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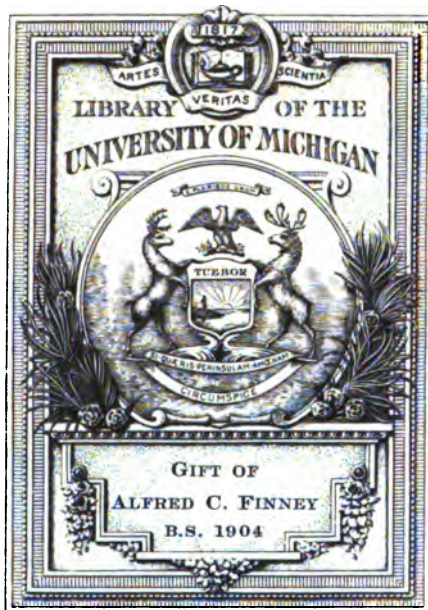
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AMERICAN REVISIONS AND ADDITIONS

TO THE

ENCYCLOPÆDIA BRITANNICA

(NINTH EDITION.)

A DICTIONARY OF

ARTS, SCIENCES AND GENERAL LITERATURE

VOLUME I

CHICAGO
R. S. PEALE & CO.

1891 0

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PREFACE.

THE inestimable value of the **ENCYCLOPEDIA BRITANNICA** does not need restatement. Treating, as the great work does, "of all the various kinds of knowledge," and embodying the results of the labors of more than twelve hundred leading scholars, each one a master-specialist in his class, and a recognized authority on the subject of which he treats, and all having at their command ample time as well as abundant materials for the elucidation of the topics assigned them, it was no marvel that, when the work appeared, it attracted immediate attention, and early came to be regarded as peerless in its line.

That so large and costly a work should have successfully passed through **NINE** editions, each edition a great improvement on its predecessor, and each one receiving an ever-increasing patronage on the part of a discriminating public, is a fact suggestive not only of the real merit of the work itself, but also of the growing appreciation on the part of the people as to its standard and permanent value. The open field for the "**Britannica**" has therefore widened, and the desire for its possession deepened in all directions, with the lapse of passing years.

The announcement, therefore, on the part of the present Publishers, that, taking advantage of the recent discoveries in photo-engraving, and in all departments of book-printing, by which the cost of book-making may be greatly reduced, they would be able to produce *fac-simile* and beautiful and durable editions of the **ENCYCLOPEDIA BRITANNICA** at a greatly reduced cost to the buyer, was hailed with the greatest satisfaction by the people. That announcement placed the great Edinburgh work in all its wealth of information, and in all its beauty of illustration and finish, within the reach of the whole people. Since that date the promise of the Publishers has been made good.

Only one thing remained to meet the full, felt, present want of the public—a want growing out of the fact of the world's rapid progress. Since the close of the record of the world-renowned latest edition of the **ENCYCLOPEDIA BRITANNICA**, the advances in all branches of human information have been marvelous, both in respect of number and

practical utility. The facts, reaches of history, discoveries in science, multiplied economic questions and conclusions in all departments of human industry, which were matters of interesting record ten years ago, have proved to be the pivotal points of remarkable revolutions characterizing the whole decade. The record of these revolutions, and of the facts of this later history, constitute the aim of these REVISIONS AND ADDITIONS.

In meeting this recognized need, the whole field of information furnished by the volumes of the BRITANNICA has been carefully explored, so as—first, to avoid all unnecessary repetitions; second, to make all needed revisions and additions to the many articles, thus bringing the record in all cases down to date; and, third, to furnish the many thousand new topics which the progress in Science, Art, and History requires.

The Editor of these REVISIONS AND ADDITIONS returns his sincerest and heartiest thanks to his staff of assistants for their faithfulness in the work assigned them; to the special contributors for the efficient aid which they have rendered; to the officers and employes of our National Government and of other governments, who have kindly responded to requests for documents and other information; to the officers of various institutions for reports promptly furnished; and especially to the Publishers for their generous outlay of funds in bringing this work to an early successful completion.

W. H. D.

AMERICAN REVISIONS AND ADDITIONS

TO THE

ENCYCLOPÆDIA BRITANNICA.

AAGESEN—AARON'S BEARD.

AAGESEN, SVEND, a Danish historian, who at the beginning of the 13th century wrote a history of Denmark down to 1187.

AALESUND, a coast town in the province of Romsdal, Norway, built on three small islands. Population, about 6,000.

AALI PASHA, MEHEMED EMIN, a distinguished Turkish statesman, born in 1815. Entered the Turkish foreign office in 1830. Turkish ambassador at London in 1844. Appointed minister of foreign affairs in 1845, serving as such three terms between 1846 to 1853. He became chancellor of the divan in 1845, pasha in 1856, and grand vizier in 1852, holding this latter position several times. He was closely identified with the extensive reforms in the government of the Ottoman empire under the sultans Abdul Medjid and Abdul Aziz. He represented the Porte at the conferences of Vienna and Paris in 1855, and signed the treaty of Paris in 1856. He presided at the conference of the European powers called to settle the Roumanian difficulties in 1864. During the absence from Constantinople of the sultan in 1867, who was engaged in making a tour of the Continent, Aali Pasha acted as regent of the empire, and was active in suppressing the Cretan rebellion in 1867-68, and in repressing the efforts of the Egyptians to destroy the supremacy of the Porte. He died Sept. 6, 1871.

AALL, JAKOB, a distinguished Norwegian historian and statesman, was born at Porsgrund July 27, 1773. While studying divinity at Copenhagen he became interested in the pursuit of natural science; and in 1797 he set out to make the tour of the scientific schools of Leipsic, Kiel and Göttingen. In Germany he became acquainted with the great geologist Werner; and in 1799, having spent the winter at the celebrated academy of mines in Freiberg, he returned to Norway and invested his patrimony in the purchase of the immense iron works of Naes, in the Arendal ore region. From this time on until his death, Aug. 4, 1844, his life was one of vast and varied activity and usefulness. In 1814 he took a very prominent

part in the framing of the free constitution of Norway; and for 14 years, 1816-30, he was a leading member of the Storting. In 1832-36 he published, in three volumes, entitled *Present and Past*, a redaction of his own numerous and important magazine articles on the history and antiquities of Norway. In 1838-39 appeared his standard translation of Snorre Sturleson's *Heimskringla*. His *Reminiscences* (1844-45) is a vast repository of reliable data concerning the contemporaneous history of the Scandinavian peninsula.

AALTEN, a town in the province of Guelderland, Netherlands, about 30 miles east of Arnhem, on the river Aar. Population (1880) 6,591.

AAM, AUM or AWM, a Dutch liquid measure of varying value. The standard or Amsterdam aam is 41 gallons for wine and about 38 gallons for oil. The aam is in limited use in other continental countries, in some of which it shrinks in capacity to about 36 gallons. In Germany it is written *ahm*, and sometimes, though erroneously, *ohm*.

AARESTRUP, CARL LUDWIG EMIL, Danish physician and poet, born Dec. 4, 1800. A volume of his poems was published in 1838, and another posthumously in 1863. He died in 1856.

AARON, SAMUEL, a Baptist clergyman and educator, born at New Britain, Pa., in 1800. Ordained in 1829. Established an enviable reputation as a teacher in Tremont Seminary, near Norristown, Pa., and the Mount Holly Institute, in New Jersey. He was also the author of various text-books. Died April 11, 1865.

AARON'S BEARD, a small creeping shrub belonging to the class of evergreens. There are three species: (a) *Saxifraga sarmantosa*. A domesticated house-plant, easily cultivated in hanging pots. The leaves, which are bright and hairy, grow alternately from long, drooping stems. The flowers resemble those of the London Pride. (b) *Hypericum calycinum*, commonly called "Rose of Sharon," was originally found in the S. E. of Europe. It is characterized by a prostrate, creeping stem, which, from July until September, is decorated with large, bright yellow flowers, bearing many stamens. This

flower is the largest of the order. (c) *Geropogon hirsutus*, is an annual of S. European nativity, and is easily cultivated. Its flower, which is a purplish capitulum, resembles that of *Tragopogon* (Goat's Beard), to which plant it is related.

AARS, JACOB JONATHAN, Norwegian linguist, born in Christiania July, 12, 1837. He wrote several text-books, and numerous important papers on language and mythology.

AASEN, IVAR ANDREAS, a distinguished Norwegian writer, born at Orsteen in 1813. Author of "Det Norske folkesprogs grammatik" (1848), "Ordbog over det Norske folkesprog," (1852), and "Norske Ordsprog" (1856). The Drontheim Association of Sciences became his patron and supported him while he devoted himself to an exhaustive study of the Norwegian dialects, enabling him to visit all parts of the country while in the pursuit of his studies.

AASVÆR, a group of small islands about 10 miles from the coast of Norway, under the arctic polar circle. During the month of December they are inhabited by over 10,000 herring fishermen, the islands being almost deserted during the balance of the year. The fishing season lasts only about three weeks, during which time 200,000 kegs of herring are caught.

AB, a Jewish month—the 11th of the civil year, and the 5th of the ecclesiastical year.

ABABDEH, one of the nomadic negro tribes of Upper Egypt and Nubia, principally employed as guides through the desert.

ABACK, a nautical phrase. A ship or her sails are said to be *laid aback* when they are placed in such a position as to receive the wind from ahead, pressing the sails against the mast, and retarding or checking the speed of the ship. This is done in cases where immediate retreat is necessary, or where there is danger ahead; or to give the ship sternway. The sails are *taken aback* when placed in such position through the force of the wind. To *brace aback* is a term used when the yards are to be swung round by means of braces, thus checking the ship's progress.

ABACO, the largest of the Bahama Islands. Length 80 miles. Area 96 sq. miles. Lat. 26° 18' N., long. 76° 57' W. Its chief town is Carleton. It is also called Great Abaco. Little Abaco lies west of the northern portion of Abaco.

ABACOT, an antique cap of state, made to resemble a double crown, formerly worn by the English kings.

ABAD, a name given to several of the kings of Moorish Spain. Abad I, the first Moslem king of Seville, reigned 1023–42. The last of the dynasty, Abad III, died in 1095.

ABADDON, a Hebrew word used in rabbinical legends to denote the deepest place in hell. As used in the Apocalypse it denotes the angel of the abyss, the bottomless pit. Used by Job as a poetical term for Sheol, the kingdom of shadows. Synonymous with the Amodeus of Tobit iii, 8, and the Apollyon of Rev. ix, 11.

ABAISSE, ABAISSÉ or ABASED, in heraldry, is applied to the depression of a bearing below its definite or usual position in the shield; also to the wings of eagles when open, but having their tips inclined downwards to the points of the escutcheon.

ABALONE (Bor.), a name given in California to species of *Haliotis*, particularly *H. Cracherodii*.

ABANCOURT, D', CHARLES FREROT, French engineer, who spent many years in Turkey in the employ of the French government. Distinguished as the author of several maps of Eastern Europe.

ABANCOURT, D', CHARLES XAVIER JOSEPH FRANQUEVILLE, a minister of Louis XVI, of France, in

1792. Born at Douai 1758, died Sept. 9, 1792, having been murdered by a mob at Versailles. He was a nephew of the celebrated Calonne, and an ardent royalist.

ABANDONMENT, in law, is the relinquishment of a possession, privilege, or claim; or the voluntary desertion of a wife by the husband, a husband by the wife, a child by the parent, etc. In maritime law, the relinquishment of a ship and freight, either or both, and surrender of the same to a creditor, by which act the owner may avoid obligations far in excess of the value of the ship and cargo. In marine insurance, the surrender to the insurers of all the property saved from loss by perils of the sea, thereby entitling the insured to indemnification for a total loss. For a further discussion of this subject see Britannica, Vol. I, p. 4.

ABARBANEL, ABRABANEL, or ABRAVANEL, ISAAC BEN JEHUDAH, a celebrated Jewish writer, born at Lisbon 1437. He was employed by the Portuguese government in affairs of state during the reign of Alfonso V, but subsequently was accused of treason and his property confiscated. He fled to Spain in 1483, and died at Venice in 1508. He wrote several critical and doctrinal commentaries on the Bible.

ABARCA, JOAQUIN, a bishop and leader of the absolutist party of Spain, born in 1780. He became prime minister of Don Carlos, but, falling into disfavor, was banished, and died in 1844.

ABARIM, a range of mountains on the east side of Jordan, opposite Jericho, in the land of Moab. These mountains have an elevation of nearly 3,000 feet above the Mediterranean, and more than 4,000 feet above the Dead Sea. The summit of the range was formerly supposed to be level, but recent explorers have found considerable inequalities of surface. Mount Nebo, the highest point, and still called Mount Nebo or Nebbeh, is believed to be the point from which Moses obtained his view of Palestine.

ABASCAL, José FERNANDO, a Spanish commander, born in 1743. He became connected with the army in 1762; was at one time intendant of New Galicia, and in 1804 became viceroy of Peru. The Peruvians recognized him as an able and popular ruler, and in 1812 he was given a marquisate. He died at Madrid in 1821.

ABATEMENT, in heraldry, is the name commonly applied to a series of marks, nine in number, which were placed upon a knight's coat of arms, designating his unfitness to bear the symbol of honor. There were three signs of particular significance: *Delf tenné*, which was a sign of revoked challenge; *point-à-point*, denoting a coward; *gusset sinister*, drunkenness. The greatest disgrace that could be bestowed upon a knight was to have his shield turned upside down. A complete analysis of these signs would be unnecessary, as they were very little used.

ABATEMENT, in law, is the removal or destruction, as of a nuisance; the suspension, diminution, or failure, as of an action or legacy; and the entry upon land by a stranger after the death of its former owner and before the entry of the heir or devisee. The term also applies to a reduction sometimes made in the amount of a tax. In revenue law the term is used to designate a reduction of duties on damaged goods. For a further discussion of this subject, see Britannica, Vol. I, p. 8.

ABATTIS (Fr.), a bulwark or species of intrenchment consisting of trees felled and laid side by side with the tops towards the enemy. Usually the ends of the branches are cut off and sharpened, and sometimes the trunks are fixed in the earth to give greater stability to the obstruction.

A BATTUTA, in music, denotes the end of an *ad libitum* movement, and directs the performer to return *a tempo primo*. It is confined chiefly to recitatives.

ABA-UJVAR, a county of Hungary. Area, 1109 sq. miles. Bounded by the counties of Borsod, Torna, Zemplin, Saros and Zips. Its chief town is Kaschan, and its population (1890) 162,756. The country is mountainous, and the soil specially favorable for grape culture. Gold, silver, iron and copper are among its mineral products.

ABBADIE, D'ANTOINE THOMSON and ARNOULD MICHEL, two brothers who became famous as travelers and explorers. Antoine was born in Dublin in 1810 and Arnould in 1815. They were educated in France, and from 1837 to 1848 made extensive explorations in Abyssinia and Upper Egypt. On their return the elder brother published a catalogue of Ethiopian MSS., the *Géodésie d'Éthiopie* and a Dictionary of the Amarinna (Amharic) language. The younger published the *Douze Ans dans la Haute Éthiopie*. They have a collection of 234 Ethiopic and Amharic manuscripts, one of the largest collections in Europe.

ABBANDONAMENTE, in music, directs the performer to sing or play with abandon, having less regard to time than to the expression of musical feeling.

ABBAS, ABBAS-IBN-ABD-IL-MOOLTALIB, the paternal uncle of Mohammed, and the founder of the dynasty of Abbasides. Born at Mecca 566. He opposed Mohammed at first, but, subsequently becoming converted, became one of the principal promoters of the Mohammedan religion. Died in 652.

ABBAS PASHA, Viceroy of Egypt, and a grandson of Mehemet Ali. Born at Yedda in Arabia in 1818. He ascended the vice-regal throne at Cairo on the death of his uncle, Ibrahim Pasha, in 1848. He was a bigoted, indolent and sensual ruler, bitterly opposed to foreigners and their civilization. He was found dead, probably murdered, July 13, 1854. He was succeeded by his uncle, Saïd Pasha.

ABBATE, NICCOLO DELI', a famous fresco-painter, born at Modena in 1512. The principal work by him now in existence is an altar piece in Dresden. He died at Paris in 1571.

ABBATUCCI, CARLO, or CHARLES, a Corsican general, who served in the French army under the Republic. Born 1771; died 1796.

ABBATUCCI, CHARLES, a counsellor of state under Napoleon III. In June, 1872, he was elected to the National Assembly. Born 1816.

ABBATUCCI, GIACOMO PIETRO, or JACQUES PIERRE, a Corsican who became a general of division in the French army. Born 1726; died 1812.

ABBATUCCI JACQUES PIERRE CHARLES, a Corsican, who became a distinguished French lawyer, and was at one time (1852) appointed minister of justice by Louis Napoleon. Born 1791; died 1857.

ABBEVILLE COURT HOUSE, a thriving post-village of South Carolina, county seat of Abbeville county; contains excellent schools and a number of churches, and carries on a brisk local trade in general merchandise.

ABERDEEN, an important and rapidly growing city of South Dakota, county seat of Brown county; lies in the heart of a region of remarkable fertility, and is noted for its public improvements, its good schools, its financial, commercial and manufacturing enterprise, and the substantial character of its growth and prosperity.

ABILENE, a thriving city of Texas, county seat of Taylor county, is an important live-stock market.

ABBE, CLEVELAND, American meteorologist and astronomer, born in New York city Dec. 3, 1838. He was graduated at the New York Free Academy

taught mathematics in Trinity Latin School, and then studied astronomy under Brünow, Gould and Struve. In 1868 he was elected director of the Cincinnati Observatory, and inaugurated a system of daily meteorological reports by telegraph with weather predictions. The favor with which this project was received was brought to the attention of congress, and the secretary of war was directed to provide for taking meteorological observations at military posts with the design of giving warning of any approach of storms. As it was his duty to prepare "probabilities," Prof. Abbé became popularly known as "Old Probabilities," and under his direction the service reached the high degree of efficiency that it has since maintained. He has written for numerous periodicals, cyclopedias, and books of reference on astronomical and meteorological subjects.

ABBETT, LEON, governor of New Jersey, born in Philadelphia in 1836. Removed to New Jersey very early in life, and for many years has been a member of the New York bar. He early entered politics, and served three terms as a member of the New Jersey legislature, subsequently becoming State senator, and for three years was president of the senate. In 1883 he was elected governor of the State after a bitter contest. In the winter following the expiration of his term he was a candidate for the election to the U. S. senate, but was defeated. He is now serving his second term as governor, having been elected in 1889.

ABBEVILLE TREATIES, so-called because of the meeting of Henry III of England and Louis IX of France at Abbeville, May 20, 1259, to conduct negotiations for a treaty of peace. The final terms of the treaty were settled in Paris.

ABBEY, EDWIN AUSTIN, American artist, born in Philadelphia, Pa., in 1852. He studied at the Pennsylvania Academy, and later devoted himself to drawing illustrations for books and magazines. In 1875 he took up water-color work, and in 1883 removed to London, where his studio now is. Among his notable pictures are *The Stage Office*, *The Evil Eye*, *Lady in a Garden*, *Rose in October*, and *The Widower*. Mr. Abbey is a member of the New York Water-color Society, of the New York Etching Club, of the Tile Club, and of the London Institute of Water-colors.

ABBEY, RICHARD, a Methodist clergyman and author, born in Western New York in 1805. Removed to Mississippi in 1825, and in 1844 joined the Mississippi Conference of the Methodist Episcopal Church South. He is the author of numerous religious books, and has been an extensive newspaper and review writer.

ABBIATI, a famous Italian painter. Born at Milan 1640; died 1715.

ABBITIBBI, or ABBITIBBE, a lake, river, and trading-station in British North America.

ABBON, THE CROOKED (Lat. *Abbo Cernuus*), a French monk of St. Germain-des-Prés, who wrote an epic poem descriptive of the siege of Paris by the Northmen (885-887). Died 923.

ABBOT, ABIEL, D. D., a Congregational and Unitarian minister, born at Wilton, N. H., 1765. Graduated at Harvard in 1787. Author of a *History of Andover*. Died 1859.

ABBOT, ABIEL, D. D., a Congregational minister, born at Andover, Mass., 1770. Graduated at Harvard in 1792; died 1829. Author of *Letters from Cuba*. A volume of his sermons have also been published.

ABBOT, BENJAMIN, LL. D., an eminent educator, born at Andover, Mass., 1762. Graduated at Harvard in 1788. For half a century he was principal of Phillips Academy at Exeter, N. H., and numbered among his pupils Daniel Webster, Alexander

H. Everett, Edward Everett, Lewis Cass, Jared Sparks, George Bancroft, and others of world-wide fame. Died 1849.

ABBOT, EZRA, D. D., LL. D., American Biblical critic, born in Jackson, Me., April 28, 1819. He was graduated at Bowdoin College in 1840, and taught



EZRA ABBOT.

school until 1856, when he became assistant librarian at Harvard. In 1872 he became professor of New Testament criticism and interpretation in the Divinity School at Cambridge, which position he held till his death. Mr. Abbot's most important work was a small volume on *The Authorship of the Fourth Gospel* (1880). He was a Unitarian, and contributed largely to the periodicals of that denomination. He also furnished papers for the "North American Review" and the "Journal of the American Oriental Society," and was a member of the American committee to revise the New Testament. He died in Cambridge, Mass., March 21, 1884.

ABBOT, FRANCIS ELLINGWOOD, American philosopher, born at Boston, Mass., Nov. 6, 1836. After being graduated at Harvard College in 1859, he studied theology and became a Unitarian clergyman. In 1870 he left the ministry, however, and published "The Index," a Boston journal of free thought. He has written much on metaphysical subjects, and has published *Scientific Theism*.

ABBOT, HENRY LARCOM, American soldier, born in Beverly, Mass., Aug. 13, 1831. Graduated at West Point in 1854; made brevet second lieutenant of topographical engineers; served in the office of the Pacific railroad surveys in Washington, and later on the hydrographic survey of the Mississippi river delta. During the civil war he was engaged in military engineering and brevetted brigadier-general. In 1880 he was appointed lieutenant-colonel of engineers. He has been a member of various boards connected with fortifications and harbor and river improvements. He invented the U. S. system of submarine mines for coast and river defense, and published numerous military articles.

ABBOT, JOEL, an American naval officer, born in Westford, Mass., Jan. 18, 1793. He was appointed midshipman at the outbreak of the second war with England, and served under Com. Rogers and Com. Macdonough. The last-named officer, learning that the English had accumulated a large supply of spars at Sorel, he asked Abbot if he were willing to die for his country. "Certainly, sir; that is what I came for," was the answer. Young Abbot then entered the enemy's lines, disguised as a British officer, located the spars, and destroyed them. He encountered such hardships during this expedition that when he reported he was in a state of prostration. For this and similar exploits he was promoted to a lieutenancy, and congress voted him a handsome sword. In 1818 he took charge of the 30-gun pirate craft, *Mariana* captured by Com. Stocton. On the voyage to Bos-



JOEL ABBOT.

ton his crew mutinied, and the prisoners, during a terrible gale, wrenched their irons off. Lieut. Abbot regained command, however, and brought his ship safely to port. In 1838 he was promoted to commander, and from 1839 to 1842 was in command of the Boston navy-yard. In 1852 he commanded the *Macedonian*, and during the critical period of the relations between the United States and China he discharged several delicate diplomatic duties. He died in Hong Kong, China, Dec. 14, 1855.

ABBOT, JOEL, M. D., born at Bridgefield, Conn., 1766. Removed to Georgia in 1794, where he engaged in the practice of medicine. Member of the Georgia legislature in 1809, and U. S. congressman 1816-25. Died 1826.

ABBOT, JOSEPH HALE, an educator, born at Wilton, N. H., 1802. Tutor at Bowdoin College 1825-27; professor of mathematics and modern languages at Phillips Academy, 1827-33. Subsequently became principal of a ladies' seminary at Boston, and later at the head of the Beverly High School. He was for many years the recording secretary of the American Academy of Arts and Sciences, and was one of Dr. J. E. Worcester's assistants in the preparation of his Dictionary.

ABBOT, SAMUEL, merchant, born at Andover, Mass., 1732. He was one of the founders of the Andover Theological Seminary, to which he gave \$20,000 during his lifetime, and \$100,000 at his death. Died 1812.

ABBOT, WALTER, U. S. naval officer, born in Massachusetts, in 1843. A graduate of the Naval Academy in 1861, he became an ensign in 1862, lieutenant in 1864, and lieutenant-commander in 1866. He served on board the *Mississippi* and *New Ironsides* during the civil war, and died at Funchal, Madeira, in 1873.

ABBOT OF MISRULE, a name given in Scotland during the middle ages to the master of revels. Also called the "Abbot of Unreason" and the "Abbot of Fools."

ABBOTT, AUSTIN, BENJAMIN, VAUGHAN AND EDWARD, sons of Jacob. The first two are lawyers and writers of some note, and the third was editor of the "Congregationalist," but has since become a clergyman of the P. E. Church.

ABBOTT, CHARLES, LORD TENTERDEN, an eminent English jurist, born at Canterbury, in 1762. In 1802 he published a treatise on *Merchant Ships and Seamen*. In 1816 he became one of the judges of the court of common pleas. In 1818 he was knighted, and became chief-justice of the king's bench. He was raised to the peerage in 1827, and became one of the most influential members of the House of Lords. Died in 1832.

ABBOTT, EDWIN A., D. D., an English theologian and philologist, born at London in 1838. He obtained a fellowship at St. John's, Cambridge, was master at King Edward's School, Birmingham, and at Clifton College, and headmaster of the City of London School. Author of numerous works, the best known being his *Bacon and Essex* (1877) and *Francis Bacon* (1885).

ABBOTT, JACOB, American author, born in Lowell, Me., Nov. 14, 1803. He was graduated at Bowdoin College in 1820, and studied theology at Andover, Mass. He was a remarkably voluminous writer and acquired a large measure of popularity from the simplicity and earnestness of his thought. He addressed himself principally to the young, and nearly all his books have been repeatedly republished in England. He died in Farmington, Me., Oct. 31, 1879.

ABBOTT, JO, American congressman, born near Decatur, Morgan county, Alabama, Jan. 15, 1840.

He was educated in the public schools of his native State, and private schools in Texas, to which State he had accompanied his family in 1853. He served as lieutenant in the Twelfth Texas cavalry, of the Confederate army. In 1866 he was admitted to the bar, and in 1869 was elected to the State legislature, serving one term. In February, 1879, he was appointed Judge of the Twenty-eighth Judicial District, and in November of the following year was elected to the same position. In 1886 he was elected to the Fiftieth congress of the United States, and in 1888 received a re-election to the Fifty-first.

ABBOTT, JOHN JOSEPH CALDWELL, Canadian statesman, born in St. Andrews, Argenteuil county, Canada East, March 12, 1811. He was educated at St. Andrews and McGill Colleges, was admitted to the bar in 1847, and in 1859 he was elected as representative to the Canadian Assembly. Mr. Abbott is considered one of the best authorities on commercial law in Canada.

ABBOTT, JOHN STEPHENS CABOT, American historian, born in Brunswick, Me., Sept. 18, 1805. In 1825 he was graduated at Bowdoin College, studied theology, and continued his pastoral labors until 1844, when he retired to devote himself to literature. His principal works are: *Kings and Queens, or Life in the Palace; The French Revolution of 1789; The History of Napoleon Bonaparte; Napoleon at St. Helena; The History of Napoleon III; A History of the Civil War in America; Romance of Spanish History; The History of Frederick the Second, called Frederick the Great; Histories of Austria, Russia, Spain and Italy; Lives of the Presidents; and Practical Christianity*. Many of his works have been translated into foreign languages. He died in Fair Haven, Conn., June 17, 1877.

ABBOTT, JOSEPH CARTER, American journalist and soldier, born in Concord, N. H., July 15, 1825.

He studied law and was admitted to the bar in 1852. He edited the "Daily American," and later the Boston "Atlas and Bee," continuing to discharge the duties of adjutant-general of New Hampshire, to which office he had been appointed in 1855. He joined the Know-Nothing party, and was a member of a commission for adjusting the boundary line between Canada and New Hampshire. When the civil war broke out Abbott obtained a commission as lieutenant-colonel of the Seventh New Hampshire volunteers. He distinguished himself on several occasions, and in 1863 was promoted colonel. He commanded his regiment till 1864, when he was brevetted brigadier-general, which post he held till the end of the war, when he removed to Wilmington, N. C., where he was elected U. S. senator for a partial term. Under President Grant he served as collector of the port, and as inspector of ports under President Hayes. He died in Wilmington, Oct. 8, 1882.

ABBOTT, LYMAN, D. D., American clergyman, born in Roxbury, Mass., December, 1835. He was graduated at the University of the City of New York; studied law and practiced with his three brothers under the firm-name of Abbott Brothers. They published several legal works, and wrote for many law and commercial magazines. Later Mr. Abbott withdrew from the firm, and became a Congregational clergyman. He has since been connected with several missionary journals, and has published numerous works. He is at present the editor-in-chief of the "Christian Union," and pastor of Plymouth Church, Brooklyn.

ABBOTT, ROBERT OSBORNE, American surgeon, born in Pennsylvania in 1824. His entire life was given up to arduous labors in the military field and hospital. He died in Brooklyn, N. Y., June 16, 1867, a victim of over-work.

ABBREVIATIONS.

<p>A. A. America. A. or a. Answer; Acre; Alto; Accepted (in commerce); are (in the metric system). A. or @. (Ad.) To or at. # or #. (Ana. Gr. aná). Of each the same quantity (in medicine). A.A. Associate of Arts. A.A.A. (Amalgama) Amalgamation. See A.M.M. ..A.G. Assistant Adjutant-General. A.A.P.S. American Association for the Promotion of Science. A.A.S. (Academix Americanz Socius) Fellow of the American Academy. A.A.S.S. (Academix Antiquarianz Societatis Socius) Member of the American Antiquarian Society. A.B. (Artium Baccalaureus) Bachelor of Arts. See B.A. A.B. Able-bodied seamen. Abbr. or Abbrev. Abbreviated, Abbreviation. A.B.C.F.M. American Board of Commissioners for Foreign Missions. A.B.H.M.S. American Baptist Home Missionary Society. Abl. or abl. Ablative. A.B.M.U. American Baptist Missionary Union. Abp. Archbishop. Abr. Abridged, Abridgment. A.B.P.S. American Baptist Publication Society. A.B.S. American Bible Society. Abt. About.</p>	<p>A.C. Arch-chancellor (<i>Ante Christum</i>) Before Christ. Acad. Academy. Acad. Nat. Sci. Academy of Natural Science. A.C.A. American Congregational Association. Acc. or acc. Accusative. Acc. or Acct. Account. A.C.S. American Colonization Society. A.C.U. American Congregational Union. A.D. Archduke (<i>Anno Domini</i>) In the year of our Lord. Ad. or Adv. Adverb. A.D.C. Aid-de-Camp. Adj. or adj. Adjective. Adjt. Adjutant. Ad lib. or ad libit. (<i>Ad libitum</i>) At pleasure. Adm. Admiral, Admiralty. Adm. Ct. Admiralty Court. Admr. Administrator. Admx. Administratrix. Adv. or adv. Advocate; Adverb; Adverb. — (<i>Ad valorem</i>) At, or on, the value. Advt. Advertisement. Æ. or Æt. (Ætatis) Of age. A.F.A. Associate of the Faculty of Actuaries. A.F.B.S. American and Foreign Bible Society. Af. or A. fr. Firkin of Ale. Af. or Afr. Africa, African. A.F.B.S. American and Foreign Bible Society. A.F.C.U. American and Foreign Christian Union. A.G. Adjutant-General, Accountant-General. Ag. (Argentum) Silver. Agl. Agricultural.</p>	<p>Agl. Dept. Department of Agriculture. Agr. or Agric. Agriculture, Agricultural. A.G.S.S. American Geographical and Statistical Society. Agt. Agent. A.H. (<i>Anno Hegiræ</i>) In the year of the Hegira. A.H.M.S. American Home Missionary Society. A.I.A. Associate of the Institute of Actuaries. A.K.C. Associate of Kings College, London. Al. Aluminum. Ala. Alabama. Alas. Alaska. Alban. Albanian. Ald. Alderman. Alex. Alexander. Alf. Alfred. Alg. Algebra. Alt. Altitude. A.M. (<i>Artium Magister</i>) Master of Arts. See M.A.— (<i>Ante Meridiem</i>) Before noon.— (<i>Anno Mundi</i>) In the year of the world.— (<i>Ave Maria</i>) Harri May. Am. American. A.M.A. American Missionary Association. Am. Assn. Sci. American Association for the Advancement of Science. Amb. Ambassador. Amer. American, American. Amer. Acad. American Academy. Amer. Phil. Soc. American Philosophical Society. A.M.G. Assistant Major-General. A.M.M. (Amalgama) Amalgamation. See A.A.A. Amt. Amount. An. (<i>Anno</i>) In the year.</p>
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Anál. Analysis, Analytic.
 Anat. Anatomical, Anatomy.
 Anc. Ancient, Anciently.
 Angl. Anglican.
 Ang.-Sax. Anglo-Saxon.
 Ann. Annales, Annals.
 Anon. Anonymous.
 Ans. or ans. Answer.
 A.N.S.S. Associate of the Normal School of Science.
 Ant. or Antiq. Antiquities, Antiquarian.
 Anthrop. Anthropology, Anthropological.
 Aor. or aor. Aorist.
 A.O.S.S. (*Americana Orientalis Societas Socius*) Member of the American Oriental Society.
 A.O.U. American Ornithologists' Union.
 A.P. Associate Presbyterian.
 Ap. Apostle.
 Apl. or Apr. April.
 A.P.A. American Protestant Association.
 Apo. Apogee.
 Apoc. Apocalypse, Apocrypha, Apocryphal.
 App. Appendix.
 Approx. Approximately.
 A.P.S. Associate of the Pharmaceutical Society.
 Aq. (*Aqua*) Water.
 A.Q.M. Assistant Quartermaster.
 A.Q.M.G. Assistant Quartermaster-General.
 A.R. (*Anno Regni*) In the year of the reign.
 Ar. Arrive, Arrival; Arabic.
 A.R.A. Associate of the Royal Academy.
 Arab. Arabic.
 Aram. Aramaic.
 Arch. Architecture.
 Archsol. Archæology.
 Archd. Archdeacon.
 A.R.H.A. Associate of the Royal Hibernian Academy.
 Arith. Arithmetic, Arithmetical.
 Ariz. Arizona.
 Ark. Arkansas.
 Arm. Armenian, Armoric.
 Armor. Armoric.
 A.R.P. Associate Reformed Presbyterian.
 Arr. Arrived, Arrivals.
 A.R.R. (*Anno Regni Regis* or *Regine*) In the year of the King's (or Queen's) reign.
 A.R.S.A. Associate of the Royal Society of Arts; Associate of the Royal Scottish Academy.
 A.R.S.L. Associate of the Royal Society of Literature.
 A.R.S.M. Associate of the Royal School of Mines.
 A.R.S.S. (*Antiquarium Regis Societatis Socius*) Fellow of the Royal Society of Antiquaries.
 Art. or art. Article.
 As. Arsenic.
 A.S. (*Anno Salutis*) In the year of Salvation.
 AS., A.-S., A.-S., A.S., or A. Sax. Anglo-Saxon.
 A.S.A. American Statistical Association.
 Assn. Association.
 Asst. Assistant.
 A.S.S.U. American Sunday School Union.
 Assyr. Assyrian.
 Astrol. Astrology, Astrological.
 Astron. Astronomy, Astronomical.
 A.T. Archtreasurer.
 A.T.S. American Tract Society; American Temperance Society.
 Atty. Attorney.
 Atty.-Gen. Attorney-General.
 Au. (*Aures*) French Ells.—(*Aurum*) Gold.
 A.U.A. American Unitarian Association.
 A.U.C. (*Anno Urbis Condite* or *Ab Urbe Condita*) In the year from the building of the city, i. e. Rome.

Aug. August.
 Aug. or aug. Augmentative.
 Aust. Austria, Austrian.
 Austral. Australia, Australasia.
 Auxil. Auxiliary.
 A.V. Authorized Version.
 Av. Average.
 Av. or Ave. Avenue.
 Avoir. Avouirdupois.
 A.Y.M. Ancient York Masonry.

B.

B. Bass (in music), Bay, Book, Baron, Boron, British.
 b. Boron.
 B.A. British America; Bachelor of Arts. See A.B.
 Ba. Barium.
 Bal. Balance.
 Bank. Banking.
 Bap. or Bapt. Baptist.
 Bar. Barleycorn; Barley; Barometer.
 Barb. Barbadoes.
 Bart. or Bt. Baronet.
 Bat., Batt. or Bn. Battalion.
 Bbl. Barrel.—bbls. Barrels.
 B.C. Before Christ; Board of Control; British Columbia.
 B.C.L. Bachelor of Civil Law.
 B.D. Bachelor of Divinity.
 Bd. Bond; Bound.
 Bdls. Bundles.
 Bds. (Bound in) Boards; Bonds.
 Be. (Beryllium) Glucinum.
 Bed. Bedfordshire.
 Belg. Belgium; Belgic.
 Benj. Benjamin.
 Berks. Berkshire.
 B. is L. (*F. Bachelier des Lettres*) Bachelor of Letters.
 B.F. or B. fr. Firkin of beer.
 B.I. British India.
 Bl. Bismuth.
 Bib. Biblical.
 Bibliog. Bibliography.
 Biog. Biography, Biographical.
 Biol. Biology, Biological.
 Bisc. Biscayan.
 Bish. Bishop.
 Bk. Bank, Book, Bark (a vessel).
 Bkts. Baskets.
 B.L.L. (*Baccalaureus Legum*) Bachelor of Laws. See LL.B.
 Bls. Bales.
 B.M. (*Baccalaureus Medicinæ*) Bachelor of Medicine.
 B.M.B., Mus. (*Baccalaureus Musicæ*) Bachelor of Music.
 Bn. Battalion.
 Bnk. or bnk. Bank.
 B.O. Buyer's Option.
 Bohem. Bohemian.
 Bor. Boron; Borough.
 Bot. Botany, Botanical, Botanist; Bought.
 B.O.U. British Ornithologists' Union.
 Bp. Bishop.
 B. P. Beatus Paulus, or Petrus.
 Bque. Barque.
 Br. or br. Bromine; Brig.
 Bras. Brazilian.
 Brig. Brigade, Brigadier.
 Brig.-Gen. Brigadier-General.
 Brit. Britain, British.
 Bro. Brother—Bros., Brothers.
 B.S. Bachelor of Surgery.
 B.Sc. (*Baccalaureus Scientiæ*) Bachelor of Science.
 B.S.L. Botanical Society, London.
 Bt. Baronet.
 Bucks. Buckinghamshire.
 Bus. or Bush. Bushel.
 B.V. (*Beata Virgo*) Blessed Virgin.—(*Bene vale*) Farewell.
 B.V.M. Blessed Virgin Mary.
 Bx., bxs. Box, boxes.

