosefish grows to a length of 4 to 5 feet, and weighs from 15 to 170 pounds. It is hideous in appearance (being also known as "wide gab" and "devilfish"), and has a most voracious appetite, preying indifferently on all kinds of fish, and eating occasionally fowls. It is practically useless.

Gopher, a name given by the early French settlers in the United States to various animals which honeycomb the ground by burrowing in it. In Illinois and Canada it was given to a gray burrowing squirrel, in Wisconsin to a striped squirrel, and in Missouri

to a burrowing pouched rat. All these are mammals; but in Georgia the term is applied to a snake, and in Florida to a turtle.



GOPHER.

Gopher Wood, the wood of which Noah's ark was directed to be made. Various attempts have been made to identify the tree. The most probable view is that it was the cypress.

Gopher State, a name sometimes given to Minnesota.

Goral, an antelope found in the Himalaya Mountains. It is about the size of the common goat.

Gordian Knot, a knot tied by Gordius in the rope which bound the yoke of his chariot to the whippletree in such an artful manner that the ends of the cord could not be perceived. So intricate was it that the report went abroad that the empire of Asia was promised by the oracle to him who could untie it. Alexander the Great, wishing to inspire his soldiers with courage and his enemies with the belief that he was born to conquer Asia, cut the knot with his sword, and so claimed to have fulfilled the oracle. Hence the term "gordian knot" is used for any apparently inextricable difficulty or deadlock; and to "cut the gordian knot" is equivalent to removing or solving a difficulty by bold or unusual measures.

Gordius, in Greek legend, a Phrygian peasant, father of Midas, who was raised to the Phrygian throne in accordance with an oracle which declared to its Phrygian consulters that their seditions would cease if they elected as king the first man they met, mounted on a chariot, going to the temple of Zeus. This was Gordius, who, to evince his gratitude, consecrated his chariot to Zeus, and fastened the pole with an ingenious knot.

Gordon, Family of, a celebrated Scottish historical house, the origin of which is still wrapped in a certain measure of obscurity. It is probable that the family came over to England with William the Conqueror. The earls of Sutherland, the barons of Lochinvar, the viscounts of Kenmure, and the earls of Aberdeen are all branches of the Gordon family. The title of Duke of Gordon became extinct in 1836, but was revived in 1875.

Gordon, Archibald D., an American dramatist; born in Ceylon, Oct. 11, 1848. He entered a publishing house in New York city in 1865, and subsequently became connected with New York and Chicago papers as dramatic critic. He died in Port Richmond, Staten Island, N. Y., Jan. 9, 1895.

Gordon, Armistead Churchill, an American poet; born in Albemarle co., Va., Dec. 20, 1855. After graduating from the University of Virginia he became a lawyer in Staunton, Va. In collaboration with Thomas Nelson Page he wrote a volume of verse, etc.

Gordon, Charles George, called "Chinese Gordon" and "Gordon Pasha," an English soldier; born in Woolwich, England, Jan. 28, 1833. He entered the Royal Engineers in 1852. From 1874 to 1879 he was governor of the Sudan under the khedive. In 1882 he was sent to withdraw the garrisons shut up in the Sudan by the insurgent mahdi. He was shut up in Khartum by the rebels, and gallantly held that town for a whole year. A British expeditionary force under Lord Wolesley was dispatched for his relief; an advance corps of which sighted Khartum Jan. 24, 1885, to find that the town had been treacherously betrayed into the hands of the mahdi two days before, and Gordon murdered. His character was marked by strong religious feelings, which latterly become so intensified as to make him somewhat of a religious enthusiast and fatalist.

Gordon, Charles William, a Canadian author; born in Indian Lands, Glengarry, Ont., Canada, in 1860. He was graduated at Toronto University in 1883 and at Knox College in 1887; was a missionary to Banff, etc., Rocky Mountains, 1890-1894. Pen name, Ralph Connor.

Gordon, John Brown, an American military officer; born in Upson co., Ga., Feb. 6, 1832; was graduated at the University of Georgia; admitted to the bar and began practice. When the Civil War broke out he was appointed a captain of infantry in the Confederate army; served with marked distinction throughout the war, during which he was wounded eight times; was promoted Brigadier-General in April, 1863, and later Major-General. In 1873 he was elected to the United States Senate and served in that body till 1880, when he resigned. In 1886–1897 he was governor of Georgia. On May 31, 1900, he was chosen commander-in-chief of the United Confederate Veterans. He was widely known as an orator on events of the Civil War. Died 1904.

Gordon, Sir John Watson, a Scottish portrait-painter, son of Captain Watson of the British navy; born in Edinburgh, Scotland, in 1788. In 1850 he was elected president of the Royal Scottish Academy and knighted, and in 1851 he became a London Royal Academician. Nearly every man of note in Scotland, besides not a few in England, sat to him for their portraits. He died in Edinburgh, June 1, 1864.

Gordon, Joseph Claybaugh, an American educator; born in Piqua, O., March 9, 1842; was graduated at Monmouth College, Ill., in 1866. He was the first instructor in oral education for the deaf in the United States; organizing the oral department in the Indiana Institution for the Deaf in 1869; was Professor of Mathematics and Chemistry in Gallaudet College, Washington, in 1873-1897; then became superintendent of the Illinois Institution for the Education of the Deaf. He died in 1903.

Gordon, Lady Duff, an English author and translator, the only child of John Austin, the jurist; born in London, England, June 24, 1821. In 1840 she married Sir Alexander Duff Gordon. She died in Cairo, Egypt, July 14, 1869.

Gore, Charles, an English clergyman and author; born in 1853. He became chaplain to the King in 1901. Bishop of Worcester in 1902 and of Birmingham in 1905.

Gorgas, William Crawford, an American military officer; born in Mobile, Ala., Oct. 3, 1854; was graduated at the University of the South in 1875 and at Bellevue Medical College in 1879; entered the Medical Department of the army in 1880; was promoted Colonel by Congress in 1903 for his successful sanitary work in Cuba; appointed a member of the Isthmian Canal Commission in 1907; had charge of the sanitation work during the construction of the Panama Canal; made health investigating trips to Johannesburg, South Africa, and Guayaquil, Ecuador, in 1912–13; and was appointed Surgeon-General of the army, Jan. 17, 1914.

Gorgei, or Gorgey, Arthur, a Hungarian general; born in Toporcz, county of Zips, Hungary, Jan. 30, 1818. During the insurrection in Hungary (1848) he assumed the chief command of the Hungarian army, and in that position showed great military talents. Differences, however, arose between himself and the civil authorities; twice he was superseded in his command, and on resuming it was alternately victor and vanquished. On the resignation of the governor and council, Aug. 11, 1849, Kossuth made him dictator in his place. Shortly after this, the Hungarian forces laid down their arms. For this Gorgei has been branded as a traitor, though the state of affairs seemed desperate enough to warrant submission. He went to Klagenfurt, was afterward released on parole, and pursued his favorite study of chemistry at Pest. He was fully vindicated from the charge of treachery before his death in 1916.

Gorges, Sir Ferdinando, styled "the father of colonization in America;" born in Ashton, Somersetshire, England, about 1565. He founded two Plymouth companies (1606–1620 and 1620–1635) for acquiring and planting lands in New England, and in 1639 received from the king a charter constituting him proprietor of Maine. He adhered to the king in the civil war, and died in 1647. His son neglected the province, which finally placed itself under the jurisdiction of Massachusetts, to which colony Sir Ferdinando's grandson sold his rights in 1677 for £1,250.

Gorgias, a celebrated Greek rhetorician and sophist, of the time of

Socrates; born in Leontini, Sicily, about 485 B. C. He came to Athens as ambassador from his native city in 427 B. C., subsequently settled in Greece, and, becoming famous as a teacher of eloquence, traveled from place to place, acquiring wealth as well as fame. He died in Larissa, Thessaly, about 380 B. C.

Gorgon, in Greek mythology, one of the three sisters, daughters of Phorcys and Ceto. Their names were Stheno, Euryale, and Medusa, all of whom were immortal except Medusa. According to the mythologists, their hair was entwined with serpents, their hands were brass; their body was covered with impenetrable scales, and their teeth were as long as the tusks of a wild boar. They were so frightful that they turned to stone all those on whom they fixed their eyes. They were conquered by Perseus. The head of Medusa remained in his hands; and after he had finished all his laborious expeditions he gave it to Minerva, who placed it on her ægis, with which she turned into stone all such as fixed their eyes upon it.

Gorilla, a celebrated anthropoid ape, generally believed to come nearer than any known one to man. The height is about 5 feet, almost the same as man. On the other hand, the greatest capacity of the gorilla's brain is only 34½ cubic inches, the least 23, against 62 in the least capacious human skull, and 114 in the greatest. The low facial angle also, and the abundant hair, with the extraordinary breadth of the chest, diminish the resemblance. The last mentioned characteristic imparts to the animal a colossal strength. It is a native of Lower Guinea and the interior of equinoctial Africa.

Goritz or Görz, a city and capital of the Italian province of Görz and Grandisca, on the Isonzo river, 22 miles N. N. W. of Triest. It consists of an old town embracing a hill crowned by a ruined castle of the Counts of Görz, surrounded by a triple wall and bastion, and a new town. Among the principal edifices is the cathedral dating from the 17th century. The city is a much frequented winter resort, and is largely engaged in cotton and silk spinning, and the manufacture of fine liqueurs and leather. In 1900 more than half of the population were Italians. The city was bombarded by the Italians, June 14, 1915, and occupied by them, Aug. 9, 1916, and was conspicuous in the Isonzo campaign of 1917. Pop. (Est.) 35,000. The crownland lies between Italy on the W. and Carniola on the E. See APPENDIX: *World War.*

Gorky, Maxim, (pen-name of Alexei Maximovitch Pyeshkoff) the Russian tramp-novelist; born in 1868; lectured in the United States for the revolutionary cause in Russia in 1906.

Gorman, Arthur Pue, an American legislator; born in Howard Co., Md., March 11, 1839. He started in life as a Senate page. After service in the Maryland legislature, from 1875-81 he was State Senator; from 1881-89 and 1903 United States Senator. He died June 4, 1906.

Gorostiza y Cepeda, Don Manuel Eduardo de, a Mexican diplomatist; born in Vera Cruz, Nov. 13, 1791. His father was Spanish governor of Mexico. He was made Mexican minister to England when independence was secured, and later had himself transferred to Paris, in which city he achieved his most enduring renown as a writer of plays. He died in Tacubaya Oct. 23, 1851.

Gorres, Jakob Joseph von, a German author; born in Coblentz, Prussia, Jan. 25, 1776. He died in Munich, Jan. 29, 1848.

Gorringe, Henry H., an American naval officer; born of English parents in Barbadoes, W. I., Aug. 11, 1841; settled in the United States early in life; joined the Union navy in 1862, and served with the Mississippi squadron under Porter, taking a conspicuous part in nearly all of the important actions of that squadron; and was promoted lieutenant-commander in July, 1865. He is best remembered by his removal of the Egyptian obelisk (Cleopatra's Needle) which the khedive had presented to the United States, from Egypt to New York city, in the iron vessel "Dessoug." The total cost of transportation was $100,000, which was paid by the late William H. Vanderbilt. The obelisk arrived in New York

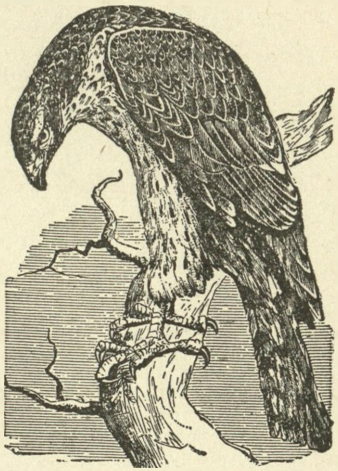
harbor July 20, 1880, and was erected in Central Park, Jan. 23, 1881. Gorringe was the author of a "History of Egyptian Obelisks." He died in New York city, July 6, 1885.

Gortchakoff, Prince Alexander Michaelovitch, a Russian statesman; born in St. Petersburg, July 16, 1798. As Russian Minister of Foreign Affairs he declined to associate himself with France and Great Britain in their unfriendly attitude toward the United States. He was appointed chancellor in July, 1863. From this time till the ascendancy of Bismarck he was the most powerful minister in Europe. He was superseded by M. de Giers as minister for foreign affairs in March, 1882. After his retirement he left Russia for Baden-Baden, where he died March 1, 1883.

Gortchakoff, Prince Michael, a Russian general, cousin of the preceding; born in 1795. In 1855 he was appointed commander-in-chief in the Crimea and Southern Russia. Alexander II. appointed him governor of Poland in 1856, and he was engaged in carrying out the conciliatory policy of the czar when his death occurred in Warsaw, May 30, 1861.

Goschen, George Joachim, an English statesman; born in London, England, Aug. 10, 1831. When Gladstone became prime minister in 1868, Goschen took office as president of the poor-law board, but three years later became the head of the admiralty, which post he retained till the fall of the Gladstone ministry in 1874. In 1878 he represented Great Britain at the International Monetary Conference held at Paris, and two years afterward, as ambassador extraordinary to the Porte, enforced on Turkey the fulfilment toward Greece of the treaty of Berlin. He strenuously opposed home rule; in 1887–1892 was Unionist Chancellor of the Exchequer; after, held other high posts in national and educational affairs; was created Viscount 1900; died Feb. 7, 1907. He wrote: "Economic Questions," etc.

Goshawk, or **Goshauk** (properly goose-hawk), a bird of prey. It is brown above, white underneath, barred across with brown, with five browner bands on the tail; the eyelids whitish. When immature it has dots instead of bars. The female is 24 or 25 inches long, the male almost one-third less. It pursues its prey directly, instead of swooping down on it from above like a falcon.



GOSHAWK.

Goshen, that part of ancient Egypt which Pharaoh presented to the kindred of Joseph when they came to sojourn in that country.

Goslar, an ancient town of Hanover, Prussia, on the N. slope of the Harz Mountains, 27 miles S. E. of Hildesheim. It was at one time a free imperial city, and the residence of the emperors; has several noteworthy old buildings, as the tower called the "Zwinger," with walls 23 feet thick, the late Romanesque Church Neuwerk, of the 12th century, and the Frankenberger Church (1108, restored 1880), both with ancient frescoes; the emperor's house, built in 1050 by Henry III., the dwelling-house of the emperors till the middle of the 13th century, the meeting place of more than 20 imperial diets, restored in 1867–1880; the town house, built in 1136–1184; and the Kaiserworth, an old building containing statues of eight emperors. In 1802 it ceased to be a free imperial town and fell to Prussia, to whom it again returned in 1866, after having in the meantime belonged to Westpha-

lia (from 1807) and Hanover (from 1816). Here were born Henry IV. and Marshal Saxe.

Gospellers, a word used with three different designations: (1) A term applied by the Roman Catholics to those Reformers who taught the people the words of Scripture in their own vulgar tongue, as Wyclif and his followers. (2) A class of Antinomians, about the period of the Reformation, who drew "strange inferences" from the doctrine of predestination. (3) The priest who reads the Gospel in the communion service of the Church of England, standing on the N. side of the altar.

Gospel. In the New Testament it denotes primarily the glad tidings respecting the Messiah and His kingdom — this was emphatically the Gospel (Anglo-Saxon, godspell, good tidings). It was quite naturally employed as a common title for the historical accounts which record the facts that constitute the basis of Christianity.

It may be fairly said that the genuineness of the four narratives written by Matthew, Mark, Luke, and John rests on better evidence than that of any other ancient writings. They were all composed in the latter half of the 1st century; those of Matthew and Mark some years before the destruction of Jerusalem; that of Luke about the year 64; and that of St. John about the close of the century. Before the end of the 2d century we have abundant evidence that the four Gospels, as one collection, were generally used and accepted. They seem to have been viewed as so many original and independent sources, each one as much so as the others. The critical spirit of modern times has refused to halt at this point; it has sought to get at, so to speak, the genealogy of the several Gospels with their different degrees of relationship. Each of the four Gospels has in turn been assumed by different critics to be the first out of which the others arose; and the theory has been more than once propounded of some prior, more strictly original document, no longer extant, which formed the common basis of them all. The fourth Gospel, as the narrative coincides with that of the other three in a few passages only, is not drawn into the discussion, and the received explanation is the only satisfactory one with respect to it, namely, that John, writing last, had seen the other Gospels, and purposely abstained from writing anew what had been sufficiently recorded. Another conjecture is that the Gospels sprang out of a common oral tradition. According to this view of the origin of the Gospels, that of Mark, if not the oldest in composition, is yet probably the most direct and primitive in form; it is the testimony delivered by Peter, possibly with little alteration. A comparison of the three synoptical Gospels (those of Matthew, Mark, and Luke) yields some interesting results. If we suppose the history they contain to be divided into sections in 42 of these all the 3 narratives coincide; 12 more are given by Matthew and Mark only, 5 by Mark and Luke only, and 14 by Matthew and Luke. To these must be added five peculiar to Matthew, two to Mark, and nine to Luke. But this applies only to general coincidence as to the facts narrated; the number of passages either verbally the same, or coinciding in the use of many of the same words, is much smaller.

Several biographies of Jesus and the holy family written by unknown authors of the 2d, 3d, and later centuries are known as Apocryphal Gospels. They have no historical or doctrinal value whatever. The titles of the best known of these are: The Gospel of James, the Gospel of Joseph the Carpenter, the Gospel of Thomas, the Gospel of Nicodemus, the Acts of Pilate, and his Letter to Tiberias, etc.

Gossamer, a light filamentous substance which often fills the atmosphere to a remarkable degree during fine weather in the latter part of autumn, or is spread over the whole face of the ground, stretching from leaf to leaf, and from plant to plant, loaded with entangled dew-drops, which glisten and sparkle in the sunshine. It is now known to be produced by small spiders, not by any single species, but by several, not improbably many, species; while it is also said to be produced by young and not by mature spiders.

Gosse, Edmund, an English author, essayist, and critic; born in London, Sept. 21, 1849; has written several works on literature and history.

Gosse, Philip Henry, an English naturalist; born in Worcester, England, April 10, 1810. In 1827 he went to Newfoundland as a clerk, and was afterward in turn farmer in Canada, schoolmaster in Alabama, and professional naturalist in Jamaica. He was elected a Fellow of the Royal Society in 1856. His writings were accurate, attractive, and popular. He retired in 1858 to Torquay, Devon, where he died Aug. 23, 1888.

Goszczynski, Severin, a Polish poet; born in Ilinze, in the Ukraine, in 1803. In the struggle for independence in 1830 he achieved brilliant feats of arms, and composed national odes that spread his fame throughout Europe. He died in Lemberg, Feb. 25, 1875.

Got, Francois Jules Edmond, a French actor; born in Lignerolles, Orne, Oct. 1, 1822. In 1866, with the emperor's special permission, he appeared at the Odeon as Andre Lagarde in Augier's "Contagion," and organized a company to carry the play through France. He played repeatedly in London. In 1881 he was decorated with the cross of the Legion of Honor. He died in 1901.

Gotha, a town of Germany, alternately with Coburg the capital of the State of Saxe-Coburg-Gotha, 31 miles W. by S. of Weimar, on the N. outskirts of the Thuringian Forest. It is a handsome well-built town, with fine parks. The principal public building is the castle of Friedenstein, built in 1648, 78 feet above the town: it contains a library of 200,000 volumes and 6,000 MSS. Pop. (1919) 41,465.

Gotham, a Nottingham village, England, whose people, to avoid the expense of entertaining royalty, turned King John from building a castle there, by designedly stupid acts. Courtiers called it a village of fools; the people said: "More fools pass through than dwell in Gotham," but "wise man of Gotham" became satirically synonymous with stupid. Irving called New Amsterdam (New York city under the Dutch), Gotham.

Gothenburg System, The, a licensing system, under which in Gothenburg, Sweden, the public-house licenses are granted to a company, which, after paying the expenses of management with 6 per cent. annual interest on the shareholders' capital, makes over the profits to the town treasury. This plan has been in force since 1865.

Gothic, a term sometimes used to distinguish mediæval from classical architecture. In a more limited sense it comprehends those styles only of mediæval architecture which are characterized by the pointed arch. In the narrower sense, Gothic architecture dates from the middle of the 12th century; in the wider, it includes as well Anglo-Saxon, which prevailed from the close of the 6th to the middle of the 11th century, and also Anglo-Norman, which flourished during the succeeding 100 years. Gothic architecture attained its perfection in the Decorated English period. In the early part of the 17th century Gothic fell into entire disuse. Toward the close of the 18th century a reaction began, and the movement has gone on gathering strength ever since.

Also the language of the Goths, a race of Teutones who anciently occupied a great portion of European and Asiatic Russia. It is of the Low German group of Teutonic dialects, to which belong English, French, Dutch, Flemish, and Old Saxon.

Gottenburg, or **Gothenburg, a** seaport town in Sweden, the second in importance, capital of the lan of the same name; 255 miles W. S. W. of Stockholm. It is one of the best built towns in Sweden, and the seat of a bishopric. It has extensive manufactures. The harbor is excellent. it has a good depth of water, is defended by forts, and there is a dry dock cut in the solid rock. Among social reformers the town is noted for its managements of the liquor question. Pop. (1921) 202,366.

Gottfried von Strasburg, a famous mediæval German poet; he flourished about the close of the 12th and the beginning of the 13th century.

Gottingen, a town in the former kingdom of Hanover; 538 feet above sea-level on the Leine. The celebrated university (Georgia Augusta) was founded in 1734–1737. Connected with it are the library of 500,000 volumes and 5,000 MSS., the art museum, the splendid botanic garden (laid out

by Haller), the observatory, the laboratory, the lying-in hospital, etc. Longfellow, Motley, Ticknor, Bancroft, and several other illustrious Americans studied at Gottingen, whose alumni include many of Germany's famous sons. Pop. (1919) 40,000.

Gottschalk, Louis Moreau, an American pianist and composer; born in New Orleans, La., May 8, 1829. He appeared in the United States and in Mexico and South America. He died Dec. 18, 1869.

Gottschall, Rudolf von, a German critic; born in Breslau, Sept. 30, 1823. Besides his critical studies he produced brilliant plays, stories, etc. He died in 1909.

Gottsched, Johann Christoph, a German critic and author; an important figure in the history of German literature; born in Judithenkirch, near Konigsberg, Prussia, Feb. 2, 1700. Between 1729 and 1740 Gottsched exercised a sort of Johnsonian dictatorship in the world of polite literature in Germany. His chief endeavors were directed to the reformation of the German drama. He died in 1766.

Gough, Hugh Gough, Viscount, an English military officer; born in Woodstown, Limerick, Ireland, Nov. 3, 1779. In 1837 he went to India as Major-General, and in the following year was made commander-in-chief of the forces sent against China. After storming Canton and forcing the passage of the Yang-tsze-Kiang, he compelled the Chinese to sign the treaty of Nanking (1342). On the outbreak of the Sikh war in 1845 he worsted the enemy in the brilliant battles of Mudki, Firozshah, and Sobraon, for which he was given a peerage. In 1848 the Sikhs renewed the war, but were again defeated by Gough at Ramnagar, Chillianwalla, and Gujerat, victories which resulted in the annexation of the Punjab to British India. Gough was in 1849 created a viscount, and about the same time returned to England. He was made field-marshal in 1862, and died near Dublin, March 2, 1869.

Gough, John Bartholomew, an American temperance lecturer; born in Sandgate, Kent, England, Aug. 22, 1817. His father was a pensioner of the Peninsular war, his mother a village schoolmistress. At the age of 12 he was sent to America, and worked on a farm in Oneida co., New York. In 1831 he went to New York city, where he found employment in the binding department of the Methodist book establishment; but habits of dissipation lost him this employment, and reduced him to that of giving recitations and singing comic songs at low grog shops. He was married in 1839; but his drunken habits reduced him to poverty and delirium tremens, and probably caused the death of his wife and child. In 1842 a benevolent Quaker induced him to attend a temperance meeting and take the pledge; and soon afterward, resolving to devote the remainder of his life to the cause of temperance, Gough attended temperance meetings and related his experience with such effect as to influence many others. A few months later he had a short relapse into drunkenness; but an eloquent confession restored him to favor, and he lectured with great pathos, humor, and earnestness in various parts of America. In 1853 he was engaged by the London Temperance League, and lectured for two years in the United Kingdom, where he attracted large crowds to his meetings. He was again in England in 1857–1860 and 1878. In some of his later addresses he took up literary and social topics, and acquired a moderate fortune by his lectures. He died in Frankford, Pa., Feb. 18, 1886.

Goujon, Jean, a French sculptor and architect; born 1515; died 1572. He was the author of what is considered the masterpiece of French sculpture, the "Huntress Diana," now in the Louvre collection.

Gould, Augustus Addison, an American naturalist; born in New Ipswich, N. H., April 23, 1805, was graduated at Harvard College, 1825, and its medical department 1830; spent some time as scientific instructor there; began practising in Boston, and was appointed visiting physician to the Massachusetts General Hospital in 1856. His scientific studies led him to the special fields of botany, zoölogy, and conchology; in the latter he became one of the most eminent authorities in the world. He aided Sir Charles Lyell in his geological investigations in the United States. He died in Boston, Mass., Sept. 15, 1866.

Gould, Benjamin Apthorp, an American astronomer; born in Boston, Mass., 1824. He was graduated at Harvard in 1844 and pursued his scientific studies abroad. In 1849 he received an appointment to the United States Coast Survey, and devised methods for determining the longitudes telegraphically. From 1870 to 1885 he was director of the national observatory at Cordova, Argentine Republic, where he completed three extensive catalogues of stars, and conducted meteorological and climatological investigations. Died Nov. 26, 1896.

Gould, Sir Francis Carruthers, an English cartoonist; born in Barnstaple, England, in 1844. His "Cartoons for the Crisis," published during the general elections of 1895, gave him a wide reputation. Knighted in 1906.

Gould, Helen Miller (Shepard), an American philanthropist; born in New York city, June 20, 1868; daughter of the late Jay Gould. She became widely known through her gifts for charitable and educational purposes. When the war with Spain broke out she gave $100,000 to the United States government and became an active worker in the Woman's National War Relief Association, contributing freely to its work. When the sick and convalescent soldiers were taken to Camp Wikoff, L. I., she gave $25,000 to purchase needed supplies and in person cared for many of the sick. Her other gifts include $380,000 to the University of New York, etc., in 1898; $50,000 to the Naval Branch of the Young Men's Christian Association of Brooklyn; and $100,000 to the University of New York for a Hall of Fame for Great Americans, in 1900. In 1913 she married Finley J. Shepard, and from the outbreak of the World War in 1914 she was untiring in zeal and benefactions for the sick, wounded and suffering, especially in France.

Gould, Jay, an American financier; born in Roxbury, N. Y., May 27, 1836; was brought up on his father's farm; attended Hobart College a short time, acquired a taste for mathematics and surveying; made surveys of Ulster, Albany, and Delaware counties, and began his railroad career directly after the panic of 1857; invested in bonds of the Rutland and Washington railroad, and became president, treasurer, and superintendent of the road. Soon afterward he effected a consolidation of his road with the Rensselaer and Saratoga road, withdrew his capital, removed to New York, opened a broker's office, and began dealing in Erie stocks and bonds. In association with James Fisk, Jr., he entered the directory of the company, and was elected president, with Fisk as vice-president and treasurer. On the reorganization of the company, 1872, he lost official connection with it. He then invested heavily in the various Pacific railroads, secured control of a number of important lines, built branches, and effected combinations which resulted in the establishment of what is known as the "Gould system." He died in New York city, Dec. 2, 1892, leaving property valued at $72,000,000.

Gould, John, an English ornithologist; born in Lyme-Regis, Dorset, England, Sept. 14, 1804. In 1827 he was appointed curator to the Zoölogical Society's Museum, and in 1838 proceeded to study the Australian birds in Tasmania, South Australia, and New South Wales. The results of his researches are embodied in his great work on the "Birds of Australia." He died in London, Feb, 3, 1881.

Goulding, Francis Robert, an American story-writer; born in Georgia in 1810. He was a Presbyterian clergyman. He died in 1881.

Gounod, Charles François, a French composer; born in Paris, France, June 17, 1818. In 1859 he produced "Faust," his chief work, which at once attained European popularity, and raised its composer to the foremost rank of contemporary musicians. He also published much church music, including several masses, hymns, and motets or anthems, and was extensively popular as a songwriter. From 1870 to 1875 he resided in England. He was a member of the Institute (1866), and a commander of the Legion of Honor (1877). He died in St. Cloud, France, Oct. 18, 1893.

Gourd, a hispid plant, with tendrils, large yellow flowers, and oblong or ovate fruit; a native of Astrakhan, but cultivated in many countries. It has run into many varieties. The pumpkin and squash are familiar types of the gourd.

Gout, a disease produced by the excess of uric acid in the blood in the form of urate of soda. It is usually hereditary, is rare before the age of 30, and generally arises from excessive indulgence in wines or malt liquors, the last giving rise to "poor man's gout." It is rarely produced by the use of spirits. The great toe is the part most frequently affected, pain and irritability are leading symptoms; it may become chronic, and is very intractable to treatment.

Government of the United States. The executive power is vested in the President, who holds office for four years and receives annually $75,000. The Vice-President, as president of the Senate, discharges the duties of that office, except in case of the removal or death of the President, in which event he assumes the executive powers. He is elected for the same term of office as the President, and receives $15,000 annually. The President and Vice-President are elected by electors chosen by the people. The number of electors from each State is equal to the whole number of Senators and Representatives to which the State may be entitled. The electors vote by ballot. These votes are sent sealed to the president of the Senate, who opens them in the presence of Congress. If there are two parties who have received an equal number of votes, the House of Representatives chooses by ballot one of them for President, provided a possible third candidate has not received a majority of the votes, in which case he is entitled to the office. The cabinet officers are appointed by the President. They are ten in number, and receive a salary of $15,000 each annually. The cabinet is arranged in the following order of succession providing for the successor for the President and Vice-President, should they both die during their term of office:

1. Secretary of State.
2. Secretary of the Treasury.
3. Secretary of War.
4. Attorney-General.
5. Postmaster-general.
6. Secretary of the Navy.
7. Secretary of the Interior.
8. Secretary of Agriculture.
9. Secretary of Commerce.
10. Secretary of Labor.

The legislative power of Congress is vested in the Senate, composed of two members from each State, who hold office for six years, at an annual salary of $10,000; and the House of Representatives, who are elected by a majority of votes cast in the various Congressional districts of each State, to hold office two years, and receive $10,000 annually. The President of the United States is commander-in-chief of the army and navy; but the direct supervision of them belongs to the Secretaries of War and of the Navy.

The judiciary of the United States consists of a Supreme Court, which sits at Washington, and which is composed of a Chief-Justice, who receives $15,000 annually, and eight Associate Justices, who receive $14,500 annually. They are appointed by the President, and hold office during good behavior. The United States is divided into nine judicial circuits, each of which has two or three circuit judges (according to the size of the circuit), who are paid $8,500 a year. There are also 104 district courts, from which an appeal lies to the Circuit Court.

Each State and Territory has its own local government, not unlike the general government in its essential features. The executive authority is vested in the governor, whose term of office and salary vary in different States. The revenue of the national government is chiefly derived from customs duties, proceeds of sales of public lands, and internal revenue taxes upon distilled spirits, fermented liquors, tobacco, etc. In conformity with several acts of Congress, the surplus revenue is devoted to the gradual redemption of the public debt.

Governor's Island, a small island at the main entrance of Boston Harbor; Fort Winthrop is built on it. Also an island in New York harbor; Fort Columbus, the headquarters of the Military Department of the East, U. S. A., is built on it.

Gower, John, an early English poet, a contemporary and friend of Chaucer; born about 1320. He was liberally educated, and was a member of the society of the Inner Temple. He died about 1408.

Gown. The academic gown is a survival of the tabardus, a garment

with many folds, which came in when the doctors began to wear long priestly robes as a distinctive mark of their standing as clerics. In the United States it is becoming more generally the custom for gowns to be worn at colleges for either sex. Gowns are also worn by judges of the Supreme Court of the United States, while in session, and by judges of some of the higher courts in New York and other States.

Gozo, an island in the Mediterranean, 4 miles N. W. of Malta and belonging to Great Britain; with the adjacent smaller island of Comino, area, 20 square miles; pop. 16,500. The surface is hilly, but the soil fertile. Chief town Babato, near the center of the island.

Graaf, Regnier de, a Dutch physician and anatomist; born in Schoonhoven, Netherlands, July 30, 1641. In the course of his investigations in abdominal anatomy he discovered in 1672, the graafian vesicles, or follicles of the female ovum. He wrote several dissertations on the organs of generation in both sexes. He died in Delft, Netherlands, Aug. 17, 1673.

Gracchus, Tiberius Sempronius, a Roman politician, son of Tiberius Sempronius Gracchus and Cornelia, daughter of Scipio Africanus Major; born about 168 B. C. The hopeless poverty in which thousands of the Roman citizens were sunk now began to weigh on the mind of Gracchus, and caused him to plunge into an agitation for reform. Elected tribune of the people in 133, he endeavored to reimpose the agrarian law of Licinius Stolo, and after violent opposition on the part of the aristocratic party, he succeeded in passing a bill to that effect. Tiberius Gracchus, his brother Caius, and his father-in-law Appius Claudius were appointed triumvirs to enforce its provisions. Meantime Attalus, King of Pergamus, died, and bequeathed all his wealth to the Roman people. Gracchus proposed that this should be divided among the poor, to enable them to procure agricultural implements and to stock their newly-acquired farms. But fortune turned against the good tribune. He was accused of having violated the sacred character of the tribuneship by the deposition of Cæcina, and thousands of the fickle mob deserted their champion and benefactor. In the midst of the next election for the tribuneship, in 133 B. C., Tiberius Gracchus, with some hundreds of his friends, was murdered.

Grace, in ordinary language, a short prayer before or after meat; a blessing asked or thanks returned. In Greek mythology, one of three sister goddesses, called Aglaia, Thalia, and Euphrosyne, daughters of Jupiter and the ocean nymph Eurynome. In their gift were grace, loveliness and favor. In Scripture the favor of God as gratuitous and opposed to merit. Also Christian virtues.

Grace, Days of, in commerce, a certain number of days immediately following the day, specified on the face of a bill or note, on which it becomes due. Till the expiry of these days payment is not necessary. In the United States the days of grace have been abolished generally in National bank operations. See DAY.

Grace, William Gilbert, an English cricketer; born in Downend, near Bristol, England, July 18, 1848. He was fourth son of the village doctor; was a very distinguished cricketer by 1864; and soon was by far the foremost of cricketers, not merely playing in the great matches at home but making cricketing tours in Canada and the United States (1871), and Australia (1873).

Grace, William Russell, sometimes called "King of Peru," on account of his large interests in that republic; born Queenstown, Ireland, May 10, 1832, son of James and Ellen Mary (Russell) Grace; ran away at 14 and worked his way to New York; afterward went to Peru, and rose from clerk to large wealth; settled in New York and was mayor in 1881–2 and 1885–6; head of W. R. Grace & Co., leading firm in South and Central American trade. Died Mar. 22, 1904.

Grady, Henry Woodfen, an American journalist; born in Athens, Ga., in 1851; was educated at the University of Georgia; served in the Confederate army during the latter part of the Civil War; became one of the staff of the Atlanta "Herald," and correspondent of the New York "Herald" in Georgia. His writings

Gout, a disease produced by the excess of uric acid in the blood in the form of urate of soda. It is usually hereditary, is rare before the age of 30, and generally arises from excessive indulgence in wines or malt liquors, the last giving rise to "poor man's gout." It is rarely produced by the use of spirits. The great toe is the part most frequently affected, pain and irritability are leading symptoms; it may become chronic, and is very intractable to treatment.

Government of the United States. The executive power is vested in the President, who holds office for four years and receives annually $75,000. The Vice-President, as president of the Senate, discharges the duties of that office, except in case of the removal or death of the President, in which event he assumes the executive powers. He is elected for the same term of office as the President, and receives $15,000 annually. The President and Vice-President are elected by electors chosen by the people. The number of electors from each State is equal to the whole number of Senators and Representatives to which the State may be entitled. The electors vote by ballot. These votes are sent sealed to the president of the Senate, who opens them in the presence of Congress. If there are two parties who have received an equal number of votes, the House of Representatives chooses by ballot one of them for President, provided a possible third candidate has not received a majority of the votes, in which case he is entitled to the office. The cabinet officers are appointed by the President. They are ten in number, and receive a salary of $15,000 each annually. The cabinet is arranged in the following order of succession providing for the successor for the President and Vice-President, should they both die during their term of office:

1. Secretary of State.
2. Secretary of the Treasury.
3. Secretary of War.
4. Attorney-General.
5. Postmaster-general.
6. Secretary of the Navy.
7. Secretary of the Interior.
8. Secretary of Agriculture.
9. Secretary of Commerce.
10. Secretary of Labor.

The legislative power of Congress is vested in the Senate, composed of two members from each State, who hold office for six years, at an annual salary of $10,000; and the House of Representatives, who are elected by a majority of votes cast in the various Congressional districts of each State, to hold office two years, and receive $10,000 annually. The President of the United States is commander-in-chief of the army and navy; but the direct supervision of them belongs to the Secretaries of War and of the Navy.

The judiciary of the United States consists of a Supreme Court, which sits at Washington, and which is composed of a Chief-Justice, who receives $15,000 annually, and eight Associate Justices, who receive $14,500 annually. They are appointed by the President, and hold office during good behavior. The United States is divided into nine judicial circuits, each of which has two or three circuit judges (according to the size of the circuit), who are paid $8,500 a year. There are also 104 district courts, from which an appeal lies to the Circuit Court.

Each State and Territory has its own local government, not unlike the general government in its essential features. The executive authority is vested in the governor, whose term of office and salary vary in different States. The revenue of the national government is chiefly derived from customs duties, proceeds of sales of public lands, and internal revenue taxes upon distilled spirits, fermented liquors, tobacco, etc. In conformity with several acts of Congress, the surplus revenue is devoted to the gradual redemption of the public debt.

Governor's Island, a small island at the main entrance of Boston Harbor; Fort Winthrop is built on it. Also an island in New York harbor; Fort Columbus, the headquarters of the Military Department of the East, U. S. A., is built on it.

Gower, John, an early English poet, a contemporary and friend of Chaucer; born about 1320. He was liberally educated, and was a member of the society of the Inner Temple. He died about 1408.

Gown. The academic gown is a survival of the tabardus, a garment

with many folds, which came in when the doctors began to wear long priestly robes as a distinctive mark of their standing as clerics. In the United States it is becoming more generally the custom for gowns to be worn at colleges for either sex. Gowns are also worn by judges of the Supreme Court of the United States, while in session, and by judges of some of the higher courts in New York and other States.

Gozo, an island in the Mediterranean, 4 miles N. W. of Malta and belonging to Great Britain; with the adjacent smaller island of Comino, area, 20 square miles; pop. 16,500. The surface is hilly, but the soil fertile. Chief town Babato, near the center of the island.

Graaf, Regnier de, a Dutch physician and anatomist; born in Schoonhoven, Netherlands, July 30, 1641. In the course of his investigations in abdominal anatomy he discovered in 1672, the graafian vesicles, or follicles of the female ovum. He wrote several dissertations on the organs of generation in both sexes. He died in Delft, Netherlands, Aug. 17, 1673.

Gracchus, Tiberius Sempronius, a Roman politician, son of Tiberius Sempronius Gracchus and Cornelia, daughter of Scipio Africanus Major; born about 168 B. C. The hopeless poverty in which thousands of the Roman citizens were sunk now began to weigh on the mind of Gracchus, and caused him to plunge into an agitation for reform. Elected tribune of the people in 133, he endeavored to reimpose the agrarian law of Licinius Stolo, and after violent opposition on the part of the aristocratic party, he succeeded in passing a bill to that effect. Tiberius Gracchus, his brother Caius, and his father-in-law Appius Claudius were appointed triumvirs to enforce its provisions. Meantime Attalus, King of Pergamus, died, and bequeathed all his wealth to the Roman people. Gracchus proposed that this should be divided among the poor, to enable them to procure agricultural implements and to stock their newly-acquired farms. But fortune turned against the good tribune. He was accused of having violated the sacred character of the tribuneship by the deposition of Cæcina, and thousands of the fickle mob deserted their champion and benefactor. In the midst of the next election for the tribuneship, in 133 B. C., Tiberius Gracchus, with some hundreds of his friends, was murdered.