C.

C. Canada; Carbon; Cartons; Conductor; Cesar; Caius; Church; Congress; Consul; Centigrade; Catholic.—(*Centum*) A hundred; Cent; Centime.—(*Congius*) A gallon.

C. or Cap. (*Caput*) Chapter.
 C. or cub. Cubic.
 C.A. Chief Accountant; Controller of Accounts; Chartered Accountant.
 Ca. Calcium.—(*Circæ*) About.
 Cal. California; Calendar.—(*Calende*) Calends.
 Cam., Camb. Cambridge.
 Camba. Cambridgeshire.
 Can. Canada.
 Cant. Canticles; Canterbury.
 Cantab. (*Canabrigienses*) Of Cambridge.
 Cantuar. (*Cantuarie*) Canterbury.
 Cap. Capital.—(*Caput*) Chapter.
 Caps. or caps. Capitals.
 Capt. Captain.
 Car. Carat.
 Card. Cardinal.
 Carp. Carpenter.
 C.A.S. (*Connecticutensis Academiæ Socius*) Fellow of the Connecticut Academy of Arts and Sciences.

Cash. Cashier.
 Cat. Catalogue.
 Cat. or Catal. Catalan.
 Cath. Catholic; Catharine; Cathedral.
 C.B. Companion of the Bath. Cape Breton.
 Cb. Columbium.
 C.B.S. Confraternity of the Blessed Sacrament.
 C.C. Caius College; County Commissioner; County Court; Crown Clerk; Contra Credit. (*Compte Courante*) Account Current.

CC.[L.] Carissimus; Clarissimus; Circum.
 C.A.C. Chief Clerk of the Admiralty.
 C.C.C. Corpus Christi College; Christ's College, Cambridge.
 C.C.P. Court of Common Pleas.
 Cd. Cadmium.
 C.D.S.O. Companion of the Distinguished Service Order.

C.D.V. Carte-de-visite.
 C.E. Civil Engineer.
 Ce. Cerium.
 Cel. Celsius.
 Celt. Celtic.
 Cent. Centigrade.—(*Centum*) A hundred.
 Cert., Certif. Certify; Certificate.
 Cf. or cf. (*Confer*) Compare.
 C.G. Captain of the Guard; Commissary-General; Consul-General; Coast Guard.

Cg. Centigram.
 C.G.H. Cape of Good Hope.
 C.H. Court-house; Custom-house; Captain of the Host.
 Ch. Church; Chapter; Chaldron.
 Chal. Chaldron.
 Chal. or Chald. Chaldee, Chaldaic, Chaldean.

Chanc. Chancery.
 Chap. Chapter.
 Chas. Charles.
 Ch. Clk. Chief Clerk.
 Chem. Chemistry, Chemical.
 Chin. Chinese.
 Chr. Christopher; Christian.
 Chron. Chronicles, Chronology.
 C.J. Order of the Crown of India.
 Cic. Cicero.
 C.I.E. Companion of the Order of the Indian Empire.

Cir. (*Circa, Circum*) About.
 Circuit. Circuit.
 Cit. Citation; Citizen.
 Civ. Civil.
 C.J. Chief Justice.
 Cl. Clergyman; Clerk; Chlorine.
 cl. Centiliter.
 Class. Classical.
 Cld. or cld. Cleared.
 Clk. Clerk.
 C.L.S.C.jitize Chautauque Literary and Scientific Society.

C.M. Common Meter; Certificated Master; Corresponding Member.—(*Chirurgus Magister*) Master in Surgery. (*Congregatio Missionum*) Lazarist Fathers.

Cm. Centimeter.

C.M.G. Companion of the Order of St. Michael and St. George.

Cml. Commercial.

C.M.S. Church Missionary Society.

Co. Cobalt; Company; County.

C.O. Crown Office; Colonial Office; Criminal Office.

Coad. Coadjutor.

Coch. or Cocha. (*Cochlear*) A spoonful.

C.O.D. Cash (or Collect) on Delivery.

C. of G.H. Cape of Good Hope.

Col. Colonel; Colossians; Colonial; Column.

Coll. College, Collector, Collection, Colleague.

Coll. or Colloq. Colloquial.

Col. or Colo. Colorado.

Com. Commissioner; Commodore; Committee; Commerce; Common; Commander.

Com. or Comm. Commentary.

Comp. Compare, Comparative; Compound, Compounded, Composites, Comptroller.

Compar. Comparative.

Comr. Commissioner.

Com. and Nav. Commerce and Navigation.

Com. Vir. Common Version.

Con. (*Contra*) Against; In opposition.

Conch. Conchology.

Con. Cr. Contra Credit.

Cong. Congress, Congregation, Congregational, Congregationalist. — (*Congius*) A gallon.

Conj. or conj. Conjunction.

Conn. Connecticut.

Con. Sect. Conic Sections.

Const. Constable; Constitution.

Contr. Contracted, Contraction.

Cop. or Copt. Coptic.

Cor. Corinthians.

Cor. Mem. Corresponding Member.

Corn. Cornwall, Cornish.

Corol. Corollary.

Cor. Sec. Corresponding Secretary.

C.O.S. Charity Organization Society.

Cos. or cos. Cosine.

Cosic. or cosic. Cosicant.

Coss. (*Consules*) Consuls.

C.P. Common Pleas; Chief Patriarch; Clerk of the Peace; Court of Probate.

C.P. or C. Pass. (*Congregatio Passionis*) Passionist Father.

C.P.C. Clerk of the Privy Council.

C.P.M. Common Particular Meter.

C.P.S. (*Custos Privati Sigilli*) Keeper of the Privy Seal; Congregational Publishing Society.

Cr. Credit, Creditor; Chromium.

C.R. (*Carolus Rex*) King Charles. — (*Carolina Regina*) Queen Carolina. — (*Civis Romanus*) A Roman Citizen. — (*Custos Rotularum*) Keeper of the Rolls.

Cres. Crescendo.

Crim. Criminal.

Crim. con. Criminal conversation, or Adultery.

C.R.P. (*Calendarium Rotularum Patentium*) Calendar of the Patent Rolls.

Crystal. or Crystallog. Crystallography.

Ca. Casium; Casca.

C.S. Court of Sessions; Clerk of Sessions; Clerk to the Signet; Civil Service. — (*Custos Sigilli*) Keeper of the Seal.

C.S.A. Confederate States of America; Confederate States Army.

C.S.I. Companion of the Star of India.

Csks. Csaks.

C.S.N. Confederate States Navy.

C.S.S.R. (*Congregatio Sanctissimi Redemptoris*) Redemptorist Fathers.

Ct. Connecticut; Count; Court.

Ct. or ct. Cent.—(*Centum*) A hundred.

C.T. Certificated Teacher.

C.T.A.U. Catholic Total Abstinence Union.

Ctl. or ctls. Cental or Centals.

Cts. or cts. Cents.

Cu. (*Cuprum*) Copper.

Cub. or cub. Cubic.

Cur. or curt. Current (*i. e.* this month).

C.V. Common Version.

C.W.O. Cash with order.

Cwt. or cwt. (*L. centum*, a hundred, and Eng. weight); Hundred-weight; Hundred-weights.

Cyc. or cylo. Cyclopaedia.

D.

D.[L.] Deus; Dominicus; Dux.

D. Didymium; Duke; Duchess; Dowager; Dose; Dutch.

D. or d. Day; Died; Dime; Daughter; Deputy; Degree.—(*Denarius* or *Denarii*) A penny or pence.

Da. Davyium.

Dan. Danish; Daniel.

Dat. or dat. Dative.

D.C. District of Columbia.—(*Da capo*) Again, or From the beginning.

D.C.L. Doctor of Civil (or Canon) Law.

D.C.S. Deputy Clerk of Session.

D.D.S. (*Divinitatis Doctor*) Doctor of Divinity.

D.D.D. (*Dono dedit deditavit*) He gave and consecrated as a gift.

D.D.S. Doctor of Dental Surgery.

Dea. Deacon.

Dec. December; Declination; Declension.

Def. or def. Definition.

Def. or def. Defendant.

Deg. or degs. Degree, Degrees.

Dekag. Dekagram.

Dekal. Dekaliter.

Dekam. Dekameter.

Del. Delaware; Delegate.

Del. or del. (*Delineavit*) He (or she) drew it.

Dem. Democrat; Democratic.

Den. Denmark.

Dep. Deputy; Deponent.

Dept. Department; Deponent.

Der. Derived; Derivation; Derivative.

Deut. Deuteronomy.

D.F. Dean of the Faculty; Defender of the Faith.

D.F.M.S. Domestic and Foreign Missionary Society (of the P. E. Church).

Dft. or dft. Defendant.

D.G. (*Dei Gratia*) By the grace of God.—(*Deo gratias*) Thanks to God.

Dg. Decigram.

D.H. Deadhead.

Di. Didymium.

Dial. Dialectic.

Diam. or diam. Diameter.

Dict. Dictionary; Dictator.

Dim. or Dimin. Diminutive; Diminutive.

Dio. Diocese.

Diosc. Dioscorides.

Dis. Discipline.

Dis. or dis. Distance; Distant.

Dis. or Disc. Discount.

Disp. Dispensatory.

Dis. Disertation.

Dist. District.

Dist. Atty. District Attorney.

Div. Dividend; Division; Divide; Divided; Divisor.

Di. Deciliter.

D. Lit. Doctor of Literature.

D.L.O. Dead Letter Office.

D.M. Doctor of Music; Doctor of Medicine.

Dm. Decimeter.

D.M.B. (*Doctor Medicinæ Dentalis*) Doctor of Dental Surgery.

D.N.P.P. (*Dominus noster Papa*) Our Lord Pope.

Do. or do. (*Idem*) The same.

Doc. Document.

Dol. or dol. Dollar.

Dols. or dols. Dollars.

D.O.M. (*Deo Optimo Maximo*) To God, the Best, the Greatest.

Dom. Econ. Domestic Economy.

Dor. Doric.

Dos. or dos. Dosen.

D. P. Doctor of Philosophy. See P.D. and Ph.D.

D.P.O. Distributing Post Office.

Dpt. Deponent; Department.

Dr. Debtor; Doctor.

Dr. or dr. Dram; Drams.

D.S. (*Dal Segno*) From the Sign.

D.Sc. Doctor of Science.

D.S.P. (*Decessit sine prole*) He died without issue.

D.T. (*Doctor Theologiae*) Doctor of Divinity.

Duo., 12 mo. Duodecimo (12 leaves).

D.V. (*Deo volente*) God willing.

D.V.M. Doctor of Veterinary Medicine.

Dwt. or dwt. (*Lat. Denarius* and Eng. weight) Pennyweight; Pennyweights.

Dyn. Dynamics.

E. East; Eastern (Postal District, London); Earl; Edinburgh; Erbium; English; Episcopal.

E. or e. Eagle, Eagles.

Ea. Each.

Eb. Erbium.

Eben. Ebeneser.

Ebor. (*Eboracum*) York.

E.C. Eastern Continent; Eastern Central (Postal District, London); Established Church.

Ecl. or Eccles. Ecclesiastes; Ecclesiastical.

Ecl. Eccl. Ecclesiasticus.

Eclec. Eclectic.

Econ. Economy.

E.C.U. English Church Union.

Ed. Editor.

Ed. or ed. Edition.

Ed. or Edin. Edinburgh.

Edm. Edmund.

Eds. Editors.

E.D.S. English Dialect Society.

Edw. Edward.

E.E. Errors excepted; Ells English.

E.E.D.S. Early English Dialect Society.

E.E.T.S. Early English Text Society.

E. Fl. Ells Flemish.

E. Fr. Ells French.

E.G. (*Exempli Gratia*) For example.

Egypt. Egyptian.

E.I. East Indies; East India.

E.I.C. or E.I. Co. East India Company.

E.I.C.S. East India Company's Service.

E.L. Evangelical Lutheran.

Elec. Electricity; Electrical.

Eliz. Elizabeth.

E. Lon. East Longitude.

E.M. (*Equitum Magister*) Master of the Horse.

Em. Emma; Emily; Emanuel.

Emp. Emperor; Empress.

Ency. or Encyc. Encyclopedia.

E.N.E. East, North East.

Eng. England, English; Engraving.

Engin. Engineering.

Eng. Dept. Department of Engineers.

Ent. or Entom. Entomology.

Env. Ext. Envoy Extraordinary.

E.o.d. Every other day. (Printer's Advertising Mark.)

e.o.w. Every other week. (Printer's Advertising Mark.)

Ep. Epistle.

Eph. Ephesians; Ephraim.

Epiph. Epiphany.

Epis. Episcopal.

Eq. or eq.	Equal; Equivalent.	Fid. Def.	(<i>Fidei Defensor</i> or <i>Defensatrix</i>). Defender of the Faith.	G.A.R.	Grand Army of the Republic.
Equiv. or equiv.	Equivalent.	<i>Fi. Fa.</i>	<i>Fieri Facias</i> (Legal phrase).	G.B.	Great Britain.
Er.	Eribium.	<i>Fig. or fig.</i>	Figura, Figures; Figurative, Figuratively.	G.B. & I.	Great Britain and Ireland.
E.S.	Ells Scotch.	Fin.	Finland.	G.C.	Grand Chapter; Grand Conductor.
Esd.	Esdras.	Finn.	Finnish.	G.C.B.	Grand Cross of the Bath.
E.S.E.	East, South East.	Vir. or fr.	Firkín.	G.C.H.	Grand Cross of Hanover.
Esp., esp. or espec.	Especially.	F.K.Q.C.P.I.	Fellow of the King's and Queen's College of Physicians, Ireland.	G.C.L.H.	Grand Cross of the Legion of Honor.
Esq. or Esqr.	Esquire.	Fl.	Flemish.	G.C.M.G.	Grand Cross of St. Michael and St. George.
Esqs. or Esqrs.	Esquires.	Fl. or fl.	Florin, Florins.	G.C.S.I.	Grand Commander of the Star of India.
Esb.	Esther.	Fla.	Florida.	G.D.	Grand Duke; Grand Duchess.
E.T.	English Translations.	Fl. E.	Flemish Ells.	G.E.	Grand Encampment.
<i>et al.</i>	(<i>et alibi</i>) And elsewhere. —(<i>et alii</i> or <i>alii</i>) And others. —[Sometimes improperly written <i>et alis</i> .]	Flem.	Flemish.	Ge.	Germanium.
Etc., etc. or &c.	(<i>Et ceteri, ceteræ</i> or <i>cætera</i>) And others; and so forth.	F.L.S.	Fellow of the Linnæan Society.	Gen.	Genesis; General; Geneva or Genevan.
Ethnol.	Ethnology; Ethnological.	F.M.	Field Marshal; Foreign Mission.	Gen. or gen.	Genitive; Generally, Genus, Genera, Generic.
<i>et seq., sq.</i> or <i>seqq.</i>	(<i>et sequentes</i> or <i>et sequentia</i>) And the following.	F.O.	Field Officer.	Geneal.	Genealogy.
Etym. or Etymol.	Etymology.	F.O. fo., Fol.	or fol. Folio.	Gent.	Gentleman.
Ex.	Example; Exception; Exodus.	F.O.B.	Free on board.	Geo.	George.
Exc.	Excellency; Exception.	For.	Fortification.	Geog.	Geography, Geographer, Geographical.
Exch.	Exchequer; Exchange.	F.P.	Fire Plug.	Geol.	Geology, Geological, Geological.
Ex. Doc.	Executive Document.	F.P.S.	Fellow of the Philological Society.	Geom.	Geometry, Geometer, Geometrical.
Exec.	Executor.	Fr.	France; Francis; French.	Ger. or Ger.	Gerund.
Execx.	Executrix.	Fr.	From.	Ger. or Germ.	German.
<i>Ex. Gr.</i>	(<i>Exempli Gratia</i>) For example.	F.R.A.S.	Fellow of the Royal Astronomical Society; Fellow of the Royal Asiatic Society.	Gill. or gl.	Gill, Gills.
Exod.	Exodus.	F.R.C.P.	Fellow of the Royal College of Physicians.	G.L.	Grand Lodge.
Exon.	(<i>Exonia</i>) Exeter.	F.R.C.P.E.	Fellow of the Royal College of Physicians, Edinburgh.	Gl.	Glucinum.
Exr.	Executor.	F.R.C.S.	Fellow of the Royal College of Surgeons.	Gloss.	Glossary.
Exx.	Executrix.	F.R.C.S.E.	Fellow of the Royal College of Surgeons, Edinburgh.	G.M.	Grand Master.
Ez. or Ezr.	Ezra.	F.R.C.S.I.	Fellow of the Royal College of Surgeons, Ireland.	G.M.K.P.	Grand Master of the Knights of St. Patrick.
Ezek.	Ezekiel.	F.R.C.S.L.	Fellow of the Royal College of Surgeons, London.	G.O.	General Order.
E. & O.E.	Errors and Omissions Excepted.	Fr. E.	French Ells.	Go. or Goth.	Gothic.
F.					
F.	French; Fellow; Folio; Friday; Fluorine; Fahrenheit.	Fred.	Frederic, Frederick.	Gov.	Governor.
F. or f.	Feminine; Franc, Francs; Florin, Florins; Farthing, Farthings; Foot, Feet.—(<i>Fiat</i>) Let it be made.	Freq. or freq.	Frequentative.	Gov.-Gen.	Governor-General.
Fahr.	Fahrenheit.	F.R.G.S.	Fellow of the Royal Geographical Society.	Govt.	Government.
F.A.M.	Free and Accepted Masons.	F.R.H.S.	Fellow of the Royal Historical Society; Fellow of the Royal Horticultural Society.	G.P.	(<i>Gloria Patri</i>) Glory to the Father.
Far.	Farrier; Farthing.	Fri.	Friday.	G.P.M.	Grand Post Master.
F.A.S.	Fellow of the Society of Arts; Fellow of the Antiquarian Society.	Fries. or Frs.	Friesic, Frisian.	G.P.O.	General Post Office.
F.A.S.E.	Fellow of the Antiquarian Society of Edinburgh.	F.R.S.	Fellow of the Royal Society.	G.R.	Grand Recorder—(<i>Georgius Rex</i>) George the King.
F.A.S.L.	Fellow of the Anthropological Society, of London.	F.R.S.E.	Fellow of the Royal Society, Edinburgh.	Gr.	Greece, Greek.
F.B.	Free Baptist.	F.R.S.L.	Fellow of the Royal Society, London; Fellow of the Royal Society of Literature.	Gr. or gr.	Grain, Grains; Gross; Great.
F.B.S.E.	Fellow of the Botanical Society, of Edinburgh.	F.R.S.S.	Fellow of the Royal Statistical Society.	Gram.	Grammar.
F.C.	Free Church of Scotland.	F.S.A.	Fellow of the Society of Arts, or of Antiquaries.	Gris.	Grisons.
Fcp. or fcp.	Foolschap.	F.S.A.E.	Fellow of the Society of Antiquaries, Edinburgh.	Gro. or gro.	Gross.
F.C.P.S.	Fellow of the Cambridge Philosophical Society.	F.S.A. Scot.	Fellow of the Society of Antiquaries of Scotland.	G.S.	Grand Secretary; Grand Scribe; Grand Sentinel.
F.C.S.	Fellow of the Chemical Society.	F.S.S.	Fellow of the Statistical Society.	G.T.	Good Templars; Grand Tyler.
F.D.	(<i>Fidei Defensor</i> or <i>Defensatrix</i>) Defender of the Faith.	Ft. or ft.	Foot, Feet; Fort.	Gtt. or gtt.	(<i>Gutta</i> or <i>Guttæ</i>) Drop, Drops.
Fe.	(<i>Ferrum</i>) Iron.	F.T.C.D.	Fellow of Trinity College, Dublin.	Gun.	Gunnery.
F.E.	Flemish Ells.	Fth. or fth.	Fathom.	H.	
Feb.	February.	Fur. or fur.	Furlong.	H.	Hydrogen.
Fec. or fec.	(<i>Fecit</i>) He (or She) did it.	Fut. or fut.	Future.	H. or h.	High, Height; Harbor; Husband; Hour, Hours.
F.E.I.S.	Fellow of the Educational Institute of Scotland.	F.W.B.	Free-will Baptist.	Ha.	Hectare.
Fem. or fem.	Feminine.	F.Z.S.	Fellow of the Zoological Society.	Hab.	Habakkuk.
Ferd.	Ferdinand.	G.			
F.E.S.	Fellow of the Entomological Society; Fellow of the Ethnological Society.	G.	Genitive; Glucinum; Guide; German.	Hab. corp.	(<i>Habeas corpus</i>) You may have the body.
Feud.	Feudal.	G. or g.	Guinea, Guineas; Gull.	Hag.	Haggal.
F.F.[L.]	Felicitissimus; Fratres.	Ga.	Georgia; Gallium.	Hants.	(A contraction of <i>Hants-shire</i>) Hampshire.
F.F.A.	Fellow of the Faculty of Actuaries.	G.a.	Go ahead.	H.B.C.	Hudson's Bay Company.
F.F.P.S.	Fellow of the Faculty of Physicians and Surgeons.	G.A.	General Assembly.	H.B.M.	His (or Her) Britannic Majesty.
F.F.V.	First Families of Virginia. [Humorous.]	Gael.	Gaelic.	H.C.	House of Commons; Herald's College.
F.G.S.	Fellow of the Geological Society.	Gal.	Galatians, Galen.	H.C.M.	His (or Her) Catholic Majesty.
F.H.S.	Fellow of the Horticultural Society.	Gal. or gal.	Gallon, Gallons.	Hdkf. or hdkf.	Handkerchief.
F.I.A.	Fellow of the Institute of Actuaries.	Galv.	Galvanism.	H.E.	(<i>Hoc est</i> or <i>Hic est</i>) That is, or this is.
F.I.C.	Fellow of the Chemical Institute.				

H.I.H. His (or Her) Imperial Highness.
 Hil. Hillary.
 Hind. Hindoo, Hindostan, Hindostanee.
 Hipp. Hippocrates.
 Hist. History, Historical.
 H.J. (*Hic Jacet*) Here lies.
 H.J.S. (*Hic Jacet Sepultus*) Here lies buried.
 H.L. House of Lords.
 Hl. Haktoliter.
 H.M. His (or Her) Majesty; Hallelujah Meter; Home Mission.
 Hm. Hektometer.
 H.M.P. (*Hoc Monumentum Posuit*) Erected this monument.
 H.M.S. His (or Her) Majesty's Steamer, Ship or Service.
 Ho. House.
 Hon. or Honble. Honorable.
 Hond. Honored.
 Hor. or Horol. Horology.
 Hort. Horticulture, Horticultural.
 Hos. Hosea.
 H.P. High Priest; Horse-power; Half-pay.
 H.P.M. Hallelujah Particular Meter.
 H.R. House of Representatives.
 Hr. or hr. Hour.
 H.R.E. Holy Roman Empire (or Emperor).
 H.R.H. His (or Her) Royal Highness.
 H.R.I.P. (*Hic Requiescit in Pace*) Here rests in peace.
 H.S. (*Hic Situs*) Here lies.
 H.S.H. His (or Her) Serene Highness.
 H.S.S. (*Historiæ Societatis Socius*) Fellow of the Historical Society.
 Hun. or Hung. Hungary, Hungarian.
 Hund. or hund. Hundred, hundreds.
 Hunts. Huntingdonshire.
 Hyd. Hydrostatics.
 Hydraul. Hydraulics.
 Hydros. Hydrostatics.
 H.Y.M.A. Hebrew Young Men's Association.
 Hypoth. Hypothesis, Hypothetical.

I.
 Ib., ib., Ibid. or ibid. (*Ibidem*) In the same place.
 I.C. or I.X. Jesus Christus.
 Ice. or Icel. Iceland, Icelandic.
 Ich. or Ichth. Ichthyology.
 Icon. Iconographic.
 Id. Island.
 Id. or id. (*Idem*) The same.
 I.D.N. (*In Dei Nomine*) In the name of God.
 Id. T. Idaho Territory.
 I.e. or i.e. (*Id. Est*) That is.
 I.G. Inside Guardian.
 I.H.S. (*Iesus [or Jesus] Hominum Salvator*) Jesus the Saviour of Men. See J. H. S.

Ill. Illinois.
 Illust. Illustration.
 Imp. Imperial; Impersonal; Imported.—(*Imperator*) Emperor.
 Imp., imp., Imperf. or imperf. Imperfect.
 In. Indium.
 In. or in. Inch, inches.
 Inch. or Incho. Inchoative.
 Incog. (*Incognito*) Unknown.
 Ind. India, Indian, Indiana.
 Ind., ind., Indc. or indic. Indicative.
 Ind. T. or Ind. Ter. Indian Territory.
 Inf. or inf. Infinitive.
 In lim. or in lim. (*In Limine*) At the outset.
 In loc. or in loc. (*In loco*) In its place.
 I.N.R.I. (*Iesus [or Jesus] Nazarenus, Rex Judæorum [or Judæorum]*) Jesus of Nazareth, King of the Jews.
 Ins. Inspector.
 Ins. or Insur. Insurance.
 Insep. or insep. Inseparable.
 Insp.-Gen. Inspector-General.

Inst. Instant (the present month); Institute, Institution.
 Int. or int. Interest.
 Int. Dept. Department of the Interior.
 Intens. Intensive.
 Interj. or interj. Interjection.
 Internat. International.
 Intrans. or intrans. Intransitive.
 In trans. (*In transitu*) On the passage.
 Int. Rev. Internal Revenue.
 Introd. Introduction.
 Inv. Invoice.
 Ia. Iowa.
 Id. Idaho.
 I.O.F. Independent Order of Foresters.
 I.O.G.T. Independent Order of Good Templars.
 Ion. Ionic.
 I.O.O.F. Independent Order of Odd Fellows.
 I.O.S.M. Independent Order of the Sons of Malta.
 I.O.U. I owe you (an acknowledgment for money).
 I.P.D. (*In Presentia Dominorum*) In presence of the Lords.
 Ipecac. Ipecacuanha.
 I. Q. (*Idem Quod*) The same as.
 Ir. Ireland, Irish, Iridium.
 I.R.O. Internal Revenue Office.
 Irreg., irreg. Irregular.
 I.S. Inside Sentinel; Irish Society.
 Is. or Isa. Isaiah.
 Is., Isl. or Isl. Island.
 I.T. Inner Temple; Indian Territory.
 It. or Ital. Italian, Italic, Italy.
 Itin. Itinerary.

J.
 J. Judge, Justice; Julius.
 J.A. Judge Advocate.
 Jac. Jacob.
 J.A.G. Judge Advocate-General.
 Jam. Jamaica.
 Jan. January.
 Jap. Japanese.
 Jas. James.
 Jav. Javanese.
 J.C. Jesus Christ; Justice Clerk; Julius Cæsar.—(*Juriconsultus*) Jurisconsult.
 J.C.D. (*Juris Civilis Doctor*) Doctor of Civil Law.
 J.D. (*Jurium Doctor*) Doctor of Laws.
 J.D. Junior Deacon.
 Jer. Jeremiah.
 J.G.W. Junior Grand Warden.
 J.H.S. (*Jesus Hominum Salvator*) Jesus, Saviour of Mankind. See I.H.S.
 J.J. Judges or Justices.
 Jno. John.
 Join. Joinery.
 Jona. Jonathan.
 Jos. Joseph.
 Josh. Joshua.
 Jour. Journeyman; Journal.
 J.P. Justice of the Peace.
 J.G.W. Judge of Probate.
 Jr. or jr. Junior.
 J.R. (*Jacobus Rex*) King James.
 J.U. (or V.) D. (*Juris Utriusque Doctor*) Doctor of both Laws.—(*i. e.* the Canon and the Civil Law.)
 Jud. Judith; Judicial.
 Judg. Judges.
 Jul. July; Julius; Julep (in medicine).
 Jul. Per. Julian Period.
 Jun. June.
 Jun., jun., Junr. or junr. Junior.
 Jus. Justice.
 Just. Justinian.
 J.W. Junior Warden.

K.
 K. King, Kings; Knight.—(*Kalium*) Potassium.
 K.A. Knight of St. Andrew (in Russia).

Kal. Kalends.
 K.A.N. Knight of St. Alexander, Nevsky (in Russia).
 Kan. or Kans. Kansas.
 K.B. Knight of the Bath (in Great Britain) King's Bench.
 K.B.A. Knight of St. Bento d'Avis (in Portugal).
 K.B.E. Knight of the Black Eagle (in Russia).
 K.C. Knight of the Crescent (in Turkey); Kings Council.
 K.C.B. Knight Commander of the Bath (in Great Britain).
 K.C.H. Knight Commander of Hanover.
 K.C.M.G. Knight Commander of St. Michael and St. George (in the Ionian Islands).
 K.C.S. Knight of Chas. III of Spain.
 K.C.S.I. Knight Commander of the Star of India.
 K.E. Knight of the Elephant (in Denmark).
 Ken. or Ky. Kentucky.
 K.F. Knight of Ferdinand (in Spain).
 K.F.M. Knight of St. Ferdinand and Merit (in Sicily).
 K.G. Knight of the Garter (in Great Britain).
 Kg. Kilogram. Kgs. kgs.
 K.G.C. Knight of the Grand Cross (in Great Britain); Knight of the Golden Circle (in the United States).
 K.G.C.B. Knight of the Grand Cross of the Bath (in Great Britain).
 K.G.F. Knight of the Golden Fleece (in Spain or Austria).
 K.G.H. Knight of the Guelphs of Hanover.
 K.G.V. Knight of Gustavus Vasa (in Sweden).
 K.H. Knight of Hanover.
 Kl. Kings.
 Kil. or kil. Kilderkin.
 Kilo. Kilogramme; Kilometre.
 K.J. Knight of St. Joachim.
 K.K. (Ger. *königlich, kaiserlich*) Royal and Imperial.
 K.K. (*Karlstinus*) Very dear.
 K.K.K. Ku-Klux-Klan (or Clan).
 Kl. Kiloletter.
 K.L. or K.L.A. Knight of Leopold of Austria.
 K.L.H. Knight of the Legion of Honor (in France).
 K.M. Knight of Malta.
 Km. Kilometer.
 Km. Kingdom.
 K.M.H. Knight of Merit of Holstein.
 K.M.J. Knight of Maximilian Joseph (in Bavaria).
 K.M.T. Knight of Maria Theresa (in Austria).
 K.N. Know-Nothing.
 Knick. Knickerbocker.
 K.N.S. Knight of the Royal North Star (in Sweden).
 K.P. Knight of St. Patrick (in Ireland); Knight of Pythias.
 K.R.C. Knight of the Red Cross.
 K.R.E. Knight of the Red Eagle (in Prussia).
 Ks. Kansas.
 K.S. Knight of the Sword (in Sweden).
 K.S.A. Knight of St. Anne (in Russia).
 K.S.E. Knight of St. Éspirit (in France).
 K.S.F. Knight of St. Fernando (in Spain).
 K.S.F.M. Knight of St. Ferdinand and Merit (in Naples).
 K.S.G. Knight of St. George (in Russia).
 K.S.H. Knight of St. Hubert (in Bavaria).
 K.S.J. Knight of St. Januarius (in Naples).
 K.S.L. Knight of the Sun and Lion (in Persia).

K.S.M. & S.G.	Knights of St. Michael and St. George (in the Ionian Islands).	L.M.	Long Meter.	Mex.	Mexico, Mexican.
K.S.P.	Knights of St. Stanislaus of Poland.	Lon., Lond.	London.	Mfd.	Manufactured.
K.S.S.	Knights of the Sword of Sweden; Knight of the Southern Star (in Brazil).	Lon., lon., Long.	or long. Longitude.	Mfg.	Manufacturing.
K.S.W.	Knights of St. Wladimar (in Russia).	Loq.	(<i>Loquatur</i>) Speaks.	M.F.H.	Master of Fox-hounds.
Kt.	Knight.	Lp. or Ldp.	Lordship.	M. ft.	(<i>Mistura fat</i>) Let a mixture be made.
K.T.	Knights Templar; Knight of the Thistle (in Scotland).	L.P.	Lord Provost; Large Paper.	Mg.	Magnesium.
K.T.S.	Knights of the Tower and Sword (in Portugal).	L.P.M.	Long Particular Meter.	Mg. or mgr.	Milligram.
K.W.	Knights of William (in the Netherlands).	L.P.S.	Lord Privy Seal.	M.G.	Major-General.
K.W.E.	Knights of the White Eagle (in Poland).	L.R.C.P.	Licentiate of the Royal College of Physicians.	M.-G. or M.-Goth.	Moses-Gothic.
Ky.	Kentucky.	L.R.C.S.	Licentiate of the Royal College of Surgeons.	Mgr.	Monsignor; Magistrate.
		L.S.	Left Side.—(<i>Locus Sigilli</i>) Place of the Seal.	M.H.G.	Middle High German.
		L.S.A.	Licentiate of the Apothecaries' Society.	M. Hon.	Most Honorable.
		L.S.D., & s.d. or l.s.d.	(<i>Libra, Solidi, Denarii</i>) Pounds, shillings, pence.	M.H.S.	Massachusetts Historical Society; Member of the Historical Society.
		Lt. or Lieut.	Lieutenant.	Mi. or mi.	Mill, Mills.
		Lt. Inf.	Light Infantry.	Mic.	Micah.
		Luth.	Lutheran.	M.I.C.E.	Member of the Institute of Civil Engineers.
		Lv. or lv.	Livres.	Mich.	Michigan; Michaelmas.
				Mid.	Midshipman.
				Mid. or mid.	Middle (voice).
				Mil.	Military.
				M.I.M.E.	Member of the Institute of Mining Engineers.
				Min.	Mineralogy, Mineralogical.
				Min. or min.	Minute; Mining.
				Minn.	Minnesota.
				Min. Plen.	Minister Plenipotentiary.
				Misc.	Miscellaneous.
				Miss.	Mississippi.
				Ml.	Milliter.
				M.L.G.	Middle Low German.
				Mlle.	Mademoiselle.
				M.M.	Their Majesties.—(<i>Messieurs</i>) Gentlemen or Sirs.
				Mm.	Millimeter.
				M.M.[L.]	Magistri; Martyrs; Matrimonium; Meritissimus.
				Mme.	Madame.
				M.M.S.	Moravian Missionary Society.
				M.M.S.S.	(<i>Massachusettsensis Medicinæ Societatis Socius</i>) Member of the Massachusetts Medical Society.
				Mn.	Manganese.
				M.N.A.S.	Member of the National Academy of Sciences.
				Mnfg.	Manufacturing.
				M.N.S.	Member of the Numismatical Society.
				Mo.	Missouri; Molybdenum.
				Mo. or mo.	Month.
				Mod.	Modern.—(<i>Moderato</i>) Moderately.
				Moham.	Mohammedan.
				Mon. or Mond.	Monday.
				Mons.	Monsieur or Sir.
				Monsig.	Monsignore.
				Mont.	Montana.
				Mort. or mort.	Mortgage.
				Mos. or mos.	Months.
				M.P.	Member of Parliament; Member of Police; Municipal Police; Methodist Protestant.
				M.P.C.	Member of Parliament in Canada.
				M.P.P.	Member of the Provincial Parliament.
				M.P.S.	Member of the Philological (or of the Pharmaceutical) Society.
				Mr.	Master or Mister.
				M.R.	Master of the Rolls.
				Mr.	Millier.
				M.R.A.S.	Member of the Royal Asiatic Society; Member of the Royal Academy of Science.
				M.R.C.C.	Member of the Royal College of Chemistry.
				M.R.C.P.	Member of the Royal College of Preceptors; Member of the Royal College of Physicians.
				M.R.C.S.	Member of the Royal College of Surgeons.
				M.R.C.V.S.	Member of the Royal College of Veterinary Surgeons.
				M.R.G.S.	Member of the Royal Geographical Society.
				M.R.I.	Member of the Royal Institution.
				M.R.I.A.	Member of the Royal Irish Academy.
				Mrs.	Mistress.
				M.R.S.L.	Member of the Royal Society of Literature.

L

L	Lady; Latin; Law; Left; Lord; Lithium; London.—(After titles)—(<i>Liber</i>) Book.
L. or l.	Lake; Latitude; League, Leagues; Line, Lines; Link, Links.
L., lb., lb., or lb.	(<i>Libra</i>) A pound in weight.
L., l., or £.	A pound sterling.
Liter.	Liter.
La.	Louisiana; Lanthanum.
L.A.C.	Licentiate of the Apothecaries' Company.
L.A.H.	Licentiate of the Apothecaries' Hall.
Lam.	Lamentations.
L.A.S.	Lord Advocate of Scotland.
Lat.	Latin.
Lat. or lat.	Latitude.
L.C.	Lord Chamberlain; Lord Chancellor.
L.c.	Lower case.—(<i>Loco citato</i>) In the place before cited.
L.C.B.	Lord Chief Baron.
L.C.J.	Lord Chief Justice.
L.C.M.	Least Common Multiple.
Ld.	Lord.
L.D.	Lady Day; Light Dragoons.
L.D.	Low Dutch.
Ldp. or Lp.	Lordship.
L.D.S.	Licentiate of Dental Surgery.
Lea. or lea.	League.
Leg.	(<i>Legato</i>) Smoothly.
Leg. or Legis.	Legislature, Legislative.
Lin.	Lineal (Right-line Measure).
Lett.	Lettish.
Lev.	Leviticus.
Lex.	Lexicon.
Lexicog.	Lexicography.
L.G.	Life Guards.
L.G.	Low German.
L.Gr.	Low Greek.
L.H.A.	Lord High Admiral.
L.H.C.	Lord High Chancellor.
L.H.D.	(<i>Litterarum Humanarum Doctor, or In Litteris Humanioribus Doctor</i>) Doctor of Humanities.
L.H.T.	Lord High Treasurer.
LI.	Long Island; Light Infantry.
Li. or L.	Lithium.
Lib.	Librarian, Library.
Lib. or lib.	(<i>Liber</i>) Book.
Lieut. or Lt.	Lieutenant.
Lieut.-Col.	Lieutenant-Colonel.
Lieut.-Gen.	Lieutenant-General.
Lieut.-Gov.	Lieutenant-Governor.
Linn.	Linnaeus; Linnæan.
Liq.	Liquor.
Lit.	Literature, Literary.
Lit. or lit.	Literally.
Lit. D. or Litt. D.	Doctor of Literature.
Lith.	Lithuanian.
Lith. or lith.	Lithograph.
Liv. or liv.	Livre.
L.L. or L.Lat.	Low Latin; Law Latin.
LL.B.	(<i>Legum Baccalaureus</i>) Bachelor of Laws. See B.L.L.
LL.D.	(<i>Legum Doctor</i>) Doctor of Laws. See B.L.L.
LL.M.	Master of Laws.
L.L.I.	Lord Lieutenant of Ireland.

M

M.	Marquis; Monday; Middle; Monsieur; Meter.—(<i>Mille</i>) Thousand.—(<i>Meridies</i>) Meridian or Noon.
m.	Married.
M. or m.	Masculine; Moon; Month, Months; Minute, Minutes; Mill, Mills; Mile, Miles; Member; Medicine.—(<i>Manipulus</i>) A handful.—(<i>Misce</i>) Mix.—(<i>Mistura</i>) Mixture.—(<i>Mensura</i>) Measure; By measure.
M.A.	Military Academy; Master of Arts. See A.M.
Mac. or Macc.	Maccabees.
Maced.	Macedonian.
Mach.	Machinery.
Mad. or Madm.	Madam.
Mag.	Magazine.
MaJ.	Major.
MaJ. or maJ.	Majority.
MaJ.-Gen.	Major-General.
Mal.	Malachi.
Man.	Manage; Manual.
Manuf.	Manufacturing.
Mar.	March; Maritime.
March.	Marchioness.
Marg. Trans.	Marginal Translation.
Marq.	Marquis.
Mas., mas., Masc. or masc.	Masculine.
Mass.	Massachusetts.
M. Ast. S.	Member of the Astronomical Society.
Math	Mathematics, Mathematician, Mathematical.
Matt.	Matthew.
M.B.	(<i>Medicinx Baccalaureus</i>) Bachelor of Medicine. See B.M.—(<i>Musica Baccalaureus</i>) Bachelor of Music.
M.C.	Member of Congress; Master of Ceremonies; Master Commandant.
Mch.	March.
M.C.S.	Madras Civil Service.
M.D.	(<i>Medicinx Doctor</i>) Doctor of Medicine.
Md.	Maryland.
Mdile.	Mademoiselle.
M.E.	Methodist Episcopal; Military; Mining or Mechanical Engineer; Most Excellent;
Me.	Maine.
Meas.	Measure.
Mech.	Mechanics, Mechanical.
Med.	Medicine, Medical.
M.E.G.H.P.	Most Excellent Grand High Priest.
Mem.	Memorandum, Memoranda.—(<i>Memento</i>) Remember.
M.E.S.	Methodist Episcopal South.
Mess. & Doc.	Message and Documents.
Messrs. or M.M.	(<i>Messieurs</i>) Gentlemen; Sirs
Met.	Metaphysics, Metaphysical.
Metal.	Metallurgy.
Metaph.	Metaphysics
Meteor.	Meteorology, Meteorological.
Meth.	Methodist.
Meton.	Metonymy.

M.S. (*Memoria Sacrum*) Sacred to the memory; Master of Surgery.
MSS. Manuscripts.
MS. Manuscript.
Mt. Mount or Mountain.
M.T.C. Marcus Tullius Cicero.
Mtg or mtg. Mortgage.
Mts. Mountains.
Mus. Music, Musical; Museum.
Mus. B. Bachelor of Music.
Mus. D. Musical Director.
Mus. D., Mus. Doc. or Mus. Doct. Doctor of Music.
M.W. Most Worthy.
M.W.P. Most Worthy Patriarch.
M.W.G.C.P. Most Worthy Grand Chief Patriarch.
M.W.G.M. Most Worthy Grand Master; Most Worshipful Grand Master.
M.W.S. Member of the Wernerian Society.
Myg. Myriagram.
Myt. Myrialter.
Mym. Myriameter.
Myst. Mysteries.
Myth. Mythology, Mythological.

N.
N. Noon; North, Northern (Postal District, London); Note; Name; New; Number; Nitrogen; Norse.
N. or n. Noun; Neuter; Nail, Nails.
N.A. North America, North American.
Na. (*Natrium*) Sodium.
Na. or na. Nail, Nails.
N.A.D. National Academy of Design.
Nah. Nahum.
Nap. Napoleon.
N.A.S. National Academy of Sciences.
Nat. Natural; Natal; National.
Nath. Nathaniel, or Nathanael.
Naut. Nautical.
Nav. Naval.
Navig. Navigation.
N.B. North Britain, North British; New Brunswick.—(*Nota bene*) Note well, or take note.
Nb. Niobium.
N.C. North Carolina; New Church.
N.D. No date.
N.Dak. North Dakota.
N.E. North-East, North-Eastern (Postal District, London); New England.
Neb. Nebraska.
Neh. Nehemiah.
Nem. Con. or nem. con. (*Nemine contradicente*) No one contradicting; Unanimously.
Nem. Diss. (*Nemine dissente*) No one dissenting; Unanimously.
Neth. Netherlands.
Neut. or neut. Neuter.
Nev. Nevada.
New M. New Mexico.
New Test. New Testament.
N.F. New French; Newfoundland.
N.G. New Granada; Noble Grand.
Ng. Norwegian.
N.Gr. New Greek.
N.H. New Hampshire.
N. Heb. New Hebrew.
N.H.H.S. New Hampshire Historical Society.
Ni. Nickel.
N.J. New Jersey.
N.I. or n.I. (*Non liquet*) It appears not; The case is not clear.
N.L. New Latin.
N.L. or N. Lat. North Latitude.
N. Mex. New Mexico.
N.N.E. North, North-East.
N.N.W. North, North-West.
No. Norium.
No. or no. (*Numero*) Number.
N.O. New Orleans.
Nol. Pros. (*Nolle Prosequi*) Will not Prosecute, or Prosecution Abandoned.
Nom. or nom. Nominative.

Noncom. Noncommissioned.
Noncon. or non con. Noncontent, *i.e.*, dissident (House of Lords).
Non obst. or non obst. (*Non obstante*) Notwithstanding.
Non Pros., Non pros. (*Non prosequitur*) He does not prosecute; A judgment entered against the plaintiff when he does not appear to prosecute.
Non seq., non seq. (*Non sequitur*) It does not follow.
N.O.P. Not otherwise provided for.
Nor. or Norm. Norman.
Nor. Fr. or Norm. Fr. Norman French.
Norw. Norway; Norwegian.
Nos., nos. (*Math*) Numbers.
Notts. Nottinghamshire.
Nov. November.
N.P. New Providence; Notary Public.
N.P.D. North Polar distance.
N.R. North River.
N.S. Nova Scotia; New School; New Style (since 1752); Numismatic Society.—(*Notre Seigneur*) Our Lord.
N.S.J.C. (*Noter Salvator Jesus Christus*) Our Saviour Jesus Christ.—(*Notre Seigneur Jesus-Christ*) Our Lord Jesus Christ.
N.T. New Testament.
N.u. or n.u. Name unknown.
Num. or Numb. Numbers.
Numis. Numismatics.
N.V. New Version.
Nux vom. Nuxvomica.
N.V.M. Nativity of the Virgin Mary.
N.W. North-West; North-Western (Postal District, London).
N.W.E.C. North-Western Education Commission.
N.W.T. North-West Territory.
N.Y. New York.
N.Y.H.S. New York Historical Society.
N.Z. or N.Zeal. New Zealand.

O.
O. Ohio; Oxygen; Old.—(*Octavius*) A pint.
Ob. or ob. (*Obit*) Died.
Ob. or Obad. Obadiah.
Obj. or obj. Objective, Objection.
Obs. Observatory.
Obs. or obs. Obsolete, Observation.
Obsoles. Obsolete.
Obt. or Obdt. Obdient.
Oct. or 8vo. Octavo.
Oct. October.
O.F. Odd Fellows.
O.G. Outside Guardian.
O.H.G. Old High German.
O.H.M.S. On His (or Her) Majesty's Service.
O.K. All correct; ("Oll Korrekt").
Ol. (*Oleum*) Oil.
Old Test. Old Testament.
O.L.G. Old Low German.
Olym. Olympiad.
O.M. Old measurement.
O.P. (*Ordinis Prædicatorum*) Dominican Friars.
Op. Opposite; Opus; Opera.
Opt. Optics.
Opt. or opt. Optative.
Ore. or Oreg. Oregon.
Ord. Ordinance; Ordinary.
Orig. or orig. Original, Originally.
Ornith. Ornithology, Ornithological.
O.S. Old School, Old Style (previous to 1752); Outside Sentinel.
Os. Osmium.
O.S.B. (*Ordo Sancti Benedicti*) Order of Saint Benedict.
O.S.F. (*Ordinis Sancti Francisci*) Franciscan Friars.
O.T. Old Testament.
O.U.A. Order of United Americans.
O.U.A.M. Order United American Mechanics.
Oxf. Oxford.
Oxf. Gloss. Oxford Glossary of Architecture.
Oxon. (*Ozonia*) Oxford.
Oxonien. (*Ozonienis*) Of Oxford.
Oz. or oz. Ounce, Ounces.

P.
P. or p. Page; Part; Participle; Post; Pole; Phosphorus; Pint; Penny; Pipe; Parliament.—(*Pondere*) By weight.—(*Pugillus*) A Pugil.—(*Pater*) Father.
Pa. Pennsylvania.
P.a. Participial adjective.
Paint. Painting.
Pal. or Paleon. Paleontology.
Par. Paragraph.
Parl. Parliament, Parliamentary.
Part. or part. Participle.
Pass. or pass. Passive.
Pathol. Pathology.
Pat. Of. Patent Office.
Payt. or payt. Payment.
Pi. (*Plumbum*) Lead.
P.B. (*Philosophie Baccalaureus*) Bachelor of Philosophy.
P.C. Privy Council (or Councilor); Police Constable; Principle Conductor.—(*Patres Conscripti*) Conscript Fathers.
P.C.P. Past Chief Patriarch.
P.C.S. Principal Clerk of Session.
P.Cyc. Penny Cyclopædia.
P.D. (*Philosophie Doctor*) Doctor of Philosophy.
Pd. Paid; Palladium.
P.E. Protestant Episcopal.
Pe. Peleopium.
P.E.I. Prince Edward Island.
Penn. Pennsylvania.
Pent. Pentecost.
Per. or Pers. Persia, Persian.
Per an. or per an. (*Per annum*) By the year.
Per cent, per cent, Per ct. or per ct. (*Per centum*) By the hundred.
Perf. or perf. Perfect.
Peri. Perigee.
Persp. Perspective.
Peruv. Peruvian.
Pet. Peter.
P.G. Past Grand.
P.G.M. Past Grand Master.
Pg. Portuguese.
Phar. or Pharm. Pharmacy, Pharmacopæia.
Ph.B. (*Philosophie Baccalaureus*) Bachelor of Philosophy.
Ph.D. (*Philosophie Doctor*) Doctor of Philosophy.
Phil. Philip; Philipians; Philosophy, Philosopher; Philosophical; Philemon.
Phil. or Phila. Philadelphia.
Philem. Philemon.
Philol. Philology.
Philom. (*Philomathes*) Lover of learning.
Philomath. (*Philomatheticus*) Lover of mathematics.
Philos. Philosophy, Philosophical.
Phil. Trans. Philosophical Transactions.
Phon. or Phonet. Phonetics.
Photog. Photography.
Photom. Photometry.
Phren. Phrenology, Phrenological.
P.H.S. Pennsylvania Historical Society.
Phy. Physical.
Phys. Physics, Physical; Physiology, Physiological.
Physiol. Physiology.
Pinx. or pinx. (*Pinxit*) He (or She) painted it.
P.J. Police Justice.
Pk. or pk. Peck.
Pkgs. Packages.
Pks. or pks. Pecks.
P.L. Poet Laureate.
Pl. or pl. Place; Plate; Plural.
P.L.B. Poor Law Board.
P.L.C. Poor Law Commissioners.
Plff. Plaintiff.
Plin. Pliny.
Plup. or pluf. Pluperfect.
Plur. or plur. Plural.
P.M. Postmaster; Past Master; Past Midshipman.—(*Past Meridien*) Afternoon.
P.M.G. or P.M.Gen. Postmaster-General.
P.O. Post-Office; Province of Ontario.
P.O.D. Post-Office Department; Pay on Delivery.
Poet. Poetry, Poetical.

Pol. Polish.
 Pol. Econ. or Polit. Econ. Political Economy.
 P.O.O. Post-Office Order.
 Pop. or pop. Population, Popular, Popularly.
 Port. Portugal, Portuguese.
 Pos., pos., Poss. or poss. Possessive.
 Pot. Pottle.
 P.P. Pages.
 P.P. Past participle.
 P.P. Polish Priest; Parish Priest.—(*Pater Patriæ*)
 P.P. Father of His Country.
 P.P.C. (*Pour prendre congé*) To take leave.
 Pph. or pph. Pamphlet.
 P.pf. Present participle.
 P.Q. Previous question; Province of Quebec.
 Pr., Prs. Pair, Pairs.
 Pr. Priest; Prince; Provençal.
 Pr. or pr. Proposition; Pronoun; Price; Present.
 Pr., pr. or P. (*Per*) By the.
 P.R. Prize Ring; Porto Rico.—(*Populus Romanus*) The Roman People.
 P.R.A. President of the Royal Academy.
 P.R.C. (*Post Romanum conditum*) After the building of Rome.
 Preb. Prebend.
 Pref. or pref. Prefix, Preface, Preferred.
 Prep. or prep. Preposition.
 Pres. President; Presbyterian.
 Pres. or pres. Present.
 Pret. or pret. Preterit.
 Prim. Primary.
 Prin. Principles.
 Prin. Principal, Principally.
 Print. Printing.
 Priv. or priv. Private.
 P.R.N. (*Pro re nata*) According to the occasion.
 Prob. or prob. Problem; Probably.
 Prof. Professor.
 Proc. Proceedings.
 Pron. or pron. Pronoun; Pronominal; Pronounced, Pronunciation.
 Pron.a. or pron.a. Pronominal Adjective.
 Prop. or prop. Proposition; Properly.
 Pros. Prosody.
 Prot. Protestant.
 Pro tem. or pro tem. (*Pro tempore*) For the time being.
 Prov. Proverbs; Proverbially; Provost; Province; Provincial.
 Prox. or prox. (*Proximo*) Next; Of the next month.
 P.R.S. President of the Royal Society.
 P.R.S.A. President of the Royal Scottish Academy.
 Prus. Prussian; Prussia.
 P.S. Permanent Secretary; Principal Sojourner; Privy Seal.—(*Post scriptum*) Postscript.
 Ps. or Psa. Psalm, Psalms.
 Psychol. Psychology.
 Pt. Platinum.
 Pt. or pt. Pint; Part; Payment; Point; Port.
 P.t. or p.t. Post town.
 P.T. Pupil Teacher.
 P.T.O. Please turn over.
 Pub. Public; Published, Publisher, Publishing.
 Pub. Doc. Public Documents.
 Pulv. (*Pulvis*) Powder.
 Pun. or pun. Puncheon.
 P.v. or p.v. Post village.
 P.W.P. Past Worthy Patriarch.
 Pwt. or pwt. Pennyweight.
 Pxt. or pxt. (*Pinxit*) He (or She) painted it.
 Pyro-elect. Pyro-electricity.

Q.

Q. Question; Quintos.
 Q. or q. (*Quadrans*) A farthing.
 Q. or qu. Query; Question; Queen; Quintus; Quintus.
 Q.B. Queen's Bench.
 Q.C. Queen's Council (or Counsel); Queen's College.
 d. or q.d. (*Quasi Dicit*) As if he should say.

Q.e. or q.e. (*Quod est*) Which is.
 Q.E.D. (*Quod erat demonstrandum*) Which was to be demonstrated.
 Q.E.F. (*Quod erat faciendum*) Which was to be done.
 Q.E.I. (*Quod erat invendum*) Which was to be found out.
 Q.I. or q.I. (*Quantum libet*) As much as you please.
 Ql. Quintal.
 Qm. or qm. (*Quomodo*) By what means.
 Q.M. Quartermaster.
 Q.Mess. Queen's Messenger.
 Q.M.-G. Quartermaster-General.
 Q.P. or q.pl. (*Quantum placet*) As much as you please.
 Qr. or qr. Quarter (28 pounds); Quire.—(*Quadrans*) A farthing.
 Qrs. or qrs. Quarters; Quires.—(*Quadrans*) Farthings.
 Q.S. Quarter Sessions.
 Q.s. or q.s. Quarter Section.—(*Quantum sufficit*) A sufficient quantity.
 Qt. or qt. Quart; Quantity.
 Qts. or qts. Quarts.
 Qu. Queen; Question.
 Qu. or Qy. (*Quære*) Query.
 Ques. Question.
 Q.v. or q.v. (*Quod vide*) Which see.—(*Quantum vis*) As much as you will.
 Qy. Query.

R.

R. Railway; Rare; Rhodium; Réaumur.—(*Rex*) King (*Regina*) Queen.—(*Recipe*) Take.
 R. Réaumur Thermometric scale.
 R. Recipe, prescription.
 R. or r. Rood, Roods; Rod, Rods; Rises; River; Read; Right; Rector; Resides; Retired.
 R.A. Royal Academy (or Academician); Royal Artillery; Rear Admiral; Right Ascension; Russian - America; Royal Arch; Royal Arcanum.
 R.A.C. Royal Arch Chapter.
 Rad. or rad. (*Radix*) Root; Radical.
 R.A.M. Royal Academy of Music; Royal Arch Masons.
 R.A.S. Royal Agricultural Society.
 Rb. Rubidium.
 R.C. Roman Catholic.
 R.C.A. Reformed Church in America.
 R.C.Ch. Roman Catholic Church.
 R.D. Royal Dragoons; Rural Dean.
 R.E. Royal Engineers; Royal Exchange; Right Excellent; Reformed Episcopal.
 Rec. or R. Recipe.
 Recd. Received.
 Recpt. Receipt.
 Rec. Sec. Recording Secretary.
 Rect. Rector; Receipt.
 Ref. Reformed, Reformer, Reformation; Reference.
 Ref. Ch. Reformed Church.
 Reg., Regr. Register, Registrar; Registrar.
 Reg. Prof. Regius Professor.
 Reg. or Regt. Regent.
 Regt. Regiment.
 Rel. Religion, Religious; Relative.
 Rem. Remark, Remarks.
 Rep. Representative; Republic; Report, Reporter; Republican.
 Repts. Reports.
 Res. Resolution.
 Retd. Returned.
 Rev. Revelation; Revolution; Review; Revenue; Re-
 v. Revend. Reverend.
 Revs. (Plural of) Reverend.
 Rev. Ver. Revised Version.
 Rev. Stat. Revised Statutes.
 R.F. Rex Francorum.
 R.G.G. Royal Grenadier Guards.

Rh. Rhodium.
 R.H.A. Royal Hibernian Academy; Royal Horse Artillery.
 Rhet. Rhetoric, Rhetorical.
 R.H.G. Royal Horse Guards.
 R.H.S. Royal Humane Society.
 R.I. Rhode Island.
 Rich. or Richd. Richard.
 R.I.H.S. Rhode Island Historical Society.
 R.I.P. (*Requiescat in Pace*) May He (or She) rest in peace.
 Riv. or riv. River.
 R.M. Royal Marines; Royal Mail; Resident Magistrate.
 R.M.A. Royal Military (or Marine) Asylum; Royal Marine Artillery.
 R.M.L.I. Royal Marine Light Infantry.
 R.M.S. Royal Mail Steamer.
 R.N. Royal Navy.
 R.N.O. (*Riddare of Nordstjerne*) Night of the Order of the Polar Star.
 R.N.B. Royal Naval Reserve.
 Ro. (*Recto*) Right-hand page.
 Ro. or ro. Rood.
 Robt. Robert.
 Rom. Roman, Romans.
 Rom. Cath. Roman Catholic.
 R.P. Regius Professor.—(*Republica*) Republic; Reformed Presbyterian.
 R.P.D. Royal Purple Degree.
 Rpt. Report.
 R.R. Railroad.
 R.S. Recording Secretary; Right side; Revised Statutes.
 Rs. Rupees.
 R.S.A. Royal Society of Antiquaries; Royal Scottish Academy.
 R.S.D. Royal Society of Dublin.
 R.S.E. Royal Society of Edinburgh.
 R.S.L. Royal Society of London.
 R.S.S. (*Regis Societatis Socium*) Fellow of the Royal Society.
 R.S.V.P. (*Répondez s'il vous plait*) Answer, if you please.
 Rt. Hon. Right Honorable.
 Rt. Rev. Right Reverend.
 R.T.S. Religious Tract Society.
 Rt. Wpful. Right Worshipful.
 Ru. Ruthenium; Runic; Russia, Russian.
 R.V. Revised Version.
 R.W. Right Worthy; Right Worshipful.
 R.W.D.G.M. Right Worshipful Deputy Grand Master.
 R.W.G.M. Right Worshipful Grand Master.
 R.W.G.S. Right Worthy Grand Secretary.
 R.W.G.R. Right Worthy Grand Representative.
 R.W.G.T. Right Worthy Grand Treasurer; Right Worshipful Grand Templar.
 R.W.G.W. Right Worthy Grand Warden.
 R.W.J.G.W. Right Worshipful Junior Grand Warden.
 R.W.O. (*Riddare of Wasa Orden*) Knight of the Order of Wasa.
 R.W.S.G.W. Right Worshipful Senior Grand Warden.
 Ry. Railway.

S.

S. Sign; South; Southern (Postal District, London); Sulphur; Saint; Sunday; Saturday; Signor; Saxon; Scribe; Sextus.—(*Semis*) Half.
 S. or Sab. Sabbath.
 S. or s. Second; Shilling; Sun; Sets; See; Solo; Stem; Section; Series; Singular; Son; Succeeded.
 S.A. South America; South Africa; South Australia.
 S.A. or s.a. (*Secundem Artem*) According to Art.
 Sam. Digitized by Google Samuel; Samaritan.
 Saml. Samuel.

Sans., Sansk. or Sanc. Sanskrit.
S.A.S. (*Societatis Antiquariorum Socius*) Fellow of the Society of Antiquaries.
Sat. Saturday.
Sax. Saxon; Saxony.
Sb. (*Sibium*) Antimony.
S.B. South Britain (i. e. England and Wales).
S.B.C. Southern Baptist Convention.
S.C. South Carolina.—(*Senatus Consultum*) A decree of the Senate.
S. Caps. or S. C. Small Capitals.
Sc. or sc. (*Scilicet*) To wit; namely being understood.
Sc. Scandium.
Sc. or Sculp. (*Sculpsit*) He (or She) engraved it.
Scand. Scandinavian.
Scan. Mag. (*Scandalum magnatum*) Defamatory expressions injurious to persons of dignity.
Sc. B. Bachelor of Science.
Sc. D. Doctor of Science.
Sch. (*Scholium*) A note.
Sch., sch. or schr. Schooner.
Sci. Science.
Sci. fa. *Scire facias*.
Scil., scil. (*Scilicet*) To wit; namely being understood.
S.C.L. Student of the Civil Law.
Sclav. Slavonic.
S.C.M. (*Sacra Cesarea Majestas*) Imperial Majesty.
Scot. Scotland, Scotch, Scottish.
Scr. or scr. Scruple, Script., Scripture, Scriptural.
Sculp. or sculp. (*Sculpsit*) He (or She) engraved it.
Sculp. or sculpt. Sculpture.
S.D. Senior Deacon.
S. Dak. South Dakota.
S.D.U.K. Society for the Diffusion of Useful Knowledge.
S.E. South-East; South-Eastern (Postal District, London).
Se. Selenium.
Sec. or Sec'y. Secretary.
Sec. or sec. Second, Section.
Sec. Secant.
Sec. Leg. Secretary of Legation.
 Sect. or sect. Section.
Sen. Senate, Senator; Senior.
Sep. or Sept. September; Septuagint.
Seq. or seq. (*Sequentes or Sequenti*) The following; the next.
Sen. Doc. Senate Document.
Ser. Series.
Serb. Serbian.
Serg. or serj. Sergeant, or Serjeant.
Serv. Servian.
Serv. or Servt. Servant.
Sess. Session.
S.G. Solicitor-General.
Sh., sh., S. or s. Shilling.
Shak. Shakespeare.
S.H.S. (*Societatis Historis Socius*) Fellow of the Historical Society.
Si. Silicon, Silicium.
S.I.M. Society for the Increase of the Ministry (P.E. Church).
Sing. or sing. Singular.
S.J. Society of Jesus.
S.J.C. Supreme Judicial Court.
Skr. Sanskrit.
S.L. Solicitor at Law.
S. Lat. or S.L. South Latitude.
Slav. Slavonic, Slavonian, Slavic.
Slid. or sld. Salled.
S.M. State Militia; Short Mter; Sergeant Major; Sons of Malta.
Sm. Samarium.
S.M.E. (*Sancta Mater Ecclesia*) Holy Mother Church.
S.M.I. (*Se Majesté Imperiale*) His (or Her) Imperial Majesty.
S.M. Lond. Soc. (*Societatis Medicæ Londinensis Socius*) Member of the London Medical Society.
S.M.M. (*Sancta Mater Maria*) Holy Mother Mary.
S.N. or sn. (*Secundum Naturam*) According to Nature.
Sn. (*Stannum*) Tin.

S.O. or s.o. Seller's Option.
Soc. Society.
S. of Sol. Song of Solomon.
S. of T. Sons of Temperance.
Sol. Solomon; Solution.
Sol.-Gen. Solicitor-General.
Sp. Spain, Spanish; Spirit.
S.P. (*Sine prole*) Without issue.
S.P.A.S. (*Societatis Philosophicæ Americanæ Socius*) Member of the American Philosophical Society.
S.P.C.A. Society for the Prevention of Cruelty to Animals.
S.P.C.C. Society for the Prevention of Cruelty to Children.
S.P.C.K. Society for the Promotion of Christian Knowledge.
Specific. or specif. Specifically.
S.P.G. Society for the Propagation of the Gospel.
Sp. gr. Specific Gravity.
S.P.M. Short Particular Meter.
S.P.Q.R. (*Senatus Populusque Romanus*) The Senate and People of Rome.
S.P.R.L. Society for the Promotion of Religion and Learning (P.E. Church).
s.p.s. (*sine prole superstitie*) Without surviving issue.
Spt. Seaport.
Sq., sqq. (*Sequens, sequentes*) And the following.
Sq. or sq. Square.
Sq. ft. or sq. ft. Square foot or feet.
Sq. in. or sq. in. Square inch or inches.
Sq. m. or sq. m. Square mile or miles.
Sq. r. or sq. r. Square rod or rods.
Sq. yd. or sq. yds. Square yard or yards.
Sr., Sjr. or Senior; Strontium.
S.R.I. (*Sacrum Romanum Imperium*) Holy Roman Empire.
S.R.S. (*Societatis Regiæ Socius*) Fellow of the Royal Society.
SS. or ss. (*Scilicet*) Namely.—(*Semis*) Half.
Ss. Sessions.
Ss. Saints.
S.S. Sunday School; Saint Simplicius (the mark on the collar of the Chief Justice of England).
S.S.C. Solicitor Supreme Court.
SS.D. (*Sanctissimus Dominus*) Most Holy Lord—a title * of the Pope.
S.S.E. South, South-East.
S.S.W. South; South-West.
St. Saint; Street; Stone; Strait. (*Stet*) Let it Stand.
Stat. Statute; Statutes; Statuary.
S.T. Sons of Temperance.
S.T.B. Bachelor of Sacred Theology.
S.T.D. (*Sacri Theologiæ Doctor*) Doctor of Divinity; Doctor of Sacred Theology.
Ster. or Stg. Sterling.
S.T.P. (*Sacri Theologiæ Professor*) Professor of Theology.
Str. Steamer.
Subj. or subj. Subjunctive.
Subst. or subst. Substantive; Substitute.
Suff. or suff. Suffix.
Su. Goth. Suiv. Gothic.
Sun. or Sund. Sunday.
Sup. Supreme.
Sup. Ct. Superior Court.
Sup. Superior; Supplement; Superlative; Superlative.
Supp. Supplement.
Supt. Superintendent.
Surg. Surgeon; Surgery.
Surg.-Gen. Surgeon-General.
Surv. Surveying; Surveyor.
Surv. Gen. Surveyor-General.
S.v. or s.v. (*Sub voce or verbo*) Under the Word (or title).
S.V. (*Sanctitas Vestra*) Your Holiness; (*Sancta Virgo*) Holy Virgin.
S.W. South-West; South-Western (Postal District, London); Senior Warden.
Sw. Swedish, Sweden.
Swit., Switz. Switzerland.
Syn. or syn. Synonym, Synonymous.
Synop. Synopsis.
Syr. Syria, Syriac.

T. Tenor; Titus; Tullius; Tuesday.—(*Tutti*) All together.
T. or t. Town; Township; Territory; Ton; Tun; Testament.
Ta. Tantalum.
Tab. Table; Tabular statement.
T.A.B. Total Abstinence Brotherhood.
Tal. qual. or tal. qual. (*Talis qualis*) Just as they come; average quality.
Tan. or tan. Tangent.
Tart. Tartaric.
Tb. Terbium.
T.C.D. Trinity College, Dublin.
Te. Tellurium.
T.E. Topographical Engineers.
Tel. or teleg. Telegraphy.
Tenn. Tennessee.
Ter. Territory.
Term. or term. Termination.
Test. Testament.
Teut. Teutonic.
Text. Texas.
Text. Rec. (*Textus Receptus*) Received Text.
Tf. or tf. Till forbidden (Printers' advertising mark).
Th. Thursday; Thomas; Thorium.
Theo. Theodore; Theodosia.
Theol. Theology, Theological.
Theoph. Theophilus.
Theor. or theor. Theorem.
Thess. Thessalonians.
Tho. or Thos. Thomas.
Thurs. Thursday.
T.H.W.M. Trinity High-water Mark.
Ti. Titanium.
Tier. or tier. Tierce.
Tim. Timothy.
Tit. Titus; Title.
Th. Thallium.
T.O. Turn Over.
Tob. Tobit; Tobacco.
Tom. Tome or volume.
Tonn. or tonn. Tonnage.
Topog. Topography; Topographical.
Tp. Township.
Tr. Translation; Translator; Transpose; Treasurer; Trustee; Terbium.
Trans. Transactions; Translated; Translation; Translator.
Trav. Travels.
Treas. Treasurer.
Trig. Trigonometry; Trigonometrical.
Trin. Trinity.
T.T.L. To Take Leave.
Tu. Thubium.
Tu. or Tues. Tuesday.
Turk. Turkey, Turkish.
Typ. or Typo. Typographer.
Typog. Typography; Typographical.
U.
U. Uranium.
U.B. United Brethren.
U.C. Upper Canada.—(*Urbs Condita*) Year of Rome.
U.E.I.C. United East India Company.
U.G.R.R. Underground Railroad.
U.J.D. (*Utriusque Juris Doctor*) Doctor of Both Laws (i. e. the Canon and the Civil Law).
U.K. United Kingdom.
U.K.A. Ulster King-at-Arms.
Ult. or ult. (*Ultimo*) Last; of the last month.
Um. Unmarried.
Unit. Unitarian.
Univ. University.
Univ. or univ. Universally.
U.P. United Presbyterian.
U.P.C. United Presbyterian Church.
us (*ut supra*) As above.
U.S. United States.
U.S.A. United States of America; United States Army.
U.S.L. United States Legion.
U.S.M. United States Mail; United States Marine.

U.S.M.A.	United States Military Academy.	v.n.	Verb neuter. (Verso) Left-hand page.	Winton.	(<i>Wintonensis</i>) Of Winchester.
U.S.N.	United States Navy.	Vo.	Vocative.	Wis.	Wisconsin.
U.S.R.	Usher of the Scarlet Rod.	Voc. or voc.	Vocative.	W. Long.	West Longitude.
U.S.S.	United States Senate; United States Ship (or Steamer).	Vol. or vol.	Volume.	Wm.	William.
U.S.S.Ct.	United States Supreme Court.	Vols. or vols.	Volumes.	W.M.	Worshipful Master.
U.S.V.	United States Volunteers. (Ger. <i>und so weiter</i>) And so forth.	V.P.	Vice-President. (<i>Victoria Regina</i>) Queen Victoria.	W.M.S.	Wesleyan Missionary Society.
U	Utah.	v.r.	Verb reflexive.	W.N.W.	West-North-West.
U.T.	Utah Territory.	V. Rev.	Very Reverend.	W.P.	Worthy Patriarch.
Uz.	(<i>Uzor</i>) Wife.	V.R.P.	<i>Vestra Reverendissima Paternitas</i> Your Very Reverend Paternity.	Wp.	Worship.
	V.	Vul.	Vulgate.	Wpful.	Worshipful.
	V.	Vulg. or vulg.	Vulgar. Vulgarly.	W.R.	William (<i>Rex</i>) King; West Riding.
	V.	Vv.II.	(<i>Varie lectiones</i>) Various readings.	W.S.	Writer to the Signet.
	V.			W.S.W.	West-South-West.
	V.			Wt. or wt.	Weight.
	V.			W.Va.	West Virginia.
	V.			Wyo.	Wyoming.
	V.				X.
	V.			Xa.	Examined.
	V.			X. or Xt.	Christ.
	V.			Xm. or Xmas.	Christmas.
	V.			Xn. or Xtian.	Christian.
	V.			Xnty. or Xty.	Christianity.
	V.			Xper. or Xr.	Christopher.
	V.				Y.
	V.			Y.	Yttrium.
	V.			Y. or yr.	Year.
	V.			Y.B. or Yr.B.	Yearbook.
	V.			Yd. or yd.	Yard—yds. Yards.
	V.			Ye or ye.	The, Thee.
	V.			Ym. or ym.	Them.
	V.			Y.M.C.A.	Young Men's Christian Association.
	V.			Y.M.C.U.	Young Men's Christian Union.
	V.			Yn. or yn.	Then.
	V.			Y.P.S.C.E.	Young People's Society of Christian Endeavor.
	V.			Yr. or yr.	Their.
	V.			Yr.	Your, Year.
	V.			Yrs.	Yours, Years.
	V.			Ys. or ys.	This.
	V.			Yt. or yt.	That.
	V.			Y.W.C.A.	Young Women's Christian Association.
	V.				Z.
	V.			Zach.	Zachary.
	V.			Zech.	Zechariah.
	V.			Zeph.	Zephaniah.
	V.			Z.G.	Zoölogical Garden.
	V.			Zn.	Zinc.
	V.			Zoöl.	Zoölogy, Zoölogical.
	V.			Zr.	Zirconium.

The following abbreviations are used by horsemen:

b.	Bay.	g.	Gelding.
blk.	Black.	gr.	Gray.
br.	Brown.	h.	Horse (stallion).
c.	Colt.	m.	Mare.
ch.	Chestnut.	ro.	Roan.
f.	Filly.	s.	Sorrel.

ABBREVIATORY SIGNS indicating weights or measures. The following arbitrary signs indicate apothecaries' weights:

℞.	Scruple.	ʒ.	Drachm.
℥.	Ounce.	℔.	Pound.

The prescriptions of physicians are written in Roman notation, a small *j* being used for small *i* when final. Thus, 2 scruples are written ℞ ij; 7 drachms, ℞ vij; 12 ounces, ℞ xij.

Ancient apothecaries and physicians carefully concealed from others all knowledge of the mixtures given as medicines, and hence Latin names were given, and arbitrary signs used to express the quantity.

In apothecaries' fluid measure the following signs are used:

℞ or MR	Minim (about equal to a drop of water).
ʒ	Fluid drachm.
℥	Fluid ounce.
℥.	Pint. (Latin <i>octavus</i> , meaning one-eighth.)
O. or Cong.	Gallon. (Latin <i>congius</i> .)

In medicine R means "take," and ãã "of each." ABBT, THOMAS, a distinguished German writer, born at Ulm in 1738, and died in 1786. In his twenty-third year he was appointed to the chair of mathematics in the Rinteln University. In the same year he published, *On Dying for One's Fatherland*; and the year before his early death his principal work, on *Merit*.

ABD, a common Arabic word meaning slave or servant. It is generally used in a religious sense, and is placed as a sort of prefix to the names of persons: as, Abd-allah, "Servant of God;" Abdel-Kader, "Servant of the Mighty One;" Abd-ullatif, or Abd-allatif, "Servant of the Gracious One." The Hebrew and Syriac word used in the same sense is "Ebed."

ABD-EL-HAMID, the adopted name of DU COURRET, a noted French traveller, born in 1812. His first tour of importance was through Egypt, the Nile country, Abyssinia, and the Red Sea. He adopted the habits and customs of the East, changed his name, and became a Mohammedan. Later, while travelling in Persia, he was held as a prisoner of State, and was released only upon the intervention of the French government, in whose interest he next undertook an expedition to the Soudan. In 1855 he published, in 3 volumes, *Medina et la Mekke*; also *Mémoire à Napoléon III.*

ABD-UL-AZIZ, born Feb. 9, 1830. In 1861 succeeded his brother, Abd-ul-Medjid, who was the thirty-first sultan of the Ottoman Turks. His reign was weak and corrupt, characterized by numerous insurrections. His professions of liberality upon accession to the throne lasted but a short time, and his people soon saw that his promise of governmental reform would come to naught. He taxed the people heavily, and with the money equipped his army extravagantly, beautified the capital, and went on pleasure-seeking journeys or costly hunting expeditions. In 1867 he paid a visit to western Europe, but his disappointed subjects gained no benefit from the expedition. During this reign the neglected government had a severe struggle to maintain its existence. First there broke out the Cretan insurrection, then came the struggle between Roumania and Servia for complete control; and, lastly, the Mohammedan dispute arose, and caused a great deal of disturbance. In 1871 the Sultan attempted to secure the throne for his son in place of his nephew, to whom the Turkish government gave the right. At last his subjects became thoroughly dissatisfied; and, in 1875, through his financial difficulties and the intrigues into which he had entered with Russia, revolts were raised in Bosnia, Herzegovina and Bulgaria. A conspiracy forced him first to dismiss his minister, and afterward, May 30, 1876, to himself abdicate the throne. His tragic death, which occurred four days later, probably resulted from treason.

ABD-UL-HAMID II., reigning Sultan of Turkey; born Sept. 22, 1842 (15 Shaban, 1245), the second son of Sultan Abdul Medjid; succeeded to the throne on the deposition of his elder brother, Sultan Murad V, Aug. 31, 1876. Children of the Sultan:—

I. Mehemmed-Selim Effendi, born Jan. 11, 1870. II. Zekî Sultana, born Jan. 12, 1871. III. Naimé Sultana, born Aug. 5, 1876. IV. Abdul-Kadir Effendi, born Feb. 23, 1878. V. Ahmed Effendi, born March 14, 1878. VI. Nailé Sultana, born 1883. VII. Mehemmed Burhaneddin Effendi, born 1885. VIII. Mehemmed and sisters of the Sultan:

I. Mohammed Murad Effendi, born Sept. 21, 1840; proclaimed Sultan of Turkey on the deposition of his uncle, Sultan Abdul-Aziz, May 30, 1876; declared by the council of ministers to be suffering from idiocy, and deposed from the throne, Aug. 31, 1876.