Grace, in ordinary language, a short prayer before or after meat; a blessing asked or thanks returned. In Greek mythology, one of three sister goddesses, called Aglaia, Thalia, and Euphrosyne, daughters of Jupiter and the ocean nymph Eurynome. In their gift were grace, loveliness and favor. In Scripture the favor of God as gratuitous and opposed to merit. Also Christian virtues.

Grace, Days of, in commerce, a certain number of days immediately following the day, specified on the face of a bill or note, on which it becomes due. Till the expiry of these days payment is not necessary. In the United States the days of grace have been abolished generally in National bank operations. See DAY.

Grace, William Gilbert, an English cricketer; born in Downend, near Bristol, England, July 18, 1848. He was fourth son of the village doctor; was a very distinguished cricketer by 1864; and soon was by far the foremost of cricketers, not merely playing in the great matches at home but making cricketing tours in Canada and the United States (1871), and Australia (1873).

Grace, William Russell, sometimes called "King of Peru," on account of his large interests in that republic; born Queenstown, Ireland, May 10, 1832, son of James and Ellen Mary (Russell) Grace; ran away at 14 and worked his way to New York; afterward went to Peru, and rose from clerk to large wealth; settled in New York and was mayor in 1881–2 and 1885–6; head of W. R. Grace & Co., leading firm in South and Central American trade. Died Mar. 22, 1904.

Grady, Henry Woodfen, an American journalist; born in Athens, Ga., in 1851; was educated at the University of Georgia; served in the Confederate army during the latter part of the Civil War; became one of the staff of the Atlanta "Herald," and correspondent of the New York "Herald" in Georgia. His writings

contributed much to the growth and prosperity of the "New South," he was also one of the editors of the Atlanta "Constitution." Among Southern editors he was perhaps more widely known than any other. He died in Atlanta, Ga., Dec. 23, 1889.

Græfe, Karl Ferdinand von, a German surgeon; born in Warsaw, Russian Poland, in 1787. To him the science is indebted for the introduction of many new instruments and methods of operating. He died in 1840. His son, Albrecht von Græfe (1828–1870), an eminent oculist, devoted himself more particularly to ophthalmology, and established in Berlin a private clinic and hospital for eye diseases, which became so well known as to be frequented by patients and students from all parts of the world. He was Professor of Ophthalmology from 1867.

Graf, a title of nobility which in Germany corresponds to the title count. The first mention of this particular grade of nobility occurs in the 5th century. There are two classes of grafs in Germany at the present time, the first forming a section of the highest and oldest nobility, and the second representing the higher order of the lower nobles.

Grafting, in carpentry, a scarfing or endwise attachment of one timber to another, as in attaching an extra length or false pile to one already driven. In nautical language, the tapering of the end of a rope, usually covered by weaving yarns around it. In surgery, the transplanting of a portion of skin to a denuded surface.

In husbandry, the act or process of inserting a shoot or scion taken from one tree or shrub in a vigorous stock of its own or a closely allied species, so as to cause them to unite and enable the graft to derive a larger supply of nutritive power than it could otherwise obtain. There are numerous methods of grafting. One is grafting by approach, or inarching, when two growing plants are united together, and after adhesion one is severed from its own stock and left to grow on the other. This kind of adhesion sometimes takes place naturally in trees growing close together. The usual method of grafting is by scions or slips, which are applied to the stock by a sloping surface, or are inserted into slits in it by cleft-grafting, or into perforations by wimble or peg-grafting. Sometimes several slips are placed in a circular manner around the inside of the bark of the stock, by crown grafting; or the bark of a portion of the stock is removed, and that of the scion is hollowed out, so as to be applied over it like the parts of a flute, hence called flute-grafting. Budding is practised by the removal of a bud from one plant, along with a portion of the bark and new wood, and applying it to another plant, in which a similar wound has been made. In whip grafting, or tongue grafting, the stock is cut obliquely across, and a slit or very narrow angular incision is made in its center downward across the cut surface, a similar deep incision being made in the scion upward at a corresponding angle, and a projecting tongue left, which, being inserted in the incision in the stock, they are fastened closely together. Splice grafting is performed by cutting the ends of both the stock and the scion across at such an angle that the oblique surfaces exactly fit each other and are fastened together. In saddle grafting the end of the stock is cut into the form of a wedge, and the middle of the scion cut away so as to rest exactly upon the stock. Grafting is usually performed between the woody parts of the plants, but herbaceous parts may also be united in this way. It is requisite that the growing parts be brought into apposition — the two albumens and the two libers. Union will only take place where the active processes of life are freely exercised. The graft and stock are secured together by means of clay, or a mixture of bees'-wax and tallow, or by bits of india-rubber.

The term "grafting" is also applied in common talk, and especially in political recrimination to the obtaining of money by methods which, while possibly within the law, are at least dishonorable, and particularly to the use of public office for personal gain in a manner that is morally dishonest. It is sometimes also applied in cases that are clearly criminal.

Grafton, Augustus Henry Fitzroy, Duke of, an English statesman, a descendant of Charles II.; born Oct. 1, 1735. In 1757 he succeeded

his grandfather, the second duke. In 1766 Pitt became premier and Earl of Chatham, making Grafton First Lord of the Treasury; but in consequence of Chatham's continued illness Grafton was compelled to assume the duties of head of the government. He resigned in 1770, and held the office of Lord Privy Seal under Lord North in 1771–1775. He died March 14, 1811.

Graham, George Perry, a Canadian official; born in Eganville, Ontario, March 31, 1859; was engaged in journalism many years; elected to the Legislature for Brockville in 1898, 1902, and 1905; became Provincial Secretary in 1904, leader of the Opposition in the Legislature in 1907, member of the Commons in 1907 and 1908, and Minister of Railways and Canals in 1907.

Graham, James, a Scottish military officer; born in 1612; fifth Earl and first Marquis of Montrose. When the Civil War began he took up arms with the Presbyterians, but later joined the king, who appointed him lieutenant-general in Scotland in 1644. He was victorious over the Covenanters in numerous engagements, but was finally overcome by David Leslie at Philiphough, Sept. 13, 1645, and was exiled from Scotland. Later he became a field-marshal in the army of Emperor Ferdinand III. In 1650 while endeavoring to lead a Royalist force into Scotland he was captured and executed.

Graham, John, Viscount Dundee, commonly known as Claverhouse, a Scottish soldier, eldest son of Sir William Graham, of Claverhouse; born, about 1650. In 1677 he was appointed captain of a troop of horse raised to enforce compliance with the establishment of Episcopacy. He distinguished himself by an unscrupulous zeal in this service. He was made a privy-councillor, and received the estate of Dudhope, with other honors from the king, and though on the accession of James his name was withdrawn from the privy-council it was soon restored. In 1686 he was made Brigadier-General, and afterward Major-General; and in 1688, after William had landed, he received from James in London the titles of Lord Graham of Claverhouse and Viscount Dundee. When the king fled he returned to Edinburgh, but finding the Covenanters in possession he retired to the N., followed by General Mackay. After making an attempt on Dundee, Claverhouse finally encountered and defeated Mackay in the Pass of Killiecrankie, July 17, 1689, but was killed in the battle.

Grail, The Holy, the name given in legend to the chalice from which Christ is said to have drunk at the last supper. The legend goes on to say that it was used by Joseph of Arimathea to catch the drops of blood which fell from the body of Jesus on the cross. It was said to have been formed of a single emerald, and after the Crucifixion, to have been guarded by angels, and then by the Templises, a society of knights who watched over it in a temple-like castle on the summit of the inaccessible mountain, Montsalvage. In A. D. 1101, the Crusaders found a costly cup at Cæsarea, which they believed to be the veritable Holy Grail. It was taken to the cathedral of San Lorenzo in Genoa. The search for it after its disappearance, formed the basis of poems and romances, among others those of Parsifal in Germany, and Lord Tennyson's poems on King Arthur and the Knights of the Round Table, in England.

Grain Elevator, a building designed for the reception, storage and transshipment of wheat, corn and other cereals. It is a tall structure situated near wharf and railway facilities. There are elevators capable of storing 1,000,000 to 1,500,000 bushels of corn. The largest are erected at Chicago, Buffalo, Minneapolis, Duluth and Superior; at these two last points combined there is a total elevator capacity of about 50,000,000 bushels. In New York, floating elevators are frequently employed to transfer the grain from barges to sea-going vessels direct.

Grakle, the common name of many birds of the starling family, all tropical or subtropical. In the United States the name grakle or grackle is applied to several species of the omnivorous birds, also called "blackbirds" and "boat-tails."

Grammar, the science which treats of the words of which language is composed, and of the laws by which it is governed. It is of two kinds, descrip-

tive and comparative. Descriptive grammar classifies, arranges, and describes words as separate parts of speech, and notes the changes they undergo under certain conditions. Comparative grammar, which is based on the study of words, goes further; it analyzes and accounts for the changes they have undergone, and endeavors to trace them back to their origin; it thus deals with the growth of language.

Grammont, the name of an illustrious French family. Philibert, Count de Grammont, known by his memoirs, written by his brother-in-law Anthony, Count Hamilton, died in 1720; Louis, Duke de Grammont, lost the bottle of Dettingen, and was killed at Fontenoy, 1745. The last Duke of Grammont, father of the Duke of Guiche, and the countesses of Tankerville and Sebastiani. He died in 1836.

Grammontians, Grandmontines, or **Grandimontains,** a monastic order founded in A. D. 1073, with the sanction of Pope Gregory VII., by Stephen of Thiers, a nobleman of Auvergne. The order became extinct at the Revolution.

Grampians, a mountain range in Scotland which sends up several lofty peaks that form the highest eminences in Scotland. Of these the most important are Ben Lomond, Ben Ledi, Ben More, Ben Lawer, and Ben Vorlich. Also, the name of a mountain chain in the colony of Victoria, South Australia, whose highest point is Mount William, which is 4,500 feet above the level of the sea.

Grampus, an animal of the cetacean order, closely allied to the porpoise, to which genus it is often referred. It is one of the largest of the dolphin family, attaining 20 to 25 feet in length and 4 feet in diameter at its greatest thickness. It tapers both to the head and tail, being much more elongated toward the latter. The head is round, the muzzle truncated, the upper jaw projecting slightly over the lower. The body is of a brilliant black color above and pure white below. It is very voracious, preying on small cetaceans, etc., and it even attacks whales in troops. It also preys on salmon and pursues them up the mouths of rivers.

Granada, an ancient kingdom, and one of the old provinces in Southern Spain; now divided into the provinces of Granada, Almeria, and Malaga. Granada was part of the Roman province of Boetica; but after the Arab invasion it formed an independent Moorish kingdom. It was the last possession of the Moors in Spain, and was conquered by Ferdinand and Isabella in 1492. Pop. (Est.) 1,500,000.

Granada, city and capital of the above province, was the ancient metropolis of the Moors in Spain, and stands on the Genil, 120 miles from Seville. The town exhibits the form of a half-moon, its streets rising above each other, with a number of turrets and gilded cupolas, the whole crowned by the Alhambra, or palace of the ancient Moorish kings, and in the background the Sierra de Nevada, covered with perpetual snow. The grand ornament of Granada is the Alhambra, the wonder of Arabian architecture. Though now in a state of decay, its remains sufficiently evince its original splendor. Another Moorish palace, called the "Generaliffe," built on the opposite hill, is the retreat of the court in summer. Pop. (1918) 77,477.

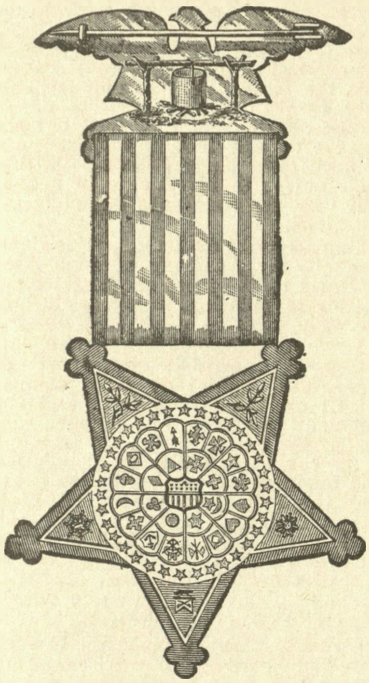
Granada, a department and city of Nicaragua on the N. W. side of Lake Nicaragua. Founded in 1522, it was formerly the chief town of the republic, but has suffered greatly from civil wars; but is still of importance as a trading center. Pop. 17,092.

Granadilla, the West Indian name for the fruits of various species of the passion-flower family.

Gran Chaco, an extensive central tract of South America, bounded on the E. by the Paraguay and Parana, and on the W. by the Argentine provinces of Santiago del Estero and Salta; area, about 180,000 square miles. Contains many wild, and some dangerous Indians.

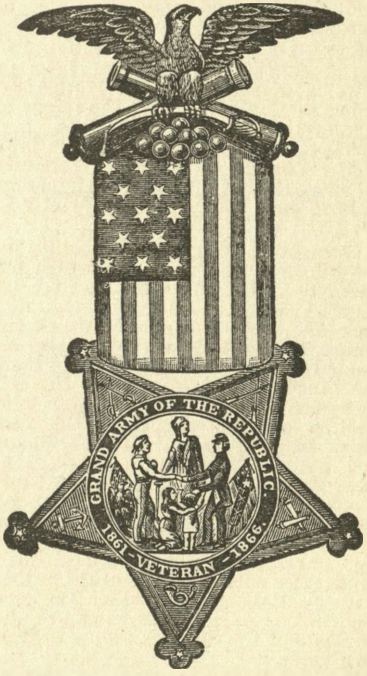
Grand Army of the Republic, a patriotic organization in the United State composed of the National veterans of the Civil War. It was organized in Decatur, Ill., April 6, 1866, by Dr. B. F. Stephenson, of Springfield, formerly surgeon of the 14th Illinois Infantry. The establishment of Post 1

in Decatur was soon followed by Post 2 in Springfield, and in a few months other posts sprang up in Illinois, Indiana, Wisconsin, Iowa, Missouri, and



BADGE OF THE G. A. R.—REVERSE.

other States. The first National Convention was held in Indianapolis, Ind., Nov. 20, 1866, with delegates from 10 States and the District of Columbia. Gen. Stephen A. Hurlbut, of Illinois, was chosen commander-in-chief and Dr. B. F. Stephenson, adjutant-general. The next National Convention was held in Philadelphia, Pa., Jan. 15, 1868, when it was enacted that annual sessions should be held. The main purpose of the Grand Army of the Republic and the qualifications of its members are given in the sixth rule of the organization, which is as follows: "To maintain true allegiance to the United States of America, based on a paramount respect for, and fidelity to, its Constitution and laws, to discountenance whatever tends to weaken loyalty, incites to insurrection, treason, or rebellion, or in any manner impairs the efficiency and permanency of our free institutions; and to encourage the spread of universal liberty, equal rights, and justice to all men. Soldiers and sailors of the United States army, navy, or marine corps, who served between April 12, 1861, and April 9, 1865, in the war for the suppression of the rebellion, and those having been honorably discharged therefrom after such service, and of such State regiments as were called into active service and subject to the orders of the United States general officers between the dates mentioned, shall be eligible to



BADGE OF THE G. A. R.—OBVERSE.

membership in the Grand Army of the Republic. No person shall be eligible to membership who has at any time

borne arms against the United States." On Dec. 31, 1924, there were 5,342 Grand Army posts, 44 Departments, and 65,382 members.

Grand Canyon, a gorge through which the Colorado river flows in Arizona; 65 miles from Flagstaff. It is one of the natural wonders with which that country abounds. The canyon is a gorge 217 miles long, or with the addition of Marble Canyon, connected with it, 286 miles. It is from 9 to 13 miles wide and 6,300 feet below the level of the plateau. This depth is maintained for about 50 miles and surpasses that of any other canyon in the world.

Grand-Carteret, John, a French journalist; born in Paris, about 1850. Of late years he has made important studies of life and manners of modern Europe.

Grand Coutumier of Normandy, a collection of ancient laws or customs of the Duchy of Normandy, in use in England during the reigns of the early Norman sovereigns, and which still form the basis of the laws of the Channel Isles, which formerly belonged to that duchy. It is supposed to have been compiled subsequently to the reign of Richard I.

Grandees, a class of nobility in the kingdom of Castile, in which the members of the royal family were included. Their honors were hereditary; they held lands from the crown on the tenure of military service, were exempted from taxation, and could leave the kingdom, and even enter the service of a foreign prince at war with Castile, without incurring the penalties of treason. Under Ferdinand and Isabella they were deprived of most of their peculiar privileges; and Charles V. converted them from an independent feudal nobility into a dependent court nobility. Under Joseph Bonaparte their dignities and privileges were entirely abolished; but they were partially regranted at the subsequent restoration. Grandees are still members of the Spanish senate in their own right.

Grand Duke, a title applied to members of the imperial family of Russia, and also to the sovereigns of certain German states, who are considered as holding a position between duke and king.

Grand Jury, a body of men selected according to the different laws of the several States, usually numbering 24, and whose duty it is to receive secretly the evidence presented regarding alleged crimes, and if satisfied that a crime has probably been committed, then to present an indictment against the accused to the proper court. As a rule the Grand Jury is approachable only through the prosecuting officer of the district, but they have a right to take up any inquiry independently of such officer, and it is also within their power to investigate in a general way the conditions of public institutions.

Grand Prix de Rome, prize given annually by Academy of Fine Arts in Paris to the most successful competitor in painting, music, sculpture, etc. The winners reside in Rome for 4 years at charge of the government.

Grand Rapids, city, port of entry, and capital of Kent county, Mich.; on the Grand river and the Michigan Central and other railroads; 60 miles N. W. of Lansing. It is the second city in population and business importance in the State and the metropolis of its W. half; has picturesque surroundings, valuable gypsum deposits, and extensive manufacturing interests; and is the seat of the State Soldiers', Masonic, Catholic, Butterworth, and other homes. Pop. (1920) 137,634.

Grand, Mme. Sarah, an English novelist; born (Frances Elizabeth Clarke) in Ireland. She married at 16 and traveled widely. Her chief works are "The Heavenly Twins;" and "Babs the Impossible."

Grangers. See HUSBANDRY, PATRONS OF.

Granicus, a river of Bithynia, famous for a battle fought on its banks between the troops of Alexander the Great and those of Darius, 334 B. C., when 600,000 Persians were defeated by 30,000 Macedonians.

Granite, an unstratified rock, normally consisting of three simple minerals, felspar, quartz, and mica, or, in Dana's nomenclature, of orthoclase, quartz, and mica. Granite is of much economic value as a building stone. The production of granite in the United States in 1920 was valued at $18,-

279,345. The leading States in its production were Maine, Massachusetts, Vermont, and Wisconsin.

Granite State, the popular name of New Hampshire. Fine building granite is quarried at many points, notably at Plymouth, Concord, Milford, Pelham, etc.

Grant, the conveyance in writing of such things as cannot be passed or conveyed by word only, as lands, reversions, rents, etc., or made by such persons as cannot give but by deed.

Grant, Sir Francis, a Scotch artist; born in Edinburgh, Jan. 18, 1803; educated at Harrow and the University of Edinburgh for the Scottish bar, but abandoned that profession to follow his natural genius for painting. His most famous works are those in which he has combined the likenesses of distinguished characters with scenes of English sport. In 1866 he became president of the Royal Academy and was knighted. He died in 1878.

Grant, Frederick Dent, an American military officer; born in St. Louis, Mo., May 30, 1850; eldest son of Gen. U. S. Grant; was graduated at West Point in 1871; served in the army till 1881; became Minister to Austria in 1885; appointed Brigadier-General, U. S. V., in 1898 and U. S. A., in 1901; Major-General, U. S. A., 1906; held commands in the Philippines and at home. He died April 12, 1912.

Grant, James, a Scotch novelist; born in Edinburgh, Aug. 1, 1822; died in 1887.

Grant, Sir James Hope, a British military officer; born in Kilgraston, Perthshire, Scotland, July 22, 1808. In 1859 he conducted the war against China, defeating the enemy three times under the walls of Peking, assaulting the Taku forts, and finally capturing the capital of the empire, for which work he was created G. C. B. He returned to England, and was made general in 1872. He died in London, March 7, 1875.

Grant, Robert, an American author; born in Boston, Mass., Jan. 24, 1852; was graduated from Harvard in 1873 and the Harvard Law School in 1879. Since 1893 he has been a judge of probate and insolvency for Suffolk co., Mass.

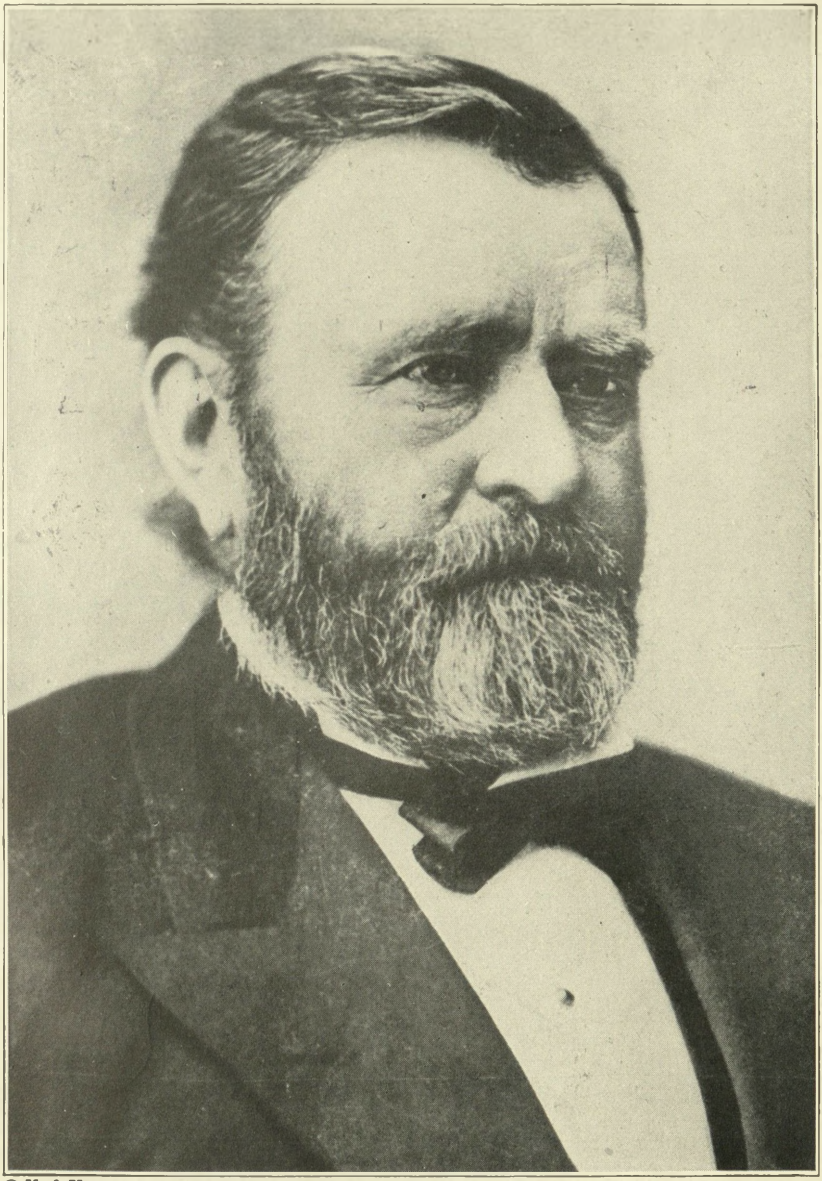
Grant, Ulysses Simpson, an American statesman and one of America's greatest generals; 18th President of the United States; born in Point Pleasant, O., April 27, 1822, entered West Point Academy in 1839, graduated in 1843, received a commission in the United States Army in 1845, and served under Generals Taylor and Scott in Mexico. In 1852 he was ordered to Oregon, and in August, 1853, became full captain. He resigned his commission in July, 1854, and soon after settled in business at Galena, Ill. From this privacy he was drawn out by the Civil War, and having acted first as aide-de-camp to the governor of his State in 1861, and afterward as colonel of the 21st Illinois Volunteers, was appointed a Brigadier-General in July of the same year. While in command at Cairo, he secured Paducah, and with it the State of Kentucky. In November, 1861, he fought and gained the battle of Belmont, and in January of the following year conducted a reconnoissance to the rear of Columbus. After capturing Fort Henry, on the Tennessee, General Grant pursued the Confederates to Fort Donelson. There a severe battle raged almost without interruption for three days and three nights, when, Feb. 15, the fort was surrendered unconditionally. This brilliant feat elevated General Grant to the rank of Major-General. Having been appointed to the command of the district of Western Tennessee, Grant advanced up that river to Pittsburg Landing, where he had to contend against a force of nearly 7,000 men. The National lines were overwhelmed, crushed, dispersed; but General Grant, undismayed, formed new lines, planted new batteries, and thus held the Confederates in check till dark, when the long expected arrival of his rear-guard of 35,000 men under General Buell, enabled him to fight, April 6 and 7, the glorious battle of Shiloh, whence the Confederates, abandoning the field, retreated to Corinth. General Grant was second in command to General Halleck at the siege of Corinth, and when the latter was ordered to Washington, he was appointed to take command of the Department of Tennessee, in which capacity he marched against Vicksburg, the so-called "Gibraltar" of the Confederates on the Mississip-

pi. After a long and memorable siege this important place was surrendered unconditionally, and 37,000 prisoners, 150 cannons, with an immense amount of military stores, fell into the hands of the victors.

Upon the defeat of General Rosecrans at Chickamauga, Grant was sent to repair the disaster, and, on Nov. 25, he defeated General Bragg at Lookout Mountain. This great victory, by which Eastern Tennessee was reduced and Kentucky saved, was perhaps the most brilliant strategic and tactical movement of the war; it placed General Grant on a footing with the ablest generals of any country or of any age. A few months after, March 1, 1864, Grant was raised to the highest military position in the land — under the title of Lieutenant-General he was constituted commander-in-chief of all the armies of the United States. Invested with this authority, the plan of General Grant was to destroy Lee's army. Washington was to be covered from raid, through the Shenandoah, by General Sigel. General Butler was to menace Richmond from the S. Sherman in Georgia was to press his campaign in that department with all vigor, that no reinforcements might be sent to the aid of Lee. General Grant with Meade's army of 150,000 N. of the Rapidan, was to draw Lee's army out of their intrenchments, and either destroy them, or compel them to rush from the menacing of Washington to the protection of their own capital. On the night of Tuesday, May 3, General Grant crossed the Rapidan and entered what is called The Wilderness. By a flank movement Grant was getting into the rear of his foe. Lee rushed from his intrenchments, and endeavored to overwhelm Grant. Then began the most gigantic and terrific campaign recorded in history.

After 11 days of bloody and almost uninterrupted battles, the two armies, on the 12th day of this unparalleled struggle, were still confronting each other, both on the defensive, sternly looking face to face, both prepared for another round. With the first dawn the battle was renewed by a tremendous but vain assault upon the Confederate lines. General Lee, nevertheless, fearing Grant might get between him and Richmond, cutting off his supplies, decided to retire, and Grant succeeded in crossing the North Anna and reached the famous banks of the Chickahominy. Finding the intrenchments of the enemy in his front too formidable to be carried by direct assault, Grant moved his troops to join General Butler at Bermuda Hundred. The performance of this movement in the presence of Lee's army, who at many points were but a few rods from him, is perhaps one of the most brilliant pages of General Grant's military career. Slowly wore away long months of expectation on the part of an impatient people.

Impenetrable to jealousy, he had but one aim, one thought — the grasping of Richmond; but the time was not yet come. With the coming of the spring of 1865, Lee, whose position and resources were quite exhausted by the self-possession and strategy of the Union commander-in-chief, now determined to assume the offensive, and on the night of March 27, 1865, he massed three divisions of his troops in front of Fort Steadman and on Grant's right, and by a sudden rush at daybreak on the following morning succeeded in surprising and capturing that important position. It is claimed by Union soldiers on the ground that they were surprised because, knowing the hopeless condition of the Confederates, they thought the latter were coming to surrender. Before noon of the same day, however, the fort was retaken by the Union troops, with all its guns and 1,800 Confederate prisoners. At this time a battle, which continued until evening, was raging at Hatcher's Run. Three corps were massed under General Sheridan below Petersburg, and on Sunday morning, April 2, flanked the Confederates at Big Five Forks, capturing their intrenchments with 6,000 men. The attack, under General Grant's direction, then commenced along the whole line, and the assault was so successful that on the same night his forces held the Confederate intrenchments from the Appomattox, above Petersburg, to the river below. At 3 o'clock that afternoon General Lee telegraphed to Jefferson Davis that he had been driven from his intrenchments, and that Petersburg and Richmond must be abandoned, which operation was performed that night; and on the next



© U. & U.

GENERAL ULYSSES SIMPSON GRANT (1822-1885)
Eighteenth President of the United States

COPYRIGHT, BY F. E. WRIGHT

FRATERNITY BADGES OF COLLEGES AND SOCIETIES

1. Kappa Alpha; 2. Alpha Delta Phi; 3. Beta Theta Phi; 4. Delta Gamma; 5. Theta Delta Chi; 6. Phi Kappa Sigma; 7. Tau Beta Pi; 8. Kappa Kappa Gamma; 9. Phi Nu Theta; 10. Delta Phi; 11. Sigma Nu; 12. Delta Psi; 13. Sigma Phi; 14. Clio; 15. Zeta Psi; 16. Sigma Chi; 17. Phi Gamma Delta; 18. Skull and Bones; 19. Alpha Tau Omega; 20. Wolf's Head; 21. Sigma Alpha Epsilon; 22. Delta Kappa Epsilon; 23. Kappa Alpha; 24. Kappa Alpha Theta; 25. Phi Beta Kappa; 26. Psi Upsilon; 27. Chi Psi; 28. Alpha Phi; 29. Chi Phi; 30. Alpha Sigma Chi; 31. Phi Delta Theta; 32. Delta Tau Delta; 33. Beta Theta Phi; 34. Scroll and Key; 35. Phi Kappa Psi.

day, April 3, 1865, the National army entered Petersburg, and General Wietzel occupied Richmond. By rapid movements, General Grant cutting off Lee's retreat to Lynchburg and Danville, came up with him at Appomattox Courthouse, and demanded his immediate surrender. The two chiefs met and arranged the details, and on Sunday, April 9, the Army of Northern Virginia capitulated. The whole of General Lee's army was paroled, with permission at once to return home. The officers were granted the privilege of retaining their side-arms, horses and baggage, and each private claiming a horse was permitted to keep it. All other property belonging to the Confederate government in the department was surrendered to the United States.

In 1866 General Grant was promoted to the rank of General, that honor being created especially for him. In August, 1867, on the suspension of Mr. Stanton by President Johnson, General Grant consented to fill the office of Secretary of War ad interim, but the Senate having refused to approve the suspension, General Grant, Jan. 13, 1868, surrendered the office to Mr. Stanton. On June 20, 1868, General Grant was unanimously nominated by the Republicans as a candidate and elected the following November President of the United States, in which capacity he served till 1877, being reëlected at the end of his first term.

On May 17, 1877, accompanied by his wife and one son he sailed from Philadelphia, Pa., for a tour around the world. Not only did he receive a grand farewell from his own countrymen, but when he arrived in the Mersey River, England, the ships of all nations gathered there displayed their flags to greet him. In England a grand reception was accorded him in every city he visited. He was received by Queen Victoria and the Prince of Wales in London, and later visited the Queen at Windsor Castle. After visiting the other countries of Europe and being entertained by all the crowned heads, the United States man-of-war "Vandalia" was placed at his service and on board her he made a cruise of the Mediterranean Sea. He then visited Bombay and Calcutta in India, Hong Kong, Canton and Peking in China, and finally Japan. On Sept. 20, 1879, he arrived at San Francisco, where a magnificent demonstration was made in his honor, and during his route E. he was given public receptions and greeted with every mark of honor wherever he stopped.

He was placed on the retired list of the army by a special act of Congress in March, 1885, with the rank and pay of General. During the last few months of his life he wrote his "Memoirs," which was published soon after his death, on Mount McGregor, near Saratoga, N. Y., July 23, 1885. The construction of a magnificent mausoleum for his remains was begun in Riverside Park, New York city, on April 27, 1891, and it was dedicated on April 27, 1897, in the presence of one of the greatest concourses of people and with one of the greatest parades ever witnessed in the United States. The mausoleum exclusive of steps and portico projections is about 100 feet square at the base and the height 160 feet from the ground and nearly 300 feet from the level of the Hudson river. There is an outer gallery 130 feet above the base from which the country may be seen for miles around.

Julia Dent Grant, widow of General Grant, born in St. Louis, Missouri, Feb. 16, 1826, and married to the general, then a lieutenant, Aug. 22, 1848, died Dec. 14, 1902, and was laid to rest by the side of her distinguished husband in the mausoleum at New York. She was a most devoted wife, and to her was largely due General Grant's ability to grasp the opportunities offered him.

Grant Land, a North Polar region, lying N. of Grinnell Land, between lat. 81° and 83° N., discovered by Hayes, Hall, and Nares, in 1875, and partly explored by Nares, who wintered on its coasts, in the most N. latitude in which the winter had been passed by any ship.

Grant University, a coeducational institution in Chattanooga, Tenn., with departments also in Athens, Tenn.; founded in 1867, under the auspices of the Methodist Episcopal Church.

Granville, George Leveson-Gower, 2d Earl, an English states-

man; born in London, May 11, 1815. In 1880 as foreign secretary under Mr. Gladstone he displayed considerable diplomatic skill in matters relating to the Berlin treaty, the occupation of Tunis, and the revolt of Arabi Pasha in Egypt. He retired with his chief in 1885, but returned once more to office as colonial secretary in 1886, resigning again with his colleagues in August of the latter year. He died in London March 31, 1891.

Grape, the fruit of the vine, or the plant itself. The native country of the vine is the region around the Caspian Sea, extending through Armenia as far W. as the Crimea. It has been cultivated from the remotest antiquity (Gen. ix: 20). It flourishes in the United States, Turkey, Greece, Italy, Spain, France, Germany, and Great Britain.

Grapeshot, a spherical iron shot, rather less than half the diameter of the bore of the piece for which they are intended, and put up in stands consisting of three tiers of three shot each; the stand has a circular cast-iron plate at top and bottom, connected by a bolt and nut.

Graphite, a hexagonal mineral, crystallizing in flat six-sided tables. Color, iron-black to dark steel gray, with a metallic luster and a black shining streak. Composition: Carbon, either pure with an admixture of iron, or occasionally of silica, alumina, and lime. It is popularly called black lead, though there is no lead even as an impurity in its composition. The product is used for the manufacture of pencils.

Graphophone, an apparatus for reproducing sound; invented by Charles Sumner Tainter in 1880. It is constructed on the principle of the phonograph, with a main cylinder, coated with wax, which revolves against the point of a needle. This in turn connects with a diaphragm at the end of a tube running from the funnel mouthpiece. When words are spoken into the mouthpiece the vibrations of the diaphragm cause the needle to make a record on the wax cylinder. When the machinery is reversed, the sounds are thrown out in their original form.

Grass, a very extensive and important order of plants, comprising about 250 genera and 4,500 species, including many of the most valuable pasture plants, all those which yield grain, the sugar-cane, bamboo, etc. In its popular use the term grass is chiefly applied to the pasture grasses as distinct from the cereals, etc.; but it is also applied to some herbs which are not in any strict sense grasses at all, rib-grass, scurvy, and whitlow grass.

Grasse-Tilly, Francois Joseph Paul, Count de, a French naval officer; born in Volette, France, in 1723; joined the navy in 1734. He was given command of a French fleet early in 1781 and ordered to aid the Americans. In April of that year he sailed with a fleet of 29 vessels and 3,000 troops for Chesapeake Bay; blockaded the James and York rivers, and landed his troops to prevent the retreat of Cornwallis. In October the combined forces of the Americans and the French compelled the surrender of Cornwallis, and Grasse with other officers received the thanks of the American Congress. He died in Paris, France, Jan. 11, 1788.

Grasshopper, the name of various leaping insects nearly akin to the locusts. They are characterized by very long and slender legs, the thighs of the hinder legs being large and adapted for leaping, by large and delicate wings, and by the wing-covers extending far beyond the extremity of the abdomen. Grasshoppers form an extensive group of insects, and are distinguished by the power which they possess of leaping to a considerable distance, and by the stridulous or chirping noise the males produce by rubbing their wing covers together. They are generally of a greenish color.

Gratacap, Louis Pope, an American scientist; born in Brooklyn, N. Y., Nov. 1, 1851; was graduated at the University of New York in 1869, and at the Columbia School of Mines in 1876; and has been engaged since in making geological and mineralogical investigations.

Grattan, Henry, an Irish statesman; born in Dublin, July 3, 1750; graduated at Trinity College, and went to London to study and practise law. In 1772 he was called to the bar and three years after entered the Irish House of Commons.

He immediately became distinguished in the opposition and infused that spirit into the country, which in two years aroused 80,000 volunteers and produced in 1782 a repeal of the statute of 6th George I., which had enacted that the crown of Ireland was inseparably connected with that of Great Britain; that Ireland was bound by British acts of Parliament when named therein; that the Irish House of Lords had no jurisdiction in matters of repeal; and that the last resort in all cases of law and equity was the British House of Lords. For his share in the acquirement of this concession the Irish Parliament in a burst of national enthusiasm, voted him £50,000 and a house and lands for him and his heirs forever. At the opening of the century when the union was carried Mr. Grattan entered the House of Commons, being elected for Malton, Yorkshire, in 1805, and in the following year for Dublin. Died in London, June 4, 1820.

Gratz, a city and capital of Styria, Austria, 141 miles S. S. W. of Vienna. Of the former fortress, erected on a hill in the center of the town, and dismantled in 1809 by the French, two towers and other remains still exist. The town itself contains several old buildings, as the Late Gothic cathedral (1462), two other Gothic churches (one built in 1283), the ancient castle of the Styrian dukes, the Landhaus, where the nobles of the duchy held their meetings, the university, originally founded in 1586, an armory, palaces of the Styrian nobles, and four monasteries dating from the 16th and 17th centuries. Pop. (1923) 152,731.

Grave Creek, formerly Moundsville, a city and county-seat of Marshall co., W. Va.; on the Ohio river. Moundsville received its name from the Mammoth Mound in the vicinity, one of the largest remains of the mound builders in the United States.

Gravedigger, a name given in Jamaica to a fossorial insect which digs holes in clay in which it lays its eggs, depositing along with them, for the future sustenance of its larvæ, caterpillars and spiders slightly stung, so as to leave them half dead.

Grave Mound, in anthropology, extensive mounds, occurring in various portions of North America, especially in the Ohio and Mississippi valleys, in which aboriginal remains, flint arrow-heads, and pottery are found. These mounds are supposed to have been formed by a race who preceded the Indians in their occupancy of this country, and who are now distinguished only by the indefinite name of Mound Builders.

Gravel, small pebbles, stones, or fragments of stone, intermixed with sand, loam, clay, flints, etc., formed by the action of water upon disintegrated portions of rock.

In pathology, the presence of minute concretions in the urine.

Gravelines, a town in the department of Nord, France. Considerable historical interest is attached to the place, as the scene of Egmont's victory over the French (1558), and the place off which the English dispersed the Armada (1588). Pop. 5,898.

Grave Post, a board fixed at the head of the graves of many Indian tribes. It usually contains the totem of the deceased; and should the tomb be that of a warrior, devices denoting how often he had been in war parties and the number of scalps he had taken are also placed in it.

Gravesend, a port and borough of Kent, England, on the Thames, 24 miles E. S. E. of London. Gravesend forms the limit of the port of London; and here pilots and custom-house officers are taken on board of vessels going up the river. For centuries its prosperity has depended upon its connection with London.

Graviere, Jean Pierre Edmond Jurien de la, a French military historian; born in Brest, France, Nov. 19, 1812; served with distinction in several military expeditions. His numerous works include, "The Navy of the Ancients and the Campaigns of Alexander"; a great work which places the author in the front rank of military historians. He died in Paris, March 5, 1892.

Graving Dock, a dock into which vessels are floated to have their bottoms examined and cleaned; a dry dock.

Gravitation, in physics, a natural force acting on all material bodies throughout the universe, with the ef-

fect of attracting or drawing them to each other. Hence it is often called the attraction of gravitation. It has been shown that every molecule of one body acts on every molecule of the other. Universal or general gravitation may be divided into celestial and terrestrial gravitation; but when the earth is viewed as a planet the second category disappears in the first.

Gravity, in physics, the terrestrial gravitation, the operation of the law of gravitation on the earth, especially in making heavy bodies fall in all parts of the planet in the direction of the center. Newton and Bressel have shown that in a vacuum a sovereign and a feather will fall with equal speed, though the rate will be very different in the atmospheric air. The weight of a body is proportioned to the attraction which it exerts, hence gravity in many cases means simply weight.

Gray, Asa, an American botanist; born in Paris, Oneida co., N. Y., Nov. 18, 1810. He took his degree of M. D. in 1831, but soon relinquished the practice of medicine, and devoted himself to botany. In 1842 he became Fisher Professor of Natural History at Harvard. In 1873 he retired from the chair, but still retained charge of the great herbarium he had presented to the university in 1864; and in 1874 he succeeded Agassiz as a regent of the Smithsonian Institution. He ranked among the leading botanists of his age, and became an influential supporter of the Darwinian theories of evolution. He died in Cambridge, Mass., Jan. 30, 1888. As a little child Asa Gray drove a horse for the bark mill in a tannery. He went to the country school when three years old. He has a place in the Hall of Fame of New York University.

Gray, Elisha, an American inventor; born in Barnesville, O., Aug. 2, 1835; was educated at Oberlin College. He designed a self-adjusting telegraph relay in 1867 and a little later invented the telegraphic switch and annunciator for hotels, the telegraphic repeater, the private telegraph line printer, etc. In 1876 he claimed the invention of the telephone, but after a notable contest the courts decided in favor of Alexander Graham Bell. In 1893 Professor Gray brought out his telautograph, by which written messages could be transmitted over the telephone and the telegraph. He died Jan. 21, 1901.

Gray, George, an American jurist; born in New Castle, Del., May 4, 1840; admitted to the bar in 1863; Attorney-General of Delaware in 1879–1885; United States Senator (Dem.) in 1885–1899; became United States circuit judge for the Third Judicial District in 1899, member of the Permanent Court of Arbitration under the Hague Convention in 1900, chairman of the Anthracite Coal Strike Commission in 1902, and arbitrator in many labor disputes.

Gray, Horace, an American jurist; born in Boston, Mass., in 1829; admitted to the bar in 1851; associate-justice of the Massachusetts Supreme Court, 1864–1873, and chief-justice 1873–1881, when he was appointed to the United States Supreme Court. Died Sept. 15, 1902.

Gray, John Edward, an English naturalist; born in Walsall, England, Feb. 12, 1800; made the zoölogical collections of the British Museum the most complete in the world; died 1875.

Gray, Joshua, an American inventor; born in Sheffield, Vt., May 4, 1824; received a common school education; became connected with the Manchester (N. H.) Locomotive Works, and while there designed a system of quick-steaming boiler tubes. His other inventions include the rubber-tipped lead pencil, a breech-loading magazine rifle, a seven-armature dynamo, a railroad signal, and a sewing machine shuttle. He died in Medford, Mass., June 25, 1899.

Gray, Thomas, an English poet; born in London, England, Dec. 26, 1716. He was educated at Eton, and Peter House, Cambridge, and entered at the Inner Temple, with a view of studying for the bar. He occupied himself with literary work which he was slow to publish. It was only in consequence of the printing of surreptitious copy, that, in 1751, he published his "Elegy Written in a Country Churchyard." He declined the office of laureate on Cibber's death in 1757; and the same year published his odes "On the Progress of Poesy" and "The Bard." In 1768 the Duke of

Grafton presented him with the Professorship of Modern History at Cambridge. He died in Cambridge, England, July 30, 1771.

Gray, Thomas, an American educator; born in Lochgelly, Scotland, Feb. 4, 1850; was graduated at Glasgow University in 1878; instructor of electric engineering in the Imperial College of Engineering, Tokio, Japan, in 1879–1881; and represented the engineers, Lord Kelvin and Prof. Fleming Jenkin during the manufacture and placing of the Mackay-Bennett cable. Later he was made director of the Department of Mechanics and Electrical Engineering in the Rose Polytechnic Institute, of Terre Haute, Ind. He died Dec. 19, 1908.

Graydon, James Weir, an American inventor; born Jan. 18, 1848; was graduated at the United States Naval Academy; served throughout the Civil War in the Union army under Sherman and Grant; was later promoted lieutenant in the navy, and resigned. His inventions include a dynamite gun; the gigantic wheels; an aerial torpedo; a system of torpedoes; and a railway carriage heater.

Grayling, a genus of fresh-water fishes in the salmon family, distinguished from trout, etc., by the small-

GRAYLING.

er mouth and teeth, and by the long, many-rayed dorsal fin. The genus is represented by five species inhabiting clear streams in North America, Europe and Asia.

Gray Owl, the tawny-owl of North America.

Gray's Inn, one of the four Inns of Court, in London.

Gray's Peak, a peak in the Colorado range, in Colorado, and one of the highest in the Rocky Mountains. Its height is 14,341 feet.

Great Basin, a remarkable triangular plateau of North America, occupying the W. portion of Utah and nearly the whole of Nevada, as well as a section of Oregon and California, and extending at its N. E. angle into Idaho. It is bounded on the W. by the Sierra Nevada, and on the E. by the Wahsatch Mountains. The base of the triangle, in the N., is some 500 miles from E. to W.; it extends from N. to S. for nearly 800 miles, and its area is slightly greater than that of France. It is girdled round on every side by high mountains, and traversed throughout by numerous ranges, frequently parallel, yet as often irregularly blending or crossing; the valleys are usually sinks, the chief drainage center being Great Salt Lake and the Humboldt and Carson sinks, at about the same elevation. The plateau is nearly destitute of trees, and in general only the upper parts of the valley are clothed with desert shrubs, their lower portions often being occupied either by bodies of water or by a muddy bottom covered with several inches' depth of alkaline salts left by evaporation.

Great Eastern, an English iron steamship, before the "Celtic," the largest vessel constructed, built (1854–1858) at Milwall, on the Thames, for the Eastern Steam Navigation Co.; length 680 feet; breadth, 82½, or, including paddle-boxes 118 feet. From the first her career was unfortunate, the launching process alone lasting three months and costing $300,000. After several unremunerative trips to New York she was employed first as a troopship, and then as a cable-laying ship, for which her size and steadiness specially qualified her. Various attempts were afterward made to utilize her, but she at last came to be a mere holiday spectacle, and was broken up in 1888.

Greater Britain, the entire territory, subject to the English crown, including the colonial dependencies of the British Empire; in area these many times surpass the mother country. See British Empire.

Great Fish River, (1) Great Fish river, or Back's river, in North America, enters an inlet of the Arctic Ocean in lon. 95° W., after passing through Lake Pelly. (2) In Cape

Colony, a river rising in the Sneeuwberg Mountains, and entering the Indian Ocean.

Great Lakes, the name given to that chain of lakes lying on the N. borders of the United States; they include Lakes Superior, Michigan, Huron, Erie, and Ontario.

Great Salt Lake, in Utah, a sheet of water stretching along the W. base of the Wahsatch Mountains, about 4,200 feet above the sea, forming a principal drainage center of the Great Basin. Well-marked shore-lines on the mountains around, reaching 1,000 feet higher than the present level, show that the lake had formerly a vastly greater extent. Great Salt Lake is over 80 miles long and from 20 to 32 broad, but for the most part exceedingly shallow. It contains several islands, the largest, Antelope Island, about 18 miles long. Great Salt Lake has no outlet save evaporation, and its clear water consequently holds at all times a considerable quantity of saline matter in solution; in 1850 the proportion was 22.4 per cent., in 1859 it was only 14.8. Between these dates the annual tribute exceeded the evaporation, and the area of the lake increased from 1,700 to 2,360 square miles; more recently, it has again been slowly receding. Several species of insects and a brine-shrimp have been found in its waters, but no fishes; large flocks of water-fowls frequent the shores. The first mention of Great Salt Lake was by the Franciscan friar Escalante in 1776, but it was first explored and described in 1843 by Fremont. A thorough survey was made in 1840–1850 by Capt. Howard Stansbury, U. S. A.

Great Slave Lake, a body of water in the Canadian Northwest Territory (62° N. lat.); greatest length about 300 miles, greatest breadth 50 miles. It discharges by the Mackenzie river into the Arctic Ocean.

Great South Bay, an arm of the Atlantic Ocean on the S. coast of Suffolk co., Long Island, N. Y.; 50 miles long, from 1½ to 5 miles wide. Great South Beach, which is about 35 miles long and has Fire Island Lighthouse on the W. extremity, separates it from the ocean.

Greaves, armor for the legs made of metal, and lined with some soft material. They were fastened with straps and ankle rings, and were richly ornamented and embossed.

Grebe, the common name of the birds characterized by a straight conical bill, no tail, tarsus short, toes flattened, separate, but broadly fringed at their edges by a firm membrane, and legs set so far back that on land the grebe assumes the upright position of the penguin. The geographical distribution of the genus is very wide, these birds haunting seas as well as ponds and rivers. They are excellent swimmers and divers, feed on small fishes, frogs, crustaceans, and insects. Nine species are North American, some of them (crested grebe, horned grebe) being the same as those of Europe. The great crested grebe is about 21 to 22 inches long, and has been called satin grebe from its beautiful silvery breast plumage, much esteemed as material for muffs.

Grecian Architecture, the styles of architecture which prevailed in Greece and its colonies up to the conquest of the country by the Romans.

Greco-Turkish War, The, a war which took place between Greece and Turkey in 1897. On Feb. 3, 1897, the Turkish troops in Crete wantonly pillaged and massacred a large number of Christians. About 15,000 Greek women and children fled to Greece, where the people had to provide for them. In the meantime the Cretans proclaimed their independence of Turkey, their union with Greece, and appealed to that country for help. This action led King George of Greece to send a small army to occupy the island, a movement which was opposed on the part of the Powers by whom the island was blockaded March 17, 1897. After a demand was made that the Greek troops be withdrawn from Crete, which was not complied with, the Powers landed soldiers and occupied the island. Soon afterward a body of Greek "irregulars" invaded Macedonia, whereupon the Turkish cabinet declared on April 17 that a state of war existed with Greece, and Edham Pasha, commander of the Turkish army, was ordered to take the offensive.

This issue was promptly accepted by Greece, and hostilities were at once begun on the Grecian frontier, which

soon developed into a general cannonading along the entire frontier of Thessaly, while operations were likewise initiated on the sea. The Greeks, fighting their way northward, invaded Turkey and threatened Alassona, while the Turks swept down from Salonica through the mountain passes and invaded Greece, thus forcing the Greeks to abandon Larissa, their principal source of supplies. In the meanwhile the Greek navy was active, having bombarded and destroyed a number of important towns along the Gulf of Salonika. During the latter part of April and the beginning of May the Greeks were mainly victorious. A Grecian army of 12,000, under General Smolenski, repulsed a Turkish force of 14,000, with heavy loss, near Velestino, on April 30, and held in check another movement, May 2.

The tide, however, was soon turned, for on May 5 the Turks, with 50,000 men, compelled an army of 23,000 Greeks to withdraw from Pharsalos. The Greeks now became aware that they could not cope with the constantly increasing Turkish army, and this conviction with the knowledge that the country was without funds, disheartened the soldiers and caused the army to collapse. On May 8 the Powers were informed that the Greek troops would be recalled from Crete, thus signifying that Greece was ready to be guided by the Powers.

On May 11 a joint note was sent to the Greek minister of foreign affairs offering mediation, and on May 12 a request for an armistice was sent to the Turkish government. Four days later that country replied that it would not allow an armistice except on the following conditions: Annexation of Thessaly; an indemnity of £10,000,000; abolition of the capitulations or treaties conferring privileges on Greeks in the Turkish empire; and a treaty of extradition with Greece. These harsh terms met with a protest from all Europe. The Czar of Russia now wrote a personal letter to the Sultan, with the result that hostilities immediately ceased, and on May 20 an armistice for 17 days was concluded.

The question of the cession of Thessaly was referred to a military commission, which recommended no cession beyond the mountain summits on the Turkish frontier, which gave to Turkey a strategic boundary. Negotiations were finally concluded on Sept. 18, when a treaty was submitted to Turkey and Greece. The principal terms of this treaty were that Greece should pay Turkey about $15,000,000; permit a strategic reconstruction of the Thessalian frontier in Turkey's favor; and accept international control in financial matters. This treaty was signed at Constantinople, Dec. 4, 1897.

Greece, Ancient Greece, known to its own people as Hellas. Ancient Greece was intermediate in the history of human progress, between Egypt and Rome. It was not great enough for a world-power, and it may be said broadly that only through Rome has Greece left an impress on modern times. The people of Greece achieved a high degree of culture, in some respects not surpassed to this day, although their democracies were in no instance of the modern type, but only civic organizations, holding the rural districts and residents in an inferior and more or less servile position. Athens, the seat of culture, eventually fell, after a long struggle with Sparta, the seat of military power, where everything was subordinated to the fighting element; and both states, as well as the other commonwealths of Greece, were so weakened by the conflict that they became easy prey to Macedon under Philip and Alexander. The most precious gifts of Greece to mankind are the examples of heroism which its history offers, and its splendid literature, not surpassed to this day in beauty of thought and imagery. The several states and the greater men of Greece are treated under their respective names. To the Greeks also we owe the development of written language, and examples of the arts of painting and sculpture that have never been surpassed. Physically as well as mentally the ancient Greeks were among the best types of mankind. They never quite rose above the nature-worship of their old mythology, but the teachings of their philosophers show that the idea of one supreme, all-controlling God was taking firm root in the Greek mind at the higher stage of its development, and that the heathen deities were regarded quite generally as creatures of imagination, made sacred chiefly by ancient

and venerable associations, and cherished largely through selfish motives as in the case of the silversmiths of Ephesus and the goddess Diana. But for the stern militarism of Rome, however, Greece, its traditions and its arts, would probably have been overwhelmed in oblivion by the hordes of barbarians who, near the close of the republican period, were driven back to their native forests by the Roman legions, but against whom the degenerate successors of Alexander would doubtless have contended in vain.

HENRY MANN.

Greece, Modern (Greek, Hellas), a kingdom in the S. E. of Europe, corresponding, since the incorporation of Thessaly, very nearly to ancient Greece in the narrower sense; bounded on the N. by Turkey, and on all other sides by the sea — Ionian Sea on the W., the Mediterranean proper on the S., and the Ægean Sea on the E. The mainland forms two chief portions, united by the narrow Isthmus of Corinth, called Northern Greece or Livadia, and the Peloponnesus or Morea. The acquisition of new territories by Greece, obtained as the result of the war with Turkey, 1912–13, and with Bulgaria, 1913, gave the country a total area of 41,933 square miles with an estimated population in 1914 of 4,821,300. Capital, Athens, pop. (1907) 167,479.

As first drawn up by the allied powers in 1830 the Greek monarchy was nearly absolute, but in 1844 and again in 1864 important modifications were made. As settled by the present constitution the throne is hereditary according to the law of primogeniture in the family of King George. The king must be a member of the Greek Church. He attains his majority at the age of 18. The legislative authority is vested in a single chamber, called the Boule, the members of which (proportioned in number to the amount of the population) are elected for four years by ballot by manhood suffrage. The executive power is exercised by the king through a responsible ministry. The Greek Church alone is established, but all other forms of religion enjoy toleration. The highest ecclesiastical authority, subject to the king, is vested in a permanent synod which sits at Athens and consists of five members appointed by the king from the highest dignitaries of the Church. There is 1 metropolitan, who has his seat in Athens, 21 archbishops, and 29 bishops, who are presented and ordained by the synod, and confirmed and invested by the king.

Every male Greek on attaining the age of 21 years is liable to military service, his term being 2 years with the colors, 10 with the reserve, 8 in the national guard, and 10 in the national guard reserve. The army in 1900 numbered about 25,000 on a peace footing, expanding easily to 82,000 in time of war. The navy in 1900 consisted of 5 armor-clad ships, 51 torpedo boats, besides several unprotected gun vessels and cruisers.

The population contains a considerable intermixture of foreign stocks, among which the Albanese, or Arnauts, are most numerous; but the great majority, though not without some taint in their blood, are of genuine Greek extraction, and both in physical and mental features bear a marked resemblance to their celebrated forefathers. It is true that the degrading bondage to which they were subjected for centuries has sunk them far below their natural level, and too often substituted sycophancy and low cunning for the intellectual superiority which, in earlier and better times, displayed itself in immortal productions of the chisel and the pen; but that the original elements of greatness still exist has been proved by the noble struggles which they have made for independence. The educational system of Greece, organized in 1834 by George Gennadius, one of the leaders of the war of independence, is very complete. There are three grades of schools, the demotic or primary national schools, the Hellenic or secondary grammar schools, and the gymnasia, in which, it is asserted, the range and the level of the teaching are much the same as in a German gymnasium or in the upper parts of our public schools. In all three grades of schools education is gratuitous, and in the primary schools it is compulsory on all children between 5 and 12. There is a university at Athens, attended by nearly 3,000 students, many of whom come from districts under the rule of the Sultan. Thus far, however, education seems to

be actually diffused among the people only to a limited extent, though the numbers that receive a university education are so great that many such young men find themselves without any proper sphere of employment, and are obliged to adopt the career of politician and place-hunter. Many of these are now, however, said to be finding better ways of turning their education to account through the rapid development of trade and industry. The national dress of the Greeks resembles the Albanian costume. In the men it consists of a tight jacket, generally scarlet, a white linen kilt in numerous folds, a bright-colored sash round the waist, and embroidered gaiters; in the women it consists of a vest or jacket fitting close to the shape, and a skirt, on the head a kind of fez or skull-cap.

From the year 1715 till 1821 the Greeks were subject to the domination of the Turks. In 1770, and again in 1790, they made attempts at insurrection, which, however, were speedily frustrated. In the early years of the 19th century a secret society was formed for the purpose of effecting their liberation from the galling yoke, and in 1821 they found an opportunity of breaking out into another insurrection which in the end proved successful. In that year Ali, the Pasha of Janina, revolted against the Sultan Mahmoud II., and secured the aid of the Greeks by promising them their independence. The rising of the Greeks took place on March 6, under Alexander Ypsilanti, and on Jan. 1, 1822, they published a declaration of independence. In the same year Ali was assassinated by the Turks, but the Greeks nevertheless continued the struggle that they had begun, and in which they were encouraged by the sympathy of nearly all the nations of Europe. Among the most distinguished of their leaders were Marcos Bozzaris, Capo d'Istria, Constantine Kanaris, Kolocotroni, Miaulis, Mavrocordato, Mavromichaelis, etc. In 1823 they were joined by Lord Byron, who, during the last year of his life, did all in his power to further their cause by his wealth, as well as by his active efforts on their behalf. Unfortunately he died in the April of the following year. In 1825, the Turks having called to their aid Mehemet Ali, the Pasha of Egypt, the latter sent his son, Ibrahim Pasha, whose talents secured them the success that they had hitherto been unable to attain. Tripolitza, the capital of the Morea, was taken, as was also Missolonghi, in spite of the valor of the Suliote mountaineers. It was about this time that the Greek patriots received the aid of the English admiral Lord Cochrane, who organized their fleet, and of the French Colonel Fabvier, who instructed their army in the system of European tactics. In spite of this, however, the Turks continued to triumph everywhere, and resisted all the pressure that was put on them by other European powers to make concessions.

A treaty was then concluded at London (July 6, 1827) between Great Britain, France, and Russia, for the pacification of Greece, and when the mediation of these three powers was declined by the Sultan, their united fleets, under Admiral Codrington, attacked and annihilated the Turkish fleet off Navarino, Oct. 20, 1827. In the beginning of the following year (1828) Count Capo d'Istria became president of the State, and later on in the same year Ibrahim Pasha was forced to evacuate Greece. At last, on Feb. 3, 1830, a protocol of the allied powers declared the independence of Greece, which was recognized by the Porte on April 25, of that year. The new member of the States of Europe received from the allies a monarchical form of government, and offered the crown to Leopold, Prince of Saxe-Coburg, and when he refused it, to Otho, a young prince of Bavaria. The latter accepted the offer, and was proclaimed King of the Hellenes at Nauplia on Aug. 30, 1832. The power of the king was at first almost absolute, and his arbitrary measures, and more especially the preponderance which he gave to Germans in the government, soon made him unpopular. At the same time the finances of the kingdom were in a very embarrassed condition, and a general uneasiness prevailed. In 1843 a rebellion took place, after which a constitution was drawn up. But Otho was after that no more popular than before, and after the outbreak of another rebellion in February, 1862, he saw himself compelled to abdicate the throne (Oct.

24). A provisional government was then set up at Athens, and the National Assembly, after declaring that the throne had been forfeited by Otho, offered it in succession to Prince Alfred of England and Prince William George of Denmark. The latter accepted it, and on March 30, 1863, was proclaimed King George I.

In 1864 an addition was made to the small kingdom by the annexation of the Ionian Islands which had hitherto formed an independent republic under the protection of Great Britain. From the first Greece has been watching for an opportunity of extending its frontier N., so as to include the large Greek population in Thessaly and Epirus. In January, 1878, during the Russo-Turkish War, Greek troops were moved into Thessaly and Epirus to the assistance of their brethren who had risen there, but on the remonstrance of England these troops were withdrawn. The treaty of Berlin made no definite provisions for any extension of the Greek territory, but in 1881 Turkey had to cede about 5,000 square miles of Thessaly to Greece. After the union of Eastern Rumelia with Bulgaria in 1885, war with Turkey was only prevented by the Great Powers. In 1896 an insurrection of the Christians in Crete led to the interference of Greece and to war with Turkey, and Greece obtained reasonable terms of peace only through the efforts of the Great Powers. In 1908 another agitation for annexation to Greece was suppressed in Crete; in 1911 the Powers vested the government of that island in a commission under King George; the same year Greece adopted a new constitution; and in 1912 joined the other Balkan States in war against Turkey.

In November, 1914, Greece, with the consent of the Great Powers, occupied North Epirus, Albania, and in March, 1916, formally took possession of the district. The outbreak of the World War plunged Greece into a sea of intense perplexity. King Constantine was wedded to Princess Sophia, sister of Emperor Wilhelm of Germany, and his sympathies for the Central Powers were above concealment. Events moved speedily. Revolutions broke out in various sections.

In 1917 King Constantine abdicated. By election he was re-established in January, 1921. Again abdicated in 1922, and died in 1923. Succeeded by son as King George II, who in turn was exiled in 1924, and a republic was again proclaimed by decree of May 1, 1924.

Greek Church, the Eastern Church, that of the old Eastern empire, which prior to the Turkish conquest, had its metropolis at Constantinople, as distinguished from the West Church, which had its capital at Rome; the church of the people speaking the Greek language rather than that of the Roman nation.

The first variance between the East and the West arose in the 2d century regarding the time of keeping Easter. The disputes which succeeded were chiefly as to personal dignity. As long as Rome was the metropolis of the empire, the Bishop of Rome had indisputably the most important see in the Church; but when, on May 11, 330, Constantine removed the seat of government to Byzantium (Constantinople), the bishop of the new metropolis became a formidable rival to his ecclesiastical brother at Rome. In the second General Council, that of Constantinople, 381, the Bishop of Constantinople was allowed to sit next to the Bishop of Rome; by the 28th canon of the Synod of Chalcedon, 403, he was permitted to enjoy an equal rank. In 588, John, Patriarch of Constantinople, assumed the title of œcumenical or universal bishop, for which he was denounced by Pope Gregory the Great. The last General Council in which the Churches of the East and the West were united was the Seventh, or Second Council of Nice, 787. The feud continued through the 9th and on to the 11th century. In the 13th an effort was made by Michael Palæologus to promote a reunion of the two great Churches at the Council of Florence, but all was in vain. They have remained separate till now. Efforts are said to be on foot looking to the union of the Greek and Roman Churches.

The Bible as now interpreted by tradition is the rule of faith. Regarding the Trinity, the divinity of Christ, the Atonement, and the work of the Holy Spirit, the Greek Church holds

the ordinary faith of Christendom. Regarding what is termed the procession of the Holy Ghost, the East holds that he proceeded from the Father only, while the Churches of the West believe that he did so from the Father and Son (fifth of the Thirty-nine Articles). With regard to the decrees of God, the Greek tenets are what would now be called strongly Arminian. Worship of a superior or of an inferior kind is rendered to the Virgin Mary, to saints and angels. The secular clergy are enjoined to marry once, and with a virgin. Images are in use. The communion is administered even to the laity in both kinds. The doctrine of purgatory is not accepted. Baptism is by immersion, and is followed by chrism or anointing. The government is episcopal. Excepting the Church of Rome, the Greek Church is the largest Christian organization, though it would be only the third if the several Protestant Churches were united into one. It is composed of eleven Patriarchates, of which that of Russia is by far the largest and most influential. It is the most numerous Christian body in the Turkish empire, and has a patriarch at Constantinople. It has many adherents also in the heterogeneous Austrian empire. The Russian Emperor Nicholas delighted to call it "the orthodox faith."

Greek Fire, a composition supposed to have been of pounded resin or bitumen, sulphur, naphtha (the principal ingredient), and probably niter, with which, from about 673 A. D. onward the Greeks of the Byzantine empire were wont to defend themselves against their Saracen adversaries. It was poured out, burning, from ladles on besiegers, projected out of tubes to a distance, or shot from balistæ, burning on tow tied to arrows. At Constantinople the process of making Greek fire was kept a profound secret for several centuries. Combustibles with a similar aim were used at the siege of Charleston in 1863, composed of sulphur, niter, and lampblack, and naphtha in shells was also tried.

Greeley, Horace, an American journalist; born in Amherst, N. H., Feb. 3, 1811. About 1825, his parents having removed to Vermont, Horace, who had always been a lover of books, obtained employment as an apprentice in a printing office for five years. He learned the business rapidly, became an accurate compositor; and later was intrusted with a portion of the editorial work on the "Northern Speculator" till the paper was suspended, when he was released from his apprenticeship, and worked with his father on the farm. He later decided to seek his fortune in New York, and arrived there in August, 1831, and secured occasional work as a journeyman printer in various offices. In 1834, in partnership with Messrs. Winchester and Gibbett, he started "The New Yorker," a weekly literary journal, which, after several years' trial proving unprofitable was abandoned, and in 1841 he commenced the publication of the New York "Tribune," a journal which has been eminently successful. In 1848 he became a member of the 30th Congress; in 1851 he visited Europe, and was chosen chairman of one of the juries of the Great Exhibition in London, and afterward published an account of his travels. He assisted his brother-in-law in editing "A Political Text-book"; and wrote "Glances at Europe," "Overland Journey to San Francisco," "Essays Designed to Elucidate the Science of Political Economy," "What I Know of Farming," "Hints Toward Reforms," "History of the Struggle for Slavery Extension" (1856); "The American Conflict" (1864–1866); "Recollections of a Busy Life" (1868). He ardently supported the Union cause during the Civil War. In 1872 he was nominated by the Democratic party a candidate for the presidency in opposition to General Grant, but he failed to be elected. His strong constitution became impaired by excessive toil and excitement. The loss of his wife, who was a hopeless invalid many years, served to complete the fatal work. He died in Pleasantville, Westchester Co., N. Y., Nov. 29, 1872.

Greely, Adolphus Washington, an American Arctic explorer; born in Newburyport, Mass., March 27, 1844. He served as a volunteer through the war of 1861–1865, and shortly after its conclusion entered the regular army as lieutenant, and in 1868 was placed on the signal service. In 1881

he was selected to conduct the American expedition to the head of Smith Sound, for the purpose of carrying on observations in pursuance of the international scheme arranged at Hamburg in 1879. He and the survivors of his party were rescued in June, 1883, when at the point of perishing from starvation, after spending three winters in the Arctic regions. Their sufferings were so extreme that some of the party had even been reduced to eating the bodies of the dead. Lieutenant Lockwood of this expedition traveled to within 396 miles of the geographical pole, the farthest point N. hitherto reached. In 1887 Greely was appointed chief of the signal service, with the rank of a Brigadier-General. He wrote "Three Years of Arctic Service."

Green, Andrew Haswell, born at Green Hill, Worcester co., Mass., Oct. 6, 1820; a lawyer by profession, and known as "The Father of Greater New York," on account of his leading part in bringing about the consolidation of the former cities, towns and villages which now constitute New York city. Mr. Green was the greatest municipal builder that America has produced, and he extended his activities in some degree also to the State, having virtually created the State Reservation at Niagara Falls. Entering prominently into public life about the middle of the 19th century he had complete charge, as Comptroller of the Park, of the construction of Central Park, New York, disbursing many millions in the work, without a discrepancy of even one cent. He then virtually laid out the magnificent upper West Side of New York, with its broad avenues and parks, and with wonderful foresight of the growth of population. His known integrity led to his selection as Comptroller of the city after the fall of the Tweed ring, and during an arduous struggle of about five years he brought civic finances from chaos to order and prosperity. He originated the Museum of Art, the Natural History Museum, and the Zoölogical and Botanical Gardens. He labored unceasingly for consolidation, which was accomplished in 1897, and he continued at an advanced age, while managing the Ogden estate and other great interests to devote his energies largely to the public welfare. The New York Public Library, in which the Astor, Lenox and Tilden libraries are consolidated, owes its origin to Andrew H. Green, who was always deeply interested in education, and who from the first urged and provided for the largest possible use of Central Park by children of the public schools. Mistaken for another man, he was assassinated by a negro, Nov. 13, 1903.

Green, Anna Katherine, the maiden name and pseudonym of Mrs. Rohlfs, an American author; born in Brooklyn, N. Y., Nov. 11, 1846. She graduated at Ripley (female) College, Poultney, Vt., 1867. Her novels are popular detective stories.

Green, John Richard, an English historian; born in Oxford in 1837; received his early education at Magdalen College School and gained a scholarship at Jesus College. Immediately after taking his degree in 1860 he was appointed curate of St. Barnabas, King Square, in the East End of London, and in 1866 to the vicarage of St. Philip's, Stepney. While still continuing his historical studies he never neglected his parish duties—duties made infinitely more arduous by the visit of the cholera in 1868. Soon after that year, however, the state of his health compelled him to resign his living, and he was appointed to the post of Lambeth librarian by Archbishop Tait. His work as librarian occupied but little of his time, and he now collected and digested the materials for a projected history, which was completed and published in 1874 under the title of "A Short History of the English People." The author recast it on a larger scale, the new book appearing at intervals between 1877 and 1880 in 4 vols. In recognition of his literary ability his college at Oxford made him an honorary fellow, and the University of Edinburgh gave him the degree of LL. D. In 1881 was published his last important work, a volume on the beginnings of English history, entitled "The Making of England," which is one of the most valuable works of its kind in the language. In spite of repeated winter visits to the Continent he never recovered sound health, and on May 7, 1883, he died in Mentone.

Green, Seth, an American pisciculturist; born in Irondequoit, N. Y., March 19, 1817. To him is due the entire credit of having been the first to make the reproduction of shad possible. The Seth Green shad-hatching box was devised by him in 1867, and by its use the Connecticut river was restocked. In 1870 he became superintendent of the State hatchery at Caledonia, which position he held till his death in Rochester, N. Y., Aug. 20, 1888.

Green, William Henry, a clergyman and author; born in Groveville, N. J., Jan. 27, 1825; was graduated at Lafayette College in 1840 and at the Princeton Theological Seminary in 1846; was ordained in the Presbyterian Church in 1848; was made Professor of Oriental and Old Testament Literature at Princeton Theological Seminary in 1851; and was chairman of the Old Testament Committee of the Anglo-American Bible Revision Committee. In 1868 he declined the presidency of Princeton College. He died in Princeton, N. J., Feb. 10, 1900.

Green, William Mercer, an American clergyman and author; born in Washington, N. C., May 2, 1798; was graduated at the University of North Carolina in 1818; was ordained in the Protestant Episcopal Church; became Professor of Belles-Lettres in the University of North Carolina in 1837; and was consecrated first bishop of Mississippi in 1850. He died in Sewanee, Tenn., Feb. 13, 1887.

Green, the color of growing herbage; the color of the solar spectrum between blue and yellow; a secondary color composed of the primaries blue and yellow in different proportions.

Greenback Party, in the United States, called by its members the Independent National party, was organized in 1876, and was the outgrowth of the Granger and Labor Reform movements. Its convention at Indianapolis in May, 1876, "demanded the unconstitutional repeal of the Specie Resumption Act on Jan. 14, 1875"; urged the issue of United States notes as a circulating medium, and the suppression of bank paper; and protested against the further issue of gold bonds, and the purchase of silver to replace the fractional currency. Peter Cooper was nominated for President, and received 81,740 votes. In 1880 its candidate was James B. Weaver, who received 306,305 ballots. It has never gained any electoral votes. In 1884 the party indorsed the nomination of Benjamin F. Butler by the People's party, which polled 175,370 votes.

Green Bay, city, port of entry, and capital of Brown county, Wis.; on Green bay, the Fox river, and the Chicago & Northwestern and other railroads; 113 miles N. of Milwaukee; is bisected by the river; has an excellent harbor, large commerce in lumber, grain, fish, and manufactures, railroad repair shops, canneries, flour and planing mills, and engine and boiler works; and is the seat of a State Reformatory and Orphans' Home. Pop. (1920) 31,017.

Greene, Albert Gorton, lawyer and poet; born in Providence, R. I., 1802; died 1868. He wrote the famous poem "Old Grimes."

Greene, Christopher, military officer; born in Warwick, R. I., in 1737; fought at Bunker's Hill; defended Fort Mercer against the Hessians; and was killed on the Croton river, N. Y., in 1781.

Greene, Francis Vinton, an American military officer; born in Providence, R. I., June 27, 1850. He graduated from West Point in 1870, and served till 1886, when he resigned with the rank of captain. In the Spanish-American War (1898), he was commissioned a Major-General of volunteers and served principally in the Philippines.

Greene, George Sears, an American military officer; born in Warwick, R. I., May 6, 1801; was graduated at the United States Military Academy in 1823; resigned from the army in 1836, and engaged in civil engineering. In January, 1862, he was appointed Brigadier-General of volunteers, and from that time served through the Civil War, participating in many important actions. He was chief engineer of the public works in Washington, D. C., in 1871–1873; and planned the sewer system of that city. He died in Morristown, N. J., Jan. 28, 1899.

Greene, George Washington, an American historian, grandson of Gen. Nathanael Greene; born in East Greenwich, R. I., April 8, 1811. He died in East Greenwich, R. I., Feb. 2, 1883.

Greene, Nathanael, an American military officer; born in Warwick co., R. I., May 27, 1742. His school education was of the simplest and most limited character; but by his own industry he soon acquired a tolerable knowledge of the principal branches of an English education and made some progress in the study of law. On the commencement of the troubles between the colonies and Great Britain he volunteered as a private (1774); but the following year he was chosen, by the Assembly of Rhode Island, general of the contingent furnished by that colony to the army near Boston. He was made Major-General in the Continental army in 1776, and accompanied Washington on his brilliant expedition into New Jersey near the close of the same year. He performed a prominent part in the disastrous battle of Germantown (1777), on which occasion his courage and skill did much toward retrieving the reputation of the American arms. In 1778 he was appointed quartermaster-general and for more than two years he fulfilled the duties of that position with faithfulness and ability. After the defeat of General Gates (1780) at the battle of Camden, S. C., he was appointed to the command of the S. army, which he found demoralized and in a state of utter destitution. His presence soon restored the confidence of the troops. Through his skillful strategy, even his reverses produced the fruits of victory. In March, 1781, he was defeated by Lord Cornwallis in the hard-fought battle of Guilford Court House, but the English general derived no permanent advantages from this success. Cornwallis having retreated into Virginia. Greene defeated, after a severe action (September, 1781), the forces of Colonel Stewart at Eutaw Springs, and thereby put an end to the British power in South Carolina. This was the last battle in which General Greene was engaged, though he held his command till the end of the war. He died from the effect of a sunstroke at Mulberry Grove on the Savannah river, June 19, 1786.

Green Ebony, an olive-green wood obtained from a South American tree used for round rulers, turnery, marquetry work, etc., and also much used for dyeing.

Greenland, an extensive island belonging to Denmark; on the N. E. of the continent of North America, from which it is separated by Davis Straits, Baffin Bay, and Smith Sound; area 46,740 square miles; pop. 10,516, chiefly Eskimos. In June and July the sun is constantly above the horizon, the ice on the coast is broken up and floats S. and a few small lakes are opened; but the short summer is followed by a long and dreary winter. The interior, which is lofty, is uninhabitable, and all the villages are confined to the coasts, which are lined with numerous islands and deeply penetrated by fiords. Cultivation is confined to the low shores and valleys, where grassy meadows sometimes occur with stunted shrubs and dwarfed birch, alder, and pine trees. Attempts to raise oats and barley have failed, but potatoes have been grown toward the S. extremity. Turnips attain the size of a pigeon's egg, and cabbages grow very small. The radish is the only vegetable which grows unchecked.

The inhabitants are largely dependent on hunting and fishing. Whale blubber and seal oil are used as fuel. The land animals are the Eskimo dog, the reindeer, the polar bear, the Arctic fox (blue and white), the ermine, the Arctic hare, and the musk ox. Among the amphibia the walrus and several species of seal are common. The seas abound in fish, the whale and cod fisheries being of special importance. Seafowl are abundant in summer, and largely killed. The chief mineral product is cryolite, but graphite and miocene lignitic coal are also found. Oil, eider down, furs, and cryolite are exported. For administrative purposes Greenland, or rather its coast, is divided into two inspectorates of North and South Greenland. The residences of the inspectors are at Disco Island and Godhaab, but the most populous district is Julianshaab.

Greenland was discovered by an Icelander named Gunnbjorn about 876 or 877, and was colonized from Ice-

land about the end of the 10th century. In the reign of Elizabeth, Frobisher and Davis rediscovered the coast, but nothing was done to explore it till the Danish government in 1721 assisted Hans Egede, a clergyman, to establish a European mission settlement, Good Hope (Godhaab), which was successfully carried on by him and his son. Whale fisheries were established on the coast by the English and Dutch about 1590. The interior of the country was first crossed from E. to W. by Nansen in 1888.

Greenlet, a species of small birds, so called from having much green or olive in the colors of their plumage. They arrive in the United States from South America and the West Indies about the month of May, departing again in August.

Green Mountain Boys, a name applied to the male inhabitants of Vermont, from the chief range of mountains in the State, and used especially in referring to regiments from Vermont in the Revolution and the Civil War.

Green Mountains, a considerable mountain range commencing in Hartford co., Conn., and extending N. through Massachusetts and Vermont into Lower Canada. Length, about 240 miles. Their greatest elevation is in Vermont, where Mount Mansfield, or North Peak, rises to a height of 4,389 feet. The slopes are covered on the disappearance of the snow in spring with fine pastures of rich green grass, which may have given to the mountains their name, though this is commonly referred to the growth of evergreen forest trees, as the hemlock, balsam, fir, spruce, pine, cedar, etc., which abound upon the poorest land and along the margin of the streams.

Green Mountain State, a popular name for the State of Vermont, from its being crossed by the Green Mountains.

Greenough, Horatio, an American sculptor; born in Boston, Mass., Sept. 6, 1805. He studied for two years at Harvard, and from 1825 spent the greater part of his life in Italy. His principal work was the colossal statue of Washington in front of the National Capitol. He died in Somerville, Mass., Dec. 18, 1852.

Greensboro, city and capital of Guilford county, N. C.; on the Southern railroad; 48 miles S. W. of Danville, Va.; has iron and steel works, cotton and woolen mills, and tobacco factories; contains the State Normal and Industrial College, the State Agricultural and Mechanical College (colored), Bennett College (colored), and Greensboro Female College; and 5 miles distant is the historic Guilford battlefield, now a beautiful park. Pop. (1920) 19,861.

Greenville, city and capital of Greenville county, S. C.; on the Reedy river and the Southern and other railroads; 141 miles N. W. of Columbia; is an important cotton market; has large cotton and cottonseed oil mills; and is the seat of Furman University (Bapt.), Greenville Female College, Greenville College for Women, and Chicora College (Pres.). Pop. (1920) 23,127.

Greenwich, a borough of the city of London, England, 6 miles S. E. of London bridge. It contains a magnificent hospital for invalid seaman, built by Sir Christopher Wren (1696), and a Royal Observatory, erected by Charles II. The longitude of all English charts and maps is reckoned from this observatory, and the captains of ships take their time as given at 1 p. m.

Greenwood Cemetery, the principal necropolis of New York city and neighborhood, in East Brooklyn, L. I., E. of Gowanus Bay; area 475 acres. It occupies a picturesque site, and is laid out so handsomely as to make it almost without a rival in the world. From its heights the waters of New York Bay may be seen on the one hand and the broad expanse of the Atlantic on the other. There are 20 miles of roadway and more than 25 miles of footpaths. Its monuments are numerous and costly. The main gateway is adorned with four magnificent sculptures in alto relievo, representing four scenes in the resurrection.