II. Djémilé Sultana, born Aug. 18, 1843; married, June 3, 1858, to Mahmoud-Djelal-Eddin Pasha, son of Ahmet Feti Pasha.

III. Mehemmed-Reshad Effendi, born Nov. 3, 1844; heir-apparent to the throne.

IV. Medihîé Sultana, born Nov. 21, 1851; married to the late Mahmud Pasha, son of Halil Pasha.

V. Suleiman Effendi, born Nov. 21, 1860.

VI. Fehimé Sultana, born Jan. 26, 1861.

VII. Wahieddin Effendi, born Jan. 12, 1862.

The present sovereign of Turkey is the thirty-fourth, in male descent, of the house of Othman, the founder of the empire, and the twenty-eighth Sultan since the conquest of Constantinople. By the law of succession obeyed in the reigning family, the crown is inherited according to seniority by the male descendants of Othman, sprung from the Imperial harem. The harem is considered a permanent State institution. All children born in the harem, whether offspring of free women or of slaves, are legitimate and of equal lineage. The Sultan is succeeded by his eldest son, but only in case there are no uncles or cousins of greater age.

It has not been the custom of the Sultans of Turkey for some centuries to contract regular marriages. The inmates of the harem come, by purchase or free-will, mostly from districts beyond the

limits of the empire, the majority from Circassia. From among these inmates the Sultan designates a certain number, generally seven, to be "Kadyn," or Ladies of the Palace, the rest, called "Odalik," remaining under them as servants. The Superintendent of the Harem, always an aged Lady of the Palace, and bearing the title of "Haznadar-Kadyn," has to keep up intercourse with the outer world through the Guard of Eunuchs, whose chief, called "Kyzlar-Agassi," has the same rank as the Grand Vizier, but has the precedence if present on State occasions.

ABD-UR-RAHMAN (1778-1859), Sultan of Fez and Morocco. He ascended the throne upon the death of his uncle, in 1823. At that time the country was disturbed by insurrections and foreign wars, brought about by the hostility of his subjects, and the first four years of his reign were spent in settling domestic disputes. War was threatened with Austria, because her sailors refused to pay the tribute formerly levied on them by the government of Morocco, insuring them against the attacks of Moorish pirates. The controversy was settled by Abd-ur-Rahman, who pronounced this requirement unjust and ordered it abolished. The Sultan afterwards engaged in the religious war under Abd-el-Kader, against the French in Algeria, which movement was concluded in the battle of Isly (1844).

ABECEDARIANS, a small sect of Anabaptists in Germany, founded by Storch. They were especially noted for their fanatical ideas with regard to education. Their teaching was that the merest rudimentary learning was unnecessary, and that it led to evil consequences. The Lord, they said, would communicate sufficient knowledge to such as desired to read the Bible.

ABEEL, DAVID, American missionary, born in New Brunswick, N. J., June 12, 1804. He was graduated at Rutgers College, entered the ministry, and became a missionary to China. He was one of the most successful in the missionary field of the early Americans, but his health gave way and he returned to die, in Albany, N. Y., Sept. 4, 1846.

ABEGG, JULIUS F. H., a German writer on jurisprudence, was born at Erlangen, March 27, 1796. From 1826 until his death in 1868 he was professor at Breslau. His works on criminal legislation are numerous and important, and have exercised a vast influence, especially in Germany and the Scandinavian Peninsula.

ABEL DE PUJOL, ALEXANDRE DENIS, French artist, born at Valenciennes, Jan. 30, 1785. His most important works are decorations in various public buildings of note; but he has also painted numerous celebrated pictures. He died Sept. 28, 1861.

ABEL, SIR FREDERICK AUGUSTUS, chemist, born in London 1827. His main study was the science of explosives. He made numerous discoveries in this science, and in 1866 published them in a work called *Gun-Cotton*. Subsequently, he wrote: *The Modern History of Gunpowder; Unexplosive Agents; Researches in Explosives*; and, in 1884, *Electricity Applied to Explosives Purposes*. He also wrote, with the assistance of Colonel Bloxam, a *Handbook of Chemistry*. Through some chemical arrangement he produced, from blasting gelatine, a very powerful and more easily manageable explosive. He was knighted in 1883, and the same year received at Oxford the degree of D. C. L. He has been elected associate member of the ordnance committee, chemist to the war department, and chemical referee to the government.

ABELITES, an ancient sect of Christians in North Africa, so named from the Patriarch Abel.

who, as they said, not begetting children, was not a propagator of original sin. They married, but remained childless—adopting children, whom they educated in their belief.

ABELL, ARUNAH S., American journalist, born in East Providence, R. I., 1806. He began life as a clerk, but in 1822 became an apprentice in the office of the Providence "Patriot." After becoming thoroughly proficient in all the details of a printing office, he removed to Boston, and later to New York, where he secured employment. Here he made the acquaintance of Azariah H. Simmons and William M. Swain, practical printers like himself, and associating himself with them under the firm-name of Swain, Abell & Simmons, removed to Philadelphia and started the "Public Ledger" as a daily penny paper, the first number appearing March 25, 1836. The following year Mr. Abell went to Baltimore and started the Baltimore "Sun," the first number appearing May 17, 1837. This paper was successful from the start, and in 1864



ARUNAH S. ABELL.

Mr. Abell disposed of his interest in the "Ledger" and devoted his whole attention to the "Sun," becoming its sole proprietor in 1868. With the most sovereign contempt for sensationalism, scandal and petty gossip, he had the true spirit of enterprise. His firm was the first to adopt the great Hoe rotary printing machines; and the first extended despatch over the experimental telegraph line between Baltimore and Washington was the President's message, printed in the "Sun." Died April 19, 1888.

ABENAKIS. See ALGONQUINS, in this volume.

ABENAQUI, ABNAKI or TARRANTEENS were the former Algonquins of Maine. They were implacably hostile both to the Indians and to the colonists south of them. They were converted to Roman Catholicism under the labors of Rale, who compiled a dictionary of their language.

ABENDBERG, a mountain in the canton of Berne, rising abruptly out of the water of Lake Thun on the south side. It is an interesting site of an institution established by Dr. Gugenbuhl for the cure of cretinism.

ABER is an ancient word of Celtic origin, which originally signified the emptying of a smaller body of water into a larger one. It also means the mouth of a river or a conflux of waters, hence it is often prefixed to the names of places throughout Scotland and Wales situated at the mouth of a river, or where one river flows into another, or into the sea; as Aberbrothock, a place in Forfarshire, Scotland, situated at the mouth of the Brothock; Abergavenny, a Welsh town, at the junction of the Usk and the Gavenny. A town situated like the latter derives its name from the larger or more important body of water.

ABERCORN, JAMES HAMILTON, DUKE OF, lord lieutenant of Ireland, 1866-68 and 1874-76, was born Jan. 21, 1811, and died Oct. 31, 1885.

ABERCROMBIE, JAMES, British general and statesman, born in Scotland in 1706. He entered the army and became colonel in 1746, major-general in 1756, lieutenant-general in 1759, and general in 1772. On July 8, 1758, he attacked Fort Ticonderoga with 15,000 men, of whom 9,000 were collo-nial troops, and was completely defeated by 3,600

Frenchmen under Gen. Montcalm, losing above 2,000 followers. In 1759 he returned to England, and, as a member of parliament, opposed the rights of the American colonies. He died April 28, 1781.

ABERCROMBIE, JOHN JOSEPH, American soldier, born in Tennessee in 1802. He was graduated at West Point in 1822, served in the First Infantry as adjutant from 1825 to 1833, and as captain in 1836. For gallant conduct at the battle of Okeechobee he was brevetted major, and lieutenant-colonel for gallantry at the battle of Monterey, where he was wounded. He served at Vera Cruz, Cerro Gordo, and as aid-de-camp to Gen. Patterson in 1847. He served in several battles during the civil war and was brevetted brigadier-general, retiring June 12, 1865, to Roslyn, N. Y., where he died, Jan. 3, 1877.

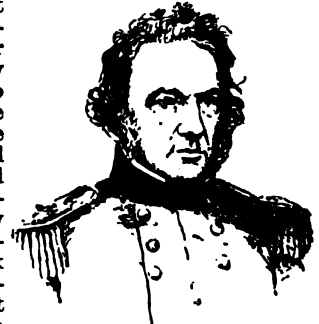
ABERDARE, LORD (HENRY AUSTIN BRUCE), was born at Duffryn, in Glamorganshire, in 1815. He was called to the bar in 1837, and in 1852 was returned by Merthyr-Tydvil to the House of Commons as a Liberal. He was Home Secretary under Gladstone in 1868, and carried an important licensing act; raised to the peerage as Lord Aberdare in 1873, he became Lord President of the Council. He was elected President of the Royal Geographical Society in 1880.

ABERDEEN, a town of Mississippi, on the Tombigbee River, enjoys an immense trade in cotton and general merchandise; is an educational center, and contains the fine public buildings of Monroe county.

ABERDEVINE, a song-bird somewhat resembling the green canary. It has no settled home, migrating as the seasons change into different European countries—Germany, Britain and France. It is adapted to a cold climate, and therefore spends most of the year in the north of Europe, where it breeds, coming south only in the cold season. The nest of this bird is rarely found, as it builds it in very high trees and in secluded positions. The Goldfinch is related to it, but is somewhat larger. It is black except for the nape, which is of a dusky green, and above and below each eye is a broad streak of yellow. The people of Europe often tame it, which is an easy task, and keep it as a cage-bird.

ABERGELDIE CASTLE, the Aberdeenshire seat of the Prince of Wales, on the Dee's right bank, 6 miles west of Ballater, and 2 north east of Balmoral.

ABERT, JOHN JAMES, American soldier, born in Shephardstown, Va., Sept. 17, 1788. He was graduated at West Point in 1811, and was employed in the war office. He studied law and was admitted to the bar in 1813. He volunteered for the defense of the capital in the war of 1812, and in 1814 was reappointed to the army as topographical engineer. In 1829 he took charge of the topographical bureau at Washington, and in 1861 retired after "long and faithful service." He died in Washington, D. C., Sept. 27, 1863.



JOHN JAMES ABERT.

ABEYANCE, in law, is a term denoting a state of expectation or contemplation. Thus, where property is devised to one during life, with remainder over to his heirs after his death, the remainder is said to be in abeyance until the death of the life

tenant. Titles of honor and of dignity are in abeyance when it is uncertain who shall enjoy them. The title to personal property may also be in abeyance; as in replevin suits, where the ownership of property is in dispute, and the property itself is in the custody of the law pending its delivery to the successful claimant. In such case the title is said to be in abeyance until the determination of the suit.

ABHORRERS was a name given, from their professed abhorrence of the principles of those who, during the reign of Charles II, endeavored to restrict the royal prerogative, to those who were afterwards known as Tories.

ABIATHAR, a Hebrew high-priest in the time of David. For his share in Adonijah's rebellion he was deprived of the priestly office, and banished by Solomon from Jerusalem.

ABIB, "the season of newly ripe corn," designated particularly the month *Nisan*, the first of the Jewish sacred year, nearly corresponding to our March.

ABICH, WILHELM HERMANN, geologist and traveler, was born at Berlin, Dec. 11, 1806. He studied at Berlin, became professor at Dorpat in 1842, Fellow of the St. Petersburg Academy in 1853, and after 1877 lived at Vienna. He explored the Caucasus region, the Armenian highlands and northern Persia, and his published works are invaluable geological and meteorological memoirs on these countries. He died July 2, 1886.

ABIGAIL, wife of Nabal, a wealthy chief of Carmel, who refused common hospitality to David when an outlaw from the court of Saul. When David was on his way to punish Nabal, Abigail hastened to meet him with a present, and he was so much pleased with her that, on the death of her husband soon after, he took her to wife. In her address to David, Abigail applied to herself the title of "handmaid," hence the general application of the name to lady's-maids and waiting-maids.

ABILENE, a thriving town of Kansas, on the Kansas River. It was formerly an important shipping center for cattle. It is the county seat of Dickinson Co., and located 95 miles west of Topeka.

ABINGDON, a town of Illinois, situated in Knox county, and a thriving agricultural center. It is the seat of Abingdon and Hedding Colleges.

ABINGDON, a noted historical town of Virginia, county seat of the first county named in honor of Washington, is beautifully situated near Walker's Mountain, and is the seat of a Roman Catholic academy and convent, the valuable library of the Maury Literary Society, Stonewall Jackson Institute, Abingdon Male Academy, and Martha Washington College for Girls. Deposits of gypsum occur here, and Abingdon furnished immense quantities of salt to the Confederacy during the war.

ABINGER, SIR JAMES SCARLETT, LORD, a distinguished barrister of England, was born in Jamaica in 1769 and died 1844. He was attorney-general in 1827 and 1829, and in 1834 he was appointed chief baron of the exchequer.

ABIOGENESIS, is a term used to indicate spontaneous generation, or the production of living things otherwise than through the growth and development of detached portions of the parent organism. Belief in the prevalence of abiogenesis has become very much modified during the last few years, and it is now supposed to occur, if at all, only in the lowest forms of microscopic organisms. For a further discussion of this subject, see *Britannica*, Vol. I, p. 49.

ABOLITIONISTS, a term used to designate a party in the United States, who sought the immediate and total abolition of slavery. Their views

had long been held by many, especially by the members of the Society of Friends. The term was not commonly used until an aggressive party spread from New England throughout the north and west, demanding an immediate and unconditional emancipation. After about 30 years of agitation they became sufficiently powerful to secure the adoption of some of their doctrines by the Republican party. Their ends were gained when, under Lincoln's administration, slavery was abolished, Jan. 1, 1863.

ABOMASUM, or **ABOMASUS**, the true stomach of ruminating mammals. In all ruminant animals, such as camels, deer, neat cattle, etc., the vegetable food, after the first mastication, enters the first stomach; subsequently it passes into the second stomach, where it is moistened and formed into pellets or "cuds," which the ruminantia have the power of bringing back into the mouth for further mastication. Upon being swallowed the second time, it passes into the third stomach, called omasum, after which it passes to the abomasum, or fourth stomach, where the process of digestion is completed. See *Britannica*, Vol. I, p. 51.

ABOUSAMBUL, also called *Ipsambul*, is a place in Nubia, of considerable note, situated in lat. 22° 22' on the left bank of the Nile. It contains two magnificent temples cut from the solid rock, and the work is supposed to have been achieved at an earlier date than that of any architecture now existing. Their decorations are perfect specimens of Egyptian sculpture. The larger temple, which is composed of fifteen partitions, contains a large apartment, 52x57 feet, and this is supported by eight massive stone pillars, rising to a height of thirty feet. A colossal stone figure, such as usually decorated the temples of ancient Egypt, is fastened at the foot of each pillar and reaches to the top, where the decoration is finished off with stucco, painted in gay but rich colors. The front of this large temple is also adorned with four of these figures, so massive as to be considered the largest among any specimens of Egyptian sculpture yet discovered. At Sydenham, there is a crystal palace containing a model of the temple, and also of two of these sitting figures, each sixty-five feet in height. The painted walls of these temples contain accounts of the achievements of Rameses the Great, and it is supposed that the stone figures were meant as representations of this king.

ABOU-GIRGEH, a large town-like collection of Fellahin, near the west bank of the Nile, somewhat more than a hundred miles above Cairo.

ABOUKIR, a bay of the Mediterranean, west of the Rosetta mouth of the Nile, is celebrated as the scene of Nelson's great victory of Aug. 1, 1798. In the bay is also Aboukir, or Nelson Island. On a promontory west of the bay, near the ruins of ancient Canopus, stand the citadel and town of Aboukir.

ABOUT (*a-boo*), E. F. V., French littérateur of reputation, born at Dieuze, 1828. His first novel, *Tolla*, appeared in the *Revue des Deux-Mondes*, and was published in 1855. He was an ardent Republican. He died in 1885.

ABRAHAM, PLAINS OF, a plateau just outside the city of Quebec, was the scene of a battle between the British and French forces, Sept. 18, 1759, in which the respective commanders, Generals Wolfe and Montcalm, were killed.

ABRAHAMITES, a sect whose most noticeable peculiarity was that they rejected all of the Bible except the Lord's Prayer and the Ten Commandments; though they professed to believe the doctrines of probation and future reward and punishment, immortality, and the personality of God.

They obtained a short-lived prominence in Bohemia, whence they were expelled in 1783. The term is also used of a Christian sect of alleged gnostics, of whom Abraham of Antioch was the leader.

ABRAHAM-MEN, a term applied to a certain class of beggars, common in the days of Shakespeare and existing until after the civil wars. They tramped about the country under every imaginable disguise, sometimes pretending to be lunatics, and attired in a disgracefully shabby garb, with unkempt hair and soiled person. They would make their way into dwellings, tell a pitiful tale and demand their wants supplied. Decker called one of these mendicants an "Abraham cove" on account of his grotesque manner of begging. He lived by exciting pity, or, when that failed, by resorting to theft. His style of dress was ludicrous and disgusting, but its peculiarity gained him a subsistence. When he was detected stealing, he claimed for himself the right that was granted to the original "Tom o' Bedlam," who, after his discharge from Bedlam hospital, was permitted to roam about the country at will. The name still exists in several slang phrases.

ABRAHAMSON, WERNER HANS FREDERIK, Danish poet, born in Schleswig, April 10, 1744. He wrote historical, æsthetic and critical essays, and numerous translations, and also published many poems and songs. He died at Copenhagen, Sept. 22, 1812.

ABRIDGMENT, the condensation of a literary production, regarded as a new work by the law of copyright.

ABROGATION, the annulment of one law through force of another. This governmental practice dates as far back as the days of ancient Rome, when the different tribes gathered together.

ABROLHOS (ar-bro-lyos), a group of islands off the Brazilian coast.

ABRUS, a genus of plants: natural order, *Leguminosæ*; sub-order, *Papilionaceæ*. The small, round seeds of this plant are much used in Britain as beads; they are of a deep scarlet ornamented with a black ridge on one side. The plant is a native of India, and originally grew in that country in a clayey soil; but it has been introduced into other tropical countries, chiefly in the West Indies, where it thrives successfully.

ABSECOM, a village of New Jersey, with lighthouse. Population, about 507.

ABSENTEE is a term applied to land-owners who obtain their revenue from their tenants in their own country, while they reside abroad.

ABSOLUTISM is that form of monarchy in which no restriction is placed upon the authority of the sovereign.

ABSTINENCE, TOTAL. The first total abstinence society in the United States was formed by Dr. B. J. Clarke, in 1808, in Saratoga, N. Y.; the Massachusetts society in 1813; and in 1826, the American Temperance society was formed. The principle of total abstinence was not generally adopted as the platform of these societies till 1836. The societies in 1841 were succeeded by the "Sons of Temperance," "Rechabites," "Good Templars" and many others. The first T. A. pledge was adopted at Manchester, England, 1834. Father Mathew was the originator of T. A. societies in Ireland.

ABSTINENCE SOCIETIES are associations organized to promote the cause of total abstinence. The members, who are often called teetotalers, usually take a vow, pledging themselves to take no alcoholic drink, except at the communion table or for medical purposes. They hold that alcohol is not only unnecessary, but actually injurious to the human system, and that, through the excessive use

of it, society is being demoralized; hence they claim it necessary to set an example of total abstinence. North America and the United States is the special field for the work of these societies. Originally, they went by the name of Temperance Societies.

ABSTINENTS, a sect who were prominent in Spain and France in the third century; so called in allusion to their abstinence from marriage, the eating of flesh and the drinking of wine—which things, they said, were inventions of the Devil. They held that the Holy Ghost was a created being.

ABSTRACT SCIENCE is the result of reasoning from axioms of human understanding, and is applied in all discoveries not purely accidental.

ABT, FRANZ, an eminent German composer, was born at Eilenburg, Dec. 22, 1819. His works, mostly songs, have attained great popularity on both sides of the Atlantic. He died in 1885.

ABU KLEA, on the route across country between Korti and Metammeh (both on the bend of the Nile below Khartoum), was the scene of a battle on the 17th Jan., 1885, in which Sir Herbert Stewart defeated the Mahdi's forces.

ABUTMENT, the part of a pier or wall from which an arch springs, and which resists the outward thrust. The term impost is used when the arch is a semicircle, so that the pressure is vertical. In reference to a bridge, the abutments are the walls adjoining the land, which support the ends of the roadway, or the extremities of the arch or arches. The skew-back is the course of masonry forming the abutment of the segmental arch.

ABYLA AND CALPE, rocks both sides of the Straits of Gibraltar, anciently the pillars of Hercules.

ABYSMAL ACCUMULATIONS consist of those organic and inorganic materials which form over the deepest portions of the sea-bottom, where no land-derived sediments occur. Of these the most conspicuous is a fine red clay, which owes its color to the presence of oxides of iron and manganese. In these red clays, metallic sperules, which are thought to be of cosmic origin, otherwise meteoric dust, frequently occur.

ABYSSINIA, the historic outline given in Britannica, Vol. I, pp 66-7, closed with the accession of Kassai to the throne in 1872; the further chronological record is as follows:

Kassai reported, in the British Parliament, to be ruling tyrannically, 1873-74.

War with Egypt: the Khedive's troops enter Abyssinia; the natives retire, but surprise and defeat the Egyptians at Kherad Iska (a massacre) and at Gonda Gouddi (a desperate fight), Oct. 16, 1875.

Abyssinians defeated in three days' conflict, Feb. 17-19, 1876.

Col. Gordon said to be negotiating peace for Egypt, June, 1877.

King Johanni totally defeats Menelek, king of Shoa, middle of June, 1877.

Menelek submits, permitted to rule;—reported great battle; Menelek said to be killed Sept. 17, 1877.

Col. Gordon concludes peace; Abyssinia to have a port, October, 1879.

Prince Alamayouf dies at Leeds, Nov. 14; buried at Windsor, 1879.

King Johanni receives Admiral Hewitt, of the British navy, from Suakim, and signs treaty with the English about May 26, 1884.

Abyssinian envoys arrive at Plymouth, England, August, 1884.

Received by the Queen, Aug. 20, 1884.

Death of King Johanni; succeeded by Menelek II, king of Shoa, 1889.

Throughout the historic period the supreme authority has shifted with the vicissitudes of local wars from one dynasty to another. After the overthrow of Theodore, king of Amhara, by the English in 1868, the suzerain power passed to Prince Kassai of Tigré, who assumed the old title of Negus Negust ("King of Kings"), and was crowned in 1872 as Johannes II, Emperor of Ethiopia. After the death of this potentate in 1889, Menelek II, king of Shoa, became the supreme ruler of Abyssinia, which region has practically become an Italian protectorate in virtue of the treaty of May 2, 1889, confirmed and extended in October of the same year by a convention for "mutual protection" between Menelek and Umberto I, king of Italy.

The political institutions are essentially of a feudal character, analogous to those of mediæval Europe. The absolute authority of the crown is checked by custom, as well as by an ancient code of laws. There are twenty-four great feudal lords, who, like the provincial governors, and even many of the village chiefs, exercise royal functions, but are responsible to the crown for the local taxes, which are usually paid in kind.

The subjoined table gives a rough estimate of the extent and population of the great political divisions of Abyssinia, taken in its widest sense:

Political Divisions.	Area in sq. miles.	Population.
Tigré, Lasta, Amhara, and Gojam . . .	80,000	2,000,000
Shoa	26,000	1,500,000
Territory of the Bogos, Mensas, Beni-Amer, etc.	26,000	100,000
Territory of the Afars and Adals (Danakil)	40,000	200,000
Territory of the Issa and other dependent Somali tribes	6,000	60,000
Galla and Kaffa lands	64,000	3,500,000
Total	244,000	7,360,000

Besides the chiefs and their retainers summoned in time of war, the king maintains a permanent army of *Woltoader* or "mercenaries," most of whom are now armed with rifles instead of national weapons, shield and lance.

There is comparatively little land under tillage, pasturage being the chief pursuit of the people, who raise large herds of cattle, as well as sheep and goats. Wild indigo, coffee, cotton, the sugar-cane, date-palm, and vine thrive well in many districts, but are nowhere extensively cultivated. The forests abound in valuable trees. The chief exports are skins, ivory, butter, gums, mules, forwarded mainly through Massowah, the exchanges of which port rose from 40,000*l.* in 1861 to 280,000*l.* in 1881. British imports amounted in 1887 to 14,000*l.*, and in 1888 to 3,270*l.* Besides Maria Theresa pieces, bales of cloth and salt are still used as currency. Towns are numerous, but are all of small size, scarcely any with a population of over 5,000. The most important, politically and commercially, are: Gondar, capital of Amhara, 5,000; Adua, capital of Tigré, 3,000; Aksum, ancient capital of the Ethiopian empire, 5,000; Antalo, former capital of Tigré, 1,000; Ankober, former capital of Shoa, 7,000; Licheh, present capital of Shoa, 3,000; Debra-Tabor, Magdala, and Makallé, occasional royal residences; Besso and Sokoto, 1,500, important trading centers; Amba-Mariam, 4,000; Mahdera-Mariam, 4,000.

For information concerning currency, religion, education, weights and measures, and judiciary system, see those topics in this Supplement.

ACACIANS, a sect of wild Arians, named after Acacius, bishop of Cæsarea, who held that Christ was like the Father but not of the same substance, being himself but a creature of God. Some contended for complete dissimilarity.

ACADEMIES OF SCIENCE, see SCIENCE in subsequent volume.

ACAJUTLA, a seaport of Central America, on the Pacific Ocean.

ACANTHACEÆ, a natural order of monopetalous exogenous plants; many of which, as the *Thunbergia*, the *Justicia* and the *Aphelandra* are held in high esteem for the beauty of their flowers. Their seeds grow from hooks on the placenta, and the calyx is imbricated in two broken whorls.

ACANTHASPIS, fossil-fishes found in the limestone of Ohio. They are buckler-headed and somewhat resemble Cephalaspis.

ACANTHOPHIS, native serpents of Australia, allied to the viper, the tail ending in a horny spine; the adder is included in the genus.

ACANTHURUS CHIRURGUS, popularly known as the *Surgeon*, *Doctor* or *Barber*, is a tropical sea-fish typical of the *Acanthuridæ*, characterized by a very sharp and pointed spine on the side of the tail, which cuts like a lancet or razor.

A CAPELLA, a term used in music denoting the church style. It is equivalent to *alla breve*, a time signature which often appears in church music. It also denotes that the instruments are to play in unison with the voices, or that one part is to be played by a number of instruments.

ACARIDÆ, a family of minute insects, including the *Acarus domesticus* or *cheese mite*, and the *Acarus Crossii*, the accidental appearance of which during some experiments by Andrew Crosse led to the belief that they had been generated by electricity.

ACARUS FOLLICULORUM, a name generally accepted for a microscopic parasite residing in the sebaceous sacs and hair-follicles of the human skin. As regards to size and form of these animals there is much variety. Their whole existence is passed in the fatty matter of the sebaceous cells, molting repeatedly during their growth, and are finally expelled from the follicles with the secretions of these organs. They are met with in almost every person, but are most numerous in those in whom the skin is torpid, in invalids and in the sick; they vary in length from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch.

ACCAD was the south-eastern division of ancient Babylonia, as distinguished from Sumir, the north-western. The Accadians were the dominant people in Babylonia at the time of the earliest records, and to them is attributed the origin of Babylonian civilization and the earliest form of cuneiform writing. There was also a city of Accad, one of the four great cities of the "Land of Shinar."

ACCA LAURENTIA, variously considered as the foster mother of Romulus, and as a rich widow who left all her property to the Roman people.

ACCENT, a musical term analogous to accent in language. It consists of a stress or emphasis given to certain notes or parts of bars in a composition. It may be divided into two kinds—grammatical and rhetorical, or aesthetic.

ACCENTOR, song-birds of Europe, introduced into the United States; small, brown above and steel-colored beneath.

ACCEPTANCE, in law, is the receipt of anything in fulfillment of a contract, or an agreeing to the offer or contract of another by some act which binds the person in law. In commercial law the term denotes an engagement by the person or

whom a bill of exchange is drawn, to pay the bill. See *Britannica*, Vol. I, p. 82.

ACCEPTANTS, or **CONSTITUTIONISTS**, French Jesuits, who accepted the bull of Clement XI, 1713.

ACCEPTER, or **ACCEPTOR**, one who obligates himself to pay a bill of exchange. See **ACCEPTANCE**.

ACCEPTILATION, literally the bearing of a receipt, means, in Roman and Scotch law, the imaginary discharge of a debt or other obligation growing out of a verbal contract, with a declaration that the terms of the contract have been fulfilled when they have not. Hence, by transference to theology, the word is used of the forgiveness of sins by God for the sake of Jesus Christ.

ACCESSORY, in painting, is any part of a picture which is not an essential motive or center of interest, but is introduced for the purpose of enhancing the effectiveness of the main object.

ACCIDENS is that which results from any cause other than the essence or nature of the thing, as opposed to *per se*. The sun shines *per se*; the moon, *per accidens*.

ACCIDENT, in general, is that which happens by chance, or as an unforeseen and unexpected effect; but in law it has a special application to those unforeseen occurrences which are injurious, and not the result of personal negligence or misconduct. Courts of equity will not entertain claims for damages arising from accident where the claimant has through any negligence or misconduct contributed to the accident. Neither will they afford relief where a person has an adequate remedy at law. But with these exceptions courts of equity will, as far as possible, give ample relief where otherwise damages would ensue. See *Britannica*, Vol. I, p. 83.

ACCIDENTAL COLORS are complimentary colors, as seen when the eye is suddenly turned away from a bright-colored object upon which it has been fixed. If we look steadily at a red spot on a white ground, and then turn the eye quickly to another part of the ground, a green spot appears.

ACCIDENTALS, in painting, are chance effects produced by the introduction of extraneous lights and their consequent shadows, by means of which the artist is enabled to bring his principal characters into greater prominence.

ACCIPITRES, the name given by Linnaeus to an order of birds, including, according to his system, the genera *Vulture* (vultures), *Falco* (eagles, falcons, hawks, etc.), *Strix* (owls), and distinguished principally by a short, hooked bill, short legs, powerful feet and sharp hooked claws. They prey upon other birds and upon mammals.



ACCIPITRES.

ACCOMPANIMENT, in music, is the aiding of a solo part by other parts, which may consist of a whole orchestra or a single instrument, or even subservient vocal parts. It serves to elevate and beautify the solo part, and is subject to certain rules for composition as well as for performance.

ACCOMPLICE, one connected with a crime either as accessory or as principal; sometimes applied to those who testify against each other.

ACCORD AND SATISFACTION, an agreement to give and receive something as compensation for injury and its performance. In music A is synonymous with concord.

ACCOUNT, a statement, written or printed, of whatever is subjected to a commercial reckoning, is used especially of such a statement of debits and credits, or of receipts and expenditures. A state-

ment of particulars of an open, running and unsettled business transaction, as between a merchant and his customer, is called an account current. An account which has been adjusted, and in which a balance has been struck, is known as an account stated. The same term is also used of an account which, by implication, is presumed to be correct; as in the case of one party receiving a statement from another and retaining it without objection. Account, in the common law, otherwise known as account render, is an action—now nearly obsolete—lying against one who refuses to render an account which, by virtue of his position or office, ought to have been rendered. Relief in cases of account is now usually sought and granted in a court of equity. See *Britannica*, Vol. I, p. 91.

ACCRETION, land gradually formed by water deposits along the shore of a river or sea, belonging, except in cases of sudden formation, to property owners adjacent.

ACCUBATION, the ancient oriental practice of eating at meals in a reclining posture, though not mentioned by Homer, was in general use in the historic times of Greece and Rome. The guests lay upon the breast or the left side, upon cushioned couches somewhat higher than the table; three sides of which were usually thus occupied, the middle place being considered the position of honor.

ACCUMULATED FORCE, the excess of force communicated to a body to overcome resistance and produce motion. As power is each instant imparted to the body, the constant application of a very small force will at length communicate rapid motion and great momentum.

ACCUMULATION, in law, is the adding to the principal the income or interest of a fund as provided by will or deed.

ACELDAMA (Chaldee, "field of blood"), the name given to the potter's field bought by the priests, as a burial place for strangers, with the money which Judas had received for betraying Jesus, and which, in the horror of his repentance, he flung at their feet before hanging himself.

ACEPHALOCYSTS are simple sacs, oval or nearly spherical, varying in size from a pin's head to that of a child, and found in various parts of the body of man. They were formerly considered as parasitic animals, but are now known to be scolices of cestoid worms.

ACESIUS, a bishop of Constantinople, of the third century. He favored the teaching of Novatianus; and Constantine is said to have exclaimed to him: "Take thee a ladder, Acesius, and go up to Heaven alone."

ACETABULUM, a vase used by ancients to hold vinegar, generally made of fine red clay. Specimens are now in the museum of Naples.

ACETAL, a colorless liquid of an agreeable flavor and odor, resembles that of the hazel-nut. It is one of the products of the slow oxidation of alcohol under the influence of finely divided platinum, or of chlorine, or diluted sulphuric acid and peroxide of manganese.

ACETATES are salts formed by the union of acetic acid with various oxides. They are characterized by solubility in water, and, generally, ready crystallization. They are extensively used in pharmacy and in the manufacture of dyes and paints.

ACETIC ACID (Formula, $C_2H_4O_2$), a colorless liquid, with a strongly acid and pungent smell and taste. See *Britannica*, Vol. I, p. 93.

ACETIC ANHYDRIDE, a colorless, odorless fluid, the result of the action of oxychloride of phosphorus on acetate of potassium.

ACETIC ETHERS are acetates of alcohol radicals. Common Acetic Ether, a distillation of sodium acetate, alcohol and oil of vitriol, is a mobile liquid of agreeable taste and smell, used in medicine and in the flavoring of wines.

ACETONE, or **PYRO-ACETIC SPIRIT**, is a liquid which, mixed with water, alcohol or ether, is used to dissolve camphor, resin and fat. It has a biting taste, and its odor, which resembles that of peppermint, is pleasant. Acetone belongs to a class of organic bodies derived from the Aldehydes.

ACETYLE is an organic radical not yet isolated, but is supposed to exist in acetic acid and its derivatives. The reason for assuming the existence of this radical in the acetic compounds is, that the formula to which it leads affords the simplest explanation of the most important reactions of acetic acid.

ACHÆMENIDES, an ancient royal family of Persia, began with Cyrus, about 558 B. C., and were brought to an end by the conquest of the empire by Alexander in B. C. 330.

ACHALGANJ, town of British India in the southern part of the chief commissionership of Oude. Population, 5,000.

ACHARD (*pr.* as-shar), **FRANZ KARL**, born in Berlin 1753, naturalist and chemist, chiefly distinguished by his improvements in the process of preparing sugar from beet root. Died in 1822.

ACHENBACH, **ANDREAS**, born at Cassel, Germany, 1815. He took art lessons at the Dusseldorf school, and afterward painted landscapes and water views.

ACHENBACH, **HEINRICH**, was born in Germany, Nov. 23, 1829. In 1858 he became privatdocent and two years later was appointed professor at the University of Bonn; this position he held for six years, during which time he founded a periodical treating only of mining laws, and published several valuable works on the ancient land relations of the Germans, and on German and French mining laws. In 1866 he became connected with the Prussian Diet, and was in the same year made chief counselor in the Prussian ministry of commerce. He spent another six years in this service, after which he was transferred to the ministry of public worship; a year after this he became minister of commerce.

ACHENBACH, **OSWALD**, was a brother of Andreas, born 1827. He was a landscape painter, and at thirty-six years of age he accepted the position of professor of painting in the academy at Dusseldorf, the place of his birth.

ACHENE, a dry, indehiscent, single-seeded fruit. The term is often restricted to fruits like those of the common dock, but it is perhaps better to extend the term to forms like grains of wheat, nuts of hazel, and so on. Called also Achenium, or Akenium, and by earlier botanists called a naked seed.

ACHERONTIA, or Death's Head Moth, a handsome insect, on whose back is a remarkable representation of a skull. It makes a squeaking noise when disturbed.

ACHERUSIA is the name of a lake in Epirus into which the Acheron river flows. It is also the name of a cavern situated in Bithynia, near Heraclea. Ancient Grecian mythology contains an account of Hercules dragging Cerberus through this cavern to reach the light of day.

À-CHEVAL POSITION, meaning astride or on horseback. A body of troops is said to occupy an A. P. when they have been divided by the obstruction of a river or road, so that one part of the army is on one side and the other on the opposite.

ACHILLÆA, a genus of plants of the natural order *Compositæ*, having small flowers (heads of flowers) disposed in corymbs, and the receptacle covered with chaffy scales (small bractææ). The florets of the ray are female, and have a short, roundish tongue or lip; the florets of the disk are hermaphrodite, the tube of the corolla flatly compressed and two-winged; the involucre is imbricated. The common yarrow, or milfoil (*A. millefolium*) abounds in some parts of North America and in all parts of Europe. It is about a foot in height, its leaves bipinnate, the pinnæ deeply divided, the segments narrow and crowded. It has white or rose colored flowers.

ACHILLES' TENDON attaches the soleus and gastrocnemius muscles of the calf of the leg to the heel bone. It is capable of resisting a force equal to 1,000 pounds' weight, and yet it is often ruptured by the contraction of these muscles in sudden extension of the foot. Serious wounds and bruises of the A. T. were formerly considered fatal.

ACHILLI, **GIOVANNI GIACINTO**, issued the best Italian version of the New Testament known. He was first a Dominican, but became a Protestant. Born 1803.

ACHIMENES is a plant usually found in the warm regions of America. It bears beautiful flowers, and for this reason florists often cultivate it. There are a great many different species of this plant. It is of the natural order *Gesneraceæ*.

ACHORES are one of the forms of pustules, being most common on the face of children. Their secretion forms those large, thick, irregular scabs, resembling dried honey, which are so common on children's chins. Internal administration of purgatives and alkalies, strict attention to diet and weak alkaline lotions are very effective.

ACHTKARPELEN, meaning the "eight parishes," is a town in the province of Friesland, Netherlands. It contained in 1879 a population of 10,224 inhabitants.

ACHTYSKA is a Russian town of about 17,820 inhabitants. It is situated on the Vorskla river, in the government of Kharhov, sixty-nine miles north-east of the town of that name.

ACID, a general term applied in chemistry to a certain class of compounds having as one of its numerous characteristics a sour, sharp, or bitter taste. See *Britannica*, Vol. I, p. 97.

ACIDIMETER, an instrument for determining the strength of acids. The most general plan of this instrument is a glass tube of a hundred equal parts, into which an alkaline liquor, the strength of which has been determined, is placed. The acid to be tested is of known quantity, and its strength is determined by the proportion of liquor necessary for its saturation.