Greenwood, Grace. See LIPPINCOTT.

Greer, David Hummel, American prelate; succeeded Bishop Henry C. Potter, Protestant Episcopal Diocese of New York in 1909; born March 20, 1844, at Wheeling, W. Va.; grad-

uated from Washington College, Pennsylvania, 1862; studied theology at the Episcopal Seminary, Gambier, Ohio; was rector of Christ Church, Clarksburg, W. Va., of Trinity Church, Covington, Ky., of Grace Church, Providence, R. I., for sixteen years, and of St. Bartholomew's, N. Y., since 1888. Elected coadjutor bishop, Sept. 30, 1903, and accepted. Had previously declined a coadjutor bishopric of Rhode Island, bishopric of Western Massachusetts, and coadjutor bishopric of Pennsylvania. Died, 1919.

Greer, James Augustin, an American naval officer; born in Cincinnati, O., Feb. 28, 1833; joined the navy in 1848. On April 16, 1863, he commanded the ironclad "Benton" in the fleet of Admiral Porter, when that officer forced his way past the Vicksburg batteries; in 1873 he commanded the "Tigress" in the search of the polar seas for the "Polaris," the wreck of which was found at Littleton Island, North Greenland. He was promoted rear-admiral Apr. 3, 1892; retired Feb. 28, 1895; died June 17, 1904.

Greey, Edward, an English-American story-writer; born in Sandwich, Kent, England, Dec. 1, 1835. After spending several years in Japan he came to the United States in 1868, and engaged in commercial pursuits and literature in New York. He died in New York city, Oct. 1, 1888.

Gregoire, Henri, the most remarkable among the "constitutional" bishops of France; born in Veho, near Luneville, France, Dec. 4, 1750. Educated by Jesuits at Nancy, he took orders, and lectured for some time at the Jesuit College of Pont-a-Mousson. One of the secretaries of the National Assembly, he supported enthusiastically the abolition of the privileges of the nobles and clergy alike, and the civil constitution of the clergy. He was the first of his order to take the oaths, and was elected the first constitutional bishop of the department of Loir-et-Cher. At the blasphemous Feast of Reason, the weak Gobel, constitutional Bishop of Paris, publicly renounced Christianity; but Gregoire faced the infuriated rabble with all the courage of the primitive martyrs, and refused to deny his Master. After the 18th Brumaire he became a member of the Corps Legislatif. His extreme republicanism was highly distasteful to Bonaparte, and it was only after a third attempt that he was appointed member of the Senate. On the conclusion of the concordat between Pius VII. and Bonaparte he ceased to exercise ecclesiastical functions, being unable conscientiously to give the retractations required by the Church. He died in Auteuil, near Paris, May 28, 1831.

Gregorian Calendar, the calendar as reformed by Pope Gregory XIII. in 1582. The Gregorian year is the ordinary year, as reckoned according to the Gregorian calendar.

Gregorian Telescope, the first and most common form of the reflecting telescope, invented by James Gregory in 1663.

Gregory, Patriarch of Constantinople; born in 1730. He studied at Mount Athos; lived as a hermit; was made archbishop at Smyrna, and, in 1795, Patriarch of Constantinople. In 1821, when the Greek insurrection broke out in the Morea, his native country, he became an object of suspicion to the Porte, and when, shortly after, he allowed the family of Prince Morousi to escape from his guardianship, he was seized as he left the church on the first day of the Easter festival and hanged in his robes of office before the church gate.

Gregory I., surnamed the Great, a Pope; born in Rome, about 544. He showed such abilities as a senator that the Emperor Justinus appointed him prefect of Rome, after which he embraced the monastic life in a society founded by himself. He was elected successor to Pelagius II. in 590. Pope Gregory was pious and charitable, had lofty notions of the papal authority, was a reformer of the clerical discipline, and after his death was canonized. His works are comprised in four volumes. He died in 604.

Gregory VII., Hildebrand, son of a carpenter; born in Soano, Tuscany, about 1020. He was the friend and counsellor of Leo IX. and the four succeeding Popes, and on the death of Alexander II. was elected to succeed him in 1073. He obtained confirmation in his election from the Emperor Henry IV., and immediately

applied himself zealously to reform simony and the licentiousness of the clergy. In his view, however, marriage, no less than concubinage, was a sin in them. He menaced the emperor and the King of France, the latter without effect. In 1074 he assembled a council, by which it was forbidden the prelates to receive investiture of a layman; and this was the first step in the quarrel with the emperor, which lasted so many years. Henry, disregarding the papal authority, was summoned to Rome; but he held a diet at Worms and pronounced the deposition of the Pope. To this Gregory replied by procuring the deposition of the emperor and the election of another, Rudolph of Suabia. Henry now promised submission; and in the early winter of 1077 went with his wife and child to Italy. The Pope was at the castle of Canossa, and there, after keeping the penitent Emperor of Germany three days waiting at the gate, he received him and gave him absolution. The terms imposed on him were intolerable, and he soon broke them, made war on Rudolph, and defeated him, set up a rival Pope in Guibert, Archbishop of Ravenna, with the title of Clement III., and after several unsuccessful attempts entered Rome in 1084, had himself crowned emperor by his own Pope. Gregory retired to Salerno where he died May 25, 1085.

Gregory XIII., Buoncompagno, born in Bologna in 1502; succeeded Pope Pius V. in 1572. His pontificate is memorable for the reformation of the calendar which bears his name. Died, 1585.

Gregory, Casper Rene, theologian; born in Philadelphia, Pa., Nov. 6, 1846. A Ph. D. degree, the professorate of New Testament exegesis at Leipzig, Germany, and other academic honors, crowned a brilliant American College course. His exegetical writings are numerous.

Gregory, John Milton, an American educator; born in Sand Lake, N. Y., July 16, 1822. He was State superintendent of public instruction in Michigan in 1858–1863; president of Kalamazoo College in 1863–1867; and president of the Industrial University in Champaign, Ill., in 1867–1880. Died in Washington, D. C., Oct. 20, 1898.

Gregory, St., surnamed Illuminator, the founder of the Armenian Church; born in Valarshabad, Armenia, about 257. From 302 to 331 he was Patriarch of the Armenian Church, but having resigned the patriarchate in favor of his second son Aristaces, Gregory in 331 retired to a cave at the foot of Mount Sebuh in Upper Armenia, where he died in 332.

Gregory, Thomas Watt, an American lawyer, born in Crawfordsville, Miss., Nov. 6, 1861; acquired a collegiate education; was admitted to the bar of Texas in 1885; was special State counsel to prosecute certain corporations for violating anti-trust laws; special assistant Attorney-General of the United States in investigation and prosecution of the N. Y., N. H. & H. R. R. Co. for violation of the Sherman Act; and became U. S. Attorney-General Aug. 29, 1914.

Gregory of Tours, a Frankish historian; born in Arverna (now Clermont), Auvergne, France, about 540. He belonged to one of the most distinguished Roman families of Gaul. His fame rests on his "History, or Annals," the chief authority for the history of Gaul in the 6th century. He died in Tours, France, Nov. 17, 594.

Grenada, an island of volcanic origin in the British West Indies, lying N. by W. from Trinidad; area, 133 square miles; pop. (1921) 75,663. Some of the craters in the central ridge of mountains, rising to 3,000 feet, have been transformed into large lakes; streams and mineral springs abound; there are several good natural harbors. The inhabitants, who are almost all negroes, cultivate cocoa, coffee, and oranges; a little rum is manufactured, and spices and fruits are grown. Grenada has been a crown colony since 1885; previous to that date it had a constitutional government. Columbus was the discoverer of the island in 1498.

Grenfell, George, an English missionary; born about 1845. Next to Livingstone and Krapf, he deservedly ranks among the foremost of Africa's missionary explorers. He made a 2,000 m. track survey of the Upper Kongo 1884-86. He died July 1, 1906.

Grenier, Edouard, a French poet; born in Baumes-les-Dames. Doubs, France, in 1819. He abandoned the

diplomatic service for poetry. His lines on "The Death of President Lincoln" were crowned by the Academy.

Grenoble, a fortified town of France; capital of the department of Isere, on the Isere, 60 miles S. E. of Lyons. It has a cathedral, and a more noteworthy church, Saint-Andre, with the tomb of Bayard. Grenoble existed in the time of Cæsar; and Gratian, who had improved it, changed its name from Cularo to Gratianopolis. Pop. (1921) 77,409.

Grenville, George, an English statesman; born Oct. 14, 1712. In 1763 he succeeded Lord Bute as prime minister, uniting in himself the offices of Chancellor of the Exchequer and First Lord of the Treasury. The most prominent facts of his administration were the prosecution of Wilkes and the passing of the American Stamp Act, which first drove the American colonies to resistance. He resigned the premiership in 1765, and died in London, England, Nov. 13, 1770.

Gresham, Sir Thomas, an English financier; born in 1519; only son of Sir Richard Gresham. In 1569, by his advice, the State was induced to borrow money from London merchants instead of from foreigners, to the great advantage of the mercantile body. Having in 1564 lost his only son, Richard, in 1566–1571 he devoted a portion of his great wealth to the erection of an Exchange in imitation of that of Antwerp, for the London merchants, who were wont to meet in the open air. He provided for the erection and support of eight almshouses, and made many other charitable bequests. He died in London, England, Nov. 21, 1579.

Gresham, Walter Quinton, an American jurist; born near Lanesville, Harrison co., Ind., March 17, 1832. He became a member of the Indiana State Legislature in 1861; served in the Civil War, rising to Brigadier-General of volunteers; at its close resumed the practice of law, and in 1869 was appointed by President Grant United States District Judge for Indiana; in 1883 was appointed Postmaster-General by President Arthur; in 1884 became Secretary of the Treasury, and later was appointed one of the judges of the United States Circuit Court. He died in Washington, D. C., May 28, 1895.

Gretna Green, a village in Dumfriesshire, Scotland, 8 miles N. of Carlisle, for over a century notorious for the celebration of the marriages of eloping lovers from England. These were checked in 1856, when all irregular marriages were rendered invalid unless one of the parties had been residing in Scotland for three weeks previously.

Grevy, Francois Paul Jules, President of the French Republic 1879-1887; born in Mont-sous-Vaudry, in the Jura, France, Aug. 15, 1813. Grévy was chosen president of the National Assembly which met in 1871. In 1876, 1877, and 1879 he again represented the Jura in the French Parliament, and in the latter year he was chosen president of the republic by an enormous majority. In 1886 he was reëlected, but on account of a scandal in which his son-in-law was implicated was forced to resign, Dec. 2, 1887. He died in Mont-sous-Vaudry, Sept. 9, 1891.

Grey, Albert Henry George, 4th Earl Grey, English colonial administrator; born 1851; in 1904 succeeded his brother-in-law Earl Minto as Governor-General of Canada. Earl Grey is a grandson of the Reform Premier. Educated at Cambridge, he passed first in law and history tripos (1873); entered Parliament for Northumberland, in 1880; was administrator of Rhodesia (1896-97); is one of the executors under Cecil Rhodes' will; director British South Africa Co. in 1898–1904. Died Aug. 26, 1917.

Grey, Charles, Earl, English statesman, eldest son of Charles, first Earl Grey; born in 1764; died in 1845. He was educated at Eton and at King's College, Cambridge. In 1786 he entered Parliament as member for Northumberland, and in 1806 became leader of the House of Commons. The death of his father in 1807 raised him to the House of Peers. On the accession of William IV. and the retirement of the Wellington ministry, Earl Grey became Premier. The great event of his administration was the passing in 1832 of the first reform bill.

Grey, Edward, Viscount Grey of Falloden, a British statesman; born in 1862; was Under-Secretary for Foreign Affairs in 1892–95; became Secretary of State for Foreign Affairs in 1905; created Viscount in 1916. When, in July, 1914, it became evident that war was about to break out, Sir Edward, acting for the Entente Allies, proposed to Germany to submit the Servian affair to mediation, but Germany refused, and on Aug. 4, following, Great Britain and Germany declared war against each other. Sir Edward's position in the Cabinet subsequently made him the official mouthpiece of the British Government and, to a certain extent, of its Allies also.

Grey, Lady Jane, an interesting figure in English history, the daughter of Henry Grey, marquis of Dorset, afterward duke of Suffolk, by Frances, daughter of Charles Brandon, duke of Suffolk, and Mary, youngest sister of Henry VIII., in whose reign Lady Jane was born, in 1537. She was married to Lord Guildford Dudley, fourth son of the Duke of Northumberland, in 1553. Edward VI., who died in 1553, was induced on his deathbed to settle on her the succession to the crown. The council endeavored to keep his death secret, with a view to secure the persons of the princesses, Mary and Elizabeth, and when Mary discovered the design the council proclaimed Lady Jane queen. On the approach of Mary, however, the council deserted Lady Jane, and Mary was proclaimed queen. Jane was imprisoned in the Tower. She and her husband were arraigned, and pleaded guilty of high treason, and she was beheaded Feb. 12, 1554.

Gridley, Charles Vernon, an American naval officer; born in Logansport, Ind., in 1845; entered the United States navy in September, 1860; was promoted midshipman July 16, 1862; commander, March 4, 1868; and captain, March 12, 1868; and shortly after was ordered to the Pacific station. When he reached Hong Kong, China, he was placed in command of the cruiser "Olympia," the flagship of the Asiatic fleet. On the morning of May 1, 1898, Captain Gridley skillfully managed the "Olympia" during the engagement at Manila Bay and delivered the broadside which destroyed the flagship of the Spanish fleet. Though very ill, he commanded his ship throughout the fight. Shortly after his sickness became more serious, and he was ordered home, but died on reaching Kobe, Japan, June 4, 1898.

Grieg, Edvard, a Scandinavian composer; born in Bergen, Norway, June 15, 1843. His music is characterized by originality and warmth of national coloring. Died Sept. 4, 1907.

Grierson, Benjamin Henry, an American military officer; born in Pittsburg, Pa., July 8, 1826. When the Civil War broke out he joined the Union army and in April, 1863, he successfully led a cavalry raid from La Grange to Baton Rouge, making much easier the operations of Grant against Vicksburg. He was promoted colonel in 1866, and brevetted Major-General, U. S. A., in March, 1867. In 1890 he was promoted Brigadier-General, U. S. A., and retired. He died Sept. 1, 1911.

Griesbach, Johann Jakob, a German Biblical scholar; born in Butzbach, Hesse-Darmstadt, Jan. 4, 1745. The great work with which his name is associated is his critical revision of the New Testament text. He died in Jena, March 24, 1812.

Griesinger, Karl Theodor, a German novelist; born in Kirnbach, in the Black Forest, Dec. 11, 1809; studied theology at Tubingen, and became a clergyman, then drifted into authorship. He visited the United States and wrote several pictures of New York life. He died in Stuttgart, March 2, 1884.

Griffin, or **Griffon,** in mythology, a fabulous animal, usually represented with the body and legs of a lion, and the head and wings of an eagle, signifying the union of strength and agility. Figures of griffons are frequently used as ornaments in works of art. It is employed as an emblem of vigilance, the animals being supposed to be the guardians of mines and hidden treasures.

Griffin, Appleton Prentiss Clark, an American author; born in Wilton, N. H.; received a

public school education; was connected with the Boston Public Library in 1871–1894; became assistant librarian in the Congressional Library in 1897.

Griffin, Gerald, an Irish novelist, dramatist, and poet; born in Limerick, Ireland, Dec. 12, 1803. In 1823 he went to London and embarked on a literary career. He died in Cork, June 12, 1840.

Griffin, Gilderoy Wells, an American lawyer and author; born in Louisville, Ky., March 6, 1840; was educated at Louisville University, and admitted to the bar in 1861. He was consul to Copenhagen in 1871; to the Samoan Islands in 1876; to Auckland, New Zealand, in 1879; and to Sydney, Australia, in 1884. He died in Louisville, Ky., Oct. 21, 1891.

Griffin, Watson, a Canadian author; born in Hamilton, Ont., Nov. 4, 1860; was educated at Toronto University; later was connected with various Canadian and American journals.

Griffis, William Elliott, an American clergyman and author; born in Philadelphia, Pa., Sept. 17, 1843; was graduated at Rutgers College in 1869 and at the Union Theological Seminary in 1877; spent several years in Japan teaching and organizing schools; became pastor of the First Congregational Church of Ithaca, N. Y., in 1893.

Griffiths, John Willis, an American naval architect; born in New York city, Oct. 6, 1809; became a special naval constructor in the United States navy in 1858. His inventions include a timber-bending machine, iron keelsons for wooden vessels; bilge keels to prevent rolling; improved rivets; and triple screws for great speed. He died in Brooklyn, N. Y., April 29, 1882.

Grigorovich, Dimitrij Vasilievich, a Russian novelist and prose-writer; born in Simbirsk, March 31, 1822. His first stories, "The Village" and "Anton the Unfortunate," rank him among the first of Russian novelists. He died in 1900.

Grillparzer, Franz, an Austrian poet and dramatist; born in Vienna, Jan. 15, 1791. "Blanche of Castile," a tragedy, written at 17, and "Spartacus," a tragedy, showed genius; but "The Ancestress," first called popular attention to him. "Sappho," a tragedy based on classical tradition, made him eminent in scholarship also. He died in Vienna, Jan. 21, 1872.

Grimaldi, the name of an illustrious family of Genoa, distinguished as partisans of the Guelphs.

Grimm, Herman, a German essayist, critic, and biographer, son of Wilhelm Grimm, born in Cassel Jan. 6, 1828; most famous, "Life of Michael Angelo." He died June 18, 1901.

Grimm, Jakob Ludwig, a German philologist and literary historian; born in Hanau, Hesse-Cassel, Jan. 4, 1785. The labors of Grimm are of unrivaled importance in the broad field of German literary antiquities. The constant aim of his investigations was to trace the spiritual life of the German people as revealed in their laws, customs, faiths, and poetry. His "Deutsche Grammatik" is perhaps the greatest philological work of the age and may be said to have laid the foundation of the historical investigation of language. This work, as well as the great "Deutsches Worterbuch," commenced in 1852 in conjunction with his brother Wilhelm, he did not live to complete. He died in Berlin, Sept. 20, 1863.

Grimm, Wilhelm, a German philologist, brother of the preceding; born in Hanau, Hesse-Cassel, Feb. 24, 1786. He edited many old German texts, and collaborated with his brother Jakob in several of his works. He died in Berlin Dec. 16, 1859.

Grimm's Law, a law formulated by Jakob Grimm, the German philologist, relative to the changes undergone by mute consonants in the most important of the Aryan languages.

Grindelwald, one of the most beautiful valleys (3,468 feet) of the Bernese Oberland in Switzerland, about 12½ miles long and 4 broad; it forms the approach to the two Grindelwald glaciers.

Gringore, or **Gringoire, Pierre,** a French dramatist and satiric poet; born between 1475 and 1480. He early became known as a writer of moral and allegorical poems, next of satirical farces abounding in allusions to the social and political circumstances of the time. He is an impor-

tant figure in literary history as one of the creators of the French political comedy. In later life he entered the service of the Duke of Lorraine as a herald, and confined his muse to religious poetry alone. He died in 1544.

Grinnell, George Blake, a New York merchant and banker; born in Greenfield, Mass., Nov. 11, 1823. Was a partner in the dry goods firms of George Bird & Co., Morton Grinnell & Co., and George B. Grinnell & Co. Died Dec. 19, 1891.

Grinnell, Henry, an American merchant; born in New Bedford, Mass., Feb. 13, 1799. In 1850 he fitted out an expedition, under the command of Lieut. E. J. De Haven, to search for the Arctic explorer Sir John Franklin. De Haven discovered land which he named Grinnell Land. He could not find Franklin and returned. In 1853, in connection with George Peabody, Grinnell fitted out another expedition for the same purpose as the first. This was under Dr. Elisha K. Kane, but was no more successful than the former one, though adding much to scientific knowledge. He died in New York city, June 30, 1874.

Grinnell Land, a barren, mountainous Polar tract, in lat. 80° N., separated from Greenland by Smith Sound and Kennedy Channel. It was discovered by Lieut. E. J. De Haven, and named after Henry Grinnell, of New York.

Grip, or **La Grippe,** a disease which frequently becomes an epidemic in different parts of the United States and Europe and in the East and West Indies. It is believed to be contagious, and is somewhat similar to influenza. The symptoms are fever, headache, swelling and pain in the smaller joints, eruption of the skin, etc. The disease is produced by bacilli which, when magnified, appear somewhat like goose eggs in form and substance. They are usually discovered in pairs, and where the disease has attacked a person are abundant in the lung and bronchial tissues, and in the nasal and salivary secretions. They are imbibed in breathing, and will not breed except in a temperature of at least 80°, yet no degree of natural cold can kill them. When in a temperature below that mentioned they remain in a dormant state. In 1892, the grip germ was discovered in Berlin by Prof. Robert Pfeifer, who observed that it breeds by lengthening itself and then dividing in the middle.

Griqualand, West and **East,** two British districts of South Africa, named from the Griquas or Bastaards, a mixed race sprung from Dutch settlers and native women. Portions of the country are suitable for sheep farming and agriculture, but the chief source of wealth is the diamond fields. The first diamond was discovered in 1867. Diamonds to the value of $75,000,000 were found there between 1883 and 1887, and the daily output of the consolidated mines at Kimberley is estimated at $220,000.

Griscom, Lloyd Carpenter, diplomat; b. Riverton, N. J., Nov. 4, 1872. He studied law, served in the Spanish-American War, was on diplomatic service in London and Constantinople, Envoy to Persia, 1901, to Japan, 1902, was nominated Ambassador to Italy Dec. 12, 1906.

Grisebach, Eduard, a German author; born in Gottingen, Oct. 9, 1845. He was a consular agent for many years. "German Literature Since 1770," and "The Goethe Period of German Poetry," are masterpieces. His editing of Schopenhauer has been very important. He died in 1906.

Grisi, Giulia, an Italian singer; born in Milan, May 22, 1812. She made her debut at Bologna. Her fame reached its climax in her rendition of the roles of "Norma" and "Lucrezia Borgia," in which characters her singing and dramatic acting have never been surpassed. She was twice married; on the second occasion to the unrivaled tenor, Signor Mario, Marquis de Canada, with whom she visited the United States in 1854, singing in the principal cities. She died in Berlin, Nov. 29, 1869.

Gris-nez, Cape, a headland 164 feet high, in the department of Pas-de-Calais, France, opposite Dover, is the point of land nearest to the English shore, the distance being barely 20 miles. It is surmounted by a lighthouse.

Grison, or **Huron,** a South American weasel, somewhat larger than the European weasel, and often kept in captivity.

Grisons, or **Graubunden,** a canton of Switzerland; the largest and the most thinly peopled; bounded by Tyrol and Lombardy; area, 2,773 square miles; pop. (1921) 119,854.

Griswold, Alexander Viets, an American clergyman; born in Simbury, Conn., April 22, 1766; ordained in the Protestant Episcopal Church in 1795; made bishop over "The Eastern Diocese," including all of the New England States except Connecticut in 1811. He died in Boston, Mass., Feb. 15, 1843.

Griswold, Hattie Tyng, an American author; born in Boston, Jan. 26, 1842. She wrote many tales and poems. She died in 1909.

Griswold, Rufus Wilmot, an American editor; born in Benson, Vt., Feb. 15, 1815. The most important paper which he edited during his career, the "International Magazine," was afterward amalgamated with "Harper's Magazine." His books are numerous. He died in New York city, Aug. 27, 1857.

Grizzly Bear, a huge bear, sometimes 9 feet from the nose to the end of the very short tail, and weighing 800 pounds. The hair, which varies between gray and blackish brown, is more or less grizzled, whence the animal's English name. It inhabits the Rocky Mountain region.

Grodno, a town of Russia, capital of a government of the same name, on the Nieman river, 49 miles E. of the extreme S. E. point of East Prussia, and on the railway from Petrograd to Warsaw. It is a place of large historic interest. Originally a Russian town, it fell to Lithuania in 1241, was the birth-place of Stephen Bathori, was the seat of the Polish Diet which ratified the second partition of Poland, and was the scene of the abdication of Stanislaus Augustus, the last King of Poland, and in the World War was occupied by the Germans, Sept. 2, 1915. Pop. (1921) 34,916.

Groin, in anatomy, the hollow in the human body where the thigh and the trunk unite. In architecture, the angle or angular curve formed by an intersection of vaults; most of the vaulted ceilings of the Middle Ages were groined, and therefore called groined ceilings.

Gros, Baron Antoine Jean, a French painter; born in Paris, March 16, 1771. His first great achievement, however, was "Napoleon Visiting the Plague-smitten at Jaffa" (1804). Gros also painted several other historical pictures illustrating the achievements of Napoleon. His body was found in the Seine near Meudon, June 27, 1835.

Grosbeak, or **Grossbeak,** the cardinal grosbeak, an American bird. The pine grosbeak is called also pine bullfinch; and the social or republican grosbeak is from South Africa, and belongs to the sub-family of weaver birds.

Groschen, a small silver coin used in the North German States, value about 2 1-3 cents. Each groschen is sub-divided into 10 pfennigs.

Grose, Francis, an English antiquary; born in Greenford, Middlesex, in 1731. His "Antiquities of England and Wales" (1773–1787) proved a success, and in 1789 he set out on an antiquarian tour through Scotland. Grose's work on the antiquities of Scotland appeared 1789–1791; that of Ireland in 1791. He died in Dublin, Ireland, May 12, 1791.

Gross, Samuel David, an American surgeon; born in Easton, Pa., July 8, 1805; was graduated at Jefferson Medical College, 1828. He was the founder and chief editor of the "North American Medico-Chirurgical Review," and president of the American Medical Association 1867. He died in Philadelphia, Pa., May 6, 1884.

Grosse, Julius, a German author; born in Erfurt, April 25, 1828. He was successively lawyer, playwright, and journalist. He died in 1902.

Grosseteste, Robert, an English clergyman; born in Stradbroke, Suffolk, about 1175; educated at Lincoln, Oxford, and Paris; he had for some years been the first teacher of theology in the Franciscan school at Oxford, and had held eight archdeaconries and other preferments, when in 1235 he was elected Bishop of Lincoln. He forthwith undertook in the most vigorous fashion the reformation of abuses, embroiling himself thereby first with his own chapter and next

with Pope Innocent IV., whom he twice visited at Lyons, in 1244–1246 and 1249–1250. He was excommunicated by Innocent, but the feeling of the English nation sustained him, his clergy went on obeying him as if nothing had happened. He died in Buckden, Oct. 9, 1253.

Grosswardein, or **Nagy-Varad,** a town of Bihar Co., Hungary. At Grosswardein peace was concluded between Ferdinand I. of Austria and John Zapolya of Transylvania in 1538. It was taken and pillaged by the Turks in 1660, and remained in their hands till its recapture by the Austrians in 1862. Pop. (Est.) 65,000.

Grosvenor, Edwin Augustus, an American educator; born in Newburyport, Mass., Aug. 30, 1845; was graduated at Amherst College in 1867 and at Andover Theological Seminary in 1872; Professor of History at Robert College, Constantinople, in 1873–90; of European History at Amherst College in 1892–98; of Modern Government and International Law, Amherst, since 1901.

Grosz, Ferdinand, an Austrian journalist; born in Vienna, April 8, 1849. He wrote while still a boy; but his first success was "Literary Music of the Future" (1877).

Grote, George, an English historian; born in Clayhill, Kent, Nov. 17, 1794; died in 1871. In 1832 he was elected a member of Parliament for the city of London, and his subsequent parliamentary career, until his retirement in 1841, was principally devoted to the advocacy of vote by ballot. In 1846 appeared the first two volumes of his "History of Greece." The remaining 10 volumes followed in rapid succession, the final volume being published in 1856. The work terminates with the death of Alexander the Great. He died in London, June 18, 1871.

Grotefend, Georg Friedrich, a German archæologist; born in Munden, Hanover, June 9, 1775. He made for himself an enduring fame by deciphering the cuneiform alphabet first given forth in 1802. He died in Hanover, Dec. 15, 1853.

Grotefend, Karl Ludwig, a German historian; born in Frankfort-on-the-Main, Dec. 22, 1809; studied at Gottingen University, and filled from 1853 a post in the Royal Archives at Hanover. His works are of the greatest value for numismatics and Roman epigraphy. He died Oct. 27, 1874.

Grotesque, a term used in painting by the Italians; appropriated to that peculiar manner of composition and invention observed among the antique monumental paintings which were discovered in the subterranean chambers that had been decorated in the times of the ancient Romans.

Grotius, or **De Groot, Hugo,** a Dutch statesman; born in Delft, Holland, April 10, 1583. In 1613 he supported Barneveldt and the cause of the Arminians by his pen and influence. But for this he received sentence of imprisonment for life in the fortress of Lœwestein. From this, however, at the expiration of 18 months, which he had employed in writing his celebrated "Treatise on the Truth of the Christian Religion," he succeeded in escaping. This was effected by the management of his wife, who contrived to have him carried out of the castle in a chest that had been used for the conveyance of books and linen. Grotius at first sought an asylum in France; and it was during his residence there that he composed his great work, "The Justice of War and Peace." On his return to his native country he was condemned to perpetual banishment. He passed the remnant of his life in the diplomatic service of Sweden, dying Aug. 28, 1645.

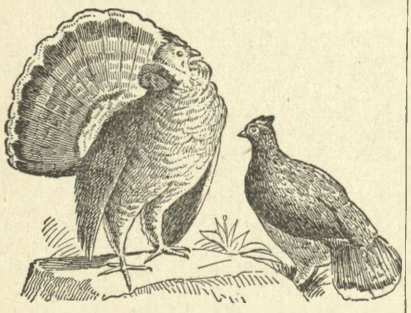
Groton, a town in New London co., Conn., on the Thames river and Long Island Sound, opposite New London. There still may be seen Fort Griswold, memorable for the massacre of an American garrison by the British in 1781. A granite monument, to commemorate that event, was erected in 1830. Pop. (1920) 4,236.

Grouchy, Marquis Emmanuel de, a French military officer; born in Paris, Oct. 23, 1766; entered the army at 14; threw in his lot with the Revolution. He fought with conspicuous gallantry in the Russian campaign of 1812, being appointed during the memorable retreat leader of the bodyguard of Napoleon. Among the first to welcome Napoleon after his escape from Elba, Grouchy destroyed

the Bourbon opposition in the S. of France, and then, hastening N., routed Blucher at Ligny. After the defeat at Waterloo and the second abdication of Napoleon, Grouchy, appointed by the provisional government commander-in-chief of the broken armies of France, led them skillfully back toward the capital; then, resigning, he went to the United States. He returned from exile in 1819, and was reinstated as marshal in 1831. He died in St. Etienne, May 29, 1847.

Ground Dove, a name of various species of pigeons, living mainly on the ground, their feet being better suited for walking than perching. The name is especially given to the members of the genus Chamæpelia, small birds belonging to the warmer parts of America, and includes the bronze-wing pigeons of Australia. The crowned pigeons are also so called.

Ground-Hog Day, the 2nd of February, on which day, it is said, the ground-hog comes out of his hole, and if he sees his shadow goes back again and remains six weeks, which indicates a late spring. If he fails to see his shadow he remains out, and the spring will be early. See WOODCHUCK.



RUFFED GROUSE.

Grouse, in ornithology, various game-birds, specially the black grouse, and the red grouse. The male of the former is called the black cock, and the female the gray hen. The red, called also the common grouse, inhabits moors, feeding on the young shoots of the heath. They are well known to be large, plump, somewhat heavy birds, usually short-tailed, and with beautifully variegated plumage, which must often be protective. They are especially abundant in the N. parts of both New and Old World. They frequent woods, roost in trees, nest on the ground, and fly straight and swiftly. The male is famous for his habit of drumming, or beating stiffly downward with his wings and making a loud drumming noise. The largest American grouse is the cock of the plains or sage cock. It is dispersed over the W. plains, and, according to Elliot, owes the bitter unpalatable character of its flesh to its diet of artemisia or wild sage which abounds in these regions. The tail is remarkably long, the neck sacs very large, the usually hard gizzard portion of the stomach remains soft.

Grove, in comparative religion, a group of trees under which religious worship is held.

Grove, Sir George, an English author; born in Clapham, England, in 1820; was trained as a civil engineer. As a member of the staff of Robert Stephenson he was employed at the Chester general station and the Britannia tubular bridge. He was editor of "Macmillan's Magazine," a large contributor to Smith's "Dictionary of the Bible," and editor and part author of the great "Dictionary of Music and Musicians." He was knighted in 1883 on the opening of the Royal College of Music, Kensington Gore, of which he was made Director by the Prince of Wales. He died in London, England, May 28, 1900.

Grove, Sir William Robert, an English physicist; born in Swansea, Wales, July 11, 1811; became interested in the study of experimental physics and electricity early in life. He won fame by the invention of the Grove voltaic battery in 1839. He died in London, Aug. 2, 1896.

Grove Battery, a double fluid galvanic battery, invented in 1839 by Sir William Grove. It consists of a plate of amalgamated zinc, generally bent into a shape like the letter U, so as to embrace a flat cell of porous earthenware in which is suspended a sheet of platinum foil. The porous cell is filled with strong nitric acid, and the whole arrangement placed in a jar containing dilute acid 1 in 20.

Grove City College, a non-sectarian coeducational institution in Grove City, Pa., founded in 1876.

Grover, Cuvier, an American army officer; born in Bethel, Me., July 24, 1829. On the outbreak of the Civil War he was a captain in the 10th infantry, and with his command in New Mexico. Returning East, he was, April, 1862, appointed a Brigadier-General of volunteers, and assigned to duty with the Army of the Potomac, participating in the various battles of the Peninsular campaign in Virginia, and in the second battle of Bull Run. In August, 1864, he was assigned to the command of the 19th Corps, and in the Shenandoah campaign was engaged in the battles of Opequan, Fisher's Hill, and Cedar Creek; subsequently commanded the district of Savannah, Ga., and was mustered out of the volunteer service August, 1865; in 1875 became colonel of the 1st Cavalry. He died in Atlantic City, N. J., June 6, 1885.

Grow, Galusha Aaron, an American legislator; born in Eastford, Conn., Aug. 31, 1824; was graduated at Amherst College in 1844, and admitted to the bar in 1847; settled in Towanda, Pa., and there practised; was a member of Congress in 1851–1863 and speaker during the last two years. He was again elected to Congress in 1894 and served until Mar. 4, 1903. He died Mar. 31, 1907.

Grub, a name generally applied to the worm-like larvæ of insects when they have a distinct head but no legs, e. g., in bees and some beetles.

Grubb, Howard, an optician and telescope-maker of considerable celebrity at Dublin, Ireland. He was the first to suggest a movable floor for an observatory dome, which has been adopted in the dome of the great 36-inch telescope of the Lick Observatory.

Grun, Anastasius, pseudonym of Anton Alexander, Count of Auersperg; an Austrian poet; born in Laibach, April 11, 1806. Though of aristocratic birth and breeding, his political leanings were liberal, and he became immersed in the progressive movement of his day. His literary work, for the most part, grew out of and developed his public policy. He died in Gratz, Sept. 12, 1876.

Grundtvig, Nikolai Frederik Severin, a Danish poet; born in Udby, Zealand, Sept. 8, 1783. His religious views got firm hold of the hearts of the people throughout the three countries of Scandinavia. Besides this he was instrumental in raising the educational condition of the peasantry. From 1839 Grundtvig preached in the church of Vartov Hospital in Copenhagen, after 1861 with the title of bishop, though he held no see. He died in Copenhagen, Sept. 2, 1872.

Grundy, Sydney, an English author; born in Manchester, March 23, 1848; was called to the bar in 1869. He has become known as a successful playwright.

Grysboc, or **Grysbok,** a South African antelope. It has straight, upright, pointed, shining horns, with two or three small annuli at the roots. On the upper parts the hair is red mixed with white, below it is sandy-brown or red, and on some there is black about the head. Length of the animal, nearly three feet. It is found in South Africa, goes in pairs, not in herds, and furnishes excellent venison.

Guadalajara, city and capital of the State of Jalisco, Mexico, and the third city of the republic. Guadalajara is the seat of an archbishop, and possesses a handsome cathedral, besides the government palace, a mint, university, hospitals, and school of art. Its industries are important; it is the chief seat of the cotton and woolen manufactures of the country, and the Guadalajara pottery and metal wares, like the confectionery, have a reputation all over Mexico. Pop. (Est.) 122,000.

Guadalaquivir, a river, known to the ancients by the name "Baetis," rises in the Sierra de Cazorla, Spain, on the borders of Jaen and Murcia, and falls into the Atlantic at San Lucar, after a winding course of about 250 miles.

Guadalupe, a river rising among the mountains in Kerr co., Tex.; flows a general E. and S. E. course and enters Espiritu Santo Bay.

Guadalupe-Hidalgo, a village of the federal district in Mexico, at the foot of Guadalupe mountain; 5 miles

N. of Mexico city. It has a famous brick cathedral, the richest in all Mexico. Here is preserved a miraculous picture of a brown Virgin, painted on a peasant's coarse cloak. The treaty which ended the war with the United States was signed here, Feb. 2, 1848.

Guadeloupe, one of the Lesser Antilles; a French colony. It is divided into two distinct parts by a narrow arm of the sea called Riviere Salee. The principal exports are sugar, coffee, dye, and cabinet woods, tafia, hides, copper, etc. The principal town, St. Louis, or Point-a-Pitre, was destroyed by an earthquake in February, 1843. Guadeloupe was discovered by Columbus in 1493, and named by him Santa Maria de la Guadeloupe. In 1634 it was taken by the French, who held it till 1759, when the English gained possession of it, after which it changed owners several times, till the peace of 1814 restored it to the French. Pop. 212,500.

Guaiacum, an ornamental tree with blue flowers, growing in Jamaica. The wood furnishes Lignum vitæ; its resin is called gum guaiacum. The leaves are used in the West Indies as a substitute for soap. The bark and wood are used as sudorifics, diaphorectics, or alteratives.

Guaira, La, the port of Caracas, Venezuela, on a narrow strip of land between the mountains and the Caribbean Sea. Efforts have been made to improve the harbor by the construction of a breakwater and wharves. The average value of the imports is almost $5,000,000, and that of the exports nearly as much. The place figured prominently in the blockade of Venezuelan ports by the British, Germans and Italians in 1903. It was not bombarded, however.

Guam, an island in the Pacific Ocean, the largest of the Marianne or Ladrone group; area, 210 square miles; capital, Agaña. The island is fertile and to a great extent covered with valuable timber lands. Elementary education is compulsory; registered pupils, 1,970; English, handicrafts, and agriculture taught. At the beginning of the Spanish-American War the Ladrone group belonged to Spain, and on June 20, 1898, the United States cruiser "Charleston," on its way to Manila, opened fire on Agaña. The Spanish garrison, not knowing that war existed, and thinking the attack was a salute, sent an officer to the "Charleston," apologizing for not returning it, owing to lack of ammunition. When they learned the state of affairs, the place was surrendered in less than 30 minutes. Captain Leary, of the United States navy, was appointed the first American governor. A wireless telegraph station which is in cable communication with all parts of the world has been established. Seat of government and port of entry, Agaña, which is closed to foreign vessels of war. Pop. (1920) 14,246.

Guan, a sub-family of birds among the representatives in the New World of the grouse and pheasants in the Old. It is represented by 14 species distributed from Southern Texas through Mexico to Paraguay. The guans are graceful birds, with long tails, handsome, variegated plumage, bare, dilatable patches of skin on the throat, and naked spaces round the eyes. They live mostly on trees, descending to the ground in search of their food, which consists of fruits, berries, and insects. Their cry is loud and frequent; they are called by the natives squalling pheasants.

Guanahani. See CAT ISLAND.

Guano, a grayish white, yellowish, dark brown, or reddish substance, classed by Dana as a mineral, which he places among his anhydrous phosphates and sulphates. It is a bone phosphate of lime or osteolite with some impurities. Found in islands off the Peruvian and other South American coasts, also in those off the coast of Africa and elsewhere. Guano is formed by the droppings of multitudinous birds in secluded places where they have been undisturbed for ages. If, in any locality, little rain falls, this tends to the rapid accumulation of guano.