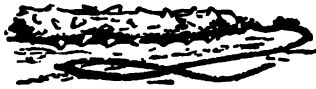
ACKERMANN, **RUDOLPH**, born in Saxony, 1764; died 1834. Went to London, opened a repository of fine arts in the Strand, and was very successful. He introduced the art of lithography into England, and was the originator of the "Annuals," which he commenced by his *Forget-me-not*, published in 1823 and after. Wood engraving, the art of water-proofing and the introduction of gas-light into shops were greatly promoted by this enterprising German.

ACKLEY, a railroad junction in Hardin county, Ia., 132 miles west of Dubuque. Population (in 1885), 1,473.

ACKNOWLEDGMENT, a declaration before some authorized person of the authenticity of an act or deed, and the certificate of this person indorsed on the instrument. Clerks of courts, justices of the peace, judges, mayors, commissioners of deeds, notaries public, are all authorized to take acknowledgments.

ACLAND, CHRISTINA HARRIET CAROLINE FOX, daughter of the earl of Ilchester, born Jan. 3, 1750. She married, 1770, Major John Dyke Acland, accompanied him to America, and shared in all the vicissitudes of Burgoyne's campaign. When her husband was wounded and taken prisoner in the second battle of Saratoga, she followed him and was received with the utmost cordiality by Gen. Gates. For some time after her death at Tetton, England, July 21, 1815, her adventures furnished a favorite subject for pen and pencil.

ACLAND, HENRY WENTWORTH, M. D., D. C. L., F. R. S., was born in 1815, and educated at the University of Oxford, where, after making a thorough study of medicine for some years, he took the degree of M. D. in 1848. In 1856 he became professor in the science. The university museum was founded partly through his efforts. He published *The Plains of Troy*, while still a student at college, and fifteen years later he gave to the public a work entitled *Memoir on the Visitation of Cholera in Oxford, 1854*. He was also the publisher of a



ACLIDE.

Romans. Called also *aclis*. It could be used as a missile or as a club.

ACLINIC LINE is the name for the magnetic equator, which cuts the terrestrial equator, inasmuch as on the former line the magnetic needle has no dip, but lies horizontal. The acclinic line is irregular and also variable.

ACNE, an important disease of the skin. The sebaceous follicles of the skin are the primary seat of the affection. Their natural secretion accumulates in their interior, and there is, at the same time, a tendency to inflammation of the follicle and surrounding tissue. It is by no means rare to find on the face and shoulder of young persons, about or above the age of puberty, a number of black spots, each of which is placed on a slightly raised pale base. These black points are called *comedones*. Interspersed are other spots with the base more raised and inflamed, which become more or less perfect pustules, each of which rests on a comparatively large and red base. There are different varieties of this disease. If there is no inflammation the treatment simply aims at favoring the escape of the contents of the sebaceous follicles by rubbing the affected parts with cold cream at bed-time, washing with soap and water next morning, and gentle subsequent friction with a soft towel.

ACOMA is an Indian village situated on a high sandstone rock in Valencia county, N. M. It can only be reached by means of a spiral staircase carved in the rock. Although the village has no priest, missionary aid has been sent, and the inhabitants have erected a church. This place is supposed to be the early *Acuco* mentioned by Spanish historians.

ACONCAGUA, mountain peak in the Andes. It is the highest in Chili; height, 22,479 ft.

ACONITIN, the active principle of the Aconite, or Monk's-hood, is one of the most potent poisons known. Its recognition in cases of poisoning is a matter of difficulty, owing to the very small quantity necessary for the purpose. Aconite root is extensively used in the treatment of neuralgia and rheumatism.

ACORN-SHELLS (*balanus*), a genus of Cirripides, an exceedingly familiar barnacle. They occur in abundance, incrusting the rocks between high

and low water mark. They derive their name from a supposed resemblance to acorns.

ACOUSTICS, the science of sound; *i. e.* the cause, nature and phenomena of the vibrations of elastic bodies which affect the organ of hearing. See *Britannica*, Vol. I, p. 100; also *SCIENCE, LATEST DISCOVERIES IN* in these "Revisions and Additions."

ACQUAVIVA is a southern Italian town, situated at the base of the Apennines, in the province of Bari, sixteen miles south of the town of that name. It contains several buildings of note, a parish church, two hospitals and several convents, and is surrounded by walls and ditches originally built as a defense to the city. The climate is very favorable, and it has a population of 6,776 inhabitants.

ACQUIESCENCE, in law, is such consent to any matter as may be reasonably inferred from neglect to take legal proceedings in opposition thereto.

ACQUITTAL, employed in law to express the removal of a charge of crime.

ACRASPEDA are such sea-nettles and jelly-fishes as have no contractile marginal fold or velum upon the lobate border of their disk.

ACRELIUS, ISRAEL, Swedish clergyman and author, born at Osteraker, Dec. 25, 1714. He was graduated at the University of Upsal, and was ordained in 1743, and in 1749 took charge of the Swedish congregations on the Delaware. His most celebrated work is a history of New Sweden, published in Stockholm in 1759. He died at Fellingsbro, April 25, 1800.

ACRI, a town in the province of Cosenza, Southern Italy, 13 miles northeast of the town Cosenza. Its climate is healthy and the scenery is beautiful. The surrounding country is very fertile. In 1861 its population was 11,977.

ACROBATES, marsupials found in Australia, one species of which—the pigmy Acrobat—resembles the flying squirrel. It is four inches in length, including the tail.



ACROBATES.

ACRO-CORINTHUS, a hill not far from the city of Corinth, on which stood its capitol, or Acropolis. It commanded views over a very large portion of Greece.

ACROLEINE, a strongly refracting liquid, colorless, and limpid, lighter than water. Its boiling point is about 125°. It constitutes the acrid principle produced by the destructive distillation of fatty bodies, and is in part due to the decomposition of glycerine. It is best prepared by distilling a mixture of glycerine and anhydrous phosphoric acid, the object of the latter being to effect the removal of the water from the glycerine. In its state of vapor it is extremely irritating to the eyes, nostrils and respiratory organs—a property to which it owes its name. The pungent smell given out by the smouldering wick of a candle just blown out is due to the presence of acroleine.

ACROMYODI, in zoölogy, a primary division of passerine birds, is conterminous with *Oacines*, or singing birds. This sub-order or superfamily, as distinguished from the *Mesomyodi*, is characterized by an attachment to the ends of the upper bronchial half-rings of a number of intrinsic syringeal muscles. It includes the great majority of the *Passeres*.

ACRONYCAL, in astronomy, passing the meridian at midnight.

ACROPOLIS. See *Britannica*, Vol. I, p. 121. See also under *ATHENS*, Vol. III, pp. 1, 5, 6. The British School of Archeology was opened at Athens in

November, 1886. The French school had been already established in 1846, the German Institute in 1873, and the American school in 1882. The Greek Archæological Society affords every facility to



THE ACROPOLIS OF ATHENS.

antiquarian students, and the whole surface of the Acropolis is undergoing excavations under its supervision.

ACROTHERION, a term used in architecture for an ornament or statue placed on the lower angles or apex of a pediment.

ACS, a village in Hungary, situated on the Danube River. Various battles have taken place there, and it has a magnificent palace. Population, 3,963.

ACTEON, a character in mythology. He was a grandson of Cadmus, and trained as a hunter by Chiron. Having once surprised Diana bathing in a fountain he was changed by the offended goddess into a stag, and his own dogs, not knowing him, tore him to pieces.

ACTA ERUDITORUM, the first literary journal of Germany. Founded about 1682, and discontinued about 1782.

ACTA MARTYRUM ET SANCTORUM (*Acts of Saints or Martyrs*), the collective title given to several old writings respecting saints and martyrs in the Greek and Roman Catholic churches, but now applied especially to one extensive collection begun by the Jesuits in the 17th century, and intended to serve as a better arrangement of the material found in ancient works.

ACTINIC PROCESS, or, popularly, "Process," is a generic name for any process in which printing surfaces are prepared by the aid of light in connection with chemical and mechanical treatment; otherwise known as photo-mechanical process (*q. v.*).

ACTINOMYCOSIS, the name now given to a disease long known to occur in cattle, but confounded with tubercle or sarcoma. Actinomycosis also occurs in pigs, and (very rarely) in man. It consists of tumors, sometimes of large size, formed of inflammatory material deposited around numerous grains of fungi. In cattle they occur usually in the jaws, mouth and stomach; in man in the neck, lungs and adjacent parts.

ACTION, in *law*, is a proceeding instituted in court by one or more persons against another, or others, to secure the punishment or redress of a wrong: distinguished from judicial proceedings which are non-controversial in form, as the probate of a will. In a wide sense of the term, an action may be classed as either *civil* or *criminal*. An action instituted by the sovereign power for the punishment of crime is *criminal*; but, if instituted

by the sovereign power in the capacity of owner or contracting party, or by a subject or citizen, it is *civil*. The term *indictment*, frequently applied to a *criminal* action, is properly used only of one kind of formal complaint by which such a proceeding may be presented for trial. A common-law action is classed as *real*, *personal*, or *mixed*: *real*, when the claim made is title to real estate; *personal*, when it demands a chattel, damages for an injury, a debt, or a statutory penalty; and *mixed*, when it demands both real estate and damages for a wrong. See *Britannica*, Vol. I, p. 132.

ACT OF GOD, in *law*, is a sudden and overwhelming action of natural forces such as could not have been foreseen by human ability, or, though foreseen, could not have been averted by the exercise of any human skill or care. It is often made the defense to an action for non-performance of contract; and usually a man is not held legally responsible for results of which such act of God is shown to be the direct cause unless bound by special agreement to that effect.

ACT OF CONGRESS. The distribution of powers under the American system grants to the national legislature complete authority to frame all laws for the welfare of the nation, while the legislation of the States within their reserved spheres is not in subordination to the general government unless it touches some question arising under the constitution or laws of the United States. The general subjects of national legislation are the departments, the judiciary, the army, the navy, the militia, arms, armories and arsenals, diplomatic and consular officers, seat of government and public buildings, the States, territories, civil rights, citizenship, the elective franchise, freedmen, Indians, immigration, naturalization, the census, public lands, duties upon imports, debts due by or to the United States, internal revenue, weights and measures, currency, coinage, appropriations, legal tender, postal service, public contracts, fisheries, prizes, pensions, patents, Smithsonian Institution, etc. An act of congress must be passed by both houses and approved by the president before it becomes a law.

ACTON BURNELL, a Shropshire parish, 8 miles from Shrewsbury. At the ruined castle here was held, in 1283, a parliament of Edward I, which carried the "Statute of Merchants" for the recovery of debts.

ACTON, defensive armor made of leather and iron, the shape of a short-sleeved shirt.

ACTON, LORD JOHN EMERIC EDW. DALBERG, born 1834. Member of the liberal Catholic party, and elected to parliament in 1859 from Carlou. In 1869 was made a baron. He founded the "Home and Foreign Review," and edited the "Weekly Chronicle" and "North British Review." He was, in 1887, made D. C. L. of Oxford.

ADA, a town of Ohio, 57 miles west of Crestline. It is a manufacturing town, and contains the Northwestern Ohio Normal School and other educational institutions.

ADA, an important steamer station of Northern Hungary, on the river Theiss. Population, 9,693.

ADAGIO, a slow measure of time in music. The special feature of the adagio is the means it affords the composer of expressing individual feeling. In more extended compositions, the second or third movement is usually marked *adagio*, being a contrast to the rapid movement preceding and following. The finest specimens of adagio occur in the productions of the old masters, particularly Beethoven, recent composers being more successful in rapid movement.

ADAIR, JAMES, American Indian trader and author. He resided among the red men from 1735-

to 1775, and published a *History of the American Indians*. He attempted to trace the descent of the Indians to the Lost Tribes of Israel, but the most valuable part of his writings are his vocabularies of Indian dialects.

ADAIR, JOHN, American general, born in Chester county, S. C., in 1759. He served in the Revolutionary war, and under St. Clair and Wilkinson in 1791 as major. He was defeated by "Little Turtle," the Miami chief, and forced to retreat. He was appointed lieutenant-colonel in 1793, and later occupied positions as representative from Mercer county in the Kentucky legislature, register of the United States land office, and United States senator. In 1820 he was elected governor of Kentucky, and in 1831 a member of Congress. He died in HARRISBURG, Ky., May 19, 1840.

ADALIA, a small seaport situated on a gulf of the same name on the south coast of Asia Minor. The population, principally Turks, numbers about 5,000.

ADAM, ADOLPHE CHARLES, musical composer, born in Paris, July 24, 1803, and died in 1856. He was professor of composition in the Paris Conservatoire, and also contributor to the newspapers. He was most successful in comic opera, of which the chief, *Postillon de Longjumeau*, produced in 1835, is still popular.

ADAM, JEAN, a Scottish poetess, born near Greenock in 1710, and died in the poor-house at Glasgow in 1765. Her poems were of a religious character. The authorship of *There's nae Luck about the House* is ascribed to her, but it was more probably written by Mickle.

ADAM, LAMBERT LEGISBERT, was a noted sculptor, born at Nancy, France, in 1700; died 1759. Fourteen years before his death he became professor in the Paris Royal Academy, and the garden of Versailles now contains some of his best statuary. Nicholas Sebastien, brother of Lambert, born at Nancy, 1705, died 1778, was also a master in the art. One of his productions is entitled *Prometheus Bound*.

ADAMANT, the name of a supposed stone or mineral, concerning the properties of which a vague idea was entertained. By early writers it was used as synonymous with the lode-stone or magnet. It was applied by Theophrastus to the emery-stone of Naxos, the hardest gem then known, and later by scientific writers as a synonym with diamond. The original word is the Greek *adamas*, meaning "invincible." Adamant is now used to express any extraordinary hardness, chiefly employed in a rhetorical sense.

ADAMS, a town in Berkshire county, Mass. From this place rises Mt. Greylock, 3,600 feet high, the loftiest mountain in Mass. In 1878, the township was divided, the country at the western extremity of the Hoosac tunnel being called North Adams.

ADAMS, a town in Jefferson county, N. Y., situated 156 miles west northwest of Albany. It is a manufacturing town, containing tanneries and carriage manufactories, also a foundry, a malt house, a sash-and-blind factory, and a cabinet shop. The Hungerford Collegiate Institute has its seat here.

ADAMS, ALVIN, founder of the "Adams' Express Company," born in Vermont, 1804. Shortly after the first United States express route was started between New York and Brooklyn by William Hardman Mr. Adams resigned the produce business, into which he had entered at Boston about 1837, and started an opposition route. After spending three years alone in this business, he was joined by Ephraim Farnsworth. Later on, William Farnsworth became his partner. The business rapidly increased and extended over a large tract of the Union. The

California express was started in 1850, and in that year the firm-name was changed to Adams Express Company. A large business grew out of the first beginning in New York State, and Mr. Adams became very wealthy through its prosperity. He died Sept. 7, 1877.

ADAMS, ABIGAIL (SMITH), wife of John Adams, second President of the United States, born in Weymouth, Mass., Nov. 23, 1744. She was the daughter of the Rev. Wm. Smith and Elizabeth Quincy, and related to the eminent divines, Thomas Shepard and John Norton. On account of delicate health her early schooling was neglected, but she became acquainted with the best English literature, and wrote in a vigorous and often elegant style. In 1764 she married John Adams, and later became the mother of a daughter and three sons. She accompanied her husband on



ABIGAIL SMITH ADAMS.

diplomatic trips to France and England, and after his retirement from public life passed the remainder of her days in the part of Braintree, Mass., called Quincy, where she died Oct. 28, 1818.

ADAMS, CHARLES BAKER, born at Dorchester, Mass., Jan. 11, 1834. He studied natural history at Amherst College, from which he graduated in that science in his twentieth year, and soon after held a position there as tutor for one year. From 1838 to 1847 he was professor of chemistry and natural history in Middlebury College; at the time of his death, Jan. 19, 1853, he was professor of zoölogy and astronomy at Amherst College, which office he had filled for six years. He was the publisher of *Contributions to Chronology*, and also of numerous works upon the geological survey of Vermont.

ADAMS, CHARLES FRANCIS, diplomatist, born in Boston, Aug. 18, 1807. He was graduated at Harvard in 1825, and studied law with Daniel Webster, being admitted to the bar in 1828. He never practiced, however, but devoted himself to the study of jurisprudence, international

law, history and finance. From 1831 to 1836 he was a member of the legislature of Massachusetts, and in 1858 the republicans of the 3rd district elected him to Congress. In 1860 he was re-elected, and the following year he was appointed to fill a position that both his grandfather and father had occupied before him—minister to England. Mr. Adams returned to the United States in 1868 after a career cited among the most brilliant triumphs of American diplomacy. He became president of the board of overseers of Harvard College in 1869, which post he occupied until within a few years of his death, which took place in Boston, Nov. 21, 1886.

ADAMS, CHARLES FRANCIS, JR., American lawyer, born in Boston, May 27, 1838. He was graduated at Harvard in 1856, and two years later was admitted to the bar. He served through the civil war as brigadier general of volunteers, and since then has been connected with railroad matters. In 1871 he



CHARLES FRANCIS ADAMS.

was a member of the board of railroad commissioners of Massachusetts; in 1882, a member of the board of overseers of Harvard College, and in 1884 president of the Union Pacific railroad. In 1871 he published, with his brother, *Chapters of Erie and Other Essays*, and later a valuable book on railroad accidents.

ADAMS, CHARLES KENDALL, American educator, born in Derby, Vt., Jan. 24, 1835. Removed to Iowa in 1855 and entered the University of Michigan, graduating therefrom in 1861. For several years he was assistant professor in that university, and in 1868 was elected to the full professorship of history. He was appointed professor of history at Cornell University in 1881, and four years later became president of the university, a position which he still holds. He is the author of *Democracy and Monarchy in France* (1874) and a *Manual of Historical Literature* (1882), and has written numerous essays on historical and educational subjects.

ADAMS, DANIEL, M. D., born at Townsend, Mass., Sept. 29, 1773, and was a graduate at Dartmouth, 1797. He took an active interest in the political affairs of New Hampshire, was well known as an editor and physician and also became popular as an educator; he published a number of school books, among which was a valuable arithmetic. He died at Keene, N. H., June 8, 1864.

ADAMS, GEORGE EVERETT, American Congressman, born at Keene, N. H., June 18, 1840. He was graduated at Harvard in 1860, studied at the Dane Law School, Cambridge, Mass., and then practiced. He was elected to the Illinois State senate in 1880. Two years later he became a member of the Forty-eighth Congress of the United States, and received a re-election the three succeeding terms.

ADAMS, HANNAH, first American authoress, born in Medfield, Mass., in 1755. She acquired a knowledge of Latin and Greek, and at an early age began writing. Her principal work was a *View of Religious Opinions*, published in 1784, in which she gave a comprehensive survey of the various religions of the world. She wrote several other books, none of which brought her great pecuniary profit, yet through them she secured many friends. She died in Brookline, Nov. 15, 1832, and was buried in Mount Auburn, the first person whose body was placed in that cemetery.

ADAMS, HENRY A., JR., American naval officer, born in Pennsylvania in 1833. He was graduated from the Annapolis Naval School in 1849, and became a passed midshipman in 1854. The following year he was made master and in 1856 lieutenant. Later he was commissioned as lieutenant-commander, and in 1866 as commander. After the attacks on Fort Fisher he received the encomium from Admiral Porter in his official despatch, "I recommend the promotion of Lieut.-Com. H. A. Adams, without whose aid we should have been brought to a standstill more than once. He volunteered for anything and everything." In 1870 he was assigned to duty in the Philadelphia navy yard, where he has since remained.

ADAMS, HENRY BROOKS, born at Boston, Mass., Feb. 16, 1838. He was a graduate of Harvard, and was private secretary to his father, Charles Francis Adams, when minister to England. He became assistant professor of history at Harvard in 1870, and edited the "North American Review" from 1870 to 1876.

ADAMS, JASPER, D. D., was born at Medway, Mass., in 1793. He was a graduate of Brown University. In 1819 he became professor of mathematics in that institution, which position he held until 1824, when he became president of Charles-

ton College, S. C. He was professor of geography, ethics, etc., at West Point in 1838-40. He died Oct. 25, 1841.

ADAMS, JOHN, LL. D., was an eminent classical teacher, born in Canterbury, Conn., Sept. 18, 1772. He graduated at Yale College in 1795. He presided for a time over Plainfield Academy and Bacon Academy in Colchester, Conn., becoming principal of Phillips Academy, Andover, Mass., in 1810. In this position he was very successful until the time of his resignation in 1833. Died April 24, 1863.

ADAMS, JOHN COUCH, astronomer, born near Launceston in Cornwall, 1819. He was educated at St. John's College, Cambridge, where he attained the honor of senior wrangler, and became a mathematical tutor. Soon after taking his degree he made observations for the purpose of accounting for the irregularities in the motion of Uranus. Leverrier commenced researches on the same subject a little later, in the summer of 1845, coming to the same conclusions, but publishing them in advance of Adams. He was at first accorded a larger share in the honor of the discovery of Neptune. The Royal Astronomical Society, however, awarded them equal honors in 1848. In 1858, Adams was appointed to the chair of mathematics in St. Andrew's, which he vacated on being nominated to the Lowndean professorship of astronomy, Cambridge. He has made important researches on the theory of November meteors, and as to the secular acceleration of the moon's mean motion.

ADAMS, JOHN R., D. D., was born in Plainfield, Conn., in 1802, and graduated from Yale College in 1821. He taught in Phillips Academy, Andover, Mass., for three years, and subsequently became pastor of various Presbyterian and Congregational churches of New York, Massachusetts and Maine. During the civil war he was chaplain of the 5th Maine and 121st New York regiments. Died April 26, 1866.

ADAMS, JULIUS WALKER, engineer, born in Boston, Mass., Oct. 18, 1812, and educated at U. S. Military Academy. He was assistant engineer of Stonington and Providence R. R. in 1832; Norwich and Worcester R. R. 1836; Western R. R. of Massachusetts, 1839; Albany and Schenectady R. R. 1842. He has also been engaged in several important hydraulic works. He served with credit as colonel of the 67th New York volunteers. Since then he has been chief engineer of the city of Brooklyn; past president of the American Society of Civil Engineers; member of New York Academy of Science, and consulting engineer to department of public works, New York.

ADAMS, NEHEMIAH, American clergyman and author, born in Salem, Mass., Feb. 19, 1808. He wrote numerous works in favor of slavery, calling forth many unfavorable comments from the anti-slavery press. He died in Salem, Oct. 6, 1878.

ADAMS, SAMUEL, American military surgeon, born in Maine. In 1863, he entered the Army of the Potomac and served with it until it was disbanded. He rose from the rank of regimental surgeon to that of medical inspector of the Ninth army corps, receiving also a brevet for meritorious conduct at the capture of Petersburg. During one of the closing battles, Dr. Adams distinguished himself by dressing the wounds of Gen. Potter between the advanced lines of the combatants and under the fire of the enemy. Dr. Adams's last days were spent in Galveston, Texas, among the victims of yellow fever, of which disease he died, Sept. 9, 1867.

ADAMS, WILLIAM, an English navigator, born at Gillingham in 1575. From 1600 to 1620, the date of his death, he was resident in Japan, where he was regarded with unusual favor by two emperors.

ADAMS, WILLIAM, born in 1814, an Oxford tutor and clergyman, author of *The Shadow of the Cross* and other "Sacred Allegories." He died at Bonchurch, in the Isle of Wight, 1848.

ADAMS, WILLIAM, D. D., LL. D., American clergyman, born in Colchester, Conn., Jan. 25, 1807. He was graduated at Yale in 1827, studied theology at Andover, and was ordained



WILLIAM ADAMS.

pastor of the Congregational church in Brighton, Mass., in 1831. He took charge of the Central Presbyterian church in New York city in 1834, and became moderator of the new-school general assembly at Washington in 1852. In 1853 he became pastor of the Madison Square Presbyterian church, and in 1873 accepted the presidency of the Union Theological seminary in New York city. He contributed numerous articles to various religious magazines, and wrote several books, the principal ones being *The Three Gardens, Eden, Gethsemane and Paradise; Conversations of Jesus Christ with Representative Men; and Thanksgiving, Memories of the Day and Helps to the Habit*. He died at Orange Mountain, N. J., Aug. 31, 1880.

ADAMS, WILLIAM TAYLOR ("Oliver Optic"), American author, born in Medway, Mass., July 30, 1822. For twenty years he was a school teacher in the public schools of Boston, for fourteen a member of the school committee of Dorchester, and for one year a member of the legislature. He is the author of over a dozen novels for young people, two for older readers, and over a thousand newspaper stories.

ADAM'S APPLE, a common name for the projection in the neck formed by the larger extremity of the thyroid cartilage of the larynx. It was so called from the suggestion that it was caused by a portion of the forbidden fruit sticking in Adam's throat. The name is also given to a fruit produced by a variety of the lime, having a depression in the surface, which the Italian peasants call the mark of Adam's teeth. Also the Forbidden Fruit; the Shaddock.

ADAMSON, JOHN, an English historian, was born in 1787. His *Memoir of Camoens* appeared in 1820, and *The History, Antiquities and Literature of Portugal* in 1842-46. He died in 1855.

ADAMSTHAL, a town of Moravia, near Brunn. It is a popular resort for tourists, being in the vicinity of the famous Regis-Kala cavern, belonging to the great system of curious calcareous caverns north of Brunn.

ADANSONIA, a genus of the order *Sterculiaceae*; the Baobab. Linnaeus named it in honor of Adanson, the botanist. It is distinguished by a simple deciduous calyx, a very long style, with numerous stigmas, and a woody capsule containing a farinaceous pulp. Only one species is known, commonly called the monkey-bread tree, a native of the tropical portion of West Africa, now introduced in the East and West Indies. It is the largest known tree, not attaining a great height, but exceeding all trees in thickness. Its trunk is from 20 to 30 feet in diameter, branches 60 to 70 feet long, and often as thick as stems of large trees, forming a hemispherical head of 120 to 150 feet in diameter. The pulp of the fruit is pleasant to the taste, eaten with or

without sugar. The expressed juice mixed with sugar is much esteemed as a beverage, very refreshing, effectual in quenching the thirst, and valuable in purtrid and pestilential fevers.

ADAR, sixth month of the Jewish year. Corresponds with parts of February and March.

ADDAX (Lat. *Addua*), a river of Lombardy, rising in the Rætian Alps above Barmio. It formerly bounded the republic of Venice and the duchy of Milan.

ADDEMIRI, or AL-DAMIRI, otherwise known as KEMAL-ED-DIN, a celebrated Arabian naturalist, historian and biographer, was born in Egypt about 1350, and died about 1405. The best known of his numerous works is *The Lives of Living Creatures*.

ADDINGTON, ISAAC, a distinguished colonial patriot, was born in Boston, Jan. 22, 1645. Upon the overthrow of the administration of Sir Edmund Andros he was chosen by the people clerk of the Council of Safety. The next year he was elected to the secretaryship of the council, which office he held from 1690 till his death, March 19, 1715.

ADDISCOMBE, town in Surrey, near Croyden. The East India Company established a college there for cadets in 1812, which was sold in 1861.

ADDISON, an important manufacturing town of New York, on the Canisteo River, about thirty miles west of Elmira, is the seat of Addison Academy and Union School.

ADDISON, THOMAS, physician, was born near Newcastle in 1793. He received his medical education at Edinburgh, settled in London, and in 1837 became physician to Guy's hospital. He made a special study of pneumonia and phthisis, and was the discoverer of what has since been known as Addison's Disease. He also wrote on the subject of poisons and female diseases. He died 29th of June, 1860.

ADDISON'S DISEASE. See SUPRARENAL CAPSULES.

ADELPHIA, flower-stamens collected in a bundle; the prefixes *mon*, *di*, etc., mark whether there is one bundle or more.



ADELPHIA.

ADEPTION, in its most important sense, denotes what is called satisfaction in the law of England; viz., that when a testator is owing a debt, or has promised to pay a provision in a marriage contract, if he gives a legacy to the creditor or person entitled under the contract, that may be taken to extinguish the debt, or to discharge the provision. Ademption also means that if a testator bequeathes a specific article or property, and before his death the article or property is destroyed or totally changed in character, either by the act of the testator or otherwise, then the legatee gets nothing. Various rules have been stated on the subject of ademption, but the courts endeavor to determine the meaning of the testator.

ADEN is a volcanic peninsula on the Arabian coast, about 100 miles east of Bab-el-Mandeb. It forms an important coaling station on the highway to the East, and is being strongly fortified. The settlement includes Little Aden, a peninsula very similar to Aden itself, and the settlement and town of Shaikh Othman, on the mainland, with the villages of Imad Hiswa and Bir Jabir. It also includes the island of Perim at the entrance to the Red Sea, and is subject to the Bombay government. The government is administered by a political resident, who is also commander of the troops. Gross revenue (1888), 174,530 rupees.

Area, 70 square miles; of Perim five square miles. Population, 34,711. Imports 2,854,242l. (409,357l. from Great Britain); exports, 2,315,383l. (170,474l. to Great Britain). Tonnage entered and cleared (mainly passenger steamers), 4,300,000. No public debt.

Chief exports: Coffee, gums, hides and skins, piece goods, tobacco. Chief imports: Cotton twist, piece goods, grain, hides and skins, tobacco. Aden itself is non-productive, and the trade is a purely transshipment one, except that (227,649l.) from the interior of Arabia.

The Somali Coast Protectorate, opposite Aden, administered by a political agent and consul subordinate to Aden, and extending from Ras Jibute E. long. 43° 15' round by Cape Guardafui and south to Ras Hafun. The natives are Mohammedans. Gross revenue (1888), 187,940 rupees. The chief port is Berbera, due south of Aden, whence cattle and excellent sheep are obtained in great numbers, and from which port also are exported the majority of the gums, hides, coffee, etc. Other ports are Bulhar, Zulia and Karam. Imports, 1887-88, 3,329,210 rupees; exports, 6,812,910 rupees. The first three ports are fortified.

The island of Socotra, off the coast of Africa, and the Kuria Muria Islands, off the coast of Arabia, are also attached to Aden. Area of the former, 3,000 square miles; population, 4,000. It was attached to Great Britain by treaty with the sultan in 1876, and formally annexed in 1886. Chief products, aloes; sheep, cattle, and goats are plentiful. The Kuria Muria Islands, five in number, were ceded by the sultan of Muscat for the purpose of landing the Red Sea cable. The group is leased for the purpose of guano collection.

ADENITIS (Gr. *aden*, "a gland") and ANGIOLEUCITIS (Gr. *angion*, "a vessel," *leukos*, "white"), terms employed in medicine to indicate respectively inflammation of the lymphatic glands and inflammation of the lymphatic vessels. In most cases the vessels and glands are simultaneously affected. There is plenty of evidence that such inflammation may occur internally; but it is only observed in the living subject in connection with the skin, or an ulcerated surface, and is most common in the arm, the hand being the part most exposed to injury. It is usually caused by an open wound, as a puncture or cut, becoming infected by some poisonous matter from without. The inflammation invariably extends towards the trunk. The constitutional symptoms attending an acute attack of inflammation of the lymphatic vessels are often severe.

ADENOCELE (Gr. *aden*, a gland, and *kele*, a tumor), or ADENO-SARCOMA, terms employed in surgery for a kind of growth in the female breast, closely resembling the breast tissue.

ADEPT, from *adeptus*, "having attained," was formerly applied to those alchemists who professed and were supposed to have discovered "the great secret" of the transmutation of the baser metals into gold.

ADET, PIERRE AUGUSTE, a French chemist, born at Nevers in 1763. He came to the United States as envoy from the French Directory in 1795; returning abruptly in 1797, alleging that the American government had become guilty of a violation of its neutrality. He died in 1832.

ADHESION: in pathology, a union between two surfaces of a living body which have been separated. In the healing of wounds it is usually a beneficial process, though sometimes causing deformity. After injuries to joints, for example, adhesion frequently takes place between the injured structures and those adjoining, causing subsequent

stiffness. Adhesion is a frequent consequence of inflammation of serous and synovial membranes.

ADIABENE, a district of Assyria, between the Greater and Lesser Zab rivers.

ADI GRAUTH, the sacred books of the Sikhs.

ADIPIIC ACID is a dibasic acid of the oxalic series, and is obtained by the oxidizing action of nitric acid on oleic acid, spermaceti, and other fatty bodies. The name is derived from Latin *adipis*, fat.

ADIRONDACK PARK. A project long entertained for creating a great park out of the extensive forest region known as the Adirondack mountains in the northeastern part of the State of New York has recently taken practical shape. A park association has been organized to induce the State to purchase from 3,000,000 to 4,000,000 of acres to be held in perpetuity as a State park. The State already owns in that region about 800,000 acres.

ADJECTIVE, a name of one of the classes into which grammarians have divided words. Languages differ much in the manner of using adjectives. In England and America the usual place for an adjective is before a noun; in German also, but in French and Italian they come after.

ADJOURNMENT, postponement till another time; especially applied to legislative bodies.

ADJUTANT-GENERAL is a military staff officer ranking in the British army as a general; in the United States service as a brigadier-general. He is the organ through whom the commanding general receives communication and issues orders. Most of the States of the Union have also adjutant-generals whose duties are similar with respect to the militia. The assistant, an official auxiliary to the father-general of the Jesuits, is often erroneously called adjutant-general.

ADLER, FELIX, an American author and orator, and founder of the Society for Ethical Culture, was born in Alzey, Germany, Aug. 13, 1851, and educated in New York, Berlin and Heidelberg. He occupied the chair of Hebrew and Oriental Literature in Cornell University between 1874 and the organization, in New York, in 1876, of the new religious society of which he is the head.

ADLER, NATHAN MARCUS, chief rabbi, was born at Hanover in 1803. He was chief rabbi of Oldenburg in 1829, of Hanover in 1830, and of the united congregations of the British empire in 1845. Herman, son of the preceding, was born in Hanover in 1839. He became principal of the Jews' College in London in 1863, and has greatly distinguished himself by his defense of his co-religionists in the columns of the "Nineteenth Century" and elsewhere, and by his earlier reply to Colenso's criticism on the Pentateuch, and that to Max Müller, entitled, *Is Judaism a Missionary Faith?* In 1881-82 he was a member of the Mansion House Committee for the relief of the Jewish victims of persecution in Russia, and visited the colonies of Russian refugees in the Holy Land.

ADLER, SALVIUS, famous Swedish ambassador, during the Thirty Years' War (1590-1652.)

ADLERBETH, GUDMUND GORAN, Swedish author, born in 1751. He wrote tragedies on historical subjects, and translated Virgil, Horace and Ovid.

ADLERCREUTZ, CARL JOHAN, count, Swedish general. He took action to arrest King Gustavus IV, thus gaining great favor with the people. Born 1757; died 1815.

ADLERSPARRE, GEORGE, Swedish statesman and author, born March 28, 1760. He joined the army in 1775, and continued in it until 1794, when he resigned, but entered again in 1808 and served until 1824. He published works on economic, historical and military subjects. Died Sept. 23, 1835.

ADLERSPARRE, KARL AUGUST, Swedish poet, born June 7, 1810. He wrote under the pen-name of "Albano," and gained a reputation through his historical writings. He died May 5, 1862.

AD LIBITUM is a musical term implying that a part so marked may be performed according to the taste of the performer. An accompaniment to music so marked must strictly follow the time of the principal performer. *Ad Libitum* also frequently means that a part for a particular instrument may be played or left out entirely.

ADMINISTRATION: in politics, the executive government of a State; in England applied more especially to the ministry. In law, it is the function of the administrator.

ADMINISTRATOR, in law, is one who administers; one who is commissioned by a surrogate's, probate, or orphans court to take charge of the goods, chattels and credits of one dying intestate. In some of the States his jurisdiction is not limited to personal property, but extends to the realty as well. The duty of an administrator is very similar to that of an executor, and consists generally in collecting and paying debts and distributing the surplus among the next of kin. The administrator is usually selected from the near relatives of the deceased, although sometimes, when the application for administration is made by creditors, one of the latter receives the appointment. There is, also, in some jurisdictions, a public officer, called public administrator, who is authorized to administer the estates of persons dying intestate and leaving no relatives qualified to perform the duties. See *Britannica*, Vol. I, p. 154.

ADMIRALTY DEBITS, a revenue arising from enemies' ships detained in the prospect of an immediate declaration of war, or those coming into port in ignorance that hostilities have commenced; also from the proceeds of wrecks, and goods of pirates.

ADMISSIONS, certain concessions which are used in law as evidence against the party making them, or against his partners or his heirs.

ADOBE, a sort of brick which is sun-dried instead of being burnt. They are used in Mexico, Texas and Central America for building purposes, and their durability is unlimited provided the rain and frost are not too severe. This fact is well attested by the ruins of Assyria, where adobe was the chief material used in masonry. The adobes are usually made near the site where the building for which they are intended is to be erected. Any cheap grade of clay is used, and water is added until it becomes a thick mud. It is then moulded into cakes of uniform size, and placed in the sun to dry. Should twenty-four hours of heavy rain fall on the unfinished bricks they would probably be rendered worthless for building purposes, while much longer exposure would entirely destroy the blocks.

ADONIC VERSE, a combination of a dactyl and spondee, or a dactyl and a trochee, especially adapted to lively poetry.

ADONAI, a Hebrew name for the Supreme Being. It is the pronoun of the first person combined with the plural of *adon*, "lord." Adonai is pronounced by the Jews in Scripture reading wherever the name *Jehovah* occurs in the text.

ADONI, a town of the province of Madras. Population, 22,441. The chief industry is weaving.

ADRIAN, a manufacturing city of Michigan, county seat of Lenawee county, is situated on both sides of the river Raisin, about thirty miles west of Toledo, Ohio. It has a fine water-power and many important manufactures, principally that of cars for steam and street railroads. Notable fea-

tures of Adrian are its costly Masonic temple, opera-house, and mineral springs. Adrian is the seat of Adrian College. Population, in 1870, 8,438; 1880, 7,849; in 1890, 9,239.

ADRIAN, WALL OF, was a defensive wall, about eight feet thick by twelve feet in height, provided with watch-towers, and extending from the Tyne to Solway Firth, a distance of about 80 miles. It was built as a defense against the invasions of the Scots and Picts into the north of England, and was named after the emperor Adrian.

ADRAMYTI, a town on the west coast of Asia Minor, opposite Mitylene. It is surrounded by beautiful olive groves. Population, 6,000.

ADULLAMITES. The attempt to extend the franchise made in England in 1866 by the government of Earl Russell and Mr. Gladstone led many of the Whigs to secede from the Liberal leaders and vote with the Conservatives. The designation of *Adullamites* was fastened on the new party in consequence of Mr. Bright having likened them to the political outlaws who took refuge with David in the cave of Adullam.