Guantanamo Bay, a harbor of Southern Cuba, 38 miles E. of Santiago. It was just outside of this bay that United States war vessels, during the early part of the war with Spain, tried to cut the cables which extended from Santiago to Guantanamo and thence to Spain. On May 18, 1898, the "St. Louis" and the tug "Wampatuck" endeavored to get into the

mouth of the harbor, but the Spanish batteries and a gunboat in the bay opened up such a severe fire that the "Wampatuck" was forced to withdraw, after grappling a cable about 800 yards from the shore. On June 10, the United States cruiser "Marblehead" shelled the hills on the right of the bay where the enemy had erected earthworks, and the next day the transport "Panther" landed 600 marines at Caimanera. In July, 1901, Guantanamo Bay was selected by the United States government as the site of one of four projected naval stations on the Cuban coast.

Guapore, a river of South America, rises in Brazil, and for some distance forms the boundary between Bolivia and Brazil. It unites with the Mamore to form the Madeira.

Guard, a term applied to a military troop especially attached to the person of a sovereign, or chief ruler of a state. Bodyguards have been an inseparable accompaniment of monarchy from the earliest ages.

Guardafui, Cape, the extreme E. point of the African continent, and the extremity of an immense promontory.

Guard Boat, a boat employed to row round and about ships of war in a harbor to see that a proper lookout is kept.

Guard Ship, a vessel of war stationed in a port or harbor to act as a guard, to see that the harbor regulations are observed, and to receive seamen until they can be draughted off to their respective ships. In the latter sense it is known in the United States as a receiving ship.

Guardian Angel, a common belief but not an article of faith in the Latin and Greek Churches that to every individual of the human race there is assigned at birth an angel as guardian and protector. The belief is shared by Anglican High Churchmen. The Roman Church celebrates the Feast of Guardian Angels on October 2.

Guarea, a genus of tropical American trees, of some of which the bark is used as an emetic and purgative. G. grandifolia is called musk wood in some of the islands of the West Indies, the bark smelling so strongly of musk that it may be used as a perfume.

Guarneri, or **Guarnieri,** the name of one of the three celebrated families of violin-makers who flourished at Cremona in the 17th and 18th centuries.

Guatemala, a republic of Central America, bounded by Mexico, Belize, Honduras, San Salvador, Gulf of Honduras, and the Pacific Ocean; area, 48,290 square miles; pop. (1914) 2,003,579; number of departments 23; and capital, Guatemala (pop.) 90,000.

The country is exceedingly mountainous and elevated. Along the main chain are a number of volcanoes, among which are Fuego, over 12,000 feet high, and Tajumulco, 14,403 feet high. In October and November, 1902, an extensive region in Guatemala was devastated and many lives destroyed by volcanic eruptions.

On the tableland, of which a considerable portion of the state is formed, the climate is mild; but in more elevated situations the cold is intense. There is much valuable timber. The soil generally is of great fertility, producing, according to altitude, soil, etc., maize, wheat, rice, coffee, cotton, tobacco, sugar, cochineal, cacao, indigo, vegetables, and tropical fruits in great variety. The mineral resources are not much developed, but there are found gold, silver, lead, coal, talc, marble, pumice, and sulphur.

The foreign trade is carried on mostly with the United States, Germany, Great Britain and France.

The executive power is vested in a President elected for a term of six years, and ineligible for reëlection for the following term. The administration is carried on, under the President, by the heads of six departments, Foreign Affairs, Government and Justice, Hacienda and Public Credit, Public Instruction, Fomento, and War. The legislative authority is vested in a National Assembly consisting of one representative for every 20,000 inhabitants, chosen by universal suffrage for four years, and a Council of State of thirteen members, partly elected by the National Assembly and partly appointed by the President.

Ancient Guatemala was occupied by a race of Indians who had reached a

high state of civilization at the time of the early Spanish invaders. It was conquered by Alvarado, a lieutenant of Cortez, and until 1824 was under Spanish rule, although independence was declared in 1821. Guatemala was a member of the Central American Confederation from 1824 to 1839, and has long sought to refederate the Central American Republics. It has railroads uniting all the departments. War broke out in 1906 with Salvador and Honduras, but through U. S. intermediation a treaty of peace was signed July 20, 1906.

Guayama, chief town in the district and Department of the same name in Porto Rico; 35 miles S. of San Juan. The Department is near the E. extremity of the island, with its S. front on the Caribbean Sea, and the town is at the intersection of several improved roads. Pop. (1920) 8,924.

Guayaquil, a city and capital of Guayas province, Ecuador; in the valley of the Guayas, 30 miles above its mouth. The city was founded by Orellana in 1537, and removed to its present site in 1693. Pop. 100,000.

Gubernatis, Angelo de, an Italian author; born in Turin, April 7, 1840. His profound scholarship and versatility have won him distinction in widely separated departments of literature. He died in 1913.

Gudgeon, a small fresh-water fish. It is about 6 to 8 inches long, and half-cylindrical in shape; its back is pale-brown, spotted with black, the belly white, and the tail forked. The gudgeon swims in shoals, and feeds on worms and aquatic insects. They afford great sport to anglers, from their greediness in seizing upon any bait presented to them.

Gudin, Theodore, a French painter; born in Paris, Aug. 15, 1802; died in Boulogne-sur-Seine, France, April 11, 1880.

Gudrun, or **Kudrun,** an old German epic, built up out of the popular songs and traditions of the seafaring folk who dwelt on the shores of the North Sea between Elbe and Seine.

Gueber, or **Gheber,** a term applied by the Mohammedan conquerors of Persia to the disciples of Zoroaster in that country. They call themselves "Behendies," followers of the true faith, and are generally known by Europeans as fire-worshipers. Zoroaster is believed to have flourished in the 6th century B. C. In the course of time the system became very corrupt, and King Ardeshir Bakekan (A. D. 226) reformed it, collected the sacred books, and caused them to be translated from the Zend language into the vernacular dialect of Persia, and built temples for the preservation of the sacred fire. The Guebers have the character of being industrious and virtuous in comparison with the other Persians, but they are ignorant and depressed. At present they are numerous in Western India, where they are called Parsees, from the country of their origin.

They recognize one God, Ormuzd, invisible and omnipotent, the creator, governor, and preserver of all things. Ormuzd created a number of good spirits to act as the medium of his bounty to men, and intrusted them each with the guardianship of a particular person or object, animate or inanimate. The sun is the eye of Ormuzd, and, like all the heavenly bodies, is animated with a soul. The worship of idols is prohibited, but a reverence for fire and the sun inculcated, as emblems of deity. To Ormuzd is opposed Ahriman, the author of evil. The precepts of this religion are contained in the "Zend Avesta," or collection of sacred writings which Zoroaster received from heaven.

Guelf, or **Guelph,** the name of a family, which in the 11th century was transplanted from Italy to Germany and became the ruling race of several countries. The family still continues in the two lines of Brunswick and the ducal in Germany. In 1917 King George of Great Britain changed the name of his house to the House of Windsor.

Guell y Rente, Jose, Spanish author; born in Havana, Cuba, Sept. 14, 1818; studied law in Havana and Barcelona. A romantic attachment for Dona Joseph de Bourbon ended in his marriage to her, in spite of tremendous court opposition in 1848. He sided with the popular party in the revolution of 1854, and was subsequently elected to the Cortes. D. 1884.

Guelph, city and capital of Wellington county, Ontario, Canada; on the Speed river and the Canadian Pacific and Grand Trunk railways; 48 miles W. of Toronto; is in a valuable limestone and building stone, grain, flax, and vegetable region; has good power for its factories from the falls of the river; ships large numbers of cattle and hogs. Pop. (1921) 14,000.

Guelphic Order, an order of knighthood of Hanover, instituted by George IV., in 1815.

Guericke, Otto von, a German physicist; born in Magdeburg, Nov. 20, 1602; is chiefly known by his discovery of the air-pump and the Magdeburg hemispheres. Died 1686.

Guerilla, an irregular mode of carrying on war by means of small, independent bands of armed men, self-constituted and ordered, unconnected with a regular army, and entitled to dismiss themselves at any time. Guerilla warfare is mainly carried on in a country occupied by an enemy. In the American Civil War much injury was done to the Union cause and its supporters by Confederate guerillas. The Cuban wars of independence have been carried on by fighters largely of the guerilla type.

Guerin, Baron Pierre Narcisse, a French painter; born in Paris, May 13, 1774. Among his pupils were Gericault, Delacroix, and Ary Scheffer. He died in Rome, July 6, 1833.

Guernsey, the second largest and most W. of the Channel Islands, lying off the N. coast of France. It is of a triangular form, about 9 miles long, and 3 to 4 miles broad. The dialect of the island is the pure Norman of some centuries ago; but a knowledge of English is general. The island is under a lieutenant-governor, who represents the sovereign in the assembly of the States, a kind of local parliament. It is strongly fortified, and has a well-organized militia. Pop. (1921) (including Herm and Jethou) 40,120.

Guernsey, Alfred Hudson, an American editor; born in Vermont, 1825. He was for several years editor of "Harper's Magazine." Together with Henry M. Alden he was author of "Harper's Pictorial History of the Great Rebellion," writing the Eastern campaigns, and "The Spanish Armada." He died Jan. 17, 1902.

Guerrero, Vicente, a Mexican military officer; born in Tixtla, Mex., Aug. 10, 1783. At the commencement of the revolution in Mexico he took up arms against the Royalists, and never ceased to occupy a prominent position in the affairs of that country. Having been successful in various contests with the aristocratic party, he at length, in 1829, was elected to the presidency. The expedition of Barradas soon gave employment to the new government; and the better to enable the president to meet the exigency, he was invested with extraordinary powers; but after the victory over the Spanish troops, and when the invading expedition was destroyed, Guerrero evinced an unwillingness to relinquish the dictatorship, which became the pretext of another revolution; and Bustamente, the vice-president, assumed the government. Guerrero, however, was not long idle; in September, 1830, he collected a large force at Valladolid, and established a form of government in opposition to that of Bustamente, and the whole country was agitated by troops in arms. He was captured and shot at Chilapa, Feb. 14, 1831.

Guest, Edwin, an English archæologist; born in Worcestershire, England, in 1800; died, 1880. He was one of the founders of the Philological Society, and a pioneer in the study of early British remains. Of his many writings, "A history of English Rhythms" is the chief.

Guest, John, a naval officer; born in Missouri in 1821. He joined the navy in 1837 and rose to be captain in 1866. He saw active service in the Mexican, Chinese, and the Civil Wars, and was promoted commodore in 1873. He was commandant of the Portsmouth Navy Yard when he died in 1879.

Gueux, or "The Beggars," the name assumed by the confederated nobles who opposed the introduction of the Inquisition into the Low Countries by Philip II. of Spain. The "beggars," who represented the national feeling of the country, maintained a long and vigorous contest against the despotic proceedings of Philip and his advisers, but were ulti-

mately compelled to succumb to superior force.

Guiana, British, a British colony in the N. E. part of South America; bounded by Dutch Guiana, Brazil, Venezuela, and the Atlantic Ocean; area, 89,480 square miles; capital, Georgetown. The surface of the country is diversified with low savannahs near the coast and mountainous toward the S. The chief products are gold, sugar, molasses, balata, rum, and rice. There are railroads, steamship communications with Great Britain and telegraph and telephone systems. Columbus is said to have discovered the Guianas in 1498. In 1895 there was trouble between Great Britain and Venezuela concerning the Guiana boundary. The United States intervened, and a Commission gave a decision practically favorable to Venezuela. Pop. (1923 Est.) 296,000.

Guiana, Dutch, or **Surinam,** a colony of the Netherlands in the N. E. part of South America; bounded by Brazil, British Guiana, French Guiana, and the Atlantic Ocean; area, 46,060 square miles; capital, Paramaribo. The surface is low along the coast, gradually increasing in elevation toward the mountains in the S. The principal products and exports are sugar, cocoa, bananas, coffee, rice, maize, rum, molasses, and gold. There are public schools, savings banks, and steamship lines. Pop. (1921) 92,240.

Guido Aretinus, or **Guy of Arezzo,** a French musician; born near Paris in 990; went to Arezzo as a Benedictine monk. It was he who first adopted as names for the notes of the scale the initial syllables, set to regularly ascending tones, of the hemistichs of a hymn in honor of St. John the Baptist. He died in Avellana in 1050.

Guido Reni, an Italian painter; born in Calvenzano, Nov. 4, 1575. About 1596 he settled in Rome, where he worked for some 20 years, adopting a graceful style, of which the famous "Aurora and the Hours," painted on the ceiling of the pavilion of the Rospigliosi Palace, is a typical example. On account of a quarrel with Cardinal Spinola regarding an altarpiece commissioned for St. Peter's he left Rome and settled at Bologna, where he died Aug. 18, 1642.

Guidon, a swallow-tailed company flag in a cavalry regiment, half red and half white, dividing at the fork.

Guido y Spano, Carlos, an Argentine poet; born in Salta, March 8, 1832. He was elected deputy to the National Congress, and became its president. He gained reputation as a poet, and is held in highest esteem by his countrymen.

Guild, a society or body of individuals associated together for carrying on commerce, or some particular trade or business. There existed at Rome various fraternities of tradesmen, which bore a considerable resemblance to our modern guild, and were permitted to regulate their affairs by their own laws; but it is usual to trace the origin of guilds to the Middle Ages. As soon as the citizens acquired an influence in the administration, the guilds became the basis of the municipal constitutions, and every one who wished to participate in the municipal government was obliged to become a member of a guild. Hence we so often find distinguished individuals belonging to a class of mechanics of whose occupation they probably did not know anything. Guilds introduced the democratic element into society, and in their progress became the bulwarks of the citizen's liberty and the depositaries of much political power. By the close of the 12th century merchants' guilds were general throughout the cities of Europe. The Drapers' Company of Hamburg dates from 1153, and that of the Shoemakers of Magdeburg from 1157. With the increase of their wealth and strength, the guilds either purchased or extorted from their rulers privileges which, once obtained, they were careful never to give up. By the 13th century they had acquired considerable power, and in two successive ages they counterbalanced the power of the nobles.

Guild, Curtis, an American author; born in Boston, Jan. 13, 1827; was editor of the Boston "Commercial Bulletin," which he founded in 1859, and author of books of travel. He died in 1911.

Guild, Reuben Aldridge, an American author; born in West Dedham, Mass., May 4, 1822. D. 1899.

Guildhall, a building in London, the place of assembly of several courts.

and the scene of the civic banquets of the city corporation; originally built in 1411, but almost wholly destroyed by the great fire of 1666. It was rebuilt in 1789 in its modern form.

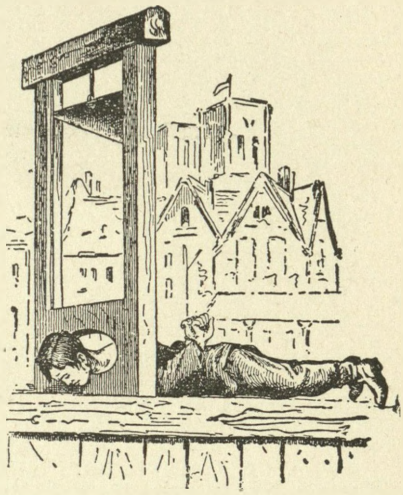
Guilford College, a coeducational institution in Guilford, N. C.; founded in 1837 under the auspices of the Society of Friends.

Guilford Court-House, a village in Guilford co., N. C.; about 5 miles from Greensboro; noted for a battle fought between the Americans under General Greene, and the British under Lord Cornwallis, on March 15, 1781. The Americans numbered about 4,400 and the British 2,400. Both armies lost heavily, and the engagement was indecisive.

Guillemot, a genus of natatorial birds. The bill is moderate and slender, the frontal planes advancing far upon the nostrils, but divided by the culmen; the tail short, the wings pointed, the feet short, slender, and three-toed. The proper habitat of the guillemot is amid the rocks and ice-caverns of the Arctic Ocean. In America the guillemot breeds as far S. as the Bay of Fundy, and is occasionally found on the coasts of New York.

Guillotine, an apparatus for beheading persons at one stroke, adopted by the National Assembly of France during the first Revolution, on the proposal of a Dr. Guillotin, after whom it was named.

In this apparatus decapitation is effected by means of a steel blade loaded with a mass of lead, and sliding between two upright posts, grooved on their inner sides, the person's neck being confined in a circular opening between two planks, the upper one of which also slides up or down. The condemned is strapped to a board, which rests horizontally on the table in front of the upright posts, the neck of the condemned within the semicircle of the lower plank, the other being raised for the purpose. The knife is fixed to the cap or lintel on the top of the posts by a claw in the form of an 8, the lower part of which opens as the upper part closes. This claw is acted upon by a lever to which a cord is attached. When the head of the condemned is in position the cord is pulled, and by the action of the lever the knife is set at liberty, descending by the grooves in the upright posts and falling on the neck of the condemned just behind the planks which keep the head in position. The same



GUILLOTINE.

name is given to a machine which cuts by a knife descending between grooved posts, much used for cutting paper, straw, etc.

Guilmant, Felix Alexandre, a French musician; born in Boulogne, March 12, 1837. He was one of the foremost of French organists, and his organ works, among which are five sonatas, are of great interest and beauty. He died in 1911.

Guinea, the name of a large section of the W. coast of Africa. Guinea is made up of several States or colonies, some of which belong to England, France, Spain, and Portugal, while others are independent. The coast-line is throughout tolerably uniform, and everywhere flat, with numerous shallow lagoons separated from the ocean by narrow spits of sand, lying parallel to the coast. Proceeding inland, the country rises to the central plateau of the continent by a series of broad terrace-like steps, down

which the longer rivers are generally precipitated in cataracts and rapids. The Genoese claim to have been the first European navigators to reach, in 1291, the coast of Guinea, but it was not colonized till the end of the 15th century, when the Portuguese, under the enterprising Prince Henry the Navigator, sent out, in 1481, the first colonies to this part of the world.

Guinea, a gold coin, formerly current in Great Britain, approximate value $5.13. There is no such coin now, but the fashion remains of quoting prices of some things in guineas, and subscriptions are frequently recorded in the same denomination.

Guinea, Gulf of, that portion of the Atlantic which washes the shores of Upper Guinea, between Cape Palmas and Cape Lopez.

Guinea Fowl, a genus of African birds in the pheasant family. It is common in Guinea and S. to the Cape of Good Hope. It is found also in more N. parts of Africa. In their wild state the birds occur in flocks, sometimes of 50 to 60, and are extremely shy and difficult to approach. They utter a frequent, harsh, and querulous cry. The guinea fowl is now common in the poultry yards of most parts of the world, though it is more adapted to warm than to cold climates.

Guinea Pig, a species of cavy, which is indigenous to South America, but is now found domesticated in all parts of the world. It has ears large and broad, the upper lip divided in two, the hair or fur erect, and somewhat resembling that of a pig. Its color is generally white, with black spots, although this is somewhat variegated by orange blotches on the coat. It has five toes on the fore legs and three on the hind ones and has no tail.

Guines, formerly **Guisnes,** a small town in France, 8 miles S. of Calais; the scene of "the Field of the Cloth of Gold."

Guiney, Louise Imogen, an American poet; born in Boston, Jan. 7, 1861.

Guisborough, a town of the North Riding of Yorkshire, England, at the foot of the Cleveland Hills. Here are the remains of a priory built in 1119 by Robert de Brus, and at the time of the Reformation one of the wealthiest monastic institutions in the kingdom.

Guise, a town of the department of Aisne, France, on the Oise, 25 miles E. N. E. of St. Quentin. Within the town are the ruins of a castle, from which the famous Dukes of Guise derived their title. The iron works are conducted on a profit-sharing scheme; and the workmen are provided with dwellings on the associated plan. This "Familistere" was erected by the initiator of the experiment, J. B. A. Godin, in 1859–60. Within the buildings are a cafe, theater, nursery, schools, covered play-grounds, coöperative store, and a library and reading room. Guise was in the zone of the great campaign of the Aisne in 1915–17. Pop. about 9,000.

Guise, the name of a branch of the ducal family of Lorraine, which it derives from the town of Guise, in the department of Aisne.

Claude of Lorraine, first Duke of Guise, fifth son of Rene II., Duke of Lorraine; born at the chateau of Conde, Oct. 20, 1496; died April 12, 1550.

His daughter, Mary of Lorraine, born Nov. 22, 1515; in 1538 became the wife of James V. of Scotland. By his death in 1542 she was left a widow with one child, Mary, Queen of Scots. Under the regency of Arran which followed, war broke out between England and Scotland, partly on account of the claims which Henry VIII. made with regard to the infant Mary's marriage, and partly on religious grounds. Mary of Lorraine during those years acted with much wisdom and moderation; but after her own accession to the regency in 1554, she allowed the Guises too much to influence her policy, the result being that the Protestant nobles combined against her in 1559. This rebellion, which she was assisted by French troops to repress, continued almost to the time of her death, which took place in Edinburgh Castle, June 10, 1560.

Francis, second Duke of Guise, son of the first duke; born in Bar, Feb. 17, 1519; became one of the greatest generals of France. He and his brother Charles, the cardinal, managed to possess themselves of all real power during the reign of the weak King

Francis II. Putting themselves at the head of the Roman Catholic opposition to the Reformation, they repressed Protestantism with a strong arm. In the war between Huguenots and Catholics Guise and Montmorency won a victory at Dreux in 1562, and the former was besieging Orleans when he was assassinated by a Huguenot nobleman, on Feb. 18, 1563.

Henry I., third Duke of Guise, son of Francis; born Dec. 31, 1550. Filled by the murder of his father with bitter hatred of the Protestants, he fought fiercely against them. He was one of the contrivers of the massacre of St. Bartholomew, Aug. 24, 1572, in which he personally made sure that Coligny should be slain; and subsequently he put himself at the head of the Catholic League. He had, however, a greater ambition, that of succeeding to the throne of France, for in respect of real power he was already the equal, or rather the superior of the feeble King Henry III., whose commands he set at naught and whom he so deeply humiliated that the king procured his assassination at Blois, Dec. 23, 1588.

Guitar, a musical stringed instrument, somewhat like the lute, particularly well adapted for accompanying the human voice, and much esteemed in Spain and Italy. It has six strings, and the sound is produced by the fingers of the right hand twitching the strings, while the fingers of the left hand make the notes of the music on the finger-board, which has frets across it.

Guiteau, Charles Julius, an American assassin; born about 1840; became a lawyer in Chicago. In 1880, after the election of James A. Garfield to the presidency, Guiteau went to Washington presumably to secure the office of United States consul at Marseilles, but did not succeed. On July 2, 1881, he shot the President in the waiting room of the Baltimore and Potomac Railroad station in Washington; and on Sept. 19 the President died from the effect of his wound. Letters taken from Guiteau after his arrest showed that he had planned to "remove" the President. He was indicted for murder on Oct. 7, was found guilty, after a sensational trial, on Jan. 25, 1882; and was hanged in the District of Columbia jail, June 30, following.

Guizot, Francois-Pierre-Guillaume, a French historian; born in Nimes, Oct. 4, 1787; educated at the gymnasium of Geneva, Switzerland. On the fall of the empire he obtained several public offices, such as councillor of state, and director-general of the department and communal administration. He was Minister of the Interior, Ambassador to Great Britain, and Minister of Foreign Affairs. After the fall of Louis Philippe, Guizot escaped and fled to England. Henceforth he practically retired from public life. Among his numerous works may be mentioned: "History of Civilization in France"; "General History of Civilization in Europe"; and "History of the English Revolution." He died in Val-Richer, France, Oct. 12, 1874.

Gujarat, or **Guzerat,** the chief town of Gujarat district, in the Punjab, India; is a place of some military and political importance, as well as the center of a considerable trade. Here, in 1849, a decisive battle was fought, which finally broke the Sikh power, and brought the whole Punjab under British rule. Pop. (1901) 19,410.

Gulden, a silver coin of Austria-Hungary and also of Holland, worth about 40 cents; also called a florin.

Gulf of St. Lawrence, a W. inlet of the North Atlantic Ocean, touching all the British provinces of North America, Newfoundland, Canada, New Brunswick, Nova Scotia, and Prince Edward Island. It has three communications with the ocean; while in the opposite direction it narrows, at the W. end of Anticosti, into the estuary of the St. Lawrence river.

Gulf Stream, a well-defined current in the Atlantic Ocean. It is due to the reflux of the equatorial current. The condensation and superheating of the last-named current takes place mainly in the Caribbean Sea and the Gulf of Mexico, whence arises the name Gulf stream. Its temperature there is about 50°. It emerges as a defined hot current through the Straits of Florida, and courses in a N. E. direction at a little distance from the coast of the United States, so affecting the Bermudas as to make their climate semi-tropical. Between these is-

lands and Halifax the Gulf stream is about 60 miles broad, 100 fathoms deep, and moves at an average rate of 3 knots an hour, sometimes faster when influenced by storms. It is of a deep blue color. The Gulf stream moves in a N. E. direction toward Europe. It is generally believed to be through its influence that the W. coast of the European continent is so much milder than the corresponding latitudes of America.

Gulick, John Thomas, an American clergyman; born in Kauai, Hawaii, March 13, 1832, of American parents; was graduated at Williams College in 1856 and studied theology at the Union Theological Seminary. He later went to China as a missionary and subsequently to Japan. He is a well-known writer on topics relating to evolution and natural history.

Gull, the name of a genus of natatorial birds. They are widely distributed along the shores of the several seas and oceans, feeding voraciously on fish, or at certain times going some distance inland to look after worms in plowed fields. They are slaughtered by thousands to provide plumes for ladies' hats.

Gull, Sir William Withey, an English physician; born in Thorpe-le-Soken, Essex, England, Dec. 31, 1816. For his treatment of the Prince of Wales in 1871 he received a baronetcy, and became physician-extraordinary to the queen. Died Jan. 29, 1890.

Gum, a vegetable secretion, sometime occurring in intercellular spaces, formed by the separation of the walls of cells; it is viscid, but not oily. The most typical kind of gum is Gum Arabic.

Gum Arabic, a gum obtained from the Acacia arabica, which grows abundantly in India and Arabia. It is yielded also by other kinds of acacia. Gum arabic occurs in transparent white tears, which are often colored yellow or brown by impurities; it cracks on exposure to the air on the surface; it is brittle, inodorous, and has a bland, mucilaginous taste.

Gun, a strongly constructed metal tube, from which destructive projectiles are expelled by the gradually increasing pressure of gas evolved from fired gunpowder or other explosive. The term comprehends every description of firearm, from cannons, mortars, and other heavy pieces of ordnance to the fowling piece, rifle, and pocket pistol.

Gun Battery, in fortification, the emplacement of two or more pieces of artillery, destined to act on the offensive or defensive. In field-artillery, the tactical unit of field-artillery, consisting of six or eight field guns under one command, together with the officers, men, horses, wagons, and stores.

Gun Cotton, a cellulose product discovered by Schönbein in 1845. It is prepared by drying cotton-wool at 100°, and then leaving it for 24 hours in a mixture of one volume of nitric acid, specific gravity, 1.5, and three volumes of sulphuric acid, specific gravity, 1.85, the mixture being cooled to 10°. It is then washed with water, and, if required pure, again with a mixture of one part alcohol and three parts ether to remove the lower nitrates. Gun cotton finely divided explodes between 160°–170°. It keeps best if it is washed with soda. Compressed gun cotton burns like tinder, but is exploded by mercuric-fulminate.

Gunnery, in one important sense, the art of conducting the fire of artillery on land or on board ship. Any science exercised in the construction of guns, carriages, and ammunition, any talent in organization and tactics, is thrown away if the guns are not laid correctly on the target. Americans have always been noted for their superiority in gunnery, to which their naval victories over the British in 1812 and over the Spaniards in 1898 were chiefly due.

Gunnison, a river in Colorado, a tributary of the Grand river, and which passes through a remarkable canyon 15 miles in length.

Gunpowder, an intimate mechanical mixture of potassium nitrate (niter), sulphur and charcoal, which do not act on each other at the ordinary temperature, but when heated together arrange themselves into new forms evolving a very large amount of highly heated gas. These three ingredients may be mixed in greatly varying proportions, each being explosive. Experience has shown the following mixture to be of the best proportions:

Saltpeter 75 parts, charcoal 15 parts, and sulphur 10 parts.

According to Sir George Staunton gunpowder has been known in China and in India from a remote period of antiquity as an agent for blasting rocks. The statement, however, is doubtful. In Europe, Roger Bacon alluded to it in his work "Of the Nullity of Magic," about A. D. 1267. A German monk, Schwartz, about 1336, is said to have discovered the method of its manufacture.

The words "smokeless" and "noiseless" as applied to powder, are used in a comparative sense, as there is some smoke and some noise in nearly all these powders. It has been said that the report of a single Lebel rifle cannot be heard at a distance of more than 20 or 30 yards, that it may be said to make no smoke, and that the recoil is of no consequence. At 300 yards' range not a sound is heard when a volley is fired with it, and only a faint haze arises, which is almost imperceptible, while a shower of bullets is seen to fall on the targets, an effect produced seemingly without a cause.

Gunpowder Plot, a plot formed in England about A. D. 1604 by Robert Catesby, various Roman Catholics of rank, goaded into excitement by the penal laws directed against their faith and its professors, joining as accomplices. Their aim was to blow up the Houses of Parliament by gunpowder Nov. 5, 1605, and destroy king, lords, and commons by one blow. An anonymous letter of mysterious warning, sent to Lord Monteagle, having led to the discovery of the plot, various conspirators were executed Jan. 30 and 31, 1606, and one May 3 following. Among those put to death was Guy Fawkes, who had been caught in the vault below the House of Lords with matches and touchwood on his person ready to fire the train. Since 1605 all places connected with the Houses of Lords and Commons where explosives could be stowed away are annually searched at the opening of Parliament.

Gunsaulus, Frank Wakeley, an American clergyman and educator; born in Chesterville, O., Jan. 1, 1856. He graduated at the Ohio Wesleyan University in 1875. After 1887 he was pastor of a Congregational Church in Chicago, and from 1899 president of Armour Institute there. D., 1921.

Gunther, Archibald Clavering, an American author; born in Liverpool, England, Oct. 25, 1847. When five years old he was taken to California by his parents. He was a mining and civil engineer in the West from 1867 until 1874, when he became a stock broker. In 1877 he removed to New York, where he devoted himself to literature. D. 1907.

Gunther, Albert Karl Ludwig Gotthelf, a German ichthyologist; born at Esslingen, Wurtemberg, Oct. 3, 1830. He wrote many valuable zoological, ichthyological, and other works.

Gurkhas. See GOORKHAS.

Gurney, Sir Goldworthy, an English inventor; born in Treator, England, Feb. 14, 1793. His inventions include the oxyhydrogen blowpipe, the lime-magnesium and oil-gas lights, the high-pressure steam jet, the tubular boiler, a steam carriage, etc., and he claimed to have been the first to observe the deflection of the magnetic needle by voltaic cross currents. He was knighted in 1863. He died in Reeds, England, Feb. 28, 1875.

Gurowski, Adam de, Count, a Polish author; born at Kalisz, Sept. 10, 1805. In early life he was a leading Polish patriot and an instigator of the revolution of 1830. In 1849 he came to the United States, and from 1861 to 1863 was a translator in the State Department at Washington. He died in Washington, D. C., May 4, 1866.

Gustafson, Zadel Barnes Buddington, (Mrs.) an author; born in Middletown, Conn., Mar. 9, 1841.

Gustavus I., commonly called Gustavus Vasa, King of Sweden from 1523 to 1560, and deliverer of his country; born, according to recent authorities, in Lindholmen, Upland, May 12, 1496. He was the son of Eric Johansson, a Swedish senator and governor of Aland, from whom he derived the surname of Ericsson. Both his parents are said to have been descended from the ancient kings of Sweden. He studied at the University of Upsala, and entered the service of Ston Sture the Younger, administrator of the kingdom in 1514. Sweden had by the

union of Calmar become subject with Norway to the crown of Denmark. The country was at this time divided into two parties. There was a Danish party headed by the Archbishop of Upsala, and a Swedish party, which upheld the independence of the country, headed by the administrator whom it had raised to power. Gustavus fought with distinction under Sture against the Danes in 1517 and 1518. He was one of six nobles sent by Sture to Christian II. in 1518 as hostages for the safety of the king during an interview. Christian sent him to Denmark, where he was put under the charge of one of his relatives, Eric Baner, Lord of Kallo in Jutland. Here he remained more than a year, but hearing of the preparations made to subdue his country, he effected his escape and reached Lubeck in 1519. Christian II. was crowned at Stockholm on Nov. 4, 1520. On the 8th the heads of the Swedish party, among whom was Gustavus' father, were executed. By the beginning of 1521 Gustavus had raised a considerable force, and had repeatedly defeated the Danes. On Aug. 24 he was named administrator of the kingdom by the States which had assembled at Wadstena. On June 6, 1523, he was elected king by the Diet of Strengnas. On the 20th he became master of Stockholm, which he had besieged three times. He deferred his coronation to avoid taking the oath to support the Church, as he had become a convert to Lutheranism, and had determined to humble the clergy, whose power was excessive.

In 1527 he obtained the exclusion of the bishops from the senate and their subjection to the civil power. He now openly professed Lutheranism, and was crowned by a Protestant archbishop of Upsala on Jan. 12, 1528. The Lutheran religion was formally established at a diet held at Orebro in 1529. In 1544 the States assembled at Westeraas declared the kingdom hereditary in his house. He died in Stockholm Sept. 29, 1560.

Gustavus II., Gustavus Adolphus, King of Sweden; a grandson of Gustavus Vasa; born in Stockholm Dec. 9, 1594, and received a most careful education. He was trained to war under experienced generals, and at the age of 16 he took his place in the State council. Charles IX., the father of Gustavus, had been declared king to the exclusion of his nephew Sigismund, who, on accepting the crown of Poland during his father's lifetime, had abjured the Protestant religion. On the death of Charles, Gustavus succeeded him, with the consent of the States, as king-elect. Sweden was at this time at war with Denmark, and Gustavus, then in his 17th year, was in command of the army. He chose for his chancellor and first councillor Axel Oxenstiern, a man 10 years his senior, but already eminent for his ability, and who eventually proved himself to be one of the greatest of European statesmen. The war with Denmark was concluded through the mediation of England in 1613. Gustavus next made considerable conquests in Russia.

His attention was now diverted from Northern wars by the affairs of Germany. The oppression of the Protestants by Ferdinand II. excited his sympathy. He was alarmed by the progress of Wallenstein, which threatened to extend the empire to the Baltic, and by leaguing himself with the Protestants of Germany he might hope for easier and more extensive conquests than by struggling single-handed against the Northern powers. He named his daughter Christina heiress to the throne, embarked for Germany on May 30, 1630, and landed on June 24 with an army of 13,000 men in the island of Usedom on the coast of Pomerania. After repeatedly defeating the imperial generals, and conquering a great part of Germany, he was killed in the battle of Lutzen, Nov. 16, 1632. Gustavus differed from some other great commanders in preferring a small well-ordered army to a large one. He used to say that all over 40,000 men were an incumbrance. His character made him beloved by his soldiers, and he was served with a devotion which enabled him to effect great things with small means. The discipline which he imparted to the Swedish army and the prestige of success derived from his victories, lasted long after his death. His body was taken to Sweden.

Gustavus III., King of Sweden; born in Stockholm, Jan. 24, 1746; was the eldest son of Adolphus Frederick,

Duke of Holstein, who had been called to the Swedish crown in 1743. He succeeded his father on Feb. 12, 1771. He found the country divided between two aristocratic factions, the adherents of France and Russia, known respectively as the Hats and Caps. He resolved to give the country a new constitution, and to increase the power of the crown. The nobles formed a conspiracy against him and resolved on his death. Three of them took an oath to murder him and drew lots which should carry out their intention. The lot fell on Captain Ankarstrom, who shot the king in the back at a masquerade at Stockholm March 16, 1792. He died on March 29.

Gustavus IV., Adolphus, King of Sweden; born in Stockholm, Nov. 1, 1778; succeeded, on the death of his father, March 29, 1792, but was deposed, 1809, and succeeded by his uncle, under the title of Charles XIII. Gustavus died in poverty in St. Gall, Switzerland, Feb. 7, 1837.

Gustavus V., King of Sweden; born June 16, 1858; married Princess Victoria of Baden, cousin of the German emperor, 1881; succeeded his father, King Oscar II., Dec. 8, 1907, having several times previously acted as regent; eldest son, Prince Gustavus Adolphus, born Nov. 11, 1882.

Gutenberg, Johannes, or **Henne,** a German printer; born in Mainz, about 1400. At Mainz in 1449 or 1450, he entered into partnership with Johannes Fust or Faust, a wealthy goldsmith, who furnished the money required to set up a printing press. This partnership was, however, dissolved after the lapse of a few years, Fust bringing an action at law against Gutenberg to recover the sums he had advanced. In consequence of the legal verdict, Fust retained the printing concern, and carried it on in conjunction with Peter Schoffer of Gernsheim. Gutenberg is considered the inventor of movable type. He died Feb. 24, 1468.

Guthrie, city and capital of Logan County in the State of Oklahoma; on the Cimarron river and six railroads; 31½ miles north of Oklahoma City; is in a grain, cotton, fruit, and broom-corn section; contains, besides the State Capitol, the State prison and State Deaf and Dumb Institute; is chiefly engaged in industries connected with manufacturing, cotton, and lumber. Pop. (1920) 11,757.

Guthrie, George Wilkins, an American diplomat; born in Pittsburg, Pa., Sept. 5, 1848; was admitted to the bar in 1869; associate counsel of the Tilden electors before the Florida Returning Board in 1876; mayor of Pittsburg in 1906–09; and Ambassador to Japan from 1913 till his death at this post, March 7, 1917. The Japanese Government assigned a warship to convey his remains to the United States.

Guthrie, Samuel, an American chemist; born in Brimfield, Mass., in 1772; was one of the original discoverers of chloroform, which was tested in 1831. He died Oct. 19, 1848.

Guthrie, Thomas, a Scottish clergyman; born in Brechin, Forfarshire, July 5, 1803; best known for his introduction of the ragged school system. He died Feb. 24, 1873.

Gutsmuths, Johann Christoph Friedrich, a German teacher; born in Quedlinburg, Prussian Saxony, Aug. 9, 1759. He is specially remembered for having introduced gymnastics as a branch of education in German schools. He died May 21, 1839.

Gutta-Percha, the inspissated juice of the gutta-percha tree. It occurs in tough, textile pieces of a light-brown color, which are soluble in benzene, chloroform, and bisulphide of carbon, insoluble in water, and only slightly soluble in alcohol and ether. Refined gutta-percha is used for making soles of boots impervious to water, for door handles, ear trumpets, golf balls, etc. It is made into bottles to contain hydrofluoric acid, as it is not acted on by that acid. Above all it is employed for coating submarine telegraph wires, partly to protect them from the salt water, partly to insulate them, gutta-percha being a decided nonconductor of electricity.

Gutta-percha Tree, a large tree growing 60 or 70 feet high, its trunk having a diameter of two or three feet. It grows in Borneo, Sumatra, Singapore, and other islands of S. E. Asia.

Gutzlaff, Karl Friedrich August, a German missionary to China; born in Pyritz, Pomerania, July 8,

1803. In 1828 he went to Bangkok, Siam, where he translated the Bible into Siamese, reaching China in 1831. During the rest of his life he lived mostly at Macao and Hong Kong, occupying himself with a translation of the Bible into Chinese, writing various books in Chinese, German, and English, and training native preachers to carry the Gospel into the interior. He rendered valuable assistance to the British during the war of 1840–1842 and the subsequent negotiations for peace. He died in Hong Kong, Aug. 9, 1851.

Guy, Thomas, an English philanthropist; founder of Guy's Hospital, Southwark, London; born in London in 1644. He contracted with the University of Oxford for the privilege of printing Bibles, which he continued to do for many years. By this means, and by selling out his original shares in South Sea stock at a great advantage, he amassed a fortune of nearly $2,500,000. He was a liberal donor to charitable institutions of all kinds. He died Dec. 27, 1724.

Guy of Warwick, the hero of one of the most ancient and popular of early English metrical romances. The hero, Sir Guy of Warwick, is the son of Segard, steward of Rohand, Earl of Warwick; his instructor in the exercises of chivalry, the famous Herand of Ardenne. Having fallen deeply in love with Felice, the fair and accomplished daughter of the earl, he fell into a grievous sickness, but was recalled to life by a promise of her hand when he had earned it by knightly deeds. He performed the most stupendous feats of valor, slaying the famous Dun Cow on Dunsmore Heath, and a most portentous dragon then ravishing Northumberland, which won for him the fair Felice. But remorse for all the slaughter he had done merely for a woman's love began to seize him, and after 40 brief days of wedded happiness he left his home in the dress of a palmer to visit the Holy Land. Later he retired to a hermitage at the place still called Guy's Cliff, near Warwick. Before his death he sent her parting ring as a token to Felice, and she arrived in time to close his eyes, survived him for but 15 days, and was buried in the same grave.