ADULTERATION is the use, in the production of any article represented as genuine, of ingredients which are cheaper and of an inferior quality. The objects of employing the different materials in the adulteration of food may be said to be three in number: First, for the purpose of increasing the bulk or weight of the dearer article; as, for example, when water is added to milk or whiskey, or when chickory is added to coffee. Second, to alter or improve its appearance; as in the case of the addition of certain metallic compounds to preserve fruits or vegetables, or of the addition of alum to bread. Third, to increase its pungency or alter its flavor; as when pepper is added to ginger. The excuses which have at different times been urged in extenuation of adulteration are numerous, and in some cases even plausible. Thus we are told that many articles of food are prepared and sold in an adulterated form in obedience to the public taste. It is asserted that some forms of admixture are quite allowable, since they are undoubtedly improvements, and that certain things must be mixed with others in order to insure their preservation. It is scarcely possible, however, that any one informed on the subject could prefer an article owing its pleasing appearance to the addition of poisonous substances. As to admixtures being improvements, this is of course largely a matter of opinion; but it is worthy of consideration in this connection that the articles which are added by way of improvement are always very much cheaper than the articles which are supposed to have been improved. With reference to the statement that admixture is necessary for the preservation of certain articles, if this is true at all, it is true of very few articles indeed. Notwithstanding the measures taken for preventing the sale of adulterated articles the practice is still of regrettably frequent occurrence, many articles being habitually sold in a form far from pure. Among the more important substances which are habitually sold in an impure condition may be mentioned milk, bread, coffee, cocoa, butter, sugar, tea, oatmeal, and various spices. Drugs are extensively adulterated, and there is a long list of miscellaneous articles of commerce which are frequently rendered almost worthless by admixture. See *Britannica*, Vol. I, pp. 167-177.

ADULTERY, the criminal sexual intercourse of a married man with one who is not his wife, or of a married woman with one who is not her husband, is, in the English law, a spiritual, not a temporal

offense, and is therefore left to the action of the spiritual courts. By the common law a civil action, known as an action for criminal conversation, may be brought by a husband against him who commits adultery with his wife. Adultery is a ground, by statutory enactment, of absolute divorce. In some of the States of the Union the English law prevails; in others, adultery is a crime. In this country also the meaning of the word adultery varies with local statutes. Sometimes it characterizes the act of the unmarried participator who has the intercourse with one who is married. Adultery, as here spoken of, is often called single adultery; double adultery being unlawful intercourse between two married persons. See *Britannica*, Vol. I, p. 177.

ADVAITA is a Hindoo term used to denote a doctrine of Hindoo philosophy according to which Brahma is the only existence, the universe being merely an emanation from this World Spirit. This doctrine received its highest development in the eight century.

AD VALOREM, a customs duty levied upon the estimated value of goods without regard to weight, size or number.

ADVANCEMENT, a legal term referring to money given to a child in expectation of a future division, and to be deducted from that child's share of the divided estate. Expenditure for the child's maintenance and education is not an advancement.

ADVANCEMENT OF SCIENCE, SOCIETY FOR THE, a British association founded by Sir John Herschel, Sir David Brewster, Sir Humphrey Davy and others, in 1831. A similar society was formed in the United States, in 1847.

ADVENTISTS, SECOND, a religious sect of America, originally followers of William Miller, who look for the speedy coming of Christ and the commencement of the millennium. The first date set for the advent was in October, 1842. It was, however, found necessary to set a later date, which has since been repeatedly changed. Notwithstanding this series of disappointments they have steadily increased in number. The sect is divided into several branches, differing somewhat in belief. The Seventh-day Adventists set no time for the coming of Christ. A large portion of the evangelical churches have of late years taken a decided interest in the subject of the premillennial coming of Christ—particularly dating from the convention called by Dr. Tyng, of New York city, a few years ago—who likewise set no time, but believe that the six days of one thousand years each are nearly ended, and thus that the seventh, or millennial, will soon dawn, and with it look for the coming of Christ.

ADVERSE POSSESSION: in law, the possession of real property avowedly contrary to the claims of another, so as to deprive the latter of the seizin. Adverse possession for a period of twenty years will defeat the title of the real owner, and vest it in the party maintaining such possession. But to produce this result such adverse possession must have been actual, uninterrupted, visible, and entirely distinct, hostile to, and in no manner derived through that of the real owner.

ADVERTISEMENT, a word which comes to us, through the French, from the Latin *advertere*, is now seldom used in its general sense of any proclamation or notification—as, for example, by the town-crier or street bell-ringer—but denotes more particularly a printed announcement of any kind; especially a paid notice in a newspaper or other periodical or public print. See *Britannica*, Vol. I, p. 177.

ADVERTISING is a broad term—including, as it does, any effort to give notoriety to facts. More strictly speaking, or to confine the subject to its most important branch, newspaper and periodical advertising, it may be said that it has reached such proportions all over the world, and especially in the United States, as to command the efforts and skilled help of men of a literary, clerical and executive turn of mind. It may be looked at from three different standpoints: that of the advertiser who spends his money in making known the merits of his goods, that of the periodical which spreads the news, and that of the middle-man or advertising agent who stands between them. Newspaper advertising has kept pace with the increase of intelligence all over the world. It is the natural outgrowth of the facilities of printing which have increased so wondrously in the past fifty years. To-day a manufacturer of some article adapted to universal use sits down and reckons what proportion of profit there is in the goods he manufactures and he computes his advertising expenses accordingly. The manufacturers of proprietary articles, or, in other words, of patent medicines, usually spend more money than any other class of advertisers. There are several in the United States to-day who are spending nearly a million dollars every year. A writer in a recent number of "Printer's Ink" quoted his advertising expenses for the year which had just closed at date of writing at \$927,000. The large percentage of profit on patent medicines makes it possible to spend a large amount to procure the sale of every package or bottle. This is the course generally taken by such advertisers, and the expense of printer's ink is the largest item in the expense column of their business.

Of course this newspaper and periodical advertising is supplemented by all the other methods of making their goods known to the buying community. The cost of advertising differs in different countries. The United States is the most costly place for advertising in the world. English periodicals are probably the next most costly. The rates of advertising in different periodicals vary according to their circulation and also according to the class of people among whom they circulate.

It is a notable fact that of recent years skill in writing advertisements as well as knack in arrangement and art in illustrating have been brought to a considerable degree of perfection. The wise and successful advertiser is always striving to make his announcements more attractive than the other letter press of the periodical in which his advertisement appears. Good work in this department brings more remuneration than almost any other form of literary or artistic work, for men will have bright ideas with which to clothe—and sometimes conceal—their advertising motives. All sorts of devices are used to attract or distract the attention, as the case may be. The margin of profit almost entirely determines the amount of expenditure, and miscalculations in reference to this are constantly leading to over-advertising and to consequent failure. Despite the fact that so many thousands are constantly using the periodicals to promote and sell their goods, it is still true that if one has an excellent article for sale, and will skillfully and judiciously expend a sufficient amount of money in advertising, he can make no better investment anywhere.

Advertising is fast coming to be the exclusive source of profit to the newspapers and other periodicals. The competition has brought the price to the reader of the various periodicals to such a point that there is practically no profit in the subscrip-

tion or sales list, and therefore the greatest energy is constantly being put forth by publishers to obtain as large an amount of advertising as possible at the best possible prices. This gives the advertiser an advantage in that the papers seek him rather than he the papers. Owing to this fact partially there is no standard price in advertising, and each publisher tries to make his paper as attractive as possible. Space is charged for by the line (agate or nonpareil generally), by the inch, and by the page and fractions of a page. One of the most popular publications at the present time is the large and influential monthly magazine; some of them having frequently published over a hundred pages of advertisements in one issue. Prices in the standard magazines vary from a hundred to two hundred dollars a page per time, and of course discounts from these prices are allowed for frequency of insertion. It is easily seen from these figures what the revenue from advertising must be to some of these large magazines. Weekly periodicals of general circulation as well as those of local interest are still favorite mediums for advertising, and they too derive a very large proportion of their income from advertisements. The daily papers in the important cities of the United States are very costly to the advertiser, many of them charging a double price for anything in the shape of large type or illustration. This springs from an increasing disposition on the part of the papers not to use large and black type, and any one that wants such special prominence must pay for it over and above the price of simple announcements. There are papers in New York city whose profits from advertising in one year reach nearly one million dollars.

As hinted above, periodicals charge in proportion to the amount of their circulation, and frequently in proportion to the quality of the magazine as well. Even when the quantity is comparatively small the quality is so choice as to command a much higher price. By quality is meant the wealth or buying power of the class of people who read a given publication. As an example of cost, a four inch single column advertisement can be inserted in a hundred of the best daily papers in the United States, one time, for a thousand dollars.

As a matter of course, advertising in a large and expensive way in order to cover the United States is a matter of discrimination and judgment even more than a question of securing the lowest possible rates; for if a man has a thousand dollar article to sell, and advertises it in periodicals which circulate among people who rarely have more than a dollar to spend at a time, he throws his money into the air at a very rapid rate.

Here is where the skill, judgment and experience of the advertising agent appear. There are many of these agencies in all the large cities of the country, whose business it is to take a sum of money which the advertiser wishes to spend and to so apportion it to the different periodicals which are likely to be profitable to him as to bring the best results. This service is remunerated by a system of commissions, varying according to the amount of work to be done. It is his business to secure the very best positions from the newspapers and periodicals; to know their lowest rates and all their peculiarities. One difference, however, between the advertising agent and other middle-men is that the advertising agent has to become financially responsible for the advertiser. The periodicals look to him for prompt and regular payment. For this guarantee of the account as well as for representing the paper faithfully to the advertiser the various periodicals allow an agent's commis-

sion. Agents also aid the advertiser in the preparation of his advertisements, and much care and attention is given to a change in advertisements from time to time in order that new matter may attract new buyers.

ADVOCATES, FACULTY OF, in Scotland. The profession has existed in Scotland from a very early time, a statute being passed in 1424 for securing the assistance of advocates to the poor. Though existing as a profession, there was no society formed until the institution of the College of Justice in 1532. The faculty was at one time a highly aristocratic institution, but is now recruited from all classes of society. Two examinations are imposed on candidates for admission—one in general scholarship, the other in law. An advocate is entitled to plead in every court in Scotland, civil, ecclesiastical or criminal, superior or inferior; and also before the House of Lords. The supreme judges of Scotland and principal judges are always, and the sheriff-substitutes generally, selected from the bar.

ADVOCATES' LIBRARY, a library belonging to the Faculty of Advocates in Edinburgh. It was established in 1682 by Sir George Mackenzie, of Rosehaugh. By the first Copyright act, passed in 1709, the privilege of receiving a copy of every book entered at Stationers' Hall was conferred on the Advocates' Library, and the privilege is still retained by them. The number of volumes in the library is about 305,000, and there are about 3,000 volumes of MSS. Although the library belongs strictly to the Faculty of Advocates, it is open to all engaged in literary work; and so liberal is the administration that it is practically the public library of Scotland.

ADVOCATUS DIABOLI, "the devil's advocate," a name given in the Romish church to a person appointed to state all possible objections to a candidate for canonization. He is in opposition to the *advocatus Dei*, "God's advocate," who undertakes the defense. The term is often applied to one who brings forward malicious accusations.

ÆDON, wife of Zethus of Thebes, who, according to Greek mythology, was changed into a nightingale as punishment for crime.

ÆDUI, a powerful tribe of Gaul at the time of Cæsar's arrival, in 58 B. C. Their territory lay between the rivers Liger and Arar; chief town, Bibracte. They formed an alliance with Cæsar, who freed them from the yoke of Ariovistus, but joined the other Gauls under Vercingetorix in the final struggle for independence. After his victory Cæsar treated them with leniency for the sake of the old alliance.

ÆGIDIUS COLONNA, prior-general of the Augustinian order, 1292; tutor to Philip the Fair; Archbishop of Bourges, 1296. Born at Rome 1247; died 1316.

ÆGINA, GULF OF, part of the Ægean Sea, where lie the islands of Ægina and Salamis.

ÆGINETAN SCULPTURES. The small island of Ægina holds a very important position in the history of Grecian art. What was usually called the temple of Jupiter Panhellenius, but in later years believed to have been a temple of Pallas, or Minerva, is now in ruins. Among these very ruins a number of statues were excavated by a company of Danes, Germans and Englishmen. They were purchased by Louis in 1811, at that time Crown Prince of Bavaria. They are the most remarkable ornaments of the Glyptothek at Munich.

ÆGIRA, ancient Grecian city; one of twelve forming the Athenian confederation, noted for numerous and elaborate temples. Its site is doubtful.

ÆGIUM, city of Greece, capital of Achaean confederation, 337 B. C. Visited by an earthquake in 1817.

ÆGLE, a genus of plants belonging to the order of *Aurantiaceæ*. It has a five-toothed calyx, linear elongate mucronate anthers and a many-celled fruit.

ÆGEL MARMELOS, or **BHEL**, is a fruit tree of the natural order *Aurantiaceæ*, growing in India. The fruit, otherwise called golden apple and Bengal quince, is aromatic, irregular in form and from five to nine inches in diameter. The rind produces a yellow dye, and is used in perfumery. The dried fruit, under the name of *Bela*, has been recently described in the British pharmacopœia as mildly astringent, and is in much favor as a remedy for diarrhœa and dysentery. It has been suggested that this remarkable tree might be grown to advantage in the Southern States.

ÆLST, **EBERHARD VAN**, a Dutch painter, famous for his dead-game and fruit pieces. Born at Delft, 1602; died 1658. He had a nephew, William, also distinguished as an artist. Died 1679.

ÆOLIAN ACCUMULATIONS is a term frequently applied to the sandhills of many maritime regions, and similar hillocks which occur in Sahara, Utah, Arizona, etc., formed by the action of the wind.

ÆOLIAN INSTRUMENTS. The use of æolian instruments is of ancient origin. Perhaps the oldest and best known of these is the æolian harp, a simple musical instrument, which produces harmonic sounds when placed in a current of wind. A common form is that of a box of thin fibrous wood, to which are attached a number of catgut strings, sometimes as many as fifteen, all tuned in unison, and stretched on low bridges at each end. The wind passing over the strings produces the effect of music heard at a distance, the sounds swelling and diminishing according to the force of the blast. The music is of a drowsy and lulling character. At one time an instrument called the bell harp was very popular in England. It consisted of a box, usually about two feet in length, strung with metal wires. This instrument was swung by the performer while playing upon it, the motion imparting a peculiar undulatory character to the tones. The Malays pierce holes in long bamboo tubes, and place them in trees to be sounded by the wind. There is a contrivance for the pianoforte called an *æolian attachment*, by which a stream of air can be thrown upon the wires. It has the effect of prolonging the vibration and increasing the volume of sound.

ÆOLIANS, one of the principal races of the Greeks, settled in Thessaly, from which they spread and formed many settlements in the northern parts of Greece and west of the Peloponnesus. About the 11th century a part of them emigrated to Asia Minor, where they founded more than thirty cities on the northwestern coast, in Mysia and the surrounding isles. Among these cities are Smyrna and Mitylene in the island of Lesbos. Here the Æolian dialect of the Greek language chiefly developed itself, especially in the form employed in the poetry of Alcæus and Sappho.

ÆOLIPILE, a hollow metallic ball containing a bent tube, invented by Hero of Alexandria. When filled with water and heated, steam issues from orifices in the tube, causing the ball to turn. It was thought to show the origin of the winds.

ÆOLOTROPY implies change in the physical properties of bodies resulting from change of position, as when the refractive property of a transparent body is not the same in all directions. Iceland spar is a notable instance of æolotropy.

ÆPYORNIS, a great wingless bird whose remains are found in the Post-tertiary deposits of Madagascar. There appear to have been two or three species of Æpyornis, one even larger than the Dinornis. The subfossil eggs are about 14 inches in diameter.

AERATED BREAD is bread mechanically charged with an acid gas, usually derived from carbonic acid water.

AERIAL PERSPECTIVE, laws which regulate the effect of light, shade and color upon the apparent distance of bodies.

ÆRIANS, a sect of Homoioussians founded by Ærius, in the 4th century.

AERODYNAMICS is that branch of Hydrodynamics which treats of air and other gases in motion.

AEROKLINOSCOPE, an instrument used in connection with weather signals to publicly exhibit the difference of barometric pressure at different stations. The aeroklinoscope was invented by Buys Ballot.

AEROLITE, a name given to stony or metallic bodies falling through the atmosphere to the earth from outer space. See *Britannica*, Vol. I, p. 184.

AEROMETER, an instrument for making the necessary corrections in pneumatic experiments to ascertain the mean bulk of gases.

AERONAUTICS. See former article in *Britannica*, Vol. I, p. 185-207. In the United States aerostatics has been prosecuted with great zeal, though it must be admitted that American aeronauts have not been actuated by the scientific spirit, as in Europe, but rather by a desire for adventure and gain, and also by sedulous efforts to discover some practicable means of navigating the air. During the civil war of 1861-65, the northern armies made frequent use of captive balloons for the purpose of observing the operations of the enemy, and balloon trains formed part of the military equipment during the Virginia campaigns and at the siege of Yorktown and in the operations before Richmond. During the battle of Seven Pines (or Fair Oaks), June 1, 1862, it was stated that "during the whole of the engagement Prof. Lowe's balloon hovered over the Federal lines at an altitude of 2,000 feet, and maintained successful communication with Gen. McClellan at his headquarters. Every movement of the Confederate forces was detected and instantaneously reported." This is the first successful instance on record of the use of the balloon in military operations. In recent years some remarkable balloon voyages have been made by various exhibitors at various points in the U. S., but none of them were especially equipped for scientific observation. The late Prof. Donaldson, a most intrepid aeronaut, who made upward of one hundred ascents, ultimately lost his life, being caught in a storm and his balloon wrecked in a western forest. F. A. Gower, an American, temporarily residing in France in 1883, constructed an "air ship," consisting of a fish-shaped balloon of 2,500 cubic metres capacity, whose motive power consisted of immense fans driven by a bronze steam engine of five horse power, consuming petroleum for fuel. Mr. Gower lost his life in the English channel in 1885 by the bursting of his balloon. Despite the thus far almost uniformly unsuccessful attempts to construct a practicable air-ship, the subject has not ceased to occupy the attention of inventors, and the study of aeronautics has now narrowed itself to the problem how to construct a machine that shall navigate the air with safety. The year 1890 was notable for the announcement confidently made that a Chicago inventor had constructed an air-ship not dependent on gas for its

buoyancy, its working parts made of aluminum, driven by electricity, and that an amply capitalized company was formed to push the invention.

AEROPHYTES, plants which derive their sustenance from the air, as orchids and some lichens.

AEROSTATIC PRESS, a machine used for extracting coloring-matter from dye-woods. A vessel pierced with holes is divided by a horizontal partition, the dye-wood containing the coloring matter is laid upon this, and a perforated cover over it. An extracting liquid is then poured on the top and the air being drawn from the under part of the vessel by a pump, the liquid is forced through the dye-wood by the pressure of the air.

AEROSTATICS, a branch of science which treats of the pressure of air and other gases, and of the methods of measuring it by the barometer and other instruments. The expansive force of atmospheric air changes with the time and place. Any particular pressure is said to be equal to so many atmospheres. Aerostatics, too, investigates the phenomena of the compression of gases. In the law of Mariotte the expansive force of a body of gas under different degrees of compression varies inversely as the space which it occupies.

ÆSCULIN, a crystalline fluorescent substance, obtained from the bark of the horse-chestnut and other trees of the genera *Æsculus* and *Pavia*. It forms colorless, needle-shaped crystals. It is inodorous, has a bitter taste, is soluble in water and alcohol at boiling heat, and nearly insoluble in ether.

ÆSOPUS (Clodius) 75 B.C. actor of tragedy in Rome, and the instructor of Cicero in oratory. He is said to have thrown himself so completely into the part he acted that he once killed a stage attendant with his truncheon.

ÆSTHETICISM is an art movement which has sprung up during the present century. The fundamental principle of aestheticism is to carry a love of the beautiful into the home and into all the relations of life. Mr. Ruskin has done much to advance a true understanding of it by his writings; and Sir Frederick Leighton and Alma Tadema are, perhaps, chief among those who have realized its ideal in their dwellings. The movement has been attended by much amusing extravagance, tending to bring it into disrepute; but, when this has passed away, there may still be left a refining and educating influence upon the masses.

ÆSTHETICS is a term now commonly used to denote the science or philosophy of the beautiful; the principles of taste and of art. *Æsthetica* was first used in this sense by the Wolfian philosopher, Baumgarten, and he may be regarded as the father of æsthetics as a well-defined system. According to him and his followers, sense is the lower intellectual power, understanding and reason the higher. As the true and the good are apprehended by the latter, the beautiful is grasped by the former.

The name of Plato is bound up with the history of speculation on the beautiful, which he never wholly separated from the good. Aristotle is more precise than his master, and left a body of valuable and still valid canons of criticism, especially for poetry. An Aristotelian dictum is that the beautiful is a mean between extremes. Winckelman did much to further æsthetic criticism by his examination of the principles of Greek sculpture; Lessing still more, by his attempt to distinguish the province of poetry from that of painting and sculpture. Schiller was not merely a great poet, but a suggestive critic; and one of his trenchant maxims was that the annihilation or superseding of the matter by the form is the true art-secret of the master artists. The influence of Goethe, by means of his *Wilhelm*

Meister and other works, has probably had still more influence. The first publication on this subject of any consequence was Hutchinson's *Inquiry* (1725). In this work the existence of an "internal sense," through which we obtain a perception of the beautiful, or are made in some way conscious of its presence, was maintained. Since that time there have been many contributors to the discussion of the problem. Ruskin especially has done much to awaken and extend the appreciation of art, and in several of his works discusses æsthetic theories; particularly in *Modern Painters* he has attempted a systematic exposition of our ideas of beauty.

ÆSTIVATION (Lat. *æstivus*, belonging to summer), a term used in botany which denotes the manner in which the parts of the flower are disposed in the flower bud just before its opening.

ÆTHIOPS, an old pharmaceutical term applied to various mineral preparations of blackish color.

ÆTHRIOSCOPE, an instrument for measuring the minute variations of temperature due to the conditions of the sky, consists of a differential thermometer whose bulbs are both within a cup-shaped mirror, one being in the focus of the mirror.

ÆTIANS, an Arian sect considered heretical by both Arians and orthodox, and condemned 353 A. D.

ÆTIOLOGY: the science of causes and causation; that branch of medicine which seeks to find out the causes and origin of diseases. Also, that department of biology which seeks to give a rational account of the forms, functions and history of organisms.

ÆTOMORPHÆ: in ornithology, birds of prey; equivalent to the group called *Accipitres* or *Rapttores*, by most writers. They were divided by Huxley into the four families of *Strigidæ*, *Cathartidæ*, *Gypsetidæ*, and *Gypogeranidæ*.

AFFILIATION, or **FIL-IATION**, a name given to an action brought in the sheriff courts of Scotland by the mother of an illegitimate child to recover aliment from the putative father. It is the equivalent of the proceeding for a bastardy order before the justices in the United States and England. The French refuse to inquire into paternity.

AFFRIQUE, SAINT, a town of the department of Aveyron, France, on the Sorgue. It has cotton and woolen manufactories and tanneries. There is considerable trade in wool, and a principal article of trade is the celebrated *Roquefort Cheese*. Population, 5,071.

AFGHANISTAN. The history given in *Britannica*, Vol. I, pp. 227-41, closes with 1872. The further record is as follows:

Shere Ali raises an army, and is said to promote disaffection to the British (1877-78).

Death of the heir Abdoola Jan, Aug. 17, 1878.

Stolietoff, a Russian envoy, favorably received at Cabul, June; a treaty signed; Russia to be the guardian of the ameer, August, 1878.

Ali Musjid shelled and occupied by the British, Nov. 22, 1878.

The British occupy Jellalabad, Dec. 20, 1878.

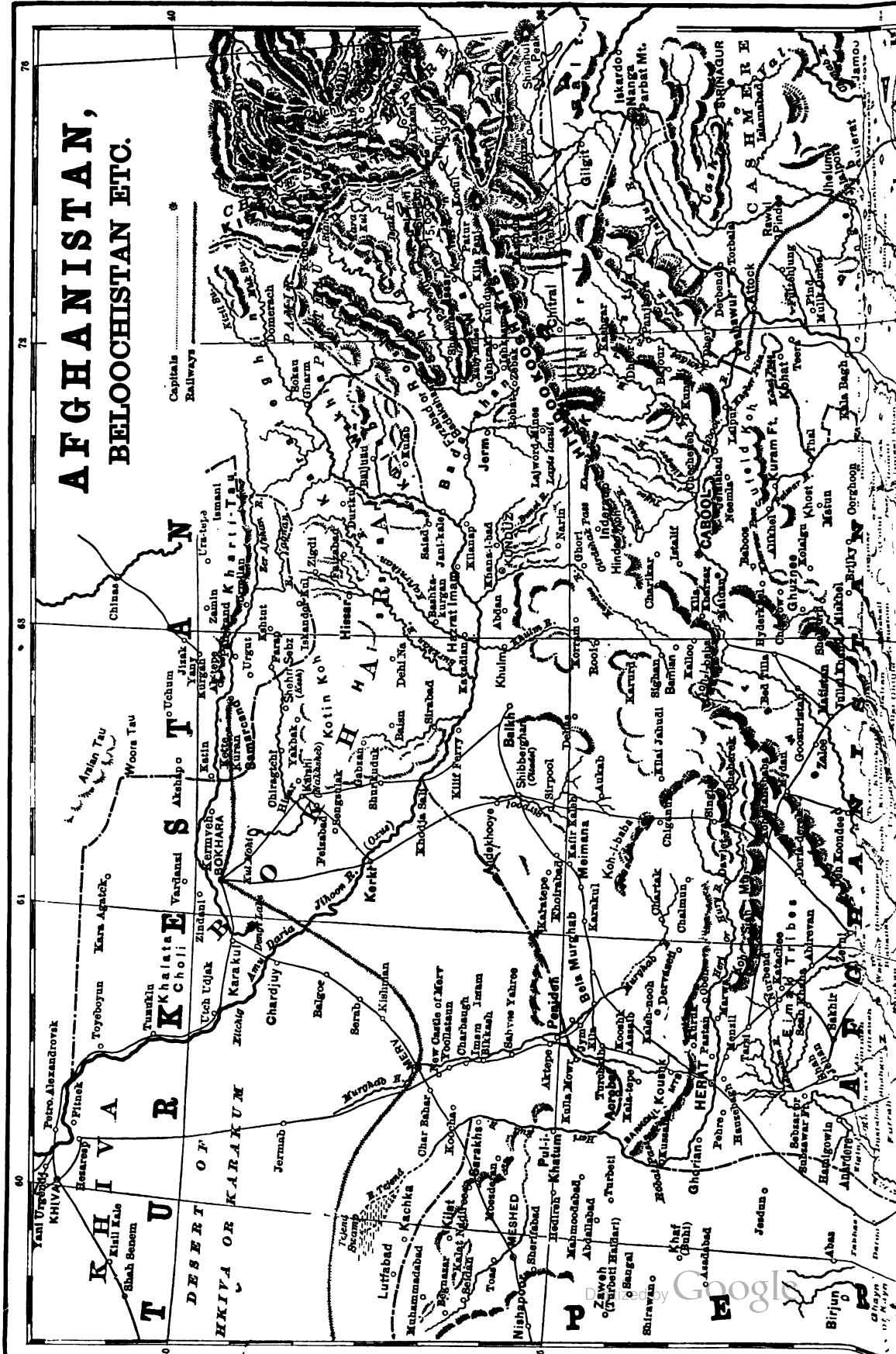
Shere Ali flees from Cabul to Balkh, Dec. 13; Yakob Khan assumes command; the Russian mission withdraws, December, 1878.

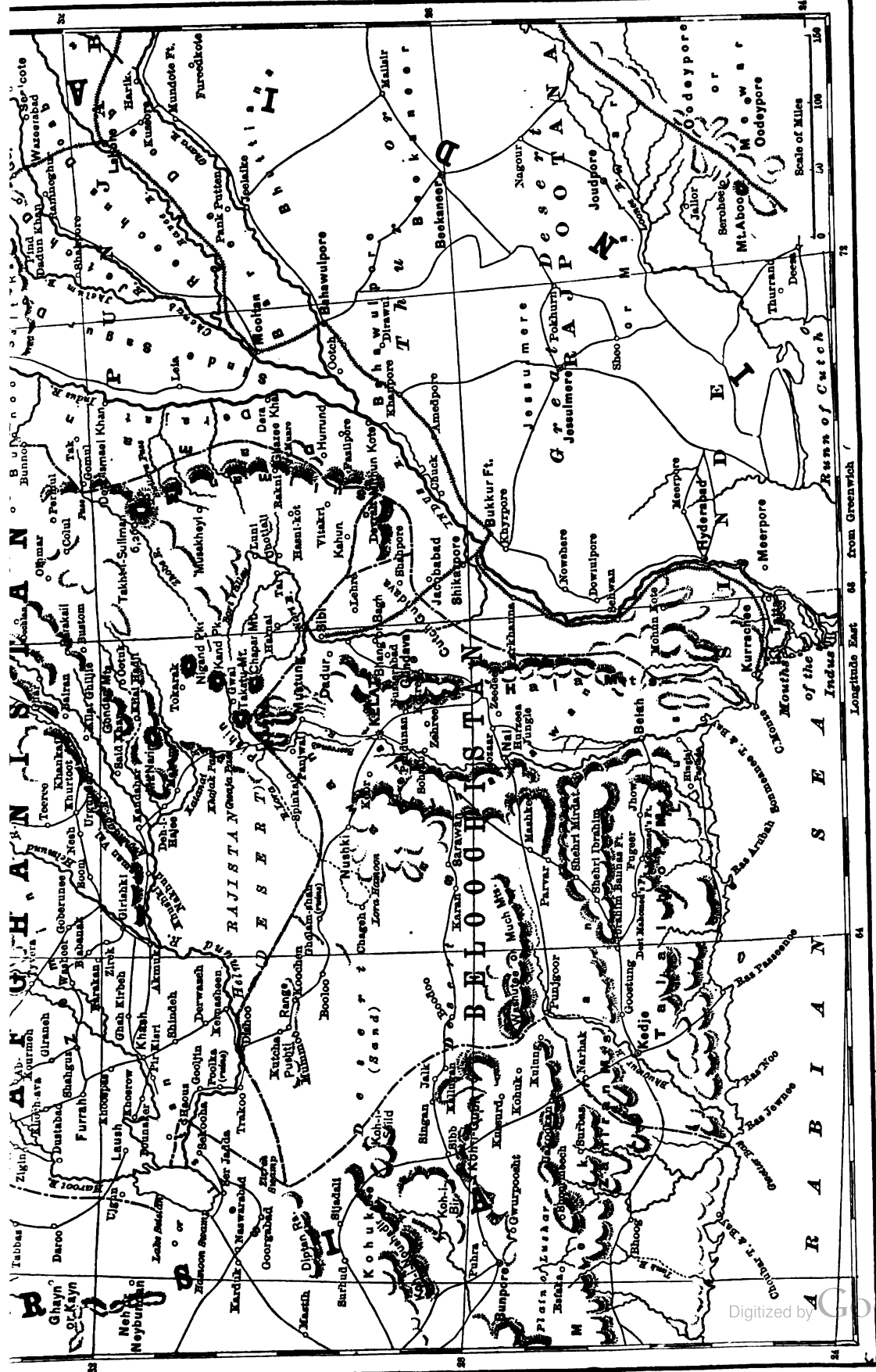
Gen. Roberts proclaims annexation of Kuram district, etc., Dec. 26, 1878.



ACCIPITRES. 1. Head and Foot of Gerfalcon. 2. Foot of Orange Legged Falcon.

AFGHANISTAN, BELOOCHISTAN ETC.





Scale of Miles
 0 50 100 150
 Longitude East 64 from Greenwich
 64 72 80

Death of Shere Ali, the ameer (announced), Feb. 20, 1879.

Yakoob Khan, son of the late ameer, recognized as ameer, May 9, 1879.

Treaty of peace signed at Gandamak (the British to occupy Khyber pass, and the Kuram and Pisheen valleys; to have a resident at Cabul; and to pay an annual subsidy of 60,000*l.* to the ameer), ratified May 30, 1879.

Abdication of Yakoob Khan announced, Oct. 19, 1879.

Proclamation of General Roberts, announcing British occupation of Cabul, etc., Oct. 30, 1879.

Musa Khan, son of Yakoob, said to be proclaimed ameer about Dec. 17, 1879.

The Afghans (25,000) defeated with great loss near Sherpur cantonments, by Gens. Roberts and Gough, Dec. 23, 1879.

Cabul left by the enemy, Dec. 24; the city and Bala Hissar reoccupied by the British, Dec. 26, 1879.

Shere Ali, cousin of the late ameer, made wali or governor of Candahar by the British, April, 1880.

Abdul-Rahman, or Abdur-Rahman, recognized as ameer at Cabul by the British, and proclaimed July 22, 1880.

Ayoob Khan (son of the late ameer, Shere Ali), governor of Herat, marches upon Candahar with about 12,000 men and 20 guns; defeats the attack of Gen. Burrows after severe conflicts; heavy loss on both sides, July 27, 1880.

Ayoob Khan's army (strengthened by Ghilzais) about 20,000 strong, Aug. 25; he retires from Candahar about Aug. 30, 1880.

Gen. Roberts arrives at Candahar, Aug. 31; declines Ayoob's terms; defeats and disperses his army at Mazra near the Aragandab; and captures his camp at Baba Wali Kotal, Sept. 1.

Shere Ali, wali of Candahar, resigns, and retires to India, December, 1880.

Abdur-Rahman virtual ruler of all Afghanistan, October, 1881.

Peace concluded about June 21, 1883.

Abdul-Rahman Kahn is still the ameer or reigning sovereign (January, 1891), having successfully maintained his position without a break.

The government of Afghanistan is monarchical, under one hereditary prince, whose power varies with his own character and fortune. The dominions are politically divided into the four provinces of Cabul, Turkistan, Herat and Candahar, to which may be added the districts of Badakshan and Wakhan, as they are also at present in the position of separate provinces. Each province is under a *hakim* or governor (called *naib* in Shere Ali's time), under whom nobles dispensed justice after a feudal fashion. Spoliation, exaction, and embezzlement are almost universal.

The ameer's subjects number about four millions, the most numerous tribe being the Ghilzais, who must amount to at least a million; then follow the Tajiks, Duranis, Hazarahs, and Aimaks, and Uzbegs. The Tajiks, who are found scattered all over the country, are presumably of Arab or Persian descent, and though they are found intermingled with Afghans, they are more settled, and prefer agricultural or industrial occupations. The Ghilzais occupy the country south-east of Cabul, while the Duranis inhabit the country north and south of the

road between Herat and Candahar; north of these lie the Paropamisian mountains, inhabited by the Aimaks and Hazarahs, who are said to be the descendants of Tartar colonies left by Chinging Khan, and who have undoubted Tartar lineaments. With the exception of the Kizilbashs and most of the Hazarahs, who are Shiah, the inhabitants are Mohammedans of the Suni sect.

The revenue of Afghanistan is subject to considerable fluctuations. One of the late ameer Shere Ali's ministers estimated the average annual revenue of the five years 1872-76 at 712,968*l.*; but subsequent events have made it impossible to estimate the present revenues. The government share of the produce recoverable is said to vary from one-third to one-tenth, according to the advantages of irrigation.

Abdul-Rahman is said to have reintroduced the regular army, which had been originally founded on a European model by Shere Ali on his return from India in 1869. In addition to his regular army the ameer's military forces are largely supplemented by local levies of horse and foot. The mounted levies are simply the retainers of great chiefs, or of the latter's wealthier vassals. The ameer's government grants 200 Cabuli rupees a year for each horseman. The foot levies are now, under Abdul-Rahman, permanently embodied, and as irregulars form a valuable auxiliary to the regular infantry. The artillery branch is very weak, as there are few trained gunners, the force being made up by infantry drafts when required. There are no engineers, but a few regiments have a company equipped with spades and axes.

The present trade routes of Afghanistan are as follows:

From Persia by Mashad to Herat.

From Bokhara by Merv to Herat.

From Bokhara by Karchi, Balkh, and Khulm to Cabul.

From East Turkistan by Cihtral to Jellalabad.

From India by the Khaibar and Abkhana roads to Cabul.

From India by the Ghwalari Pass to Ghazni.

From India by the Bolan Pass to Candahar.

The imports from Cabul into India in 1888-89 were valued at 19½ lakhs, while the exports reached the sum of 52½ lakhs of rupees. There is also a good deal of trade conveyed by the Sind-Pisheen railway. The imports consist of horses, madder (*manjic*), fruits, *ghi*, and raw silk. The chief exports from British India consist of cotton goods, indigo, sugar and tea.

The Khaibar and Bolan roads are excellent, and fit for wheeled traffic as far as Cabul and Candahar respectively. There is, however, no wheeled carriage, except artillery, proper to the country, and merchandise is transported on camel or pony back. There are practically no navigable rivers in Afghanistan, and timber is the only article of commerce conveyed by water, floated down stream in rafts.

For information concerning currency, religion, education, weights and measures, and judiciary system, see those topics in these American Additions.

AFRANCESADOS, Spanish supporters of Joseph Bonaparte, 1808-13. Punished by Ferdinand VII after his restoration.

AFRICA

FOR general history and descriptive notes, see *Britannica*, Vol. I, pp. 245-72. The greatest length of the continent from north to south is about 4,985 miles; its greatest breadth, from east to west, 4,615 miles. Area, including the adjacent islands, 11,600,000 square miles.

The historic record of Africa given in Vol. I of the *Britannica* closed soon after the finding of Dr. Livingstone by H. M. Stanley. The expedition of which Stanley was chief was organized by James Gordon Bennett, proprietor of the "New York Herald," and prosecuted by him at a cost of about \$40,000. Stanley and party left the east coast at Zanzibar, and after much opposition from the native chiefs succeeded in finding Livingstone at Ujiji, near Unyanyemba, Nov. 10, 1871, and remained with him until March 14, 1872, when he left, bringing with him Livingstone's diary and other documents. When he found Livingstone the latter had been robbed and deserted by his attendants, and was in bad physical condition. A letter from Dr. Livingstone to Mr. Bennett, printed in the "New York Herald," July 26, 1872, and in the London "Times" of the following day, told of his explorations and his painful journey to Ujiji; his meeting with Stanley, and the important aid the latter had furnished. He also described the Nile springs as located about 600 miles south of the most southerly part of Lake Victoria Nyanza, and mentioned about 700 miles of water-shed in Central Africa, of which he had explored about 600 miles.

The historic record of the African exploration furnishes the following chronological outline:

Stanley described his meeting of Dr. Livingstone to the British Association in the presence of the ex-Emperor and ex-Empress of France, and received a gold snuff-box from Queen Victoria, Aug. 30, 1872.