Guyon, Madame Jeanne Marie Bouvier de la Motte, a French mystic; the introducer in France of the system of Quietism; born in Montargis, April 13, 1648. At the age of 16 she was married to Jacques Guyon, after whose death in 1676 the tendency to mystic enthusiasm which had characterized her younger years again acquired ascendency, and she began the religious propagandism of her extreme views of self-abnegation, indifference to life and death, and even to future salvation or perdition. A commission of ecclesiastics, chief among whom was Bossuet, sat in judgment, and the doctrines of Madame Guyon were condemned (1695). This led to her being imprisoned for some years, in the Bastile, whence she was liberated in 1702. She died in Blois, June 9, 1717.

Guyot, Arnold, an American geographer; born near Neuchatel, Switzerland, Sept. 28, 1807; was the colleague of Agassiz, at Neuchatel in 1839–1848, and in 1848 accompanied him to the United States. In 1854 he was appointed Professor of Physical Geography and Geology at Princeton College. He had the management of the meteorological department of the Smithsonian Institution, where he more than once delivered courses of lectures, and in connection with which he published "Meteorological and Physical Tables." His other works include several biographies and a series of geographies and wall maps which are in general use in American schools. He died in Princeton, N. J., Feb. 8, 1884.

Guy's Hospital, a hospital in Southwark, London; founded by Thomas Guy. The first stone of the building was laid in 1722, and the hospital admitted its first patient in 1725, a few days after the death of its founder. The whole expense was $94,400, great part of which Guy expended in his lifetime, and he bequeathed $1,097,500 to endow it. The yearly average of patients is over 5,000; the out-patients relieved amount to above 80,000.

Guzman Blanco, ANTONIO, a Venezuelan soldier and politician. See BLANCO, ANTONIO GUZMAN.

Gvosdevi, a group of islands in Bering Strait, between North America and Asia. Imaglin, the largest, is 25

miles in length. They are low and destitute of vegetation.

Gwalior, a native State of Central India, the dominions of the Mahratta Maharajah Sindhia; area, 25,107 square miles; pop. (1921) 3,200,000. Since 1803 the country has been under British protection.

Gwalior, a town and capital of the State of Gwalior. Gwalior possesses two remarkable Hindu temples, and one of the most interesting examples of Hindu palace architecture in India; Jain caves and rock sculptures abound on all sides. Pop. (1921) 72,400.

Gyges, King of Lydia, who obtained the throne by murdering his master, King Candaules, and marrying his widow, about 687 B. C. Gyges reigned 34 years, during the course of which he wrested Magnesia and Colophon from the Ionian Greeks, lent assistance to Psammetichus in his revolt in Egypt against Assyria, and, after stoutly defending himself for some time against the Cimmerians, was at last slain by them in 654 B. C.

Gymnasium, the name given by the Greeks to the public building where the young men, naked or nearly so (hence the name, from gymnos, naked), exercised themselves in leaping, running, throwing the discus and spear, wrestling, and pugilism. This institution was established in most of the cities of Greece and in Rome under the Cæsars. Its objects, however, did not remain confined merely to corporeal exercises, but were extended also to the exercise of the mind; for here philosophers, rhetoricians, and teachers of other branches of knowledge delivered their lectures.

In the United States, colleges are generally provided with gymnasia, and bodily exercises are becoming a feature of the public school system. Many police stations also have gymnasia.

Gymnastics, the technical term used to designate any system of exercises specially designed to promote the development of physical, and especially of muscular powers. Such exercises may be either general or special. Special exercises are those designed to train particular muscles, thus in singing or playing on musical instruments the muscles of the mouth and chest, and of the hand and arm, are specially exercised. Gymnastics proper consist in exercises designed to promote muscular development without regard to the particular uses to which the developed power may be applied. It may be remarked in passing, that singing, dancing, violin-playing, billiards, cricket, football, bowling, rowing, military exercises, and similar amusements, afford means of physical education or development all the more valuable that it is acquired insensibly, and that such pursuits are more likely to be persevered in than any set of formal exercises which have no interest in themselves. The special value of formal gymnastic exercises is that they are capable of being scientifically arranged so as to secure not only a general development of muscular power, but what is of even greater value, an accurate knowledge of the uses of the various muscles, contributing to the economy of muscular power on which health as well as successful exertion depends, and especially that they are capable of being applied to each individual case, so as to meet, allow for, and as far as possible overcome defects in physical organization. For these purposes an elementary course of gymnastics is of great value to all, especially to the sedentary student.

The first or elementary stage of gymnastics, which should be practised by children of both sexes, consists in regular series of simple muscular movements without instruments; assuming poses or attitudes, saluting, making various flexures of the arms, legs, or body, rising on the toes, marching, etc. These exercises are performed at first slowly and carefully, afterward rhythmically to the word of command or the sound of music, such "musical drill" being now very common in schools. It is said that by a well regulated course of such exercises, without any accessories whatever, the strength of a boy may be doubled. These exercises form a necessary preparation for the gymnasium, in which, by means of complete apparatus and appliances, all the muscles of the body are regularly trained to their full development. Gymnasiums are fitted with such appliances as horizontal and parallel bars, trapezes hung from the roof, vaulting horses.

ladders set horizontally and otherwise, climbing ropes and poles, weights to be raised by pulleys and ropes, besides such things as dumb-bells, bar-bells, Indian clubs, etc. There are now also pulling apparatus which may be fixed up in private houses and form a useful means of exercise at home. A gymnasium training is most effective when conducted by an experienced master. In default of this there are many useful little treatises which explain the various kinds of apparatus and give detailed directions for their use.

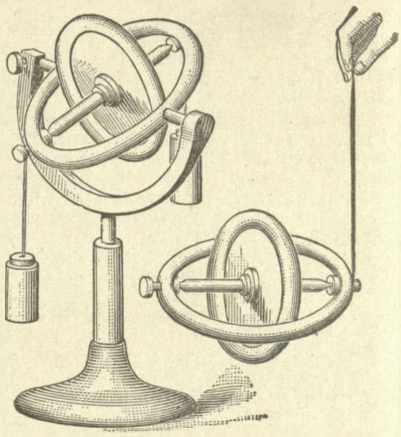
Gynæcology, that branch of medicine which treats of the diseases of women.

Gyp, pseudonym of Countess Gabrielle de Martel de Janville, a French novelist; born in the Chateau de Koetsal, Morbihan, about 1850. She is the creator of several new types, and has been a prolific writer.

Gypsies. See GIPSIES.

Gypsum, a calcium sulphate usually found as a mineral deposit, in some places constituting rock masses. It may be of any age. Near Paris it is Middle Eocene. Frapoli says that some gypsums were originally carbonates instead of sulphates of lime, and that they underwent metamorphism by the action of volcanic sulphurous or sulphuro-hydrous vapors. The principal producing States are Michigan, New York, Iowa, and Kansas. The United States ranks second to France in the world's production.

Gyroscope, an instrument constructed by M. Foucault to make the rotation of the earth visible. The principle on which it proceeds is this—that, unless gravity intervene, a rotating body will not alter the direction in which its permanent axis points. In the gyroscope there is a rotating metallic disk, the middle point of whose axis is also the center of gravity of the machine. By this device the action of gravity is eliminated. The instrument, moreover, is so constructed that



GYROSCOPE.

the axis of rotation can be made to point to some star in the sky. Then, as the heavy disk whirls round, it is found that the axis continues to point to the moving star, though, in consequence of this, apparently altering its direction relatively to bodies on the earth. If, again, the axis be pointed to the celestial pole, which is fixed, no alteration in its position relative to bodies on the earth takes place. The only feasible explanation of these appearances is that the earth is revolving on its axis.

Gyulai Pal, a Hungarian poet; born in Klausenburg in 1826. He began as a journalist. Later he was made Professor of Hungarian Literature at the University of Budapest. For many years past he has been at work upon a satirical poem scathing the present age and its follies, called "Romhanyi," modeled upon Byron.

H

H, the eighth letter and sixth consonant in the English alphabet, having as its most proper and distinctive sound that which is heard in such words as hart, hat, when, what, etc. In Latin and ancient Greek it was not considered as a true consonant, but merely as a breathing. H, among the Greeks, as a numeral, signified 8; in the Latin of the Middle Ages 200, and H with a dash over it 200,000. In music the Germans use this letter for the note we call B. Our B flat they simply call B.

Haakon VII., King of Norway; b. at Copenhagen Aug. 3, 1872. The 2d son of King Frederick VIII. of Denmark; as Prince Karl he married Princess Maud Charlotte, 3d daughter of King Edward VII. of Great Britain, July 22, 1896. On Nov. 20, 1905, he became by election King of Norway.

Haarlem, a town of Holland, 10 miles W. of Amsterdam;

Haarlem, Lake of, a former lake of Holland, adjoining and communicating with the Ij, between Haarlem and Amsterdam. The draining, commenced in 1840, was completed in 1853, and 45,000 acres of fertile land recovered is now occupied by a commune numbering about 16,000 inhabitants.

Habakkuk, in the Old Testament, the eighth book of the minor prophets, composed when the Chaldean invasion was imminent, probably about 610 B. C.

Habberton, John, an American journalist; born in Brooklyn, N. Y., Feb. 24, 1842. After service in the Civil War he became literary editor of the "Christian Union" (1874), and editorial writer on the New York "Herald" (1877). His best known novel is "Helen's Babies" (1876); over 150,000 copies were sold.

Habeas Corpus, in law, a writ (more fully habeas corpus ad subjiciendum) directed to the person detaining another, and commanding him to produce the body of the prisoner, with the day and cause of his caption and detention, to do, submit to, and receive whatsoever the judge or court awarding such writ shall consider in that behalf. It is applicable in all cases where a person in custody claims to be illegally detained, or wrongfully refused bail, or who desires to be removed from one court to another. The Habeas Corpus Act has been substantially incorporated into the jurisprudence of every State in the Union, and the right to the writ has been secured by the constitutions of most of the States, and the United States.

Habit, a tendency or aptitude for the performance of certain actions, acquired by custom, or a frequent repetition of the same act. Animals as well as mankind and to some extent plants even are influenced by this force, which in many cases becomes so strong as to deserve the proverbial phrase of being second nature.

Hachette, Louis, a French publisher; born in Rethel, Ardennes, France, May 5, 1800. In 1826 he established in Paris a publishing business, principally with the intention of issuing books calculated to improve school teaching and elevate the general intelligence. He was also a friend of the working classes, and the promoter of international copyright. He died July 31, 1864.

Hackee, or Chipping Squirrel, The, one of the most familiar of North American quadrupeds, found in great numbers in almost every locality. The general color of the hackee is usually a brownish-gray on the

back, warming into orange-brown on the forehead and the hinder quarters. On the back and sides are drawn five longitudinal black stripes and two streaks of yellowish white, so that it is a most conspicuous little creature, and by these peculiar stripes may easily be distinguished from any other animal. The abdomen and throat are white. The length of the hackee is usually about 11 inches, the tail being about 4½ inches in length.

Hackett, Horatio Balch, an American clergyman; born in Salisbury, Mass., Dec. 27, 1808. He was one of the committee of New Testament revision, and with Ezra Abbot edited the American edition of Smith's "Bible Dictionary" (1868–1870). He died in Rochester, N. Y., Nov. 2, 1875.

Hackett, James Henry, an American actor; born in New York city, March 15, 1800. He was particularly successful in impersonating Yankees and Westerners, but was best known by his Falstaff, which he played first about 1832. He wrote "Notes and Comments on Shakespeare" (1863). Died in Jamaica, N. Y., Dec. 28, 1871.

Hacklander, Friedrich Wilhelm von, a German novelist and comedy writer; born in Burtscheid, near Aix-la-Chapelle, Prussia, Nov. 1, 1816; died in Leoni, July 6, 1877.

Hackmatack, a term applied in many parts of the United States to the American larch.

Hackney, a parish of Middlesex, England, now forming a suburb of London. It was at one time a favorite suburban residence of London citizens. In its earlier and fashionable days it is by some said to have given its name to hackney coaches.

Hadad, an ancient Assyrian deity frequently mentioned in the Bible by a compound name.

Haddock, a fish of the same genus with the cod, and much resembling it in general appearance. It is taken both by trawl nets and lines. The usual bait for the long lines used to catch this fish is mussel. The haddock, when really of good quality, is perhaps the finest of all the Gadidæ. It does not "take salt" so well as the cod, but is often cured by drying and smoking. In March and April the haddock is out of season; in October, November, December, and January it is in its finest condition.

Haden, Francis Seymour, an English etcher and surgeon; born in London, England, Sept. 16, 1818. In 1857 he was elected a Fellow of the Royal College of Surgeons. His etching was undertaken as a relaxation. The chief qualities of his work are vigor and breadth. He was president of the Society of Painter Etchers. He died June 1, 1910.

Hades, in Homer the Greek word Ades figures as the name of a god, in large measure corresponding to the Roman Pluto. After Homer it becomes a place to which the dead go. Both Greeks and Romans supposed the infernal regions to be in the center of the earth. To enter these, in the Roman opinion, the river Styx had to be crossed by the spirits of the dead, Charon, the ferryman, for a very small sum, rowing the boat. If, by any misfortune the body had been unburied, the soul had to wander 100 years on the banks of the Styx before it was taken across. Pluto was the king of the spirit world, Rhadamanthus its most noted judge.

In the Jewish belief, the place of the dead; the Hebrew Sheol, which occurs 65 times in the Hebrew Bible, and in 61 of them is rendered in the Septuagint Hades. In the Authorized Version of the English Bible it is translated in the Old Testament 31 times by "grave," 31 times by "hell," and 3 times by "pit." The ancient Hebrews conceived of Sheol as situated below, so that souls had to "go down" or descend before entering it.

Hading, Jane, a French actress; born in Marseilles, France, Nov. 25, 1859. She went on the stage in early childhood, and toured the United States in 1885.

Hadith, the traditions about Mohammed the Prophet's sayings and doings, which, as complementary to the Koran, form with it the supreme authority for all religious and legal questions of the Mohammedans.

Hadji, the title of the Mohammedan who has made a pilgrimage to Mecca, a religious act which every true believer is bound to perform at

least once in his life; though minors, slaves, and lunatics are exempt.

Hackensack, a city and county seat of Bergen co., N. J.; on the Hackensack river and several railroads; 14 miles N. W. of New York City. It is both a residential and a manufacturing city, and is historically interesting because it was settled by the Dutch in the latter part of the 17th century, and in the Revolutionary war was occupied in turn by the British and American armies. Pop. (1900) 9,443; (1910) 14,050; (1920) 17,667.

Hadley, Arthur Twining, an American educator; born in New Haven, Conn., April 23, 1856; was graduated at Yale College in 1876; studied at Berlin; Professor of Polit. Science 1886 and President of Yale University, 1899-1921; held a Roosevelt professorship in Berlin in 1907–8; appointed by President Taft chairman of a commission to investigate the control of securities by concerns engaged in interstate commerce.

Hadley, John, an English mathematician, the inventor of Hadley's quadrant and of a reflecting telescope; born April 16, 1682. The honor of having invented the sextant is claimed for Hadley, Godfrey, and Newton. Each seems, however, to have made his own discovery independently. Hadley described his instrument, which he called an "octant," to the Royal Society on May 13, 1731. He died Feb. 14, 1743.

Hadrian's or **Adrian's Wall,** in N. England, sometimes called the Wall of Severus, is commonly believed to have been built by the Roman emperor Hadrian to protect the province from the barbarous tribes of the North. Considerable portions of it remain.

Haeckel, Ernst Heinrich, a German naturalist and Darwinian; born in Potsdam, Prussia, Feb. 16, 1834; became Professor of Zoölogy at the University of Jena, in 1865; withdrew from the Evangelical Church in 1910, as a protest against reactionary tendencies. Died, 1919.

Hæmatemosis, blood effused into the stomach, and thence rejected, differing thus from hæmoptysis, hæmorrhage from the lungs.

Hæmatite, a mineral consisting chiefly of peroxide of iron; a valuable iron ore. There are two principal varieties, red hæmatite and brown hæmatite.

Hæmoglobin, an albuminoid substance which forms the chief part of the red corpuscles of the blood of vertebrata.

Hæmorrhage, bleeding from the heart, arteries, capillaries, or veins, capillary hæmorrhage being the commonest form. Generally though not invariably the vessels are ruptured. In a solid organ it is called an extravasation, hæmorrhagic infraction (in embolism), or apoplexy. Hæmorrhage from the nose is known as epistaxis; from the lungs, hæmoptysis; from the stomach, hæmatemesis; from the female organs, menorrhagia; from the urine, hæmaturia; from the bowels, melæna.

Hæmus, in ancient geography, the name applied to that part of the Balkan chain which separates Thrace from Thessaly. According to mythology, Hæmus, son of Boreas and Orithyia, having aspired to divine honors, was changed into this mountain.

Hafiz, the poetical name of Khwaja Shams-ad-din Muhammad, Persia's famous lyric-poet; born in Shiraz, about 1300. Hafiz seems to be most characteristic in his many "Ghazels" or odes, whose themes are his own emotions. He died in Shiraz in 1389.

Hag, the name of certain fishes of worm-like form and without eyes or scales. The mouth is formed for suction, is without lips, and furnished with fleshy filaments or barbels. There is a single median fang on the palate by means of which the hag makes its way into the interior of other fishes, such as the cod, ling, or haddock, where it lives parasitically. An American species is not uncommon in rivers of New York and New England.

Hagada, in Hebrew literature, a branch of the Midrash, or most ancient Jewish exposition of the Old Testament. It extends over the whole of these sacred books and is homiletic and poetical.

Hagedorn, Friedrich von, a German poet; born in Hamburg, April 23, 1708. He was successively in

diplomacy, law, and trade, giving his leisure to literature. He died in Hamburg, Oct. 28, 1754.

Haggai, in the Old Testament, the 10th of the 12 minor prophets. Of the seer himself nothing is known. His book has always been regarded as canonical. The several dates are all in the second year of Darius the king —i. e., of Darius Hystaspes, B. C. 520.

Haggard, Henry Rider, an English novelist; born in Norfolk, England, June 22, 1856. He was a barrister by profession. At the age of 19 he accompanied Sir H. Bulwer as secretary to Natal, and served on the staff of Theophilus Shepstone during his mission to the Transvaal. He wrote several novels bearing on South Africa. Died, 1925.

Haggis, a Scotch dish, usually made with the large stomach bag of a sheep, also one of the smaller bags called the king's hood, together with the lights, liver, and the heart.

Hagiographa, a Greek word, signifying sacred writings, first introduced by Epiphanius as the rendering of the Hebrew word Kethubhim = writings. In our present Hebrew Bibles the Hagiographa consist of 13 books thus arranged: Psalms, Proverbs, Job, Song of Solomon, Ruth, Lamentations, Ecclesiastes, Esther, Daniel, Ezra, Nehemiah, and I and II Chronicles.

Hague, The, the capital of the Netherlands, 2 miles from the North Sea and 15 N. N. W. of Rotterdam. It is one of the handsomest cities in the country, being intersected by canals and shady avenues of lime-trees, and having many fine public buildings and private houses. In the center of the city is the Vijver, or fish pond, to the S. of which stands the old castle of the counts of Holland. It consists of two courts, an outer and an inner; in this latter are the 13th-century Gothic knights' hall and the chambers in which the Dutch parliament holds its sittings. On one side of the outer court stands the gate tower, which was formerly used as a state prison, and in which the brothers De Witt were confined till dragged thence and torn to pieces by the populace (1672). The most noteworthy public buildings and institutions are the picture gallery, with a splendid collection of works by native painters (Paul Potter's "Bull" and Rembrandt's "Lesson in Anatomy"); the royal library, with 200,000 volumes, 4,000 MSS., and collections of coins and gems; the municipal museum, with several Dutch pictures; the Museum Meermanno-Westreenen, containing a collection of early printed books; the ethnographic museum, rich in Chinese and Japanese objects; the town-house; and the royal palaces. The church of St. James is the most important ecclesiastical edifice; it dates from the 14th century and is Gothic in style. The city owes its importance mainly to the fact that it is the residence of the court and the capital of the country; but it has also considerable manufacturing industry. Here numerous treaties have been signed and diplomatic conferences held, especially the Triple Alliance of 1668 and that of 1717, and the International Peace Congress since 1899. The Hague is the seat of the International Court of Arbitration. Law Library and Temple of Peace. Pop. (1921) 353,286.

Hague, Arnold, an American geologist; born in Boston, Mass., Dec. 3, 1840; was graduated at the Sheffield Scientific School of Yale College in 1863 and then studied abroad. Returning to the United States he spent about 10 years in the West investigating the Comstock lode. In 1877 the government of Guatemala appointed him geologist, and he visited the centers of volcanic activity and the chief mining districts of that country. In the following year he was employed by the Chinese government to study the gold, lead and silver mines in Northern China. In 1879, when the United States established the geological survey, he accepted a place in that bureau.

Hague William, an American clergyman and prose-writer; born in Pelham, N. Y., Jan. 4, 1808. He held pastorates in Baptist churches in Utica, N. Y., Boston, Providence, and New York; and was Professor of Homiletics in the Baptist Theological Seminary at Chicago in 1869. He died in Boston, Mass., Aug. 1, 1887.

Hahnemann, Christian Friedrich Samuel, the founder of Homœ-

opathy; born in Meissen, Saxony, April 10, 1755. After graduating at the University of Erlangen, he practised medicine and held several public appointments in Dresden and elsewhere, and then settled in a small village near Leipsic. His observation and practice had convinced him, not only of the uselessness, but also of the injurious character of the prevailing methods of treatment, and he now abandoned all practice and devoted himself to chemical research and the translation into German of foreign scientific books. In these investigations he occupied 6 years. They proved to him that, in all instances the medicine which had cured produced a very similar condition in healthy persons to that it had relieved. This conclusion he published in an essay in "Hufeland's Journal," in 1796. It is in this essay that the principle of similia similibus curantur (similar things are cured by similar things) is first put forward by him, not as a theory but as a fact. His views at once met with vehement opposition. The very small doses of medicine which alone were needed according to his method, provoked the apothecaries, who refused to dispense his prescriptions, and he accordingly gave his medicines to his patients without charge. At Leipsic he remained till 1821, when a successful prosecution by the apothecaries drove him from the city. Under the protection of the Duke of Anhalt-Kothen he retired to Kothen, where he became a center of attraction to numerous invalids in all parts of the world. His wife dying in 1831, in 1835 he married a French lady, who induced him to remove to Paris, where he resided and practised till his death, July 2, 1843. A statue of him was erected in Leipsic in 1851.

Haidarabad, a State of Hindustan which comprehends the greater part of that central plateau of Southern India known as the Deccan, and is in possession of a Mohammedan prince, the Nizam; area, 82,698 square miles, exclusive of the Berar or Haidarabad Assigned Districts under British administration. The country is intersected or bounded by the Godavery, Kistnah, and their tributaries. The chief products are rice, wheat, maize, sugar cane, tobacco, cotton, indigo, fruits and timber. Pop. (1921) 11,500,000. Haidarabad, the capital, is on the Musi river at an elevation of 1,672 feet above the sea. Among the chief buildings are the extensive palace of the Nizam, the British residency, the Char Minar, or Four Minarets, built about 1590 as a Mohammedan college, but now used for warehouses; the Jama Masjid, or cathedral mosque, copied after that at Mecca. Pop, of city and suburbs (1921) 404,187.

Haig, Douglas, 1st Earl, a British military officer; born at Cameronbridge, Fife, Scotland, June 19, 1861; distinguished himself and won high honors in the South African campaigns; was Inspector-General of Cavalry in India in 1903–6; Director of Military Training in 1906–7; Director of Staff Duties at army headquarters in 1907–9; then Chief of Staff in India. He succeeded his former commander, Sir John French, as chief of the British forces operating in France.

Hail, the fall of aerial moisture in the form of ice. Hail occurs in two unlike forms, of different origin, which are now distinguished as hard, or true hail, and soft hail. The latter, often also known as sleet, denotes the fine, light rains that frequently fall in winter, rarely in summer, and seem an accompaniment of snow. The theory of hail formation entertained by many meteorologists is that atmospheric vapor, carried up by vertical motion of the air, is condensed into rain, and at a greater height into snow. The rain-drops, still carried upward, and held suspended for a time, are frozen into clear ice. They may fall in this condition, or may be caught during their fall by the vortex and again carried upward, gaining a new coating of ice, which is covered with frozen snow in the form of granular ice.

Hail Mary, the best known and most general form of prayer which the Roman Catholic Church makes use of in honor of the Virgin.

Hainan, an island of China in the province of Kwang-tung, E. of the Gulf of Tonquin, separated from the mainland of China by a channel of but 10 miles in width; area, 12,000 square miles. The E. coast is steep and rocky; the N. W. coast is unap-

proachable because of sandbanks; but the S. coast is indented with several commodious and safe harbors. The interior of the island is mountainous and barren, but the low lands near the sea are fertile and well cultivated. Products, sugar, pearls, coral, wax, gold, and silver. The metropolis of the whole island is Kiang-choo-foo, the port of which has been open to European shipping from 1858. Though the Chinese have possessed this island since 108 B. C., yet there are in the interior some wild and hitherto unsubdued tribes.

Hair, a small filament issuing from the skin of an animal, and from a bulbous root; or the collection of mass of filaments growing from the skin of an animal, and forming an integument or covering. The structure is analogous to that of the teeth, the hair-follicle being an inversion of the skin, as the tooth-follicle is of the mucous membrane, and is formed like dentine by the conversion of pulp enclosed in a follicle, the external and densest part being the bulb, the soft interior the pulp. Hairs, like the nails, are horny protuberances from the epidermis, and show two parts, the cortical or investing (horny), and the medullary (the pithy interior), varying in different animals, from the hedgehog and porcupine to the musk-deer. Human hair is composed of a tube of horny fibrous substance, with a central medulla inclosing pigment cells; outside all are scales like tiles on a roof, forming delicate lines on the hair surfaces, transverse, oblique, or spiral. Emotion has been known to turn the hair white in a single night, but of all the animal tissues it is the most durable, being found very perfect in Egyptian mummies nearly 4,000 years old.

Haircloth, stuff or cloth made wholly or in part of hair, and used for the covering of chairs, couches, cushions, etc. In the form of a shirt it was formerly much used in penance. Horsehair for the manufacture of haircloth is principally derived from South America.

Hairdressing. As a matter of convenience, as well as of taste and fashion, the dressing of the hair has received much attention in all civilized nations, ancient and modern. Among savages the most extraordinary diversity as to the dressing of hair obtains; some frizzing it to the utmost extent; some fixing it in all sorts of perverse arrangements by means of frames, and some partially shaving the head. The Chinese pig-tail, the American Indian scalp-lock, and the Moslem shaven head, with a small tuft left by which to be ultimately lifted into Paradise, are well known. According to Rev. J. G. Paton, missionary, some of the New Hebrides people have hair crisp and woolly, stuck full of feathers and shells; others have hair long and wavy, twisted into as many as 700 separate whip-cords on a single head, requiring the labor of five years to complete. Among modern civilized Europeans the courtiers and cavaliers of the 17th century adopted the practice of wearing those "love-locks" which excited the ire of the Puritans.

Hair Dyes, substances used for changing the natural color of the hair to a more favorable one, and for hiding the approaches of age, as indicated by the presence of gray hairs. Some of them are dangerous to health.

Hair Powder, a pure white powder, made from pulverized starch, scented with violet or some other perfume, and at one time, especially in the 17th and 18th centuries, largely used for powdering over the heads of both men and women. To make the powder hold, the hair was usually greased with pomade. In Great Britain in 1795 a tax of a guinea (afterward £1 3s. 6d.) was put on the use of hair powder, and at one time yielded $100,000 per annum, but it had the effect of causing hair powder to fall into general disuse. The French Revolution, which overturned so many institutions, contributed also to the people of Europe returning to natural and unpowdered hair. The tax on hair powder was repealed in England in 1869.

Hair Shirt, in ecclesiology and Church history, an instrument of penance, made of horse-hair; strictly speaking, it is a broad band rather than a shirt, and is worn round the loins, affording the wearer continual occasion of mortification.

Haiti, a republic on the island of Haiti, W. I.; bounded by the Domin-

ican Republic, Atlantic Ocean, and Caribbean Sea; area, 10,204 square miles; capital, Port-au-Prince; pop. (1923 Est.) 2,045,000.

The country is mountainous, being traversed by a volcanic range, which sends out lateral spurs, terminating in headlands on the coast. Cibao, the loftiest peak, reaches an altitude of 7,000 feet. The rivers are small and few in number and unnavigable.

The climate is semi-tropical, but tempered by the sea breezes, and this, with its well-watered soil, makes Haiti the most fertile of the West Indies. The industries of Haiti are mainly agricultural, coffee being the principal product. Cocoa, cotton, and tobacco are grown, and considerable rum and other spirits distilled. The mineral resources are undeveloped, but are known to be of considerable importance. Copper, iron, nickel, gypsum, limestone, and porphyry are found in the N., but are but little worked.

The exports consist principally of coffee, cocoa, logwood, cotton, hides, skins, mahogany, and honey. The import trade is carried on principally with the United States, Great Britain, France, and Germany. In the fiscal year 1922 the exports of merchandise had a value of $10,712,210, and the imports, $12,350,271.

The government is that of a republic, the present constitution dating from Oct. 9, 1889. The legislative authority rests in a Chamber of the Communes of 99 members, elected for three years by popular vote, and in a Senate of 39 members elected for six years by the Chamber of Communes from a list made out jointly by the President and the electors. The President is elected for seven years by the two branches in joint session. The administration is carried on under the President by the heads of four departments. Haiti was long a military despotism, but by treaty in November, 1915, it virtually became a protectorate of the United States.

The authorized religion is nominally Roman Catholic, but heathenism is prevalent. Instruction in elementary grades is free, and supported by the government to the extent of $1,000,000 annually. There were in 1921, 450 national schools, besides private schools, and 5 public lycees.

Haiti was a French colony previous to 1804 when it was proclaimed independent. The inhabitants are mostly negroes, speaking either French or a dialect known as Creole French.

Hajilij, an Egyptian, Indian, and African tree, cultivated for its edible fruit, from the seeds of which an oil is expressed.

Hake, a genus of fishes of the cod family, having a flattened head, an elongated body, two dorsal fins, of which the first is short, and the second very long, one very long anal fin, and the mouth destitute of barbels. One species is common in the Strait of Magellan and on the coasts of Chile, and also occurs in New Zealand.

Hake, Thomas Gordon, an English poet and physician; born in Leeds in 1809; died in London Jan. 11, 1895.

Hakim-Ben-Allah, an Arabian impostor who flourished in the 8th century. He led a schism from Mohammedanism, but was overpowered and committed suicide. His story forms an episode in "Lalla Rookh."

Hakluyt, Richard, an English author; born about 1553; was educated at Oxford University. He was the author of "Four Voyages Touching the Discovery of America and Islands Adjacent to the Same" (1582); "Four Voyages to Florida" (1587); "The Principal Navigations, Voyages, and Discoveries Made by the English Nation"; etc. He died Oct. 23, 1616.

Halacha, one of two branches of exposition in the Midrash or most ancient Jewish exposition of the Old Testament, the other being the Hagada. The object of the Halacha was to ascertain the bearing of the Mosaic law on matters to which it did not directly allude.

Halberd, a weapon formerly much used by soldiers, consisting of a pole about 5 feet in length, surmounted by a head of steel, partly crescent-shaped. The poleax was its prototype.

Halcyon, in ordinary language, the kingfisher. It was popularly supposed that these birds nested and laid their eggs in seaweed, etc., floating on the sea, and that they had the power of calming the sea.

Halcyon Days, a name given by the ancients to the seven days which

precede and the seven which follow the shortest day of the year, on account of a fable that during this time, while the halcyon bird or kingfisher was brooding, there always prevailed calms at sea. From this the phrase "halcyon days" has come to signify times of happiness and tranquillity.

Haldane, Robert, a Scottish philanthropist; born in London, England, Feb. 28, 1764. He founded a Society for the Propagation of the Gospel at Home, and built so many "tabernacles" and supported so many itinerant preachers that in 12 years he had expended more than $350,000. In the year 1817 he lectured to theological students at Geneva and Montauban, and returned to Scotland in 1819, taking an active interest thereafter in all religious questions, as the Apocrypha and Sabbath controversies. He died in Edinburgh, Scotland, Dec. 12, 1842.

Haldeman, Samuel Stenman, an American naturalist; born in Locust Grove, Pa., Aug. 12, 1812. He was Professor of Natural Sciences at the University of Pennsylvania in 1851–1855; and held the chair of Comparative Philology there in 1869–1880. He died in Chickies, Pa., Sept. 10, 1880.

Hale, Benjamin, an American educator; born in 1797; was graduated at Bowdoin College in 1818; became a Protestant Episcopal clergyman; died in 1863.

Hale, Charles Rueben, an American clergyman; born in Lewiston, Pa., March 14, 1837; was graduated at the University of Pennsylvania in 1858; held important posts in the Protestant Episcopal Church; and was made bishop in 1892. He died in Cairo, Ill., Dec. 25, 1900.

Hale, Edward Everett, an American author and Unitarian clergyman; born in Boston, Mass., April 3, 1822. He was graduated at Harvard College in 1839, and in 1856 was called to the South Congregational (Unitarian) Church, Boston. During his ministerial career he was active in social, educational, and philanthropic enterprises; organized the Harry Wadsworth Club, which has numerous branches in the United States and Europe, and the Look-up Legion among American Sunday-schools; edited "Original Documents from the State Paper Office, London, and the British Museum, illustrating the History of Sir W. Raleigh's First American Colony and the Colony of Jamestown," and many historical works, pamphlets, and papers; contributed largely to the periodical press, and attained wide popularity as a lecturer. He was known as a writer of charming fiction and history. Died June 10, 1909.

Hale, Horatio, an American ethnologist; born in Newport, N. H., May 3, 1817. Shortly after graduating at Harvard College, he was made philologist to the government exploring expedition under Captain Wilkes, and studied the languages of the Pacific Islands, North and South America, Australia, and Africa. He died in Clinton, Canada, in 1896.

Hale, John Parker, an American statesman; born in Rochester, N. H., in 1806. He was United States attorney for his State in 1834–1841. Elected to Congress, in 1842, as a Democrat, his name was afterward removed from the party ticket because he refused to support the annexation of Texas. The struggle that followed ended in a victory for the Anti-slavery party, and in 1847 Hale was elected to the United States Senate, where he served for 16 years. He was the Free-soil candidate for the presidency in 1852, but received under 5 per cent. of the total popular vote. He was minister to Spain from 1865 to 1869, and died in Dover, N. H., Nov. 19, 1873.

Hale, Sir Matthew, Lord Chief-justice of England; born in Alderley, Gloucestershire, England, Nov. 1, 1609. He acted as a puisne judge of the Common Pleas till Cromwell's death, but refused to have his commission renewed by Richard Cromwell. After the Restoration he was made Chief-Baron of the Court of Exchequer, and 11 years later was transferred to the Chief-justiceship of the Court of King's Bench. He resigned his office in February, 1676, and died in Alderley on Christmas day of that year.

Hale, Nathan, an American patriot; born in Coventry, Conn., June

6, 1755. He rose to the rank of captain in the Continental army, and, having volunteered to penetrate the British lines and procure intelligence for Washington, was detected, and executed as a spy in New York city, Sept. 22, 1776. A statue was erected to his memory in New York in 1893.

Hale, Sarah Josepha (Buell), an American author and editor; born in Newport, N. H., Oct. 24, 1788. Left a widow in 1822 with five small children, she supported her family by literary work. From 1828 to 1837 she edited the Boston "Ladies' Magazine," and when this periodical was consolidated with "Godey's Lady's Book," published in Philadelphia, she became editor. She retired from literary life in 1877, after writing several books in addition to her other labors. For more than 20 years she advocated the keeping of Thanksgiving Day as a national festival, to be held on the same day throughout the country, as it has been observed since 1864, when President Lincoln adopted her suggestion. She died in Philadelphia, Pa., April 30, 1879.

Hale, Susan, an American author, sister of Edward E. Hale; born in Boston, Mass., Dec. 5, 1833. D. 1910.

Hales, Stephen, an English philosopher; born in Beckesbourn, Kent, England, Sept. 7, 1677. His first important publication was "Vegetable Staticks, or Experiments on the Sap of Vegetables" (1727), which may be regarded as the starting point of our true knowledge of vegetable physiology. In "Hæmastaticks" (1733), a second part of this work treating of the circulation of the blood, Hales gives results obtained by experimental methods of investigation like those now in use in studying physiology. His ventilating machines were introduced into the London prisons. He also invented machines for distilling sea-water, preserving meat, etc. He died in Teddington, Middlesex, England, Jan. 4, 1761.

Halevy, Jacques Francois Fromental Elie, a French composer; born of Jewish family in Paris, France, May 27, 1799. Among his pupils were Gounod, Victor Masse, Bazin, and George Bizet, who married his daughter. Admitted to the Academy of Fine Arts in 1846, he became perpetual secretary in 1854. He died in Nice, March 17, 1862.

Halevy, Joseph, an eminent French Orientalist and traveler; born in Adrianople, Turkey, Dec. 15, 1827. In 1868 he traveled in North Abyssinia; next he traversed (1869–1870) Yemen in quest of Sabæan inscriptions for the French Academy — one of the most fruitful journeys ever made by an archæologist. No European face had been seen in the Jowf since the soldiers of Ælius Gallus had visited it in the year 24 A. D., and Halevy traveled as far N. as Bled Nedjran and was able to collect as many as 860 inscriptions.

Halevy, Ludovic, a French dramatist; born in Paris, France, Jan. 1, 1834. In 1861 he became secretary to the Corps Legislatif. He first made himself known as the writer of the librettos to Offenbach's burlesques (partly in collaboration with Meilhac). He wrote besides a large number of vaudevilles and comedies, and some novels; was admitted to the Academy in 1886; died in 1908.

Halfblood, in law, relationship by being born of the same father, but not of the same mother; or born of the same mother, but not of the same father.

Halfbreed, in anthropology, the offspring of parents of different races, though the term is usually confined to the children of one of the white race and a Red Indian. Halfbreeds, specifically, two tribes, one at Red River Settlement, chiefly employed in agriculture, the other subsisting by hunting. The term is much more in use in Canada than in the United States.

Half-caste, one born of a European father and a Hindu or Mohammedan mother, or more rarely of a Hindu or Mohammedan father and a European mother; a Eurasian, an East Indian.

Half-crown, a silver English coin of the value of two shillings and sixpence (60 cents).

Haliburton, Thomas Chandler, a Canadian-American jurist and author; born in Windsor, Nova Scotia, in December, 1796. He was raised to the bench as chief-justice of the Common Pleas in 1829, and in 1842 be-

came judge of the Supreme Court. In 1856 he retired from the bench and took up his residence in England. He is best known as the author of "Sam Slick." He died Aug. 27, 1865.

Halicarnassus (originally called Zephyria), a Greek city of Caria, Asia Minor, on the Ceramic Gulf. It was founded by Dorian colonists from Trœzon, and defended by several citadels. Alexander the Great destroyed the city by fire; but the inhabitants took refuge in the citadel, which successfully resisted his arms. The city was afterward rebuilt, but it never recovered its ancient importance or prosperity. The site of the city is occupied by the modern Budrun.

Halicz, an Austrian town in Eastern Galicia, 60 miles from the Russian frontier, 70 miles S. S. E. of Lemberg, at the confluence of the Luckow and Dneister rivers. Recent excavations show that the town was probably much larger in the 11th and 12th centuries, and archeologists believe that it met its doom during the Mongrel invasions of 1240. It was incorporated in the Kingdom of Poland in 1349. The town was a center of the protracted military operations in 1915–17. Pop. about 6,000. See APPENDIX; *World War.*

Halidon Hill, an eminence about a mile to the N. W. of Berwick, the scene of a disastrous defeat of the Scots by the English, July 19, 1333. On July 19, Archibald Douglas, regent of Scotland, led an army to the relief of Berwick and was totally routed with the loss of 10,000 men.

Halifax, a municipal and parliamentary borough of England, in York county (West Riding), on the Hebble, 36 miles W. S. W. York. Halifax commands abundant supplies of coal and water, and an extensive inland navigation connecting it with Hull and Liverpool. It is one of the centers of the woolen and worsted manufactures in Yorkshire. Pop. (1921) 99,129.