Livingstone died of dysentery in Ilala, Central Africa, May 1, 1873; his remains were interred in Westminster Abbey, April 18, 1874, and his last journals were published December, 1874.

A new expedition under Sir Bartle Frere, via Zanzibar, to suppress the East African slave trade, sailed Nov. 20, 1872. Leaving Ujiji May 14, 1874, it followed Livingstone's route; explored 1,200 miles of fertile country; arrived at Portuguese settlement Nov. 4, 1873. Sir Bartle Frere reported in person to the Royal Geographical Society in London, April 11, 1876.

H. M. Stanley, under the auspices of the "London Daily Telegraph" and the "New York Herald," surveyed Lake Victoria Nyanza, 230 miles by 180 miles, in 1875, last letter dated April 24, 1876; reported survey of Lake Tanganyika, and stated that he left Ujiji, crossing Africa from east to west, and identified the Lualaba with the Congo river, having an uninterrupted course of over 1,400 miles, arriving on the west coast Aug. 6, 1877; arrived at Capetown Oct. 31, 1877; in London Jan. 22, 1878; published *Through the Dark Continent* in May, 1878.

Italian expedition under Marechal Antinori announced December, 1876; his death reported November, 1877.

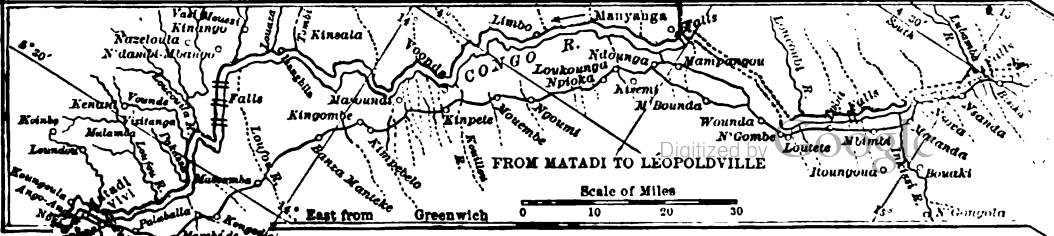
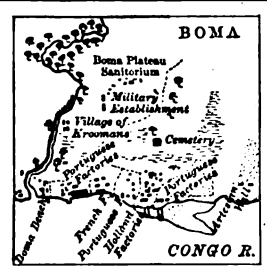
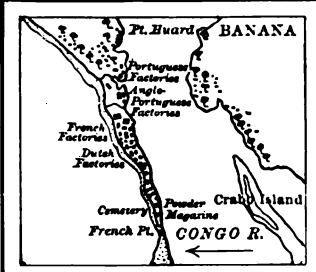
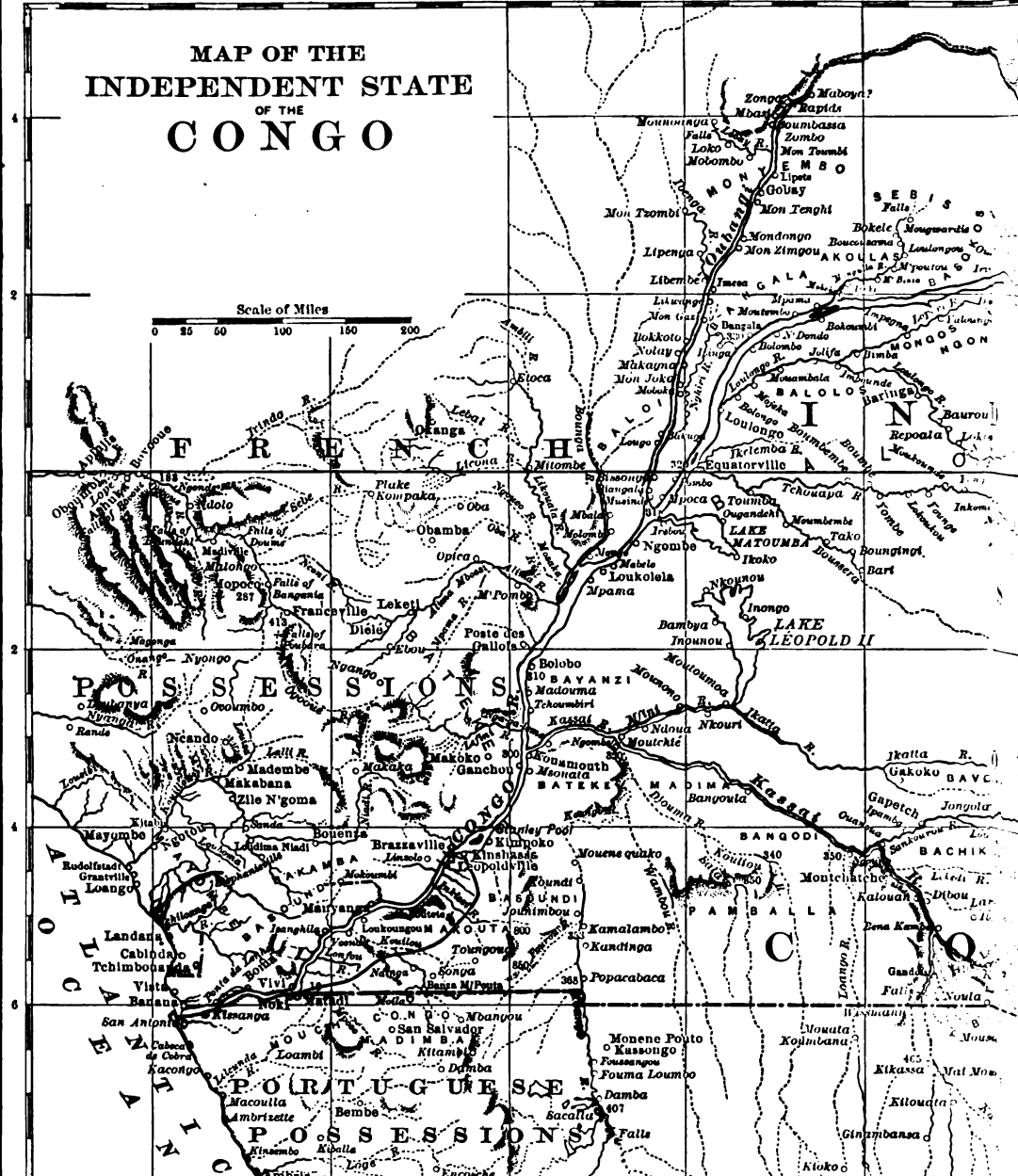
Stanley planned a new African expedition for the purpose of opening up the Congo region to commerce, the chief promoter being the king of the Belgians. The International African Association was formed at Brussels; the sum of \$100,000 was raised for the work, and Stanley started once more

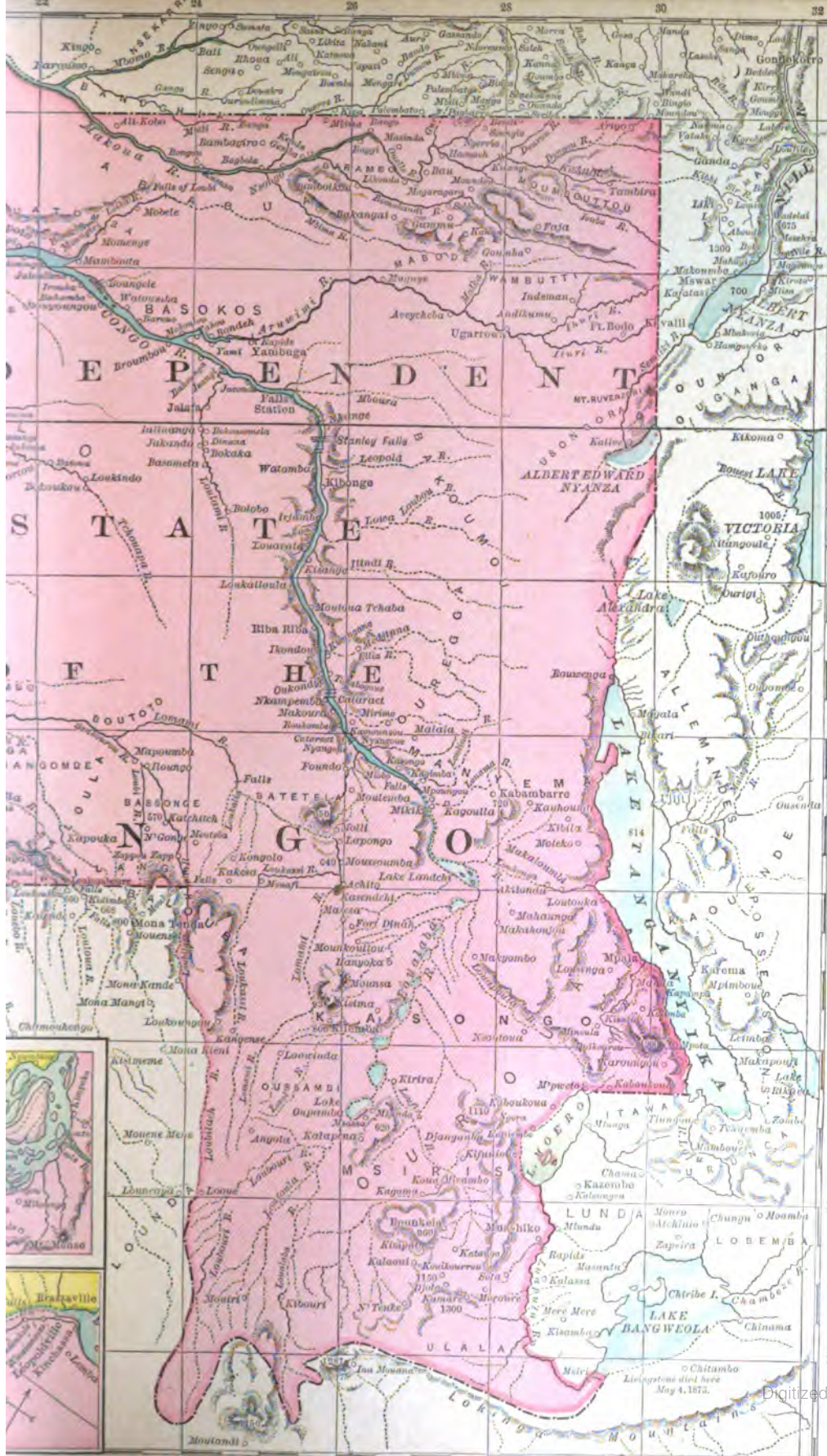
for Zanzibar, Jan. 22, 1879. He collected at Zanzibar 68 men (45 of them were his old comrades), and with eight steamers (the smallest being 25 feet long) journeyed to the Congo, on the west coast, and entered that river at its mouth Aug. 21, 1879; in eight days reached Bonea; thence to Vivi, just above which are the Livingstone Falls, the head of navigation from the sea; thence to Isangila, a distance of 140 miles by land (requiring ten months of severest labor in constructing a roadway and transporting boats and goods), reaching the place just two years from the date of his submission of his plans to the king at Brussels. From Isangila, where Stanley fitted up his boats, there is open water to Manyanga, a distance of 70 miles; thence up 95 miles of rapids until Stanley Pool was reached, Dec. 3, 1881. Above this the Congo is navigable for more than a thousand miles. While arrangements were making for advancing up the river Stanley explored the Kiva river until his little steamer entered what is now known as Lake Leopold II, covering an area of about 800 square miles. On returning he was stricken down with fever, and was compelled to return to Europe, where he arrived in October, 1882. When he left Brussels in 1877, on this expedition, his instructions were to build three stations on the Congo, launch a steamer on the Upper Congo and open communications from the Upper Congo and the sea; and he was able to report, on his return, that five stations had been constructed, a steamer and sailing boat launched on the Upper Congo, and communications opened and maintained from the mouth of the Kiva to the sea, a distance of 440 miles.

At the close of 1882 Stanley, with improved health, was again on his way to the Congo. On Dec. 1, 1883, he founded a station at Stanley Falls, and in June, 1884, again cast anchor at Leopoldville, 1,068 miles below Stanley Falls. Concerning the work thus far accomplished Stanley wrote: "From the Atlantic Ocean is a navigable length of 110 miles as far as Vivi, thence to Isangila, the lower series of the Livingstone Falls, 50 miles; from Isangila to Manyanga and Leopoldville is the upper series of Livingstone Falls, along a length of 85 miles; from Leopoldville upward to Stanley Falls we have a navigable length of 1,068 miles; from the lowest falls of this last series to Niangwe there is a course of 385 miles; from Niangwe to Mweru the river extends 448 miles; the lake of Mweru is 67 miles; thence to Lake Bangweolo is 220 miles; Lake Bangweolo, or Bembwa, is 167 miles long; and thence to its sources in the Chibalé hills the Chamezi has a length of 360 miles—the full total of these several courses being 3,034 miles." Then, comparing the immense basin of the Congo to that of the Mississippi, Stanley expressed the opinion that the former is much more promising than was the latter under the same degree of development. "The forests on the Congo," he continued, "are filled with precious red-wood, lignum-vitæ, mahogany, and fragrant gumtrees. At their base may be found inexhaustible quantities of fossil gum, with which the carriages and furniture of civilized countries are varnished; their boles exude myrrh and frankincense; their foliage is draped with orchilla-weed, useful for dye. The redwood, when cut down, chipped and rasped, produces a deep crimsoned powder, giving a valuable coloring; the creepers, which hang in festoons from tree to tree, are generally those from which India-rubber is produced, the best of which is

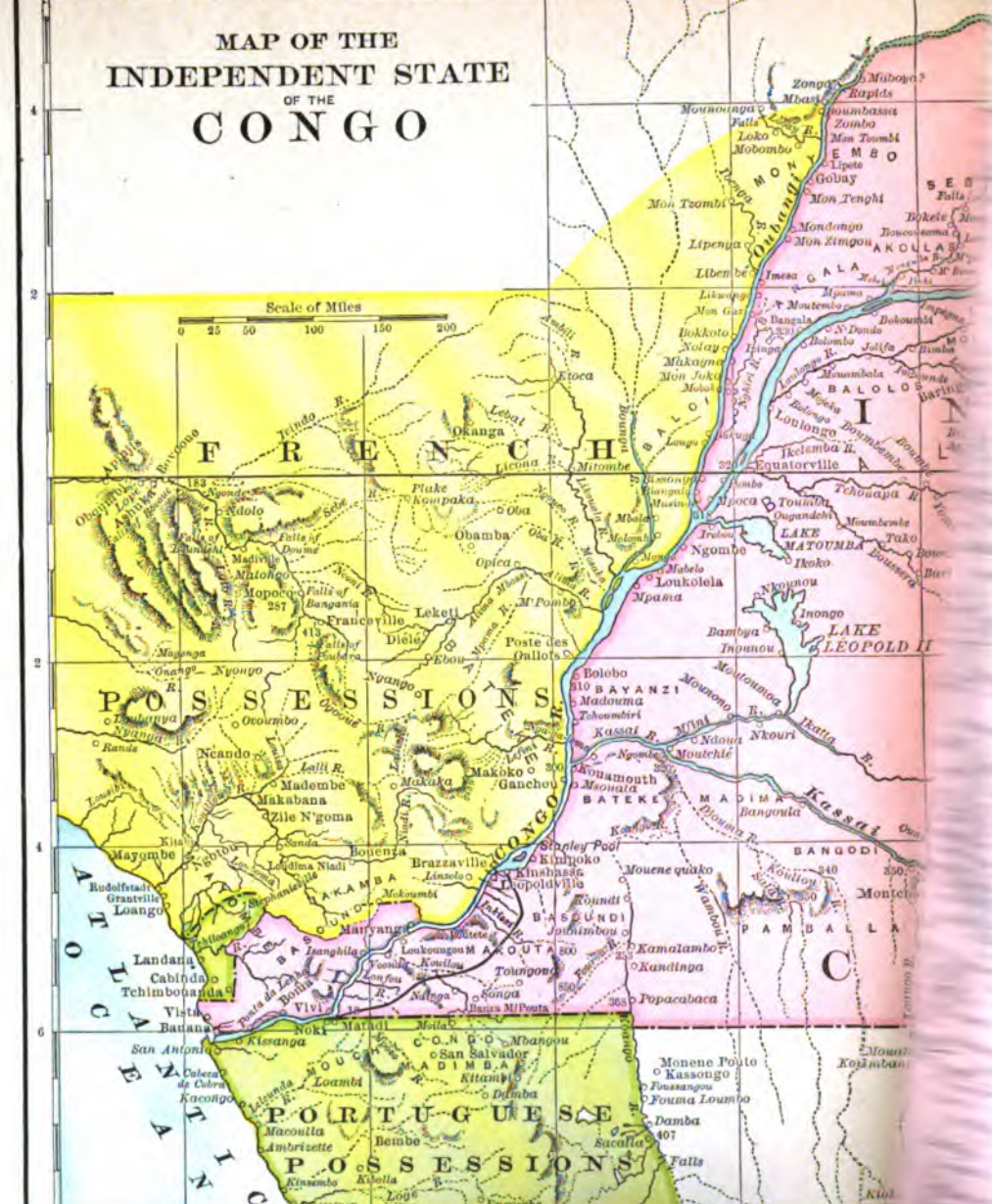
MAP OF THE INDEPENDENT STATE OF THE CONGO

Scale of Miles
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MAP OF THE INDEPENDENT STATE OF THE CONGO



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worth 50 cents per lb.; the nuts of the oil palm give forth a butter, a staple article of commerce; while the fibers of others will make the best cordage.

"Among the wild shrubs is frequently found the coffee plant. In its plains, jungle, and swamp luxuriate the elephants, whose tusks furnish ivory worth from \$2 to \$2.75 per pound; its waters teem with numberless herds of hippopotami, whose tusks are also valuable; furs of the lion, leopard, monkey, otter; hides of antelope, buffalo, goat, cattle, etc., may also be obtained. But, what is of far more value, it possesses over forty millions of moderately industrious and workable people, which the red Indians never were. And if we speak of prospective advantages and benefits to be derived from this late gift of Nature, they are not much inferior in number or value to those of the well-developed Mississippi Valley. The copper of Lake Superior is rivaled by that of the Kwilu-Niadi Valley and of Bembé. Rice, cotton, tobacco, maize, coffee, sugar, and wheat would thrive equally well in the broad plains of the Congo. This is only known after the most superficial examination of a limited line, which is not much over fifty miles wide. I have heard of gold and silver; but this statement requires corroboration, and I am not disposed to touch upon what I do not personally know."

At the close of 1884 the International African Association, under the direction and dauntless energy of Stanley, had made 500 treaties with local African chiefs, and established 156 commercial stations on the banks of the Congo between the Atlantic coast and Stanley Port. A new and great state had in fact been created, with a possible future of the highest importance. The United States has the credit of being the first government which officially recognized the newly created state, and secured for it autonomy as a separate, independent and free state. At the request of Gen. H. S. Sanford, who was an American member of the executive committee of the Association, President Arthur, in his message to Congress in December, 1883, strongly advised that the flag of the Association should be officially recognized; and the United States Senate, in accordance with the President's advice, adopted resolutions, April 22, 1884, under which the flag of the International Association was thereafter recognized as that of a friendly government. This step secured freedom of trade with the right to acquire and hold property; and the Association, on its part, engaged to abolish slavery. "This," says Stanley, in his book soon after issued, "was the birth into a new life—the point of departure of its existence as a state." The example of the United States was subsequently followed by the various governments of Europe.

Next followed the conference at Berlin, in November, 1884, at which the boundaries of the new state were fixed, and the whole Congo basin opened to unobstructed trade and international comity and progress. Belgium, whose noble king, Leopold, had already invested about \$8,000,000 of his own personal fortune in aid of the enterprise, promptly and cheerfully consented to the sovereignty of the "Congo Free State."

We next outline the origin, extent and success of still another expedition by Stanley into the regions of Central Africa. When Emin Pasha, who had been appointed governor of the Central Soudan by Gen. Gordon, and who had been placed in great peril during the revolution and conquests of the Mahdi, made an appeal for relief, the public mind in Egypt and in London was greatly aroused in his behalf, and a relief expedition was planned, in promotion of which the British Royal Geographical Society gave \$5,000, the Egyptian Khedive gave \$50,000, and many others contributed large sums.

It was determined, towards the end of 1886, that the Emin Pasha Relief Expedition, commanded by Mr. Stanley, should be conveyed up the Congo to the Aruwimi, and should march along the banks of the Aruwimi eastward to Lake Albert Nyanza, a distance of less than 400 miles. The wisdom of this resolution was disputed at the time; and some persons may now consider that the event has actually confirmed the objections which were then entertained. The professed object of the Expedition, to reach Emin Pasha, has indeed been accomplished, but at a cost of £30,000, by the labors of three years, and with immense loss of life. It was not done in the manner or by the course that Emin Pasha wished, which would have opened a direct road from the Nile, through Unyoro and Uganda, and along the north shore of the Victoria Nyanza, by Kavirondo, to British East Africa, taking the route which Mr. Joseph Thomson had explored between Kavirondo and the seacoast. It is true that Emin Pasha and Dr. Junker had been refused a passage in that direction; but the temporary ill-will of the King of Uganda, the most powerful of the native states, might probably have been appeased by negotiations, with the offer of a good round sum of money. If Mwanga could have been induced to give his assistance, and if a similar arrangement could have been made with Kabrega, the King of Unyoro, there can be little doubt that Emin Pasha and his people might have been brought down to Mombasa in about six months, at much less expense than was actually incurred. This was what Emin Pasha asked of the English public in his last letter, dated April, 1887: "A safe road to the coast." Mr. Joseph Thomson offered to undertake the task. Among those who approved of the eastern route were Dr. Schweinfurth and Dr. Junker, who were best acquainted with the subject.

But the influence of personages connected with the Congo Free State preponderated in favor of the opposite plan, which was first mooted at Brussels, with a calculation, proved afterwards to be extremely fallacious, that by going up the Congo, and by a march of thirty-five or forty days, "to take the utmost limit, two months," from Yambuya to Wadelai, the Expedition could reach Emin Pasha in five months. Mr. Stanley, who was in America, being sent for the money was presently subscribed; the King of the Belgians, as President of the Congo Free State, patronizing the enterprise, and the Khedive of Egypt contributing part of its funds. It was then arranged that the Expedition should be prepared at Zanzibar, on the east coast of Africa, and should be carried round by sea to Banana Point, at the mouth of the Congo, on the west coast of Africa, by one of the British India Steam Navigation Company's vessels. This was easily done. By the efforts of Mr. George Mackenzie and of Acting-Consul Holdmwood, at Zanzibar, the force of 623 Zanzibar men, 63 Soudanese, and 44 Somalis was hired for the service of the Expedition. It was accompanied from Zanzibar by the famous Tippoo Tib, the half-Arab ivory trader and slave-dealer of the Upper Congo and ruler of the savage Manyemas who had promised his assistance, and had been formally appointed Governor of Stanley Falls, a station violently wrested by the Arabs from the possession of the Congo State Government, which now had the policy to convert its foe into an official representative of its abandoned rule. Tippoo Tib brought 90 of his own followers with him from Zanzibar, and was joined by hundreds more up the Congo, men of the Manyema race from Nyangwé.

VOYAGE UP THE CONGO.

Leaving Zanzibar, with the Expedition, on Feb. 24, 1887, the Madura steam-ship arrived on March 18 at the mouth of the Congo. Five steam-boats conveyed the Expedition up to Boma, which has been made the headquarters of the Congo Free State Government, and has now about 120 European residents, with Dutch, French, Belgian, English, and Portuguese commercial establishments, a small garrison of Houssa and Bangala troops, and hundreds of native laborers. At Matadi, where the river navigation is interrupted, the Expedition had to land and march, with 1200 loads of stores carried on men's heads, up to Manyanga; this land transport, managed by Mr. Ingham, was a laborious work of many days. From Manyanga to Stanley Pool, where Mr. John Rose Troup was in charge of the transport all the way to the Aruwimi, the stores and baggage were carried by water. Mr. Stanley, at the end of April, having got all the men and stores collected at Kinshassa, near Léopoldville, Stanley

Pool, and put on board five steam-boats, set forth on his voyage up the river. Detained a few days by accidents at Bolobo, and stopping three days at Bangala, the Expedition nevertheless performed the ascent of the Congo, from Stanley Pool to the Aruwimi, in six weeks, only eight days behind the appointed time. Mr. Troup and Mr. Herbert Ward afterwards, by two steamers which were sent back for them, brought up the remainder of the stores, with the men left at Bangala. No time had been lost; and the Congo part of the Expedition was attended with few serious anxieties, except a scarcity of food at Stanley Pool, where the station stores were low, and the natives were shy of bringing their goods to market; in fact, there were not provisions enough to feed 800 strangers. Yambuya, two days' voyage up the Aruwimi, at the foot of the rapids which stop its navigation, was chosen as the site of the dépôt of stores, to be left with the rearguard of the Expedition, 257 men, under the command of Major Barttelot, with Mr. Jameson second in command. This rearguard stayed at Yambuya from June 1887 to June 1888, with Mr. Troup, Mr. Ward, and Mr. Bonny, while Mr. Stanley, with the advance party, marched on through the pathless forest to Lake Albert Nyanza.

THE CAMP AT YAMBUYA.

Mr. Werner, in his "River Life on the Congo," gives the best description yet published of Major Barttelot's camp, which was situated on the top of a nearly perpendicular bluff, some fifty feet high. The fort was constructed by Lieutenant Stairs, R.E., Mr. Jameson assisting in the superintendence of the work. This fort, containing all the stores as well as the huts of the Europeans, was an enclosure some thirty yards square, surrounded by a strong palisade of sticks or poles, from two to three inches in diameter, and twelve to fifteen feet in length. These were fixed as closely together as possible, just leaving room to insert the muzzle of a gun between them. Facing the river the palisade was planted on the edge of an almost vertical descent of fifty feet, rendering that side of the stronghold unassailable; but on the other three sides a stage was erected six feet from the ground, so that two rows of men could bring their guns into use at the same time, the palisade being high enough to afford cover for the upper row. Opposed to natives who fight with spears and arrows, this arrangement would have been complete; but in an engagement with Arabs, who have rifles and double-barrel shot-guns, the men would, of course, have been too much exposed. For provision against this emergency, an embankment five feet high had been thrown up against the outside of the palisades, composed of clay taken from a trench which surrounded the whole, and was from time to time filled with water. There is no regular rainy season in this part of Africa. Heavy showers fall at uncertain intervals, usually every few days; so that the trench was not only useful in the matter of defence, but could be relied upon for water, in case the camp were cut off from the river. On the land side, nearest the adjacent Arab camp, were two semicircular redoubts, through which the defenders would have opened a flank fire on any party attempting to approach the trench. There were five huts inside the enclosure, three of which were occupied by the Europeans and half filled with stores; the fourth was used as a mess-room, much space, however, being filled up with donkeys' stalls, spades, hoes, and various other articles and implements necessary for the expedition. The fifth, on the occasion of Mr. Werner's visit, was occupied by Mr. Troup, who was very ill, and eventually, as will be remembered, had to return home. Supplementing these five huts was a galley and four smaller erections for servants and other natives. The two entrances to the enclosure were about three feet wide, and defended by a door formed of planks made from the bottoms of large canoes. They were hinged at the top, and kept open during the day by having their lower ends supported on stout poles. It required four or five men to raise and close them. At night they were watched by a proper guard. The trench was crossed by means of planks, which formed a kind of primitive drawbridge. The south side of the enclosure was defended only by a palisade, being covered by the men's camp, a second enclosure, longer than the first, round which the palisade and trench were continued. Within this outer enclosure were the numerous

¹ grass huts occupied by the men, and its southern end was in a line with the foot of the last rapid in the river. Among the huts were several of the conical-roofed native huts, representing all that remained of the village which had already been burnt by the

Arabs. Around the entire stockade the bush had been cleared away, so as to leave no cover for enemies approaching from the land side. The clearing had been extended on the north for some distance up the river, and formed an esplanade.

DISASTROUS FATE OF THE REAR COLUMN.

It was on June 28, 1887, that Mr. Stanley led forth his advanced column of 389 officers and men into the unknown wilderness. In his parting instructions to Major Barttelot he seems to have provided against every contingency, except that which happened—the utter and complete breakdown of Tippoo Tib's promises and engagements. "It is the non-arrival of the goods from Stanley Pool and the men from Bolobo," wrote Mr. Stanley in camp to Major Barttelot four days before leaving, "which compels me to appoint you commander of this post; but as I shall shortly expect the arrival of a strong reinforcement of men (Tippoo Tib's people), greatly exceeding the advanced force which must at all hazards proceed and push on to the rescue of Emin Pasha, I hope you will not be detained longer than a few days after the departure of the Stanley on her final return to Stanley Pool in August. The interests now entrusted to you are of vital importance to this Expedition. The men (Zanzibaris) who shortly will be under your command will consist of more than a third of the Expedition. The goods are needed for currency through the region beyond the Lakes. The loss of these men and goods would be certain to ruin us, and the advance force itself would need to solicit relief in its turn. It may happen, should Tippoo Tib send the full complement of men promised (600), and if the 126 men have arrived by the Stanley, that you will feel competent to march your column along the route pursued by me. In that event, which would be most desirable, we should meet before many days."

The story of the Yambuya Camp and the rearguard, which developed tragically beyond the control of either Mr. Stanley or his lieutenant, is one of the most melancholy episodes of African travel and exploration. The recent action of the Emin Pasha Relief Committee in her Majesty's Consular Court at Zanzibar has, however, set at rest the question of Mr. Stanley's confidence in Tippoo Tib, of whose treachery, and that of Salim bin Mohamed, there is no longer room for the smallest doubt. It was Mr. J. R. Werner, a visitor to Yambuya and to Stanley Falls, an engineer in the service of the Congo Free State, who first detected the criminal disloyalty of Tippoo Tib and Salim, his representative. Not only did the Arab chief withhold the men he had promised, but Salim, forming a powerful camp close behind Major Barttelot, forbade the natives to sell food to the white men, demanded for his own use the stores of the Emin Pasha Relief Expedition, and sent men to break up Major Barttelot's canoes, which were lying in the river below his camp. "He would," says Mr. Werner, "perhaps have proceeded to even greater lengths, had he not heard that Mr. Ward had gone down the Congo to send telegraphic despatches to the Committee in England." We have seen that Stanley left the camp, after giving his final instructions, in June 1887; and it was in May 1888 that Mr. Werner found Major Barttelot's camp dominated by Salim bin Mohamed and 2000 men still obstructing his advance. At the end of that month Major Barttelot and Mr. Jameson were at Stanley Falls, and had obtained from Tippoo Tib 400 men, instead of 600, to enable the unfortunate commander at last to commence his march after Stanley, of whose fate he was without information, and who was reported on all hands to have met with disease and death. When these 400 men arrived at Yambuya, difficulties were raised about the loads they were to carry; and it was evident that the objections were the effect of sinister intentions to enable Tippoo Tib to secure, for his own use, a number of loads containing powder and cartridges. Embarrassed by mutinous followers, and threatened with death, Major Barttelot and



ONE OF THE WAHMETTO DWARRA, WHO SHOOT WITH POISONED ARROWS.

the remnant of his people, after a year's suffering from innumerable privations, while many had actually died from starvation, went forth on his fatal march, on June 11, 1888, too late to be of any assistance to Stanley, and destined to speedy and fatal disaster. A week afterwards, on June 18, Major Bartelot was assassinated by one of the Manyemas whom Tippoo Tib had sent for the service of the Expedition. Mr. Jameson went to Stanley Falls, to try and get more men from Tippoo Tib, and thence down the river to Bangala, to meet Mr. Ward on his return from the seacoast, expecting fresh instructions from England; but Mr. Jameson died of fever at Bangala. Mr. Troup, a helpless invalid, unable to walk, had departed with Mr. Ward, so that Mr. Bonny was the only European remaining with the rear column, which had dwindled from 267 men to 71, in a feeble and wretched condition, when found at Banalya on Aug. 17 by Mr. Stanley, who had returned on purpose to seek them, and who had not seen them, or heard of them, for more than thirteen months, while they had supposed him to be dead. The stores left with the rear-guard were almost entirely lost.

THE FOREST ROUTE OF MARCH.

On the recent maps of Central Africa, in which these places are marked, the space between Yambuya, on the Aruwimi, where steamboat navigation from the Congo ends, and Kavalli, or the site of Kavalli's village which had been destroyed, at the southern extremity of Lake Albert Nyanza on its western shore, appears quite insignificant. Kavalli is almost due east of Yambuya, only 370 miles distant in a straight line; but the river Aruwimi, which in its upper part is called the Ituri, bends to the north, and keeping near this river made the travelling distance over 500 miles. Mr. Stanley's first journey by his route occupied 171 days, but he afterwards travelled back, as far as Banalya, where the rear column had stopped, in eighty-two days. The character of this tract of country is thus described in his own letters:—

"We were 160 days in the forest—one continuous, unbroken, compact forest. The grass land was traversed by us in eight days. The limits of the forest along the edge of the grass land are well marked. We saw it extending north-easterly with its curves and bays and capes just like a sea-shore. South-westerly it preserved the same character. North and south the forest area extends from Nyangwé to the southern borders of the Monbuttu; east and west it embraces all from the Congo, at the mouth of the Aruwimi, to about East longitude 29 deg.—forty degrees; how far west beyond the Congo the forest reaches I do not know. The superficial extent of the tract thus described—totally covered by forest—is 246,000 square miles. North of the Congo, between Upoto and the Aruwimi, the forest embraces another 20,000 square miles. Between Yambuya and the Nyanza we came across five distinct languages. The land slopes gently from the crest of the plateau above the Nyanza down to the Congo River from an altitude of 5500 ft. to 1400 ft. above the sea. North and south of our track through the grass land the face of the land was much broken by groups of cones or isolated mounts or ridges.

"While in England, considering the best routes open to the Albert Nyanza, I thought I was very liberal in allowing myself two weeks' march to cross the forest region lying between the Congo and the grass land, but you may imagine our feelings when month after month saw us marching, tearing, ploughing, cutting through that same continuous forest. It took us 160 days before we could say, 'Thank God we are out of the darkness at last.' At one time we were all—whites and blacks—almost 'done up.' September, October, and half of that month of November 1887 will not be forgotten by us. October will be specially memorable to us for the sufferings we endured. Our officers are heartily sick of the forest, but the loyal blacks, a band of 130, followed me once again into the wild, trackless forest, with its hundreds of inconveniences, to assist their comrades of the rear column.

"Try and imagine some of these inconveniences. Take a thick Scottish copse, dripping with rain; imagine this copse to be a mere undergrowth, nourished under the impenetrable shade of ancient trees, ranging from 100 ft. to 180 ft. high; briars and thorns abundant; lewy creeks, meandering through the depths of the jungle, and sometimes a deep affluent of a great river. Imagine this forest and jungle in all stages of decay and growth—old trees falling, leaning perilously over, fallen prostrate; ants and insects of all kinds, sizes, and colours murmuring around; monkeys and chimpanzees above,

queer noises of birds and animals, crashes in the jungle as troops of elephants rush away; dwarfs with poisoned arrows, securely hidden behind some buttress or in some dark recess; strong, brown-bodied aborigines, with terribly sharp spears, standing poised, still as dead stumps; rain pattering down on you every other day in the year; an impure atmosphere, with its dread consequences—fever and dysentery; gloom throughout the day, and darkness almost palpable throughout the night; and then, if you will imagine such a forest extending the entire distance from



LEUTENANT W. G. STAIRS, R.E., SECOND IN COMMAND OF THE EXPEDITION.

Plymouth to Peterhead, you will have a fair idea of some of the inconveniences endured by us from June 28th to December 5th, 1887, and from June 1st, 1888, to the present date, to continue again from the present date till about December 10th, 1888, when I hope, then to say a last farewell to the Congo Forest!

"Now that we have gone through and through this forest region, I only feel a surprise that I did not give a greater latitude to my ideas respecting its extent; for, had we thought of it, it is only what might have been deduced from our knowledge of the great sources of moisture necessary to supply the forest with the requisite sap and vitality. Think of the large extent of the South Atlantic Ocean, whose vapours are blown during nine months of the year in this direction. Think of the broad Congo, varying from one to sixteen miles wide, which has a stretch of 1400 miles, supplying another immeasurable quantity of moisture, to be distilled into rain and mist and dew over this insatiable forest; and then another 600 miles of the Aruwimi or Ituri itself, and then you will cease to wonder that there are about 150 days of rain every year in this region, and that the Congo Forest covers such a wide area.

"Until we set foot on the grass land, something like fifty miles west of the Albert Nyanza, we were never greeted among the natives with a smile, or any sign of a kind thought, or a moral sensation. The aborigines are wild, utterly savage, and incorrigibly vindictive. The dwarfs—called Wambutti—are still worse, far worse. Animal life is likewise so wild and shy that no sport is to be enjoyed. The gloom of the forest is perpetual. The face of the river, reflecting its black walls of vegetation, is dark and sombre. The sky one half the time every day resembles a wintry sky in England; the face of nature and life is fixed and joyless. If the sun charges through the black clouds enveloping it, and a kindly wind brushes the masses of vapour below the horizon, and the bright light reveals our surroundings, it is only to tantalise us with a short-lived vision of brilliancy and beauty of verdure.

"The mornings generally were stern and sombre, the sky covered with heavy lowering clouds; at other times, thick mist buried everything, but cleared off about nine o'clock, or sometimes not till eleven. Then, nothing stirs; insect-life is asleep, and the forest is still as death; the dark river, darkened by lofty walls of thick forest and vegetation, is silent as a grave, our heart-throbs seem almost clamorous, and our inmost thoughts loud. If no rain follows this darkness, the

sun appears from behind the cloudy masses, the mist disappears, and life wakens up before its brilliancy. Butterflies scurry through the air, a solitary ibis croaks an alarm, a diver flies across the stream, the forest is full of a strange murmur, and somewhere up-river booms the alarum drum. The quick-sighted natives have seen us, voices vociferate challenges, there is a flash of spears, and hostile passions are aroused.

"Peace, among the river tribes, is signified by tossing water upward with the hand or with the paddle, and letting it fall on their heads. At almost every bend of the river, generally in the middle of the bend—because a view of the river approach, up and down stream, may be had—there is a village of conical huts of the candle-extinguisher type. Some bends have a large series of these villages, populated by some thousands of natives. If we could believe them, the natives all suffered from famine: there was no corn, no bananas, or sugarcanes, or fowls, or goats, or anything else. The exhibition of brass wire, cowries, or beads had no charm for them, because they said they had no food; and we should long ago have died of want, had we been so simple as to believe them. In every attempt at barter we suffered from the cunning rogues: a brass rod only purchased three ears of corn, though at Bangala, 800 miles nearer the coast, it purchases ten rolls of cassava bread, and ought here to have purchased twenty rolls of bread, or two large bunches



MR. W. BONNY.

of bananas. To live at all, we had to take what we could: we went over and helped ourselves, and prepared food for the wilderness ahead of us."

The route from Yambuya to Kavalli is divided into stages, each of which occupied many days of toilsome marching and, often cutting a path through the forest, with long delays at several places, so that the average movement of Mr. Stanley's advance column was little better than two miles and a fraction daily.

First stage, 184 English miles, from Yambuya in a direction north-east up the Aruwimi to Mugwé's villages, on the north bank of that river; this is 124 hours' marching; Banaly, the scene of the disaster to the rear column, is in this part of the route.

Second stage, 59 miles; from Mugwé's villages to Avi Sibba, villages on the south bank, where the conflict took place in which Lieutenant Stairs was wounded and five men killed with poisoned arrows.

Third stage, 39 miles, from Avi Sibba to the confluence of the Nepoko, a large river from the north, with the Aruwimi.

Fourth stage, 93 miles, from the Nepoko confluence, or Avi Jali, to the temporary Arab settlement of the notorious slave-dealer and ivory-hunter, Ugarrows.

Fifth stage, 162 miles, by a new road opened in the following year, on the north bank—not the route of the first advance in 1887—to Fort Bodo, in Ibwiri, the dépôt station constructed by Mr. Stanley in 1888.

Sixth stage, 126 miles, from Fort Bodo to Kavalli, at the south of Lake Albert Nyanza.

These stages make the whole travelling distance from Yambuya to Kavalli 563 miles; but the route first taken, in October 1887, went about fifty miles southward along the Aruwimi, above the Nepoko confluence, where the navigation of that river by the steel boat and canoes became impossible, and Mr. Stanley then, with the utmost difficulty and peril of starvation, made his way to the Arab settlement of Kilunga-Lunga, in North latitude 1 deg. 6 min., whence he passed eastward to the rising ground of Ibwiri, 3000 ft. above the sea-level.

HOW THEY MARCHED THROUGH THE FOREST.

"Until we penetrated and marched through it," says Mr. Stanley, "this region was entirely unexplored, and untrudged by either white or Arab. For the purposes of this Expedition, we should have known something of it, but we could glean no information respecting the interior, because the natives were so wild and shy of all strangers.

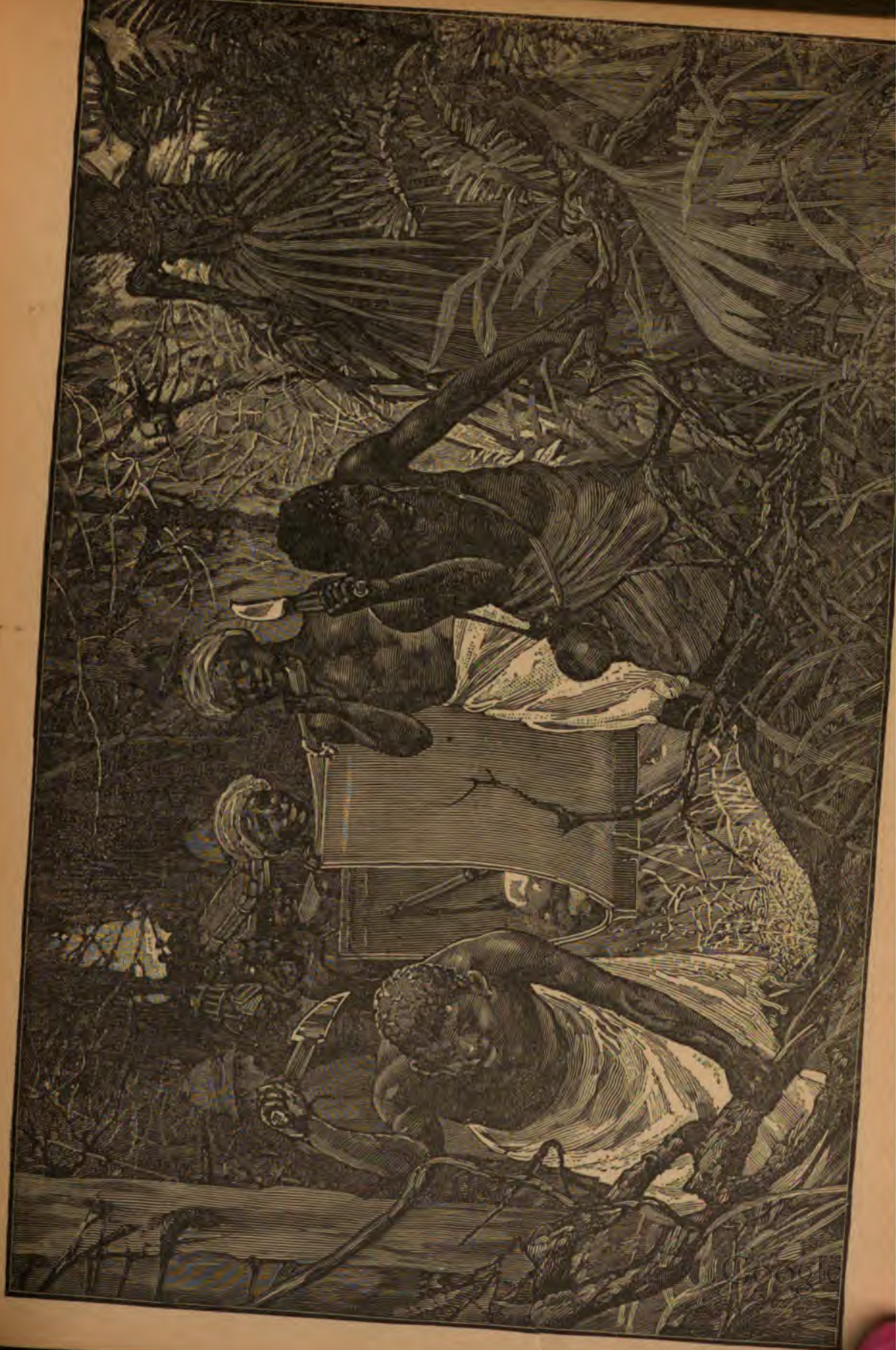
"Having selected my officers and men, my force numbered 380 rank and file. We bore a steel boat 28 ft. by 6 ft. with us, about three tons of ammunition, and a couple of tons of provisions and sundries. With all these goods and baggage we had a reserve force of about 180 supernumeraries—half of them carried, beside their Winchester's, billhooks to pierce the bush and out down obstructions. This band formed the pioneers—a most useful body.

"The path leading from Yambuya was tolerable only for about five miles: we were then introduced into the difficulties, which more or less would impede our movements and arrest rapid progress. These consisted of creepers varying from 1-8 in. to 15 in. in diameter, swinging across the path in bow-lines, or loops, sometimes massed and twisted together, also of a low dense bush occupying the sites of old clearings, which had to be carved through, before a passage was possible. Where years had elapsed since the clearings had been abandoned, we found a young forest, and the spaces between the trees choked with climbing plants, vegetable creepers, and tall plants: this kind had to be tunneled through before an inch of progress could be made.

"By compass, we found a path leading north-east and east, and on July 5 touched the river again, and, being free of rapids apparently, I lightened the advance column of the steel boat and forty loads. The boat proved invaluable: she not only carried our cripples and sick, but also nearly two tons of goods. From July 5 to the middle of October we clung to the river. Sometimes its immense curves and long trend north-east would give me sharp twinges of doubt that it was wise to cling to it; on the other hand, the sufferings of the people, the long continuity of forest, the numerous creeks, the mud, the offensive atmosphere, the perpetual rains, the long-lasting mugginess, ploded eloquently against the abandonment of the river until North latitude 2 deg. should be attained. North latitude 2 deg. I put down as the limit: I would prefer to dare anything than go farther north. In favour of the river was also the certainty of obtaining food. Such a fine broad stream as this, we argued, would surely have settlements on its banks: the settlements would furnish food by fair means, or force."

One of our Illustrations, from sketches furnished by members of the Expedition, shows the method of carrying the steel boat in sections, and the labour of cutting a path through the forest, and "blazing," or marking the trees, in order that Major Barttelot, with the rear column, should be guided to follow Mr. Stanley's track. The following note refers to this part of the subject:—

"The boat was taken to pieces at Yambuya as we were leaving the river, and was made up into men's loads, thus: the twelve sections of the boat were carried by twenty-eight men (two men extra for each end); the oars made two loads; the bottom boards were four loads; the seats and rudder made also four loads; the mats and spanners, one load; then cases of spare materials, three loads; and india-rubber packing, one load: in all, forty-three men's loads. But some of these, such as bottom boards and spare materials, were afterwards abandoned when the expedition became so reduced, and only those necessary, such as sections, seats, rubber-packing, and rowlocks, were carried. The oars became rotten, and were abandoned, and others made at Fort Bodo on our second trip to the Lake. In the open country, from Matadi to Stanley Pool, the boat sections were carried easily enough, but in the forest it was a more difficult matter: it became necessary to cut a path to permit of the sections to pass.





CAPTAIN NELSON'S "STARVATION CAMP." AT THE CONFLUENCE OF THE ITURI AND IHURI, OCTOBER 1887.

Every bush and creeper seemed to catch the sections, and constantly threw the porters off their balance: the result was that their feet became sore from constantly striking against stones, stumps, or thorns, and these sores quickly developed into ulcers. The consequence was that few of the men were able to carry the best sections for more than a week at a time, and



CAPTAIN R. H. NELSON.

even then it was necessary to pick out the strongest men for this work. The other loads too, owing to their being necessarily shapeless and cumbersome when carried on the men's heads, caught in the countless numbers of vines which hung in festoons from tree to tree across the path. The boat loads were, therefore, generally the last loads to arrive in camp at night, and constantly kept the officer in charge of them some hours behind the rest of the column. This trouble, of course, ended when the boat was put in the water, when, instead of being a hindrance, she was of the greatest service to the Expedition. While cutting a path for the boat Mr. Stanley gave strict orders that at certain intervals all the prominent trees by the path were to be carefully blazed, in order to enable Major Barttelot to follow our track without difficulty."

THE FIGHT AT AYI SIBBA.

Aug. 13, 1887, was the first day of those two unlucky periods mentioned by Mr. Stanley in one of his published letters. On this day the Expedition had crossed a small river, about sixty yards wide, close to where it joined the Aruwimi, and had camped in a village on the other side of the river. About four o'clock in the afternoon some of the men were on the banks of this river, when they were shot at by the natives, who lined the opposite bank, not showing themselves, but crouching in the dense bush, and discharging clouds of poisoned arrows. The white men, hearing the rifle fire of the Zanzibaris, rowed down to the river, and Lieutenant Stairs at once headed a party of men in the boat, and was crossing to the other side to dislodge the enemy, when, about halfway across the river, he, the only one standing up in the boat, was dangerously wounded by a poisoned wooden arrow, just below the heart. He was brought back, and Mr. Parke, the surgeon, at once took charge of him. Six or seven of the Zanzibaris were wounded at this place, and the whole affair cast a deep gloom over the camp. Most of the Zanzibaris who were wounded by these poisoned arrows died of tetanus; but, luckily, Lieutenant Stairs recovered, although the piece of arrow, which had broken off short in the wound, was not extracted until some fourteen months had passed away, and during the time he was in command of Fort Bodo.

NELSON'S "STARVATION CAMP."

On Oct. 5, the Expedition, worn out by want of food, arrived at a large and impassable cataract, just below the junction of the two rivers Iluru and Ituri. Mr. Stanley sent on men to see what the river ahead was like, and on their return they reported the river for a long distance was quite impracticable for either boats or canoes.

Mr. Stanley then decided that the canoes should be sunk, the boat pulled out of the water and taken to pieces, and everything made ready for a start inland on the morrow. The men at this time had been suffering for many days from short rations, food was terribly scarce; the few bananas that men now and then picked up were divided most carefully, and the poor fellows had to eke out their scanty supply with any green stuff they could gather at the different halting-places. A small flat bean or nut about the size and thickness of a five-shilling piece was the chief food, but it had no nourishment in it. There were also a great number of men who had such bad ulcers that they were utterly unable to walk. They had, together with their loads, been carried in the canoes; now, of course, the question arose as to what was to be done with both men and loads. After a long discussion, or *shauri*, as it is called by the Zanzibaris, it was decided to form a small camp here, and to leave all sick with their loads in charge of Captain Nelson, who was also unable to walk owing to ulcers on his feet. It was also decided that as there was no food except a few fungi, and fruit of an india-rubber creeper, called *mabungu*, near the camp, that seven or eight Zanzibar chiefs should be sent on ahead to an Arab camp, which, from information received, was supposed to be only three days off on the other side of the river, and obtain some food there, and return with it to Captain Nelson and the sick men. Alas! these poor fellows had a bad time of it. They never reached the Arab camp until after Mr. Stanley and the column had arrived there. They had lost their way, and wandered about for twenty days, and were only saved at last by coming across the gallant Uledi, coxswain of the boat, who had been sent to look for them by Mr. Stanley, and found them nearly dead for want of food.

On Oct. 6 the column started, leaving behind them fifty-five men, one white officer, and eighty-seven loads. It was thought that food would most probably arrive at the camp in about nine days. The day after the column left Captain Nelson got up a canoe, and, picking out twenty of the strongest men, sent them down river to try and get food at some deserted plantations the column had passed some two or three days before. On leaving camp, Lieutenant Stairs had given Captain Nelson one fish-hook. While getting the canoe up a little fish like a whitebait was found in the sand at bottom of canoe. This was promptly seized, and, after the canoe had started, was placed on the hook. After fishing for a few minutes Captain Nelson got one small fish about four inches long. Taking off the head, which he kept for bait, he promptly cooked the fish. This, and one cup of weak beef-tea, was all the food that day, for on going to fish again the hook got fast in the rocks in the middle of the river, and was lost. Soon death



SURGEON T. H. PARKE, OF THE ARMY MEDICAL SERVICE.

began to play havoc among the poor Zanzibaris, first one dying, then another, so that after the first few days there was hardly a day passed without one or two deaths. Deserters came back from the column with terrible accounts of the people's sufferings, and also of hard fighting with the natives. The scene in camp was now an awful one, dead and dying lying all over the camp. At first the dead were

put into the river, for no one had strength to dig graves for them; but afterwards they had to be left, as the living were too weak to remove the corpses. The ninth day had passed without the promised relief arriving. Day after day passed away, until at last, on Oct. 29, the twenty-third day, Mr. Jephson arrived with about forty Zanzibaris and thirty of the Manyema from the Arab camp, with a small supply of food. Out of the fifty-five men left in camp, and made up to about sixty by the deserters from the column, only eight were fit to start; and of these only five reached the Arab camp. Captain Nelson was simply a bag of bones, having hardly an ounce of flesh left. The total loss was fearful. Sixty being the whole number, five reached the Arab camp, with Mr. Jephson; of the twenty who had gone down river to get food ten were, after terrible suffering, picked up by a caravan of Kilunga-Lunga's; and of these fifteen men only seven or eight actually went on to Fort Bodo, the others died at the Arab camp.

EMERGING FROM THE FOREST: OPEN COUNTRY.

About the beginning of December 1887 the Expedition came to the eastern edge of the immense forest through which it had been working since June 28. It reached an open grassy country. "To those who have not gone through such a forest, it will perhaps appear strange that all should feel so elated; but to us, travelling forward, each day the same as the last, and continually hearing rumours that the plains were near, and still never reaching them, it must always be remembered as one of the brightest experiences of the Expedition. For 160 days we had been on the march from Yambuya to this point; the only object to be seen being the sky, river, and forest. 'Now, at last, we shall have no weary tracks to cut, and no muddy creeks to cross: all is fine open grassy country, and we shall get game and cattle.' Our Zanzibar boys simply went mad with joy in the first few moments, and then, settling down into a long swing, left the rearguard and sick ones far behind. We made a good march of about nine miles, and camped for the first time, since we left Kinshasa on the Congo, in open country." The Sketch on which this is a commentary depicts Mr. Stanley and Mr. Jephson in front, and Lieutenant Stairs bringing up the rear. Its date is Dec. 4, 1887.

THE FIGHT WITH MAJAMBONI.

"A few days after the Expedition moved out from the forest on to the plains, it entered the country belonging to a chief called Majamboni. The natives, instead of running away on the approach of the Expedition, now began to collect on the hillsides, near our line of march, evidently with the idea of attacking us. It soon became necessary for us to take up some strong position and enclose ourselves in a zareba, otherwise the danger ahead was too great. Accordingly we selected the hilltop which appears in my Sketch, and built a strong zareba of mimosa bushes, and then felt able to sally out and attack and punish the natives. This hill was an isolated one, lying in a broad valley, to the south of which was a high range of hills, and to the north some low grassy hills. Down the centre of this valley ran a swift stream, forming a deep crack in the surface, and making the transverse passing of the valley a difficult feat. Any attempt to make friends with the natives always failed. After some feints on the part of Majamboni's warriors on our position, two parties were sent out under Mr. Jephson and Lieut. Stairs, R.E. The party under Stairs went towards the north, across the valley to the villages north of the stream, and while actually crossing it were fired upon by crowds of natives hidden among the bananas. However, the stream was crossed, the natives dislodged, and the villages burnt. The party under Mr. Jephson had taken a north-east direction, and, returning home by a different route, had burnt every hut to the east and north-east of our position. This had the desired effect. We could see large bodies of natives retiring behind the hills to the north, and next day we were permitted to march onwards to the Lake without further molestation."

This attack on the village, Dec. 11, is the scene shown in one of our Illustrations. On all sides of the village are banana-trees and patches of Indian corn; affording excellent cover to the natives, and it is from places like this that they do most damage, as it is very difficult actually to see the natives. The village is generally attacked by dividing the forces into two, one force on a flank and one in front; a

rush in is made, fire applied to every hut, and the natives driven out; a small rearguard then occupies the place, if necessary, until the main column has safely passed by, when this rearguard takes up its proper position in rear of the column. Whatever of any value can be picked up is, of course, taken, and all bows and arrows are destroyed.

FIRST VIEW OF THE ALBERT NYANZA.

The next day saw the Expedition on the crest of the hills overlooking the Albert Nyanza Lake. "About 11 a.m. on Dec. 12, 1887, we had halted for tea and breakfast. We knew that the Lake should be close at hand, but our men always doubted any of our statements that they should see the Nyanza and Unyoro: many of them imagined we were lost, and merely wandering aimlessly about the country. Shortly after finishing breakfast a long loud shout proclaimed that something of importance had occurred. Rushing up to the front, we found, in fact, that the waters of the Nyanza were actually in sight. Below us by 2500 ft., and at a distance of nearly ten miles, stood the place marked on all maps as Kavalli. Far across the Lake, here about nine miles broad, were the cliffs of the Unyoro side, rising perhaps 1200 ft. high from the Lake shores. Our men, who had so often doubted the words of our Chief, were now beside themselves with joy. 'At last! it is true!' they said. 'Here is the Nyanza. We are not lost. The Murungu [white man] speaks truly.' After a short rest at the top, we began our descent to the plains below, and were closely pursued by a band of some fifty natives, until the shades of evening began to set in, when we built a rough 'boma,' or enclosure, and turned in, the natives disappearing with the darkness."

FORT BODO, IBWIRI

Towards the end of December 1887, the Expedition having reached the Nyanza, and being unable to communicate with Emin Pasha, it was decided upon to return to the forest, select some good position, build a strong fort, get up the steel boat from Kilunga-Lunga, leave the weakly ones at the fort, and again make a move onwards to the Lake. Accordingly, the village of Ibwiri was chosen, and on Jan. 7, 1888, the fort was begun. All hands started to work with a will. Some collected long poles, others the boards used by the natives in building their villages, others cut long vines to be used as rope, and some more men dug the holes in which the uprights of the boma were to be placed. The poles having been placed in position, two and two, the boards were inserted lengthways between these and secured, lashed home with strong vines, and so on until a secure arrow-proof boma, 10 ft. high, surrounded the whole position. Four towers were placed—two at the east and west angles, and one on the north and one on the south faces—to give efficient flank defence and command over the surrounding country. A ditch, 8 ft. wide and 7 ft. deep, was dug on the north side, and every means possible adopted to make the place secure against surprise. It was also intended that this place should afford a dépôt for grain, so that if necessary a 'suffari' could come in and leave in a day or two's time fully provisioned. For this purpose they broke up eleven acres of ground, and planted the same with Indian corn and beans. The greatest trial was the nocturnal raids of droves of elephants. Sometimes three or four acres of banana-trees would be destroyed in a single night by these monsters. It required the close attention of sixteen men for four days a week to keep these elephants out of the plantations. Another source of worry to the garrison was the devastating hurricanes, which would sweep over the crops, laying green corn flat on the ground, and lessening greatly the quantity of corn to go into the granaries. The Expedition officers kept the sentries on the alert both day and night, or they would have had the fort burnt down over their heads. They had tried many times to make friends with the Bushmen around, but to no purpose. No less than five times these came on at night trying to steal corn and tobacco, and every time the sentries heard them in the darkness, and were able to drive them off. To the north, about six miles in the forest, were many hidden camps of "Wambutti," or dwarfs—little men averaging, perhaps, 4 ft. 4 in. in height, and keen in everything pertaining to woodcraft. To describe every-day life at Fort Bodo, a day's doings has simply been taken out of one of the journals: "Thursday, May 17.—To-day 4th of Ramadan. Had a muster, posted all men to their stations (this a precaution in case of night attack). At work with all hands hoeing and weeding lower field; to-day's sick number



FIGHT IN MAJAMBOON'S COUNTRY: ATTACK OF A VILLAGE, DECEMBER 11, 1857.



FIRST VIEW OF LAKE ALBERT NYANZA. DEC 19. 1887.

ten, all are improving slowly. Nelson's brew of banana beer has come off splendidly. We now make beer, syrup, and jam from ripe bananas, all of which are very good. The boys killed a large puff-adder, this morning, in the lower field, a most venomous-looking reptile." And so on, from day to day, planting, looking after the crops and sick men. This was the chief work, varied now and then by a counter-attack on those natives who might get too bold. Fort Bodo was held until Dec. 22, 1888, when finally all hands marched on to the Albert Nyanza, but then it was found that they had too many loads and sick, and so another fort was built on the Ituri River, and was occupied for six weeks. Here all the sickly ones from Yambuza, under medical charge of Surgeon Parke, A.M.S., were placed; and when, at last, the marching day came, so well had he done his work that nearly all were ready, and fit to carry loads again. The forest was left on Feb. 13, 1889, never again to be entered by any of those who had endured such dismal trials.

MEETING OF STANLEY AND EMIN PASHA.

The meeting of Mr. Stanley and Emin Pasha on the shores of the Albert Nyanza took place on Sunday, April 29, 1888, when a courier arrived with a letter from Mr. Jephson from Mawa, informing Mr. Stanley that Emin Pasha would arrive in his steamer at the south end of the Lake. Immediately the order was given to strike camp, advance to the shores of the Lake, and there await Emin Pasha's arrival. After marching four hours, they pitched camp on a rising ground facing the island of Nsamassie; everyone of them, both white and black, now straining his eyes to get a first glimpse of the steamer. Just about sunset Mr. Stanley, by the aid of his binoculars, first saw the steamer, about seven miles distant. This announcement drew from the men successive cheers of heartfelt satisfaction and delight that they would soon see the man for whom they had toiled so much. At seven in the evening the steamer cast anchor, and the Pasha, Captain Casati, Mr. Jephson, and suite were quickly on shore, received by Surgeon Parke and an escort. As it was now dark, the Zanzibaris lighted torches and bonfires to show the road to camp, which was about two hundred yards off. Here the distinguished guests were received by Mr. Stanley in the most cordial and friendly manner. His men were in ecstacy, and enthusiastically cheered the Pasha, while the Nubians returned the compliment in their usual vociferations and gesticulations. The Pasha, who was dressed in a tarboosh and spotless white suit, expressed his thanks to the English for the Relief Expedition.

REVOLT OF EMIN PASHA'S TROOPS ON THE NILE.

In the rather complicated history of the events connected with this Expedition, a separate and distinct interest belongs to those contributed by Mr. A. J. Mounteney-Jephson, the only member of the Expedition who actually reached the Egyptian stations held by Emin Pasha on the Nile, to the north of Lake Albert Nyanza. It was he who, during many months there, witnessed and shared Emin Pasha's final struggles with the treachery of the faithless Egyptians and Arabs, and the mutiny of a large part of the Soudanese garrisons, left under his command. Mr. Jephson and Emin Pasha had their lives threatened by these rebels, and from Aug. 20, 1888, to late in November were imprisoned at Dufilé, in the utmost uncertainty about their fate—whether they were to be delivered over to the Mahdi, whose army was rapidly approaching, or to be put to death, or carried off into the wild and savage lands west of the Nile. No other European was then in the neighbourhood; and they were quite out of reach of any direct help from Mr. Stanley, who had quitted for a time the western shore of Lake Albert Nyanza, leaving only a small party at Fort Bodo, eleven days' march from the lake, and had returned westward from the Aruwimi in search of his lost rearguard column. Mr. Jephson's experiences are therefore unique in the history of these adventurous doings, and may be regarded, from a different point of view, as the last chapter of the Fall of the Soudan Government; as the concluding event of all those memorable conflicts and disasters that began in 1882 with the rise of the Mahdi's power, and which comprised the destruction of Hicks Pasha's army in Kordofan, the mission of General Gordon, the siege of Khartoum, Lord Wolseley's grand Nile Expedition, the capture of Khartoum and death of Gordon, in January 1885; the repeated battles with Osman Digma near Souakin, and every other incident of the past eight years

in those vast territories lost to Egyptian dominion, and now utterly cut off from intercourse with the civilised world.

The Equatorial Province of the Soudan, long governed by Emin Pasha, on behalf of the Khedive of Egypt, with admirable fidelity, constancy, and administrative ability, comprised the countries of the Bari, the Shuli, Latuka, Fatiko, the Shilluk, Moru, the Madi or Amadi, and Makraka, along both banks of the Upper Nile, discovered by Sir Samuel Baker in 1863, when he met Colonel Grant and Captain Speke at Gondokoro. We remember, on his arrival in England, being favoured by Sir Samuel Baker, who called at our office with his sketches of those countries and the native people. Seven years later, Baker was appointed by the Khedive of Egypt, Ismail Pasha, to subdue and rule the southern region as far as Lake Albert Nyanza, and to suppress the slave-trade; in which office, as Governor-General of the Soudan, he was succeeded by General Gordon in 1874. As Gordon's capital was at Khartoum, he made Emin (Dr. Schnitzer) ruler of the Equatorial Province in 1878. Mr. Frank Lupton (Lupton Bey) was placed over the western province of the Bahr-el-Ghazal; and Slatin Bey, an Austrian, was put in command in Darfur. The stations founded by Baker and Gordon along the banks of the Nile were, from north to south, Lado, which superseded Gondokoro as the capital, Rejaf, Beden, Mugga, Chot Ayu, Dufilé, and Wadelai, beyond which there were stations at the north end of Lake Albert Nyanza. Emin Pasha, in 1888, still remained in command of these stations, except Lado, which had been captured by the Mahdi's forces, constantly advancing to the south.

TORTURE AND DEATH OF THREE DERVISHES.

Soon after the news that the Mahdi's people had arrived at Lado, Omar Saleh, commanding the army from Dongola, sent a long letter to Emin Pasha, commanding him, in the name of the Prophet, to surrender and accompany him to Khartoum, where honours of all kinds were awaiting him at the Mahdi's hands. This letter was brought to Dufilé by three "peacock" dervishes. They were fine-looking men, of the Arab type, with an extremely dignified and self-reliant bearing. Their dress was somewhat peculiar: a long calico shirt, patched all over with different-coloured cloth—red, blue, green, and yellow—with the edges unhemmed and ragged; a loin-cloth of the same description was round their waists, and a huge many-coloured turban covered their close-shaven heads; while for arms each carried a double-edged sword of the old Crusader type, and three enormous spears, with heads like an elongated ace of spades, with immensely long bamboo shafts. When these dervishes, messengers of the Mahdi's Lieutenant-General, arrived at Dufilé, the garrison of that station had already revolted against the rule of Emin Pasha.

The rebel officers seized the letter, and, after reading it, placed it in their divan. A large council was held, at which it was decided not to surrender, but to collect as many men from each station as could be conveniently spared, and dispatch a force to Rejaf to repel the invaders. Meanwhile the dervishes, after being closely questioned, were put in irons and thrown into prison. On hearing the news of the attack by the Mahdi's people, and the subsequent fall of Rejaf station, the rebel officers again sent for the dervishes, in the hope of getting some information from them concerning Omar Saleh's strength and position. Being unable to obtain any news from them, they resorted to the cruel torture of giving them plenty to eat, but absolutely nothing to drink. For two whole days the poor fellows bore it without murmuring, and the officers, getting impatient, determined to torture them by a method which is commonly used in the Soudan. They again brought the dervishes before them, fastened a piece of split bamboo round their heads, and had it twisted up so tightly by means of a tourniquet that the bamboo cut through the flesh to the very bone. With every nerve strained by the torture, and faint from loss of blood, not a groan escaped the lips of those brave men, so strongly were they upheld by their fanatical trust and faith in their Prophet. They could only say that God through His Prophet would avenge them. It was a disgusting sight to see the Egyptian officers and clerks delighting in the torture, and smiling and exulting when the pain became too intense for flesh and blood to bear, and the poor dervishes fell fainting to the ground. The Soudanese officers, with their low bestial faces, gazed at these sufferings with a sort of stolid indifference, but even that was better than the fiendish delight displayed by the cowardly Egyptians. The black female slaves, gathered round to see what was going on, were more soft-hearted than their

masters, and sobbed audibly and wrung their hands, in very pity for the brave men who bore their sufferings with such indifference and courage. Surely their religion could not be a low one to support them under such fearful torture. No one deserving to be called a man could help a feeling of admiration and respect rising in his heart for these brave fanatics. It may be that some such feeling crossed the mind of Fadl el Mulla, the chief of the rebels, for he ordered the soldiers



EMIN PASHA (DR. E. SCHNITZER).

to unloose their bands and give them water, and they were carried back to the prison in a semi-unconscious state. In a couple of days they were able to move about again, though they were still heavily ironed. Though beaten down in body and mind, their bearing towards their captors was as dignified and self-reliant as ever, but their look of patient suffering was more pathetic than any words. For weeks they remained in prison, but no amount of suffering would induce them to betray their comrades and give information against them. At length, when the Mahdi's forces were before Dufilé, the rebels decided to kill them. The soldiers had a superstition that bullets were powerless to kill them: they were therefore taken down to the river, and there beaten to death with clubs, and their bodies were thrown to the crocodiles. If ever men suffered martyrdom for their religion, it was those three brave dervishes whose fate is here described.

THE MUTINY AT LABORÉ

The following is a correct narrative of the scene at Laboré, which was the beginning of the rebellion: "After leaving the northern stations of Kuri and Muggi, Emin Pasha and Mr. Jephson on Aug. 12 arrived at Laboré. It had been Mr. Stanley's wish that Mr. Jephson should go round to all the stations in the province and read to the people at each station the letters we had brought from his Highness the Khedive and Nubar Pasha in Egypt, and Mr. Stanley had also given Mr. Jephson a proclamation from himself to read to the soldiers. The chief of the station at Laboré was one Surore Aga, a Soudanese slave who had risen to the rank of captain in the Egyptian Army. He was a man on whom the Pasha had no reliance whatever, one of those ignorant fanatical men who hated and distrusted anyone who was not a Mohammedan. The event proved that the Pasha's want of trust in him was well founded.

"On the afternoon of Aug. 13, the soldiers, officers, clerks, and officials of the station were drawn up ready to receive the Pasha and Mr. Jephson, and to hear the letters and proclamation which had been read at the other stations. It was noticeable that while Mr. Jephson was reading the letters, and was afterwards speaking to the men, several of them were inattentive, and spoke in an undertone to one another; they appeared to be restless and incredulous. After the letters had been read, and while the Pasha was addressing a few words to them, a big, burly Soudanese soldier, with a sort of bulldog face, stepped from the ranks, and exclaimed in a loud tone, 'All you are telling us is false: these people have not come from Egypt; and those letters you have brought are forgeries. There is but one road to Egypt, and that is by Khartoum, and we only know that road: we will go by that road, or we will live and die in this

country.' He went on to say that the Pasha and Mr. Jephson had been spreading lies in the province, for, had the letter which had just been read come from the Khedive, it would have given the soldiers a command to go to Egypt, instead of saying they might stay where they were if they liked.

"The Pasha promptly seized the man by the collar, and tried to wrench his gun from his hands; at the same time calling to his three orderlies to arrest this man and put him in prison. Then arose a scene of confusion which baffles all description. The soldiers, with loud cries and execrations, surrounded the Pasha and Mr. Jephson, and, loading their rifles, pointed the weapons at them. The noise and shouting were tremendous; and for a few minutes there was no knowing how it might end. Some of the soldiers made a rush at the Pasha, hurled him on one side, and bore off their companion, with loud shouts of derision. The Pasha drew his sword to defend himself, but the officers dashed in between him and the soldiers, and struck up their rifles. At this moment a voice was heard crying out that the Pasha's and Mr. Jephson's orderlies were attempting to seize the ammunition in the storehouse. There was at once a general stampede to the powder-magazine, and the Pasha was left alone. Mr. Jephson followed the soldiers, who at first greeted him with howls and yells, but on his saying, 'You see I am not afraid of you; I am alone, because I know you are soldiers, and not savages,' at this they lowered their guns, and said, 'No, we will not harm you.' The officers had done what they could to calm them, but had been powerless to make any impression on the infuriated soldiers. If one of the guns which the soldiers were brandishing about, loaded and cocked, had gone off, a general massacre would have been the result, for when one shot was fired there would have been no stopping the tumult that would have followed.

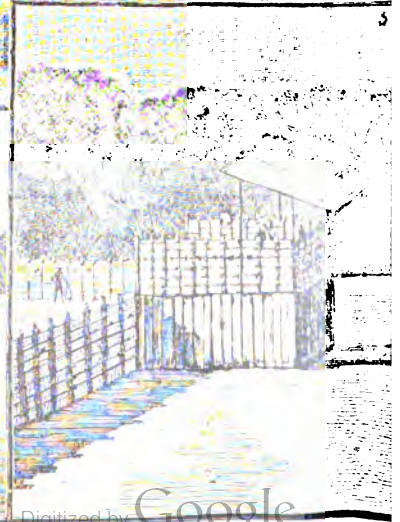
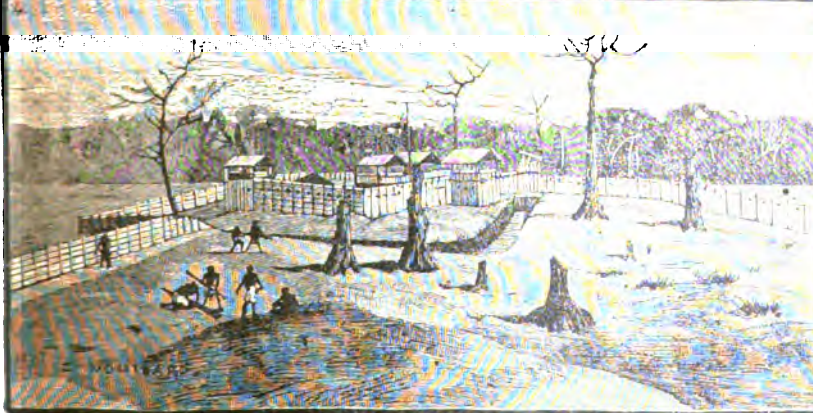
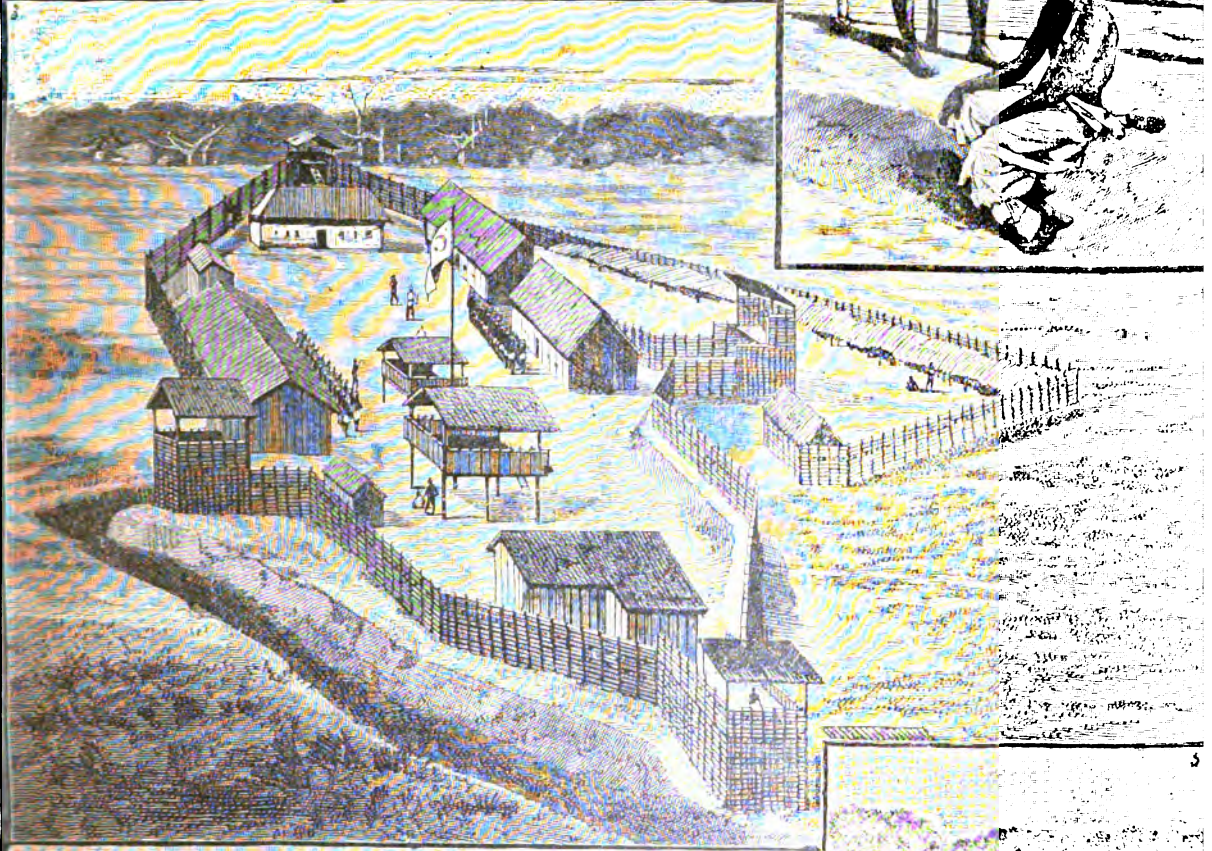