Halifax, a city, port of entry, capital of the province of Nova Scotia, and county-seat of Halifax Co., on Halifax Harbor. It is the largest community and only city in the province. The harbor of Halifax is one of the best in the world, 6 miles long, with an average width of a mile, and protected by 11 fortifications. Halifax is the chief British naval station in North America, and in 1901 was the only station on the Atlantic coast occupied by British troops.

The Citadel, a fortress of earth and granite, occupies the summit of the hill commanding the city, is over a mile in circumference, is the strongest fortification in America and one of the strongest in the world, and the work of many years.

Halifax harbor was originally known as Chedabucto or Chebucto bay, but in 1749 the city was founded on the W. shore by Lord Cornwallis, made the capital of Nova Scotia, then including New Brunswick, and named in honor of the Earl of Halifax. It was incorporated as a city in 1842. The city sends two members to the Canadian House of Commons, and three to the Provincial Legislature. Pop. (1921) 70,203.

Hall, the large principal apartment of the castles and mansions of the Middle Ages. In it the king or the lord of the manor gave audience, administered justice, received and entertained his retainers and guests, and performed all the public acts of feudal life. At one end was a raised platform or dais, on which the table of the lord of the manor was placed, and where his more honored guests sat along with him. The retainers sat at a table which ran along the lower part of the hall.

Hall, Asaph, an American astronomer; born in Goshen, Conn., Oct. 15, 1829. In 1877, with the 26-inch equatorial of the Naval Observatory, he made what, next to the discovery of Neptune, ranks as the most important discovery of the 19th century, the detection of the two remarkable satellites of Mars. Our knowledge of the difficult satellite systems of Mars, Saturn, Uranus, and Neptune depends almost entirely on his work. As a careful and accurate observer he was unrivaled. He died Nov. 22. 1907.

Hall, Basil, a British author; born in Edinburgh, Scotland, Dec. 31, 1788; died in Gosport, England, Sept. 11, 1844.

Hall, Baynard Rust, an American author; born in Philadelphia, Pa., in 1798; died in Brooklyn, N. Y., Jan. 23, 1863.

Hall, Charles Cuthbert, an American educator; born in New York, Sept. 3, 1852; studied theology at the Union Theological Seminary and in London and Edinburgh. In 1897 he was elected president of Union Theological Seminary. He died March 25, 1908.

Hall, Charles Francis, an American Arctic explorer; born in Rochester, N. H., in 1821. He made two search expeditions, in 1860–1862 and 1864–1869, living alone among the Eskimo, and bringing back some relics; and in 1871 he sailed in command of the government ship "Polaris," on an "expedition to the North Pole." He took his vessel for 250 miles up the channel leading from Smith's Sound, and on Aug. 29 reached 82° 16′ N.— at that date the highest N. latitude ever reached; then turning S., he went into winter-quarters at Thank God Harbor, Greenland (81° 38′ N.). Here on his return from a sledge expedition to the N., he was taken suddenly ill, and died Nov. 8, 1871. Among the valuable results of Hall's work were the exploration of the West Greenland Channel, and the extension of Greenland and Grinnell Land, N.

Hall, Christopher Newman, an English Congregational preacher; born in Maidstone, England, May 22, 1816. During the Civil War he favored the Union side, and in 1865 visited the United States. This visit was followed by another in 1873, when he delivered lectures in the principal cities. His third visit, which was brief, was made in 1884. He died in London Feb. 18, 1902.

Hall, Fitzedward, an American philologist; born in Troy, N. Y., March 21, 1825. He was graduated from Harvard College in 1846; spent many years in India and made a thorough study of its tongues, contributing to local journals original translations in prose and verse. He received the D. C. L. from Oxford in 1860. Settling in London in 1862, he accepted the chair of Sanskrit and Indian jurisprudence in King's College. He was the first American to edit a Sanskrit text. His contributions to our knowledge of Hindu and allied literatures are of inestimable value, and his text books authoritative. He died at Marlesford, England, Feb. 1, 1901.

Hall, Granville Stanley, an American educator; born in Ashfield. Mass., May 6, 1845; was graduated at Williams College in 1867; was Professor of Psychology at Antioch College, O., in 1872–1876; accepted the similar chair at Johns Hopkins University in 1881; and was chosen president of Clark University in 1888.

Hall, James, an American jurist and author; born in Philadelphia, Pa., Aug. 19, 1793. He served during the war of 1812–1814, and in 1818 he was elected judge of the Circuit Court of Illinois, and also State treasurer. In 1833 he took up his residence in Cincinnati, where he devoted himself to the mixed pursuits of banking and literature. He died near Cincinnati, O., July 5, 1868.

Hall, James, an American geologist and palæontologist; born in Hingham, Mass., Sept. 12, 1811. He was a member of several scientific societies in Europe and in the United States. He died near Bethlehem, N. H., Aug. 7, 1898.

Hall, John, an Irish-American Presbyterian clergyman; born near Armagh, Ireland, July 31, 1829. He was educated at Belfast College. In 1867 he became pastor of the Fifth Avenue Church, New York. For years he was Chancellor of the University of the City of New York; he was also trustee of Princeton University; of the Union Theological Seminary, and of Wellesley College; president of the Presbyterian Board of Home Missions, and chairman of the Church Extension Committee, at the same time giving much attention to the work of the Evangelical Alliance, the City Mission, etc. He died in Bangor, County Down, Ireland, Sept. 17, 1898.

Hall, Lyman, one of the signers of the Declaration of Independence; born in Connecticut about 1731. He was graduated at Yale College in 1747. Later he moved to Georgia; represented that State in Congress 1775–1780, was appointed governor of his State in 1783, and died in 1791.

Hall, Marshall, an English physician and physiologist, the son of Robert Hall, who introduced the practice of bleaching cotton with chlorine; born in Basford, in Nottinghamshire, England, Feb. 18, 1790. Hall claimed

in 1833–1837 to have been the first to show the independence of the phenomena of the reflex action of the spinal system of sensation, to work out the laws of their causation, and to apply the knowledge of them to the comprehension of nervous diseases. His name is also associated with a well-known method of restoring suspended respiration. He died in Brighton, England, Aug. 11, 1857.

Hall, Thomas, an American inventor; born in Philadelphia, Pa., Feb. 4, 1834; was educated at the University of Pennsylvania; subsequently took a course in mechanics in Europe. His inventions include a mechanism for printing by touching keys; a keyed typewriter; the Hall typewriter; several sewing machines; drill-grinding and other machinist tools, etc. He died in 1911.

Hallam, Henry, an English historian; born in Windsor, England, July 9, 1777. His father was dean of Bristol. His "View of the State of Europe during the Middle Ages" (1818) was the first great result of his studies and researches. His masterly work on the "Constitutional History of England" was given to the world in 1827. The next great work of Hallam, published in 1837–1839, was his "Introduction to the Literature of Europe in the 15th, 16th, and 17th Centuries." He died in Penshurst, Kent, England, Jan. 21, 1859.

Halle, a city of Prussian Saxony. Its famous university was founded in 1694 by Frederick I. of Prussia; after having been suppressed by Napoleon in 1806, and again in 1813, it was re-established in 1815 and incorporated with the University of Wittenberg, which had been dissolved during the war. The most important industrial product of Halle is salt, obtained from brine springs within and near the town, which have been worked from before the 7th century, and still yield about 114,500 hundred-weight annually. The industries next in importance are machine-making, sugar-refining, printing, brewing, the manufacture of mineral oil, and fruit cultivation. Originally a border fortress against the Slavs, it became in the 10th century an appanage of the Archbishop of Magdeburg, and by the 12th century was famous as a commercial city. In that and the 13th century Halle was a powerful member of the Hanseatic League, and successfully withstood a fierce siege by the Archbishop of Magdeburg in 1435, but finally fell into his hands in 1478. Terribly impoverished during the Thirty Years' War, it was incorporated with Brandenburg at the peace of Westphalia. Pop. (1919) 182,326.

Halle, Sir Charles, a German-English pianist; born in Hagen, Westphalia, April 11, 1819. He was knighted in 1888; died Oct. 25, 1895.

Halle, Lady (WILMA M. F. NERUDA), violinist, wife of Sir Charles Hallé. After her first appearance in London in 1849, her career was one long success, both in England and on the Continent.

Halleck, Fitz-Greene, an American poet; born in Guilford, Conn., July 8, 1790. By his mother he was descended from John Eliot, "the apostle of the Indians." He became a clerk in a bank in New York in 1811, and in 1832 the private secretary of John Jacob Astor; in 1849 he retired, on an annuity of $200 left him by Astor, to his native town, where he spent the remainder of his days. From his boyhood Halleck wrote verses, and in 1819 he contributed with Joseph Rodman Drake, a series of humorous satirical papers in verse to the New York "Evening Post." In the same year he published his longest poem, "Fanny" (2nd edition, enlarged, 1821), a satire on the literature, fashions, and politics of the time. He visited Europe in 1822, and in 1827 published anonymously an edition of his poems (3d edition, enlarged, 1845). In 1865 he published "Young America," a poem of 300 lines. His complete "Poetical Writings" was published in 1869. He died in Guilford, Conn., Nov. 19, 1867.

Halleck, Henry Wager, an American military officer; born in Westernville, N. Y., Jan. 16, 1815. He was graduated at the United States Military Academy in 1839. During the Mexican War he was employed in the operations on the Pacific coast, and for services was brevetted captain in 1847. On the outbreak of the Civil War he reëntered the army, and in November, 1861, was appointed Com-

mander of the Department of the Missouri. In March, 1862, Halleck's command was extended so as to embrace, under the name of the Department of the Mississippi, the vast stretch of territory between the Rocky Mountains and the Alleghanies. In July he became General-in-Chief of the armies of the United States; and henceforth he directed from Washington the movements of the generals in the field, till, in March, 1864, he was superseded by General Grant. Halleck was chief of staff till 1865, commanded the Military Division of the Pacific till 1869, and that of the South till his death, Jan. 9, 1872.

Hallelujah, Alleluia, or **Halleluiah,** an ascription of praise to God, occurring at the commencement of many psalms. Hence it became a doxology in the Jewish synagogues.

Haller, Albrecht von, a Swiss anatomist; born in Bern, Switzerland, Oct. 16, 1708. His name is particularly connected with muscular irritability, the circulation of the blood, and numerous excellent descriptions, of an anatomisco-physiological character, of important parts of the human body. He died in Bern, Switzerland, Dec. 12, 1777.

Halley, Edmund, an English astronomer and mathematician; born in Haggerston, near London, England, Oct. 29, 1656. In 1676 he published observations on a spot in the sun by which the motions of that body on its axis were determined. In 1680 he made the tour of Europe, and on the passage to Calais was the first to observe the great comet—which is visible every 75 years, appearing last in 1910. After his return, he gave his attention to the theory of the planetary motions, which made him acquainted with Sir Isaac Newton, who intrusted to him the publication of his "Principia." In 1703 he was appointed Savilian Professor of Geometry at Oxford; in 1705 he made public his valuable researches on the orbits of comets; in 1713 he became secretary to the Royal Society; and in 1719 he succeeded Flamsteed as Astronomer Royal. He died in 1742.

Hall of Fame of Great Americans, a semi-circular granite edifice on the grounds of New York University, University Heights, N. Y., connecting two of the University Buildings. It comprises a museum of seven rooms on the ground floor, and a colonnade above, 400 ft. long, completed 1900 from a gift of $100,000 by Helen Gould; 150 bronze tablets in panels are to receive inscriptions of eminent citizens dead over 10 years; 50 names were to be chosen in 1900, and 5 each succeeding 5 years; each name to receive at least 51 votes from the selecting committee of 100. In 1900 29 only were elected: Washington, Lincoln, Webster, Franklin, Grant, Marshall, Jefferson, Emerson, Fulton, Longfellow, Irving, Edwards, Morse, Farragut, Clay, Peabody, Hawthorne, Peter Cooper, Whitney, R. E. Lee, Horace Mann, Audubon, Kent, Beecher, Story, John Adams, W. E. Channing, Gilbert Stuart, and Asa Gray. In 1905 J. Q. Adams, Madison, Lowell, Whittier, and Gen. W. T. Sherman were elected. Provision was made for a hall for famous American women, and Mary Lyon, Emily C. Johnson, and Maria Mitchell were selected in 1905. In 1910 Harriet Beecher Stowe, Oliver Wendell Holmes, Edgar Allan Poe, James Fennimore Cooper, Phillips Brooks, William Cullen Bryant, Frances E. Willard, Andrew Jackson, George Bancroft, and John Lothrop Motley were elected, and in 1915 Alexander Hamilton, Mark Hopkins, Francis Parkman, Elias Howe, Joseph Henry, Rufus Choate, Daniel Boone, and Charlotte Cushman were added. In 1920 were added Samuel L. Clemens (Mark Twain), James B. Eads, Patrick Henry, W. T. G. Morton, Augustus Saint-Gaudens, Roger Williams and Alice Freeman Palmer. Total to date, 56 men, 7 women.

Halo, Parhelion, or **Corona,** various meteorological phenomena. One class of halo is very common. When the sun or moon is partially obscured by a mist or cloud, the latter not being of the species called cirrus or curl-cloud, it is almost invariably surrounded by colored rings of a few degrees only in diameter, called Coronæ (crowns). Those surrounding the sun cannot always be seen directly, but by reflection at the surface of still water, or of a glass plate blackened at the back, the glare of the sun-

light is sufficiently diminished to permit the halo to be seen. This meteor depends on the diffraction of light, caused by the small spheres or vesicles of water which compose the cloud, and can easily be imitated by looking at a bright object through a piece of glass which has been breathed on, or dusted with lycopodium seed. If the diffracting particles be all of the same size, the rings are well marked; but since they become smaller as the particles increase in size, ordinary fogs and clouds, which generally contain particles of very different dimensions, give a composite effect which spoils the distinctness and greatly limits the number of the rings. Thus, no general rule can be given for the number of colors of the halo, but it may be observed that their diminution in diameter is a sign of the increase in size of the watery spheres which cause them, and therefore in general betokens approaching rain, which comes when the particles are no longer able, on account of their size, to float in the air without sensibly falling. A different form of halo is sometimes seen to surround the shadow of the spectator's head, when cast by the sun on a bank of fog; in this case it is sometimes called a "glory." To this class belong the colors generally seen about the famous "Specter of the Brocken."

Halpine, Charles Graham (pseudonym) Miles O'Reilly, an Irish-American author; born in Ireland in November, 1829. He was the son of Rev. Nicholas Halpine and was educated in Dublin. He came to the United States at 23 and became a New York journalist. He served through the Civil War, attaining the rank of colonel. He died in New York city Aug. 3, 1868.

Hals, Franz, the Elder, a Dutch portrait and genre painter; born probably in Antwerp, in 1580 or 1581. He is usually regarded as the founder of the Dutch school of genre-painting. He died in Haarlem, Netherlands, in August, 1666.

His brother, Dirk Hals (before 1600–1656), a pupil of Abraham Bloemaert, was also an excellent genre painter. Several of Franz's sons were artists, the most celebrated being Franz Hals, the Younger, who flourished from about 1637 to 1669.

Halstead, Murat, an American journalist; born in Ross, Butler Co., O., Sept. 2, 1829. He spent his minority on a farm. At 18 he began writing for newspapers. In 1851 he finished his schooling at Farmers' College, near Cincinnati, and then decided to study law. He did local newspaper reporting on several Cincinnati papers, and in 1853 became manager of a department on the Cincinnati "Commercial." The following year he acquired a small interest in the paper, and it began rapidly to increase in circulation and influence, so that in 1866 it was considered one of the most potent newspapers in the West. The "Commercial" combining with the "Gazette," its rival, the Cincinnati "Commercial Gazette" became the recognized organ of the Ohio Republicans. In 1890 he removed to Brooklyn, N. Y., and edited the "Union" newspaper. He died July 2, 1908.

Ham, a son of Noah. The impiety revealed in his conduct toward his father drew on him, or, rather, according to the Bible statement, on his son Canaan, a prophetic malediction (Gen. ix: 20–27). Ham was the ancestor of the Canaanites, Southern Arabians, Ethiopians, Egyptians and the Africans in general.

Ham, a town in France, department of Somme, on the river of that name, 12 miles S. W. of St. Quentin. Its ancient fortress or castle was rebuilt by the Comte de Saint Pol in 1470, and now is used as a state prison. It is memorable as the place of confinement of Joan of Arc, Moncey, and others; of Louis Napoleon in 1840–46, and others; and was a center of the great battles of the Somme in the war in Europe. See APPENDIX; *World War.*

Hamadan, a town of Persia, in the province of Irak Ajemi, situated at the N. base of Mount Elwend, 160 miles W. S. W. of Teheran. It contains Avicenna's tomb, and others affirmed to be those of Mordecai and Esther. Hamadan is generally believed to occupy the site of the Median Ecbatana. Pop. 25,000 to 30,000.

Hamadryad, in Greek and Roman mythology, a wood-nymph, supposed by the Greek and Roman poets to live

and die with the tree to which she was attached.

Hamadryas, a name given to a kind of baboon; also the Hamadryas elaps, which is the largest poisonous snake of the Old World, larger and more dangerous than any of the cobras, with which it has almost the same geographical range.

Hamah, a very ancient city of Syria, on the Orontes, 110 miles N. by E. of Damascus; the Hamath of the Bible. The town stands in the midst of gardens, though the streets are narrow and irregular, and the houses are built of sun-dried bricks and wood. The inhabitants manufacture coarse woolen mantles and yarn, and carry on considerable trade with the Bedouins. Four stones were discovered there in 1812 by Burckhardt, bearing inscriptions in an unknown language, now believed to be Hittite. Pop. about 45,000.

Haman, a favorite of Ahasuerus, King of Persia. In order to revenge himself on Mordecai the Jew, he plotted the extermination of all the Jews in the kingdom; but in the providence of God he was thwarted by Esther, fell into disgrace with the king, and wrought his own ruin and the upbuilding of the Jews, B. C. about 485.

Hamburg, one of the free cities of Germany, a member of the German empire, and the greatest commercial port on the continent of Europe; about 80 miles from the North Sea, on the N. branch of the Elbe. The town of Altona adjoins it on the W. From the Elbe proceed canals which intersect the E. and lower part of the city in all directions, and it is also intersected by the Alster, which here forms two streams, the Binnenalster and Aussenalster. The quays and harbor accommodation are very extensive. After the destructive fire of 1842 whole streets were rebuilt in a magnificent and expensive style. Hamburg is of most importance on account of its great shipping trade and the business of banking, exchange, marine assurance, etc., carried on in connection with that. Its manufactures, though large, are less important, including shipbuilding, tobacco and cigar making, iron-founding, brewing, etc. The city owes its foundation to the Emperor Charlemagne, who (808–811) built a citadel and a church on the heights between the Elbe and the E. bank of the Alster, as a bulwark against the neighboring pagans. It became important as a commercial city in the 12th century, and in the 13th it combined with Lubeck in forming the Hanseatic League. In 1618 Hamburg was formally acknowledged a free city of the empire. During the Thirty Years' War its population and prosperity continued to increase on account of the immunity of its position, and in the following century it obtained a large share of the trade with North America. In 1810 it was formally incorporated in the French empire along with the N. W. part of Germany. In 1815 it joined the Germanic Confederation as a free city. In 1888 the city was included in the Zollverein or German Customs Union. Pop. (1919) 985,775.

Hameln, a town and formerly a fortress of Hanover, Prussia, on the Weser; 25 miles S. W. of Hanover. It presents a mediæval appearance, having many houses and buildings surviving from the Gothic and Renaissance periods of architecture. With this town is connected the well-known legend of the Piper (or Ratcatcher) of Hameln, who in 1284 freed the town from rats through the mystic charm of his pipe; but, when the people refused to pay him the promised reward, he exercised the power of his music on the children of the place, and drew them away into the heart of an adjoining hill, which opened to receive them, and through which he led them to Transylvania. The story is familiar from Browning's "Pied Piper of Hamelin." Pop. (1919) 22,000.

Hamerling, Robert, an Austrian poet; born in Kirchberg-am-Walde, March 24, 1830. He gained influential patronage by poems published at 20, and became a lecturer at the University of Trieste. He produced poems, plays, and romances, which rank him among the first poets of "the new time," for thought, euphony, and technique. His greatest work is "Ahasuerus in Rome" (1866), a vivid epic of Nero's time and the dying paganism. He died in Gratz, July 13, 1889.

Hames, an old Lincolnshire, England, name for a flail, an instrument

for threshing or beating grain from the ear by hand. The old saying, "to set the thames on fire," takes its origin from this word, and has nothing whatever to do with the river Thames. It was first used with reference to a man who was locally known as a braggart, a man who did considerably more talking than working. Hence, "He'll never set t'hames on fire," meant he will never whirl the hames or flails fast enough to set them on fire.

Hamilcar, the name of several Carthaginian generals, of whom the most celebrated was Hamilcar, surnamed Barca (the lightning), the father of the great Hannibal. While a young man he was appointed to the command of the Carthaginian forces in Sicily. For two years he defied all the efforts of the Romans to dislodge him; but the Carthaginian admiral, Hanno, having been totally defeated off the Ægates, 241 B. C., he reluctantly consented to evacuate Sicily. He then entered on a series of campaigns in Spain, where he founded a new empire for Carthage. He was slain in battle 229 B. C.

Hamilton, city and capital of Butler county, O.; on the Miami river and canal and several railroads; 20 miles N. of Cincinnati; is in a wheat, barley and corn section; has good power for its factories from the river; manufactures farming implements, paper mill machinery, machinists' tools, and engines. Pop. (1920) 39,675.

Hamilton, city and capital of Wentworth county, Ontario, Canada; at the W. end of Lake Ontario and on the Canadian Pacific and other railways; 50 miles S. W. of Toronto; is a port of entry with large commerce; contains Anglican and Roman Catholic cathedrals, Provincial Normal School and Insane Asylum, Collegiate Institute; and has large manufactures. Pop. (1921) 114,151.

Hamilton, Family of, a family long connected with Scotland, though probably of English origin.

Hamilton, Alexander, an American statesman; born in Nevis, W. I., Jan. 11, 1757. In 1772 he was sent to Elizabethtown, N. J., to a grammar school, and in 1773 entered King's College (now Columbia University). When the Revolution broke out he was appointed (1776) captain of artillery, and in 1777 was made a member of Washington's staff, with the rank of lieutenant-colonel. In 1780 he married a daughter of General Schuyler. Being reproved by Washington for some slight matter, he resigned his commission, but the next year was in command of a battalion of infantry, engaging in the battle of Yorktown. The war being ended he studied law, and was sent to Congress in 1782 and again in 1787. He served in the convention that framed the National Constitution, where he led the sentiment in favor of a strong federal government as against a mere union of States. He wrote the greater number of papers collected in "The Federalist," that exerted great influence in bringing the States to accept the Constitution, and became the leader of the Federalist party. He was made the first Secretary of the Treasury under Washington. He was by this time ranked with Washington, Jefferson, and Franklin, as one of the four great Americans of his day. His position as the leader of the Federalist party brought him into conflict with Jefferson and Monroe, but he nevertheless supported Jefferson in the election contest between him and Burr in the House of Representatives, and partly by his influence Burr was defeated. He became inspector-general of the army in 1798. He was one of the founders of the Society of the Cincinnati, of which, in 1800, he became President-General. In 1804 he exerted his influence to defeat Aaron Burr, who was a candidate for governor of New York. Burr challenged Hamilton to a duel, in which he was mortally wounded by Burr's first fire, and died the following day, July 11, 1804.

Hamilton, Edward John, an American educator; born in Belfast, Ireland, Nov. 29, 1834; was graduated at Hanover College, Ind., in 1853, and at Princeton Theological Seminary in 1858; was chaplain of the 7th New Jersey Volunteers in the Civil War; Professor of Mental Philosophy at Hanover College in 1868–1879, and of Philosophy at Hamilton College, New York, in 1883–1891; accepted the latter chair in the State University of Washington in 1895.

Hamilton, Frank Hastings, an American surgeon; born in Wilmington, Vt., Sept. 10, 1813. He was graduated from the medical department of the University of Pennsylvania in 1833, and first practised in Auburn, N. Y. In 1844 he went to Buffalo, and, with Dr. Austin Flint and Dr. James Platt White, established the medical department of the University of Buffalo. He removed to Brooklyn in 1860, and was the first Professor of Surgery in the Long Island College Hospital. In 1861 he went to the war as surgeon of the 31st New York Volunteers and was made brigade surgeon after the battle of Bull Run, and surgeon of General Keyes's corps in 1862. A year later he was made medical inspector of the United States army. He was one of the founders of Bellevue Hospital Medical College in 1861, and was Professor of Surgery there till he resigned in 1875. Dr. Hamilton was associated with Drs. Agnew and Bliss in the care of President Garfield. He wrote extensively on the principles and practice of surgery, his works being regarded as standards on the subjects treated. He died in New York city, Aug. 11, 1886.

Hamilton, James, an English merchant; born in London, England, in 1769. Having been taught German at Hamburg in 1798 by an original method, he afterward exchanged mercantile pursuits for the teaching of languages, and taught with great success in the United States (from 1814) and in England (from 1823). He died in Dublin, Oct. 31, 1831.

Hamilton, James, an American statesman; born in 1786; was a member of Congress from South Carolina in 1822–1829; governor of South Carolina in 1830–1832; later settled in Texas; he advocated States rights and nullification. He was drowned in 1857.

Hamilton, John Church, an American biographer and historian, son of Alexander Hamilton; born in Philadelphia, Pa., Aug. 22, 1792. He died in Long Branch, N. J., July 25, 1882.

Hamilton, Patrick, usually considered as the first Scotch reformer, the second son of Sir Patrick Hamilton of Kincavel and Stanehouse, and of Catharine, daughter of the Duke of Albany, second son of James II.; born probably in Glasgow in 1504. While still a boy he had been appointed Abbot of Fearn, in Rosshire, but never went into residence, settling instead at St. Andrews in 1523.. Here he began to announce his convictions in the principles of the Reformation, and was summoned in 1526 by Archbishop Beaton to stand his trial for heresy. He fled to Germany, where his education as a reformer was completed by an intimate acquaintance with Luther and Melanchthon. After six months' absense he returned to Scotland and began to preach the Gospel openly at Linlithgow, but was allured by Beaton to St. Andrews under pretense of a friendly conference, put on his trial, convicted of various heresies, and burned at the stake, March 1, 1527. His death did perhaps more to extend the principles of the Reformation in Scotland than even his life could have done.

Hamilton, Schuyler, an American soldier; born in 1822; a grandson of Alexander Hamilton; served in the Mexican and Civil Wars, and retired because of ill-health. He wrote "History of the National Flag of the United States." Died, March, 1903.

Hamilton, Sir William Rowan, an English mathematician and astronomer; born in Dublin, Ireland, Aug. 3–4, 1805. Before he had completed his 14th year he had made himself acquainted with 13 languages. His fame is chiefly founded on his invention of the calculus of quarternions, a new method in the higher mathematics. He died Sept. 2, 1865.

Hamilton, William Tiffany an American legislator; born in Hagerstown, Md., Sept. 8, 1820; was graduated at Jefferson College; was admitted to the bar in 1843; and three years later was elected by the Democrats to the House of Delegates. In 1849 he was elected to Congress and served three terms, but in 1855 was defeated. During the Civil War he took no active interest in political affairs, but after the adoption of the Constitution of 1867 ran for governor against Oden Bowie, and was beaten by a majority of one. In 1868 he succeeded William Pinckney Whyte in the United States Senate, and in 1875 was again a candidate for governor, but was defeated

by John Lee Carroll. He ran once more in 1879, and was elected for the term 1880–1884. He died in 1888.

Hamilton College, an educational nonsectarian institution in Clinton, N. Y., founded in 1812.

Hamilton River, Labrador. See ASHWANIPI.

Hamlet, the hero of Shakespeare's greatest tragedy.

Hamlin, Cyrus, an American missionary; born in Waterford, Me., Jan. 5, 1811; was graduated at Bowdoin College in 1834 and at Bangor Theological Seminary in 1837; went to Turkey in the following year. From 1860 to 1876 he was president of Robert College, which he had founded after a long conflict with the Turkish government. President Hamlin belonged to the group of American educators in the Levant whose influence did much in molding the character of modern Bulgarian leaders, and producing autonomy for Bulgaria. He returned to the United States and became a professor in the Theological Seminary in Bangor; was president of Middlebury College, Vt., in 1880–1885, when he removed to Lexington, Mass. He died Aug. 8, 1900.

Hamlin, Hannibal, an American statesman; born in Paris, Me., Aug. 27, 1809; was admitted to the bar in 1833; and began practice in Hampden; was elected to the United States Senate in 1848 to fill an unexpired term; reëlected in 1851 and again in 1857; resigned in 1861, after being elected Vice-President on the ticket with Abraham Lincoln; was again a United States Senator in 1869–1881, and then accepted the post of minister to Spain, but in the following year resigned and returned to the United States. He died in Bangor, Me., July 4, 1891.

Hamline University, a coeducational institution in St. Paul, Minn.; founded in 1854 under the auspices of the Methodist Episcopal Church.

Hammer, a tool used for applying the force of impact, either for the purpose of beating malleable materials into a required form, or for driving nails, wedges, etc.

Hammerfest, the extreme N. town of Europe; on the island of Kvalo, in the Norwegian province of Finmark. It is the rendezvous of the fishing fleets of the Kara sea and the waters along the Spitzbergen coasts. It imports coal, salt, hemp, flour, etc., in exchange for fish and fish-oil, with some reindeer hides, eider-down, and fox-skins. During the two summer months the sun is continually above the horizon. The winter is mild enough to allow of the fisheries being carried on.

Hammerhead, Shark, a genus of preying fishes, with heads projecting laterally up and down, somewhat resembling a double-headed hammer, with an eye at each end of the head. They abound in warm seas; and are very voracious and remarkably prolific.

Hammond, Edward Payson, an American evangelist; born in Ellington, Conn., Sept. 1, 1831; was graduated at Williams College in 1858; studied theology at Union Seminary, N. Y., and Free Church Seminary, Scotland and was ordained by the Presbytery of New York in 1862. For years he was prominent as an evangelist in the United States and Great Britain. He died Aug. 14, 1910.

Hammond, William Alexander, surgeon; born in Annapolis, Md., Aug. 28, 1828; graduated at the University of the City of New York in 1848; joined the United States Army in 1849 as assistant surgeon; became surgeon-general in April, 1862; was found guilty of misdemeanor by court-martial and discharged from the army in 1864; practised in New York till 1878, when the proceedings of the court-martial were reviewed and he was restored to his former rank in the army and retired. He died Jan. 5, 1900.

Hammurabi, King of Babylon about 2240-2185 B. C., the history of whose reign is well known owing to the tablets found in modern times at Susa. These, comprising contracts, deeds, bills of sale, wills, etc., give details of the life of the people: a stele in 44 columns contains a code of laws for conquered provinces, that shows Hammurabi to have been a humane legislator and administrator, as well as a conqueror and empire-builder.

Hampden, John, a celebrated English statesman; born in London, England, 1594. He entered Parliament in the beginning of Charles I.'s reign.

For several years he uniformly and strongly opposed the arbitrary practices in Church and state, but it was not till 1636 that his resistance to Charles' demand for ship-money made him the argument of all tongues. Though the decision in the Court of Exchequer was given against him by seven voices to five, the victory, as far as regarded public opinion, was his. He took a prominent part in the great contest between the Crown and the Parliament, and was one of the five members whom the king, in 1642, so imprudently attempted, in person, to seize in the House of Commons. When the appeal was made to the sword, Hampden accepted the command of a regiment in the parliamentary army under the Earl of Essex, and was fatally wounded on Chalgrove Field, June 24, 1643.

Hampton, a town and county-seat of Elizabeth City co., Va., on the James river, and on the Chesapeake and Ohio railroad; 15 miles N. W. of Norfolk. It is the seat of the Hampton Normal and Agricultural Institute for Indians and Negroes, and a National Soldiers' Home.

Hampton Court Palace, long a royal residence, and now partially occupied by persons of good family in reduced circumstances, standing about a mile from the village of Hampton, England, in the midst of grounds that extend to the Thames. The original palace was erected by Cardinal Wolsey, and by him presented (1526) to Henry VIII., who enlarged it and formed around it a royal deer park. Here Edward VI. was born, his mother, Queen Jane Seymour, died, and Charles I. underwent a portion of his confinement.

Hampton, Wade, an American military officer; born in South Carolina in 1754; fought in the Revolutionary War under Sumter and Marion; was a member of Congress, 1795–1797 and 1803–1805. He was commissioned colonel in the United States army in 1808; promoted Brigadier-General in 1809, and Major-General in 1813; served in the War of 1812; and resigned his commission in April, 1814. He died in Columbia, S. C., Feb. 4, 1835.

Hampton, Wade, an American military officer; born in Charleston, S. C., March 28, 1818; grandson of Wade Hampton; was graduated at South Carolina College. At the outbreak of the Civil War he was believed to be one of the richest of Southern planters and owned the greatest number of slaves. He entered the Confederate army; raised and in part equipped the Hampton Legion, and was chosen its commandant; was wounded in the first action at Bull Run and also at Gettysburg. He was promoted Major-General May 11, 1864, and in August of the same year appointed commander-in-chief of the Confederate cavalry in Northern Virginia; was promoted Lieutenant-General in 1865. He greatly distinguished himself in several important actions, including the defeat of Sheridan's cavalry at Trevillian, Va.; the capture of about 2,500 head of cattle from General Grant's commissariat; etc. After the conclusion of peace he was a stanch advocate of conciliation between the North and South; was elected governor of South Carolina in 1876 and 1878; held a seat in the United States Senate in 1878–1890; and was appointed Commissioner of Railroads in 1893. He died April 11, 1902.

Hampton, Normal and Agricultural Institute, a school opened in 1868 in Hampton, Va., under the auspices of the American Missionary Association. The farm land, and the workshops where trades are taught, furnish occupation for the boys, while the girls are similarly instructed and employed in sewing and cooking classes, doing all the domestic duties of the school, and wherever possible learning trades side by side with the boys. In 1878, 15 Indians, who had been in charge of Capt. R. H. Pratt, at St. Augustine, Fla., as prisoners of war, were admitted as students, and from this beginning the Indian Department has increased, the Indian pupils being chiefly from the Sioux tribe, of whom two-thirds make a fair or good record.

Hampton Roads, a broad, deep arm of Chesapeake Bay at the mouth of James river, between Hampton and Norfolk, Va.; with Newport News, Old Point Comfort, Fort Monroe, Fort Wool, and Thimble Shoal Lighthouse at or near the entrance to the bay. In 1861 the Confederates seized the Unit-

ed States frigate "Merrimac" at Norfolk, covered her hull with railroad iron, and under the name of "The Virginia" sent her to attack the United States vessels lying at Hampton Roads in 1862. She rammed the frigate "Cumberland," which sank in 45 minutes; forced the "Congress" on the Shoal, where she was disabled, set on fire, and blown up, but was prevented by her draught from getting within striking distance of the "Minnesota." On the following morning she reappeared to attack the "Minnesota," but was suddenly confronted by the new Union iron-clad "Monitor," just arrived from New York, which fought her so effectively that she withdrew from the fight, steamed up the river, and refused to come out a second time to meet the "floating Yankee cheese-box."

Hampton-Sidney College, an institution of learning in Hampton-Sidney, Va.; founded in 1775 by the Presbyterian Church of Hanover and incorporated by the Legislature of Virginia in 1783. It is located on a tract of land given by Peter Johnson in 1773, and which has been increased by purchases and gifts, so that the college now owns about 250 acres.

Hananiah, a false prophet of Gibeon, who for his impious hardihood was overtaken with speedy death, according to the word of God (Jer. xxviii: 15–17).

Hanaford, Phebe Ann (Coffin), an American Universalist minister and author; born in Nantucket, Mass., May 6, 1829, being descended from the Coffins, of Nantucket. She was the first of her sex to become a member of the Universalist clergy. She was author of a "Life of Abraham Lincoln," and other popular books.

Hancock, John, an American Revolutionary patriot and president of Congress; born in Quincy, Mass., Jan. 12, 1737. In the inception of the Revolutionary struggle he was a leading spirit. The attempt to arrest Hancock and Samuel Adams led to the battle of Lexington. Hancock was a member of the Continental Congress from 1775 to 1780, also from 1785 to 1786, serving as president of the body from 1775 to 1777. The Declaration of Independence as first published bore only his name. He served as governor of Massachusetts 12 years. As an orator he was eloquent; as a presiding officer, dignified and impartial. He died in Quincy, Mass., Oct. 8, 1793.

Hancock Winfield Scott, an American military officer; born in Montgomery Square, Montgomery co., Pa., Feb. 14, 1824; was graduated at the United States Military Academy in 1844, and received his commission of 2d lieutenant; served during the Mexican war, was promoted for gallantry, and, having filled several subordinate posts, made assistant quartermaster-general; in 1861 was appointed a Brigadier-General of volunteers, and attached to the Army of the Potomac, accompanied General McClellan to the peninsula in 1862, and distinguished himself before Yorktown and Williamsburg; at the battle of Fredericksburg, in December, 1862, commanded a division of the 2d Corps, which suffered most severely, and for his services on this occasion received his commission as Major-General; took part in the battles of Chancellorsville and Gettysburg in 1863, and was severely wounded; in 1868, was appointed by President Johnson to the command of the S. W. military district, but his appointment was not indorsed by the Senate. In June, 1880, he became the unsuccessful Democratic nominee for President. He died in New York city, Feb. 9, 1886.

Hand, the part of the body which terminates the arm, consisting of the palm and fingers, connected with the arm at the wrist; the principal organ of touch and prehension. Properly speaking, the hand, with its highly specialized muscles, belongs to man alone. It cannot be considered, as in the ape, as a normal organ of locomotion. It is essentially the organ of touch and prehension. It molds itself to a body to ascertain its form; it comes to the aid of the eye in completing or rectifying its impressions.

Handball, a game of ball, played without any instrument for striking, the bare hand only being used. The game is a favorite with boys in the United States, and here are to be found the most expert players. Two or four men can play, one or two on a side. As far as is known the game of handball came to the United States about 1840.

Handcuffs, an instrument formed of two iron rings connected by a short chain or fixed on a hinge on the ends of a very short iron bar, which, being locked over the wrists of a malefactor, prevents him from using his hands.

Handel, properly **Haendel, George Frederick,** a great German composer; born in Halle, Prussia, Feb. 23, 1685. The passion which he early showed for music overcame his father's opposition to training him as a musician, and at the age of 7 he was placed under the tuition of Zachau, organist of Halle Cathedral. He brought out in 1704 his first work, an oratorio on the Passion, and his first opera, "Almira," followed in February by his "Nero," and subsequently by his "Florinda and Daphne." He was placed at the head of the newly-founded Royal Academy of Music, and accumulated a large fortune in spite of a period of opposition and heavy losses incurred by the antagonism of the nobility whom he had offended. Although his operas were successful, it was by his oratorios that he obtained enduring fame. Among these are "Saul;" "Israel in Egypt;" the immortal "Messiah;" "Samson;" "Solomon;" "Judas Maccabæus;" "The Passion;" and "Jephthah." In 1752 he became blind, but he did not lose his spirits, continuing to perform in public and even to compose. He died in London, April 13, 1759, and was buried in Westminster Abbey.

Hands, Laying on of. This rite, as a token of blessing, or the communication of spiritual gifts, or of something else which could not be literally delivered into the hands of another, has been in use from the earliest times. It occurs in Scripture as a patriarchal usage, appropriate and becoming perhaps rather than strictly religious, but later assumes more of the character of a formal rite. The rite is still retained by most Western Churches in the ceremony of ordination, and in the Anglican, Lutheran and Roman Catholic Churches both in confirmation and ordination.

Hang-chau-fu, the gate of the Imperial canal, capital of the Chinese province of Chehkiang, and since the Japanese treaty of Shimonoseki (1895), a treaty port, at the mouth of the Tsien-tang in the Bay of Hangchau, 110 miles S. W. of Shanghai. The city, one of the great commercial, religious, and literary centers of China, has clean, well-paved streets and many magnificent temples, is a principal seat of the silk manufacture, of gold and silver work, and is noted for the beauty of its surroundings. From a remote period many spots in the environs have been the resort of pilgrims; and here several thousands of candidates assemble every year for the public examinations. It was formerly a naval port. Previous to the Taiping rebellion, the city had about 2,000,000 inhabitants; but it was then (1861) laid in ruins by the rebels, and in (1919) contained about 400,000.

Hanging, a mode of execution. In cases of hanging, death seldom results from pure asphyxia, but is usually in some degree owing to apoplexy and injury to the spinal cord. In law, hanging is the prescribed penalty of wilful murder. In New York and other States electrocution is substituted for death by hanging. In Rhode Island, Michigan and Wisconsin infliction of the death penalty is forbidden by law, except that in Rhode Island a life prisoner committing murder may be hanged. Hanging, drawing, and quartering were once inflicted for treason in England. See CAPITAL PUNISHMENT.

Hanging Gardens. The Hanging Gardens of Babylon were anciently reckoned among the wonders of the world. Their construction is variously ascribed to Queen Semiramis and to Nebuchadnezzar. Diodorus and Strabo have given descriptions of them. They are said to have formed a square, with an area of nearly four acres, and rose in terraces, supported on masonry arches, to a height of 75 feet. They were irrigated from a reservoir built at the top, to which water was lifted from the Euphrates by a screw.

Han-Kiang, a river in China, 1,300 miles long. Traffic is considerable and the region watered is in some places styled the "Garden of China."

Hankow, or **Han-Kau,** ("Mouth of the Han"), a river-port in China, in the province of Hupeh, at the junction of the Han with the Yang-tse-kiang. The port was opened to foreign trade in 1862, and has become the chief emporium for the green-tea dis-

tricts in the central provinces, which formerly sent their produce for export to Canton. Large steamers ascend to the town. In 1857 Hankow fell into the hands of the Taiping rebels, and was almost completely demolished by them. Pop. (1919 Est.) 900,000.

Hanna, Marcus Alonzo, an American politician and legislator; born in Lisbon, Columbiana Co., O., Sept. 24, 1837. He became a prosperous merchant; entered national politics in 1880; and was prominent in the election of President Wm. McKinley in 1896. In 1897, Gov. Bushnell, of Ohio, appointed him United States Senator to replace John Sherman, who had accepted the Secretaryship of State. At the end of the term of service in 1898, Mr. Hanna was elected Federal Senator. He died Feb. 15, 1904.

Hannibal, a Carthaginian general; son of Hamilcar Barca; born 247 B. C. At the age of 9 years his father, whom he was eager to accompany in the war against Spain, made him swear at the altar eternal hatred to the Romans. At the age of 22 he entered the army at the request of Hasdrubal. The soldiers perceived in him the spirit of Hamilcar, whom they had so highly esteemed; and in three campaigns his talents and his courage were so conspicuous that the army on the murder of Hasdrubal in 221 conferred on him the chief command by acclamation. Faithful to his early vow, the young general of 26 years soon manifested his determination to seize whatever opportunity might offer itself of commencing hostilities with Rome. This object was effected in 219 B. C. by laying siege to Saguntum, a town which had concluded an alliance with that city. In eight months Saguntum fell. The Romans alarmed by the fate of this city, sent ambassadors to Carthage to demand that Hannibal should be delivered up. The demand being refused, they declared war. Hannibal raised a powerful force and conceived the bold design of attacking the Romans in Italy.

After having provided for the security of Africa, and having left his brother Hasdrubal with an army in Spain he began his march with 90,000 foot soldiers, 40 elephants, and 12,000 horsemen, traversed Gaul in the depth of winter with incredible rapidity and reached the foot of the Alps. In nine days he crossed these mountains, probably by the pass leading over the Little St. Bernard. Of the troops with which he had set out, however, he had now only 20,000 foot soldiers and 6,000 horse remaining, and these were little more than skeletons. Hannibal repeatedly defeated the Romans, until Fabius Maximus adopted the plan of wearing him out by delay, and by avoiding a battle. Scipio now carried the war into Africa and made Carthage tremble; and Hannibal was recalled to defend his country. He reluctantly embarked his troops, and in 203 left the country which for 16 years he had held in spite of all the efforts of Rome. He landed at Leptis, and advanced to meet Scipio. The two generals had an interview and Hannibal proposed terms of peace, but in vain. Hannibal was defeated; 20,000 Carthaginians were left on the field and as many more taken prisoners. Hannibal fled to Adrumetum, rallied the fugitives, and in a few days collected a new army capable of checking the conqueror's progress. He then hastened to Carthage and declared to the senate that there was no safety but in peace and persuaded that body to accede to the terms offered.

Driven from country to country to escape the Romans, Hannibal ended the hopeless effort by swallowing poison which he carried in his ring. He died 183 B. C.

Hannington, James, an English clergyman, first Bishop of Eastern Equatorial Africa; born in Hurstpierpoint, Sussex, England, Sept. 3, 1847. He became a student of St. Mary Hall, Oxford, in 1868, and was ordained in 1873. June 24, 1884, he was consecrated Bishop of Eastern Equatorial Africa, and in the following January entered his new diocese, taking up his quarters at Frere Town, near Mombasa. In July, 1885, he started for the interior, the object of his journey being to reach the mission-station of Rubaga, in Uganda. But, after successfully surmounting the difficulties and dangers of the road through the land of the Masai, he was slain by order of Mwanga, King of Uganda, at a place not far from the right bank of the Nile, Oct. 29, 1885.

Hanno, a king or magistrate of Carthage who undertook a celebrated voyage of discovery along the W. coast of Africa. His expedition is said to have consisted of 60 ships; he founded numerous colonies or trading-stations, and proceeded as far S. as a point that has been variously identified with places between Cape Nun and the Bight of Benin. On his return to Carthage he inscribed an account of his voyage on a tablet, and placed it in the temple of Moloch.

Hanoi, or **Cachao,** the capital of Tonkin, and headquarters of the French administration on the Songkoi or Red river, 80 miles in a direct line from the sea. The commercial city has a river front of 1½ mile; the citadel behind contains within its walls most of the official buildings. Embroidery and work in mother-of-pearl are the chief local industries. Pop. (1921) 90,303.

Hanover, formerly a kingdom in the N. W. of Germany, now a province of the kingdom of Prussia; bounded N. by the German Ocean and the duchies of Holstein and Lauenburg, from which it is separated by the Elbe; N. E. by Mecklenburg-Schwerin; E. by Prussia and Brunswick; S. by Prussian Saxony, Hesse-Cassel and Rhenish Prussia; and W. by Holland. Total area, 14,869 square miles; capital, Hanover. It is divided into six regierungsbzirke or districts, and, according to the census of Dec. 1, 1919, had a total population of 3,017,366.

Taken as a whole, Hanover is very thinly peopled and in proportion to its extent of surface has much fewer towns of importance than any other country in Germany. The inhabitants are generally of Saxon origin except in the W., where they have a common origin with the Dutch, and are of Frisian extraction. They are simple, temperate, industrious, and patient; submitting almost without a murmur to live on the humblest fare and give themselves little concern with political arrangements. The educated classes, of course, speak the ordinary written language, but the lower orders generally speak Low German. The great majority of them are Protestants of the Lutheran persuasion. The Roman Catholics do not exceed one-seventh of the whole, and are almost entirely confined to the districts of Hildesheim and Osnabruck.

The government, previous to its annexation to Prussia in 1866, was a hereditary monarchy in which the Salic law was in force. The greater part of the population seemed readily to acquiesce in the new order of things and most of the officials passed over into the service of the Prussian rulers, but the nobility, Lutheran clergy, etc., were less easily reconciled, or remained irreconcilable, and the present Duke of Cumberland still claims to be the rightful king. Hanover, however, has been more and more closely incorporated with the rest of the Prussian dominions, special laws having been passed with that object in view, one in particular putting an end to the preponderance of the land-owners in the provincial diet. The province sends 36 members to the Prussian chamber of deputies and 10 to the House of Lords (Herrenhaus).

Hanover, capital of the Prussian province of Hanover, situated in an extensive plain on the Leine, which here receives the Ihme and becomes navigable. The old town, irregularly built and with many antiquated buildings, is surrounded by the handsome new quarters which have arisen to the N., E., and S. E. There are fine promenades, and a large wood with beautiful walks, the Eilenriede, lies on the E. side of the city. The principal buildings are the Market Church, the Old Town House, the Theater, one of the finest in Germany, the Royal Palace, the Museum of Art and Science, the Royal Library, containing 175,000 volumes, the Central Railway Station, the Waterloo Monument, etc. About a mile to the N. W. is Schloss Herrenhausen, the favorite residence of George I., George II., and George V. Near the town is the colossal Welfenschloss, or palace of the Guelphs, now fitted up as a polytechnic school. Hanover is a manufacturing town of some importance, has cotton-spinning, machine works, iron foundries, chemical works, tobacco and cigar factories, etc. Hanover is first mentioned in 1163. It joined the Hanseatic League in 1481. It became the residence of the dukes of Brunswick-Luneburg, and capital of the principality in 1636. Pop. (1919) 310,431.

Hanover College, a coeducational institution in Hanover, Ind., founded in 1828 under the auspices of the Presbyterian Church.

Hanover, Treaty of, a treaty concluded between England, France, and Russia, in September, 1725, for the purpose of mutual assistance, as opposed to the alliance between Austria and Spain.

Hanseatic League, a celebrated confederacy formed in the 13th century between certain commercial towns, with the view at once of restraining the rapacity of kings and nobles, and clearing the Elbe, the German Ocean, and other places from the pirates and robbers by which they were then infested. Becoming powerful, the League concluded treaties with monarchs, raised troops, and made war, as if it had been an independent political power. At the time when the League flourished most, it consisted of 85 confederate towns. It gave a powerful impulse to commerce, and when in 1631 it in large measure fell to pieces, it left behind various free republics which continued for a long period of time.

Hansen, Peter Andreas, a German astronomer; born in Tondern, Schleswig, Dec. 8, 1795. In 1842 he was awarded the gold medal of the Royal Astronomical Society of Great Britain for his work on the perturbations of Jupiter and Saturn and on the Lunar Theory. In 1857 the British government published his "Lunar Tables" (in French), in which he had embodied the results of his now completed lunar theory. In 1860 the Royal Astronomical Society for the second time conferred upon him its gold medal, and the British government awarded him $5.000 in acknowledgment of his services to astronomy and navigation in the completion of this great work. He died in Gotha, Germany, March 28, 1874.

Hanslick, Eduard, a German musical critic; born in Prague, Sept. 11, 1825. He surpassed all contemporary workers in the field of musical criticism. He died Aug. 8, 1904.

Hansteen, Christoph, a Norwegian astronomer; born in Christiania, Norway, Sept. 26, 1784. In 1814 he was appointed to the chair of mathematics in the university at Christiania, and there, in 1819, published his famous work, "Investigations into Terrestrial Magnetism." He was also Professor of Mathematics in the School of Artillery, superintendent of the triangulation of Norway, and reorganizer of the national system of weights and measures. He died in 1873.

Hanuman. See ENTELLUS.

Hapgood, Isabella Florence, an American translator and writer; born in Boston, Mass., Nov. 21, 1851. She is well known as a translator of the works of Gogol, Hugo, and other great European writers.

Hapgood, Norman, an American journalist; born in Chicago, Ill., March 28, 1868. He was graduated at Harvard, the Harvard Law School, and studied literature in Europe. He published "Abraham Lincoln" (1899); "Daniel Webster" (1899); etc.; editor "Collier's Weekly" 1903–12.

Happy Hunting Grounds, the region to which the North American Indians believe they will go when they die; a place where there will be everlasting feasting and hunting.

Hapsburg, or **Habsburg** (properly Habichtsburg or Habsburg, the hawk's castle), a small place in the Swiss Canton of Aargau, on the right bank of the Aar. The castle was built about 1027 by Bishop Werner of Strassburg. Werner II., who died in 1096, is said to have been the first to assume the title of Count of Hapsburg. After the death, about 1232, of Rudolph II., the family divided into two branches, the founder of one of which was Albert IV. In 1273 Rudolph, son of Albert IV., was chosen Emperor of Germany, and from him descended the series of Austrian monarchs, all of the Hapsburg male line, down to Charles IV. inclusive. After that the dynasty, by the marriage of Maria Theresa to Francis Stephen of Lorraine, became the Hapsburg-Lorraine. Francis II., the third of this line, was the last of the so-called "Holy Roman Emperors," this old title being changed by him for that of Emperor of Austria. From the Emperor Rudolph was also descended a Spanish dynasty which began with the Emperor Charles V. (Charles I. of Spain), and terminated with Charles

II. in 1700. The castle of Hapsburg is still to be seen on the Wulpelsberg. In 1881 the Austrians proposed to purchase the castle of Hapsburg and give it as a wedding gift to the Crown-prince of Austria; but the people of Aargau refused to hear of the sale.

Haquebut, a firearm with a hooked butt fitted to the barrel in place of the straight butt or stock then in use. It was introduced into England about 1485. The haquebut may be considered as the first step in the long series of improvements in small arms which seem to have culminated in the modern rifles.

Harakiri, or **Seppuku,** a method of suicide which members of the Japanese official classes were required to perform when the government considered them to be worthy of death. It is effected by making two gashes in the abdomen somewhat resembling a cross. Suicides sometimes adopt this painful method of death.

Harar, a city and territory of North-east Africa, under the dominion of Abyssinia, but practically self-governing. Pop. about 37,000, two-thirds females, composed of native Harari (nearly one-half), Gallas, Somali, and Abyssinians.

Harbor, a portion of a sea, a lake, or other large body of water, either landlocked or artificially protected so as to be a place of safety for vessels in stormy weather; a port or haven.

Harcourt, Sir William George Granville Venables Vernon, an English lawyer and politician, son of the Rev. William Vernon Harcourt; born Oct. 14, 1827. In February, 1886, he was made chancellor of the exchequer, and was reappointed in 1892. After the resignation of Mr. Gladstone, he became leader of the Liberal Party. He retired from public life in March, 1904, and died at Nuneham Park, near Oxford, October 1, 1904.

Hardee, William J., an American military officer; born in Savannah, Ga., Oct. 10, 1815; was graduated at the United States Military Academy in 1838; served with distinction in the Mexican War; in the Civil War entered the Confederate army with the rank of colonel; commanded a corps at Shiloh; promoted to lieutenant-general in 1862; commanded a corps at the battle of Missionary Ridge, and in 1864 was assigned the command of the Department of South Carolina, Georgia, and Florida. He died in Wytheville, Va., Nov. 6, 1873.

Hardenberg, Karl August, Prince von, a famous Prussian statesman; born in Essenrode, Hanover, May 31, 1750. In 1790 he entered the service of the king of Prussia, whose minister for foreign affairs he became in 1806. At the close of the wars of the first French empire he signed the treaty of peace at Paris in 1814. To Hardenberg Prussia is mainly indebted for the improvements in her army system, the abolition of serfdom, of the privileges of the nobles, and of a multitude of trade corporations, the encouragement of municipal institutions, and the reform of her educational system. He died in Genoa, Nov. 26, 1822.

Harding, Warren Gamaliel, born 1865, died 1923. Twenty-ninth President of the United States. He was born near Blooming Grove, Ohio, the son of a physician in moderate circumstances. Became editor and afterwards owner of the Marion, Ohio, Daily Star. Active in Ohio politics from 1900. Elected to United States Senate in 1914, he soon became a dominant figure in the Republican party politics. He was nominated for President by the Republican National Convention in 1920, and elected President Nov. 2, 1920, by the largest plurality ever given to a candidate. The popular vote was: Harding, 16,138,914; Cox, the Democratic candidate, 9,142,438. His choice of cabinet met with general approval. The cabinet was headed by Charles E. Hughes as secretary of state. Notable features of his short administration was the signing of a separate treaty with Germany, the adjustment with Japan over the controversy concerning the island of Yap, and the conference held in Washington for the limitation of armaments. He was taken suddenly ill on a western tour and died suddenly at San Francisco, California, Aug. 2, 1923. He married in 1891 Miss Florence Kling of Marion, Ohio. They had no children.

Hardwar, or **Hari-dwara,** also called **Ganga-Dwara,** a city situated on the right bank of the Gangos,

39 miles N. E. of Saharunpur, Northwest Provinces. It attracts immense numbers of pilgrims at the end of March and the beginning of April. In ordinary years the attendance is about 100,000; but every 12th year peculiarly sacred rites take place, attended by perhaps 300,000 (formerly 2,000,000). Pop. (1921) 31,200.

Hardy, Arthur Sherburne, an American novelist; born in Andover, Mass., Aug. 13, 1847. He was graduated from the United States Military Academy. His poetry and prose have great charm. He was U. S. minister to Persia, 1897-9; to Greece, Rumania and Servia, 1899-1901; Switzerland, 1901-03; Spain, 1903-05.

Hardy, Thomas, an English novelist; born in Dorset, England, June 2, 1840. He was brought up as an architect, and practised some time at Dorchester, next prosecuted his studies in design at London, gaining professional distinction. His intention was now to become an art critic but the experiment of a not wholly unsuccessful work of fiction, shaped his destiny otherwise. He has written many popular books.

Hardy, Sir Thomas Duffus, an English palæographer; born in Jamaica, W. I., in 1804. He died in London, England, June 15, 1878.

Hardy, Fort, a Revolutionary fort now in ruins, at the confluence of the Fishkill creek and the Hudson river, near Saratoga, N. Y.

Hare, in zoölogy, various species of a rodent quadruped. It does not make a burrow like the rabbit, but lurks in a seat or form, which it varies according to the season, and in severe weather betakes itself to the woods. It is, properly speaking, a nocturnal animal and is very prolific.

Hare, John, an English actor; born in London, England, May 16, 1844. Traveled largely in the United States at the head of his own company, and was celebrated for his portrayal of emotional roles.

Hare, Robert, an American scientist; born in Philadelphia, Pa., Jan. 17, 1781; was Professor of Chemistry in the University of Pennsylvania in 1818–1847. His fame rests chiefly on the valuable discovery of the oxyhydrogen blowpipe to which he gave the name "hydrostatic blowpipe." His other inventions include the valve-cock or gallows-screw, the calorimeter and a process for denarcelizing laudanum. He died in Philadelphia, Pa., May 15, 1858.

Hareld, a genus of the duck family, having a short thick bill, and two feathers of the middle of the tail, in the males, greatly elongated. Two species are known; the best known, the long-tailed duck or hareld, inhabits the arctic regions both of the Old and New Worlds, its winter migrations in the United States extending as far S. as the Carolinas.

Harelip, usually a congenital malformation, and frequently hereditary, chiefly occurring in the upper lip, and having one fissure only; if there are two it is called a double harelip. Harelip, besides being a great deformity, is attended with defect of speech and often a cleft of the upper jaw and palate bones, converting the mouth and nose practically into one cavity. In ordinary cases a cure by means of operation is easily effected.

Harem, (Arabic, the prohibited), a word used by Mussulmans to signify the women's apartments in a household establishment, forbidden to every man except the husband and near relations. The women of the harem may consist simply of a wife and her attendants, or there may be several wives and an indefinite number of female slaves. The greatest harem is that of the Sultan of Turkey. It is only the richer Moslems who can maintain harems; the poorer classes have generally but one wife.

Hargraves, Edmund Hammond, the discoverer of the goldfields of Australia; born in Gosport, England, in 1815. When 18 years of age he settled in Australia. Attracted to California in 1849, he there tried his luck as a gold-digger, and while so engaged was greatly struck by the similarity in the geological formation of California and Australia, and suspected that gold would be found in the latter. On his return home he proved the correctness of his surmise by discovering gold on the W. slopes of the Blue Hills in New South Wales in 1851. He was appointed commissioner of crown lands, and received from the government of New South

Wales a reward of $50,000. In 1855, one year after his return to England, he published "Australia and Its Goldfields." He died in 1891.

Hargreaves, James, an English inventor; born probably in Blackburn, Lancashire, England. He invented the spinning-jenny, but his fellow-spinners, imbued with strong prejudices against machinery, broke into his house and destroyed his frame. He then removed to Nottingham (1767), where he erected a spinning mill. He died April 22, 1778.

Hargrove, Robert Kennon, an American clergyman; born in Pickens co., Ala., Sept. 17, 1829; ordained in the Methodist Episcopal Church, South; and held pastorates in Alabama; and was made bishop in 1882. He had been secretary of the College of Bishops since 1884, and president of the board of trustees of Vanderbilt University since 1889. Died in 1905.

Haring, Georg Wilhelm Heinrich, pseudonym Wilibald Alexis, a German novelist; born in Breslau, June 23, 1797. He died in Arnstadt, Thuringia, Dec. 16, 1871.

Hari-Rud, or **Heri-Rud,** a river of Asia, which rises in the Hindu Kush about 150 miles W. from Kabul, pursues a W. course through Afghanistan for nearly 250 miles; then, bending suddenly to the N. it forms the boundary between Persia and Turkestan, and, after a further course of about 250 miles, loses itself in several arms in the Tekke Turkoman oasis.

Harlan, John Marshall, an American jurist; born Boyle co., Ky., June 1, 1833; was graduated at Centre College in 1850; became a lawyer; served in the Civil War; was attorney-general of Kentucky; a member of the Louisiana Investigation Commission of 1877, and in the same year was made associate justice of the Supreme Court of the United States. In 1892 he was an arbitrator before the Bering Sea tribunal. He died Oct. 14, 1911.

Harland, Henry, pseudonym Sidney Luska, an Anglo-American novelist; born in St. Petersburg, Russia, in Mar., 1861, died Dec. 21, 1905.

Harlaw, a place 18 miles N. W. of Aberdeen, the site of a battle fought July 24, 1411, between the Highlanders, led by Donald, Lord of the Isles, and the Lowlanders of Aberdeen, Mar, Garioch, Buchan, Angus, and Mearns, under Alexander Stewart, Earl of Mar. The battle was long and bloody, but the Highlanders were at last driven back, leaving more than 900 dead on the field. For long after "the red Harlaw" was a favorite theme of legend and song.

Harlem, the name applied to that portion of Manhattan borough, New York city, above Central Park. It includes an East and West side, the latter magnificently laid out with parks and broad avenues, and is being rapidly built up. Officially there is no such place as Harlem, although in the early days of the colony, "New Harlem" was a town.

Harlem River, a tidal channel which separates Manhattan Island from the mainland of the State of New York.

Harlequin, a character of the Italian comedy introduced on the stage of other countries. On the Italian stage he is a comic character, full of drolleries, tricks, and knaveries, and resembles the American clown.

Harmar, Josiah, an American soldier; born in 1753; served with Washington and Greene in the Revolutionary War; and was general-in-chief of the army in 1789 to 1792. He died in 1813.

Harmattan, a dry, hot wind blowing from the interior of Africa to the Atlantic, between Cape Verde and Cape Lopez, in December, January, and February. It hurts vegetation and prejudicially affects man, drying up the eyes, the mouth, etc., even peeling off the skin.

Harmonica, a musical instrument formed of a number of glasses which are tuned by filling them more or less with water, and are played by touching them with the dampened finger. Also a small wind instrument. A mouth-organ.

Harmonichord, an instrument played like a pianoforte, but sounding like a violin. The tone is produced by the pressure of the keys, which sets a revolving cylinder of wood, covered with leather and charged with resin, in action over the strings. It has also been called piano-violin, violin-piano, tetrachordon, etc.

Harmonists, a sect founded by two brothers, George and Frederick Rapp, who emigrated from Wurtemberg to the United States in 1803. Soon afterward they founded the town of Harmony in Pennsylvania. In 1815 they built New Harmony in Indiana. In 1825 the Harmonists removed to a new settlement, which they called Economy. They have community of goods and consider marriage a civil contract.

Harmonium, an instrument which bears some affinity to the organ, but, unlike that instrument, is made upon a principle technically termed the free vibrating reed. The free reed consists of a brass plate containing an oblong slit, having a thin elastic tongue fixed to one end in such a manner, and so exactly fitting into the slit, as to completely close it, but so that it will, upon the pressure of the wind on the free end, pass either inward or outward, without touching the end or sides.

Harmony, a union of sounds which individually appear different, but when heard together form a collective sound called a chord. It may also be explained as the melting or flowing together of several sounds into, as it were, one sound; in consequence of, or arising from, the consonant nature of their relative proportions to a fundamental sound. All musical compositions can be reduced to a fundamental harmony of successive chords, which, in their progression, are regulated by the rules of the theory of music.

Harmony, David B., an American naval officer; born in Easton, Pa., Sept. 3, 1832; entered the navy as a midshipman in 1847, rising through all the grades to that of rear-admiral in 1889. He served brilliantly in the Civil War, and was executive officer of the ironclad "Nahant" in the National operation in Charleston harbor in 1863; was retired in 1893.

Harney, William Selby, an American military officer; born in Haysboro, Tenn., Aug. 27, 1800; served as colonel in the Mexican War and was brevetted Brigadier-General for gallantry at Cerro Gordo. He was given command of the Department of Oregon, and in 1859 took possession of the island of San Juan, which was claimed by the English. For this he was recalled. He retired in 1863 and was brevetted Major-General in 1865. He died May 9, 1889.

Harney's Peak, the highest point of the Black Hills, South Dakota, named in honor of Gen. W. S. Harney. It is about 7,400 feet high.

Haro, or **San Juan Archipelago,** a cluster of islets owned by the United States, lying off the S. end of Vancouver Island.

Harold II., King of England; born about 1022, was the second son of Godwin, Earl of Kent. On the death of Edward the Confessor, Jan. 5, 1066, he stepped without opposition into the vacant throne, without attending to the claim of Edgar Atheling, or the asserted bequest of Edward in favor of the Duke of Normandy. The latter immediately called upon him to resign the crown, and upon his refusal prepared for invasion. He also instigated Harold's brother, Tostig, to infest the N. coasts of England in conjunction with the King of Norway. The united fleet of these chiefs sailed up the Humber and landed a numerous body of men; but at Stamford Bridge, in Yorkshire, were totally routed by Harold, whose brother Tostig fell in the battle. Immediately after he heard of the landing of the Duke of Normany at Pevensey, in Sussex. Hastening thither with all the troops he could muster, a general engagement ensued at Senlac near Hastings, Oct. 14, 1066, in which Harold was slain, and the crown of England passed to William.

Harold, I., surnamed Haarager (Fair-haired), the first king of all Norway. In his old age Harold divided his territories among his sons, and died at Throndhjem, which he had made his capital, in 930, leaving the supreme power to his son Eric, surnamed Bloody-Axe.

Harold III., surnamed Haardraade, or Hardrada (stern in council), a king of Norway. He was one of the most famous of the old Viking chiefs, and a descendant of Harold I. About 1045 his nephew, Magnus (the son of St. Olaf), agreed to divide the supreme power with him, in exchange for a share of his treasures. The death of Magnus in 1047 left Harold sole King of Norway. In 1066 he landed

in England, to aid Tostig against his brother Harold, King of England, but was slain in battle at Stamford Bridge, where also the flower of his warriors fell.

Haroun, surnamed Al-Raschid (more properly Harun er Rashid the orthodox), the most renowned of the Abbaside caliphs; born in 763. He succeeded his elder brother, El Hadi, in the caliphate, in the year 786. He owed his peaceful accession to the sagacity of the Barmecide Yahya, whom he at once made his grand vizier. To him and his four sons he left the entire administration of his extensive kingdom; and the general prosperity of the country proved that his confidence was not misplaced. Meantime Haroun gave himself up to the pleasures of life, and his own taste and hospitality quickly made his court at Bagdad a brilliant center of all the wit, learning, and art of the Moslem world. Himself an accomplished scholar and poet, he gathered round him the best scholars, poets, and musicians of his age, and heaped rewards upon them with lavish prodigality. Toward the end of his reign a strange and deeply rooted hatred toward the Barmecides filled his mind, and in 803 he caused the vizier, his four sons, and all their descendants, save one, to be executed. But retribution quickly followed; treason and rebellion, no longer dreading the far-reaching arm of the able vizier, showed themselves in every corner of the empire; and, when it was too late, Haroun repented bitterly his ferocious cruelty. To quell a formidable rising in Khorassan, in the N. E. of the empire, Haroun marched in person against the rebels, but an attack of apoplexy obliged him to remain behind, in Tus, where he soon afterward died, in the month of March, 809. Haroun the Magnificent is the hero of many of the stories in the "Arabian Nights," which have thrown a false halo round his memory; for with all his enlightenment, there was room in his heart for the most merciless and bloodthirsty ferocity and injustice.

Harp, a stringed instrument of great antiquity. In the Bible, Jubal, a descendant of Cain, is mentioned as its inventor. It was in use among the Egyptians, Assyrians, Hebrews, Greeks, Irish, Welsh, and other nations.

Harper, William Rainey, an American educator; born in New Concord, O., July 26, 1856; was graduated at Muskingum College in 1870; Professor of Hebrew at the Baptist Union Theological Seminary, Chicago, in 1879–1886; of Semitic Languages at Yale College in 1886–1891; was then chosen president of the University of Chicago. He was most successful in promoting its interests, benefited by the liberal donations of John D. Rockefeller. He died from cancer Jan. 10, 1906.

Harper's Ferry, a town in Jefferson Co., W. Va.; at the confluence of the Shenandoah and Potomac rivers, and on the Baltimore and Ohio railroads; 81 miles W. of Baltimore, Md. The place has considerable historical interest. It was the site of a United States government foundry, arsenal and armory, and the scene of John Brown's raid in Virginia in 1859. The government buildings were burned in 1861, to prevent their falling into the hands of the Confederates. In 1862 a Union army under Gen. D. H. Miles surrendered to Stonewall Jackson at this point. It is the seat of Storer College, and has considerable local trade. Pop. about 1,000.

Harpoon, a barbed javelin used to pierce and fasten to whales. It has a broad, flat, sharp head, and a shank about two feet long, furnishing a socket for the shaft. A line about 70 fathoms long is attached to the harpoon, and runs out rapidly as the struck fish dives below the surface.

Harpseal, a Greenland seal. The resemblance to a harp is in two large brown, oblique bands meeting near the shoulders, and then running separately along the sides and up the hind legs, where they become brighter, till they finally disappear in the white of the under parts. It is found in the Arctic Ocean, in Greenland, Newfoundland, Iceland, the N. and N. E. of Asia.

Harpsichord, a stringed instrument with a key-board, similar in form to a modern grand pianoforte, by which it has been superseded.

Harpy, a fabulous creature in Greek mythology, considered as a min-

ister of the vengeance of the gods. They are described as hideous monsters with wings, of fierce and loathsome aspect, with their faces pale with hunger, living in an atmosphere of filth and stench, and comtaminating everything that they approached. A harpy in heraldry is represented as a vulture with the head and breast of a woman.

The name harpy is also applied to a raptorial bird, an inhabitant of the great tropical forests, where it preys upon all quadrupeds except the most powerful, chiefly, however, on monkeys and sloths; even children are said to have been carried off by it. It inhabits the tropical regions of South America, from Bolivia and Paraguay to Mexico.

Harraden, Beatrice, an English novelist, daughter of an East India agent in London; born about 1864. After private schooling and a season in Germany she took her degree at London University at 21, showing marked excellence in languages. Her first novel, "Ships that Pass in the Night," was instantly successful.

Harriman, Edward Henry, capitalist, born 1847, of an old New York family. His father was a clergyman. He became a stock broker, a member of the New York Exchange, and as railroad financier, chairman and director became known as the Western Railroad Czar, practically controlling the whole systems. In 1909 was head of 20,000 miles of railroad. After a protracted illness he died, Sept. 9, 1909.

Harrington, Mark Walrod, an American astronomer; born in Sycamore, Ill., Aug. 18, 1848. He acquired his education at Evanston, Ill., and the University of Michigan, graduating from the latter in 1868. From 1879 to 1891 he was Professor of Astronomy and Director of the Observatory at the University of Michigan. In 1884 he founded the "American Meteorological Journal" and was its managing editor until 1892. In 1891 he was appointed Chief of the Weather Bureau at Washington, D. C., which post he held till 1895, when he was made vice-president of the International Meteorological Conference at Munich.

Harris, Amanda Bartlett, an American writer; born in Warner, N. H., Aug. 15, 1824. Besides numerous contributions to periodicals, she has published many pleasing books.

Harris, David Bullock, an American military officer; born in Virginia in 1814; was graduated at the United States Military Academy in 1833. In 1861 he entered the Confederate army, attaining the rank of general. He died in 1864.

Harris, Isham Green, an American legislator; born in Tullahoma, Tenn., Feb. 10, 1818. He was a member of Congress in 1849–1853, and governor of Tennessee in 1857–1863. During the latter part of the Civil War he served as a staff officer in the Confederate army. He subsequently practised law in Memphis, and in 1877 was elected United States Senator, and reëlected in 1883, 1889, 1895. He was unanimously elected president pro tem. of the Senate in 1893. He died July 8, 1897.

Harris, Joel Chandler, an American journalist and story writer; born in Eatonton, Ga., Dec. 8, 1848. He had a thorough familiarity with the negro of the post-bellum period, and while editing an Atlanta paper he produced for it the series of "Uncle Remus" sketches and songs which immediately made him known. In a more serious vein is his biography of the lamented Henry W. Grady, a work of genuine power. Died in 1908.

Harris, Mrs. Miriam (Coles), an American novelist; born in Dosoris, L. I., in 1834.

Harris, Robert, a Canadian artist; born in Wales in 1849. His best known work is "Fathers of Confederation," now in the Parliament House, Ottawa.

Harris, Thomas Lake, religious reformer; born in Fenny Stratford, England, May 15, 1823. He accompanied his father to the United States and became a Universalist pastor, and founded an "Independent Christian Society," when in 1850 he was drawn into the spiritualistic movement. He lectured in Great Britain in 1858, and on his return to the United States reorganized his society as the "Brotherhood of the New Life." Latterly he settled in California. D. in 1906.

Harris, William Logan, an American clergyman; born in Ohio in 1817; became a Methodist clergyman in early life; and was made bishop in 1872. He died in 1887.

Harris, William Torrey, an American educator; born in North Killingly, Conn., Sept. 10, 1835; studied at Yale College; superintendent of St. Louis public schools in 1867–1880; United States Commissioner of Education, 1889–1906. He died Nov. 5, 1909.

Harrisburg, a city, capital of the State of Pennsylvania, and county-seat of Dauphin co.; on the Susquehanna river, 160 miles W. of Philadelphia. It is a railroad center with direct connections with the coal and iron resources of the State, and is an extensive lumber depot. The State Capitol, a magnificent classic building completed in 1906 at a cost of $13,000,000, stands on a slight eminence in a beautiful park of 10 acres. Pop. (1920) 75,917.

Harrison, Benjamin, an American patriot; born in Berkeley, Va., about 1740. He was elected to the House of Burgesses soon after attaining his majority. In 1773 he was chosen a member of the committee which united the colonies against Great Britain. Shortly afterward he was elected to Congress and five times reëlected. On July 4, 1776, he reported, as chairman of the committee of the whole House, the Declaration of Independence, of which he was one of the signers. He opposed the ratification of the Federal Constitution, but, on its adoption, supported the National government. He died in April, 1791.

Harrison, Benjamin, an American statesman, 23d President of the United States; born in North Bend, O., Aug. 20, 1833. He was a great-grandson of Benjamin Harrison, signer of the Declaration of Independence, and grandson of William Henry Harrison, 9th President of the United States. He was graduated at Miami University; studied law in Cincinnati; removed to Indianapolis, Ind., in 1854, and laid the foundation of a fine legal practice; entered the Union army in 1862, serving with conspicuous gallantry in the Atlanta campaign, finally returning to civil life at the close of the war with the rank of brevet Brigadier-General; was the Republican candidate for governor of Indiana in 1876, but was defeated; was elected to the United States Senate in 1881, where he added to his reputation as a sound thinker and a polished debater; at the Republican Convention held in Chicago, June, 1888, he was nominated for the presidency of the United States; elected in the ensuing November; and inaugurated March 4, 1889. His administration was quiet, successful and measurably popular. It was marked by the amicable settlement of the trouble with Chile and by the passage of the McKinley Tariff Bill. In 1892 he received again the nomination in the National Republican Convention, but by this time the able and persistent attacks of the Democracy on the high tariff policy led to a general revulsion against it, and he was defeated at the election by Cleveland. He thereupon pursued a private law practice, occasionally giving public addresses. He died in Indianapolis, Ind., March 13, 1901.

Harrison, Mrs. Burton (Constance Cary), an American novelist and miscellaneous writer; born in Vaucluse, Va., April 25, 1846.

Harrison, James Albert, an American educator; born in Pass Christian, Miss., Aug. 21, 1848; was graduated at the University of Pennsylvania in 1868; Professor of English and Romance Languages at the University of Virginia since 1895.

Harrison, John, an English inventor; born in Foulby, Yorkshire, England, in 1693. In 1726 he constructed a timekeeper provided with compensating apparatus for correcting errors due to variations of climate. After a long period of persevering labor Harrison made a chronometer which, in a voyage to Jamaica in 1761–1762, was found to determine the longitude within 18 miles. He died in London, March 24, 1776.

Harrison, Thomas Alexander, an American landscape painter; born in Philadelphia, Jan. 17, 1853. He was awarded the gold medal of honor by the Pennsylvania Academy of Fine Arts in 1894 and in 1898 became an associate National Academician.

Harrison, William Henry, an American statesman, 9th President of the United States; born in Berkeley, Va., Feb. 9, 1773. He served in the Indian War on General Wayne's staff, 1791–1792, and in 1797 was appointed captain, in command of Fort Washington, on the present site of Cincinnati, O. On the conclusion of the war he became Secretary of the Northwest Territory (1798), resigning the next year to enter Congress as delegate from that Territory. In 1801 he was appointed governor of Indian Territory, and made superintendent of Indian Affairs. He made important treaties with the Indians, and won considerable fame by a victory over a force of Indians, in the battle of Tippecanoe, in 1811. In 1812 he was intrusted with full military command on the Northwest frontier, with the rank of Brigadier-General, and the following year was promoted to Major-General. During this year he distinguished himself by his defense of Fort Meigs and in the battle of the Thames. After the War of 1812 he was sent to Congress, 1816; to the Ohio State Senate, 1819; to the United States Senate, 1825; and as United States minister to Colombia, 1828. After a retirement of 12 years he was nominated for the presidency by the Whig party, against Van Buren, in the famous "log-cabin" and "hard cider" campaign. Harrison was said by his opponents to live in a log cabin and to be given to the habit of drinking hard cider. These reproaches were turned into watchwords by the Whigs, and aroused unprecedented enthusiasm. He died April 4, 1841, just a month after his inauguration, leaving the presidency to the Vice-President, John Tyler.

Hart, Albert Bushnell, an American educator; born in Clarksville, Pa., July 1, 1854; was Professor of History at Harvard University in 1897–1910; then of Government. He edited "American History Told by Contemporaries" (1898–1901); "The American Nation," 27 vols. (1903–8); "Cyclopædia of American Government," 3 vols. (1914); and numerous other historical works; and during the World War he was a frequent contributor to the periodic press on problems connected with the World War.

Hartbeest, the commonest of the larger antelopes in Southern Africa. It is of a gray-brown color. It lives in large herds, and is hunted for its flesh, which resembles that of the ox. It can be domesticated.

Harte, Francis Bret, an American novelist and poet; born in Albany, N. Y., Aug. 25, 1839. He went to California in 1854, and figured as a coal dealer, a teacher, and a typesetter on the "Golden Era," in which appeared some of his earliest literary efforts. He next became editor of the "Californian," and in 1864 secretary to the United States Mint at San Francisco. In 1868 he became editor of the "Overland Monthly," in which appeared, in 1869, the humorous poem of "The Heathen Chinee." In 1878 he became United States consul at Crefeld, whence he was transferred to Glasgow in 1880, and remained there till 1885. Among his best known works are "The Luck of Roaring Camp," and "The Outcasts of Poker Flat." During the last 24 years of his life Mr. Harte resided abroad. He died near Aldershot, England, May 5, 1902.

Hartford, a city, capital of the State of Connecticut, port of entry and county-seat of Hartford co.; on the Connecticut river, 36 miles N. E. of New Haven. It is an important commercial and manufacturing city, and is noted for its many insurance companies. Area, 17 square miles.

The new State House is an imposing structure completed in 1880, at a cost of $3,100,000, having its main approach by way of a bridge over Park river, on which bridge a soldiers' memorial arch has been built. The old State House, now used as a city hall and the rooms of the Hartford Historical Society, contain many interesting relics and antiquities. The grounds of the new State House and Bushnell Park comprise together a park of 46 acres. The city's manufactures are varied and extensive.

The first settlement was made by the Dutch in 1623. The Dutch were banished from Connecticut in 1654, and in 1687 an attempt was made by the English Governor Andros to seize the Charter, which was thwarted by hiding it in the Charter Oak. Pop. (1920) 138,036.

Biblioteka Wojsk. Akad. Polit.
8161

BIBLIOTEKA NAUKOWA WDP
46666/2
188/03
188/03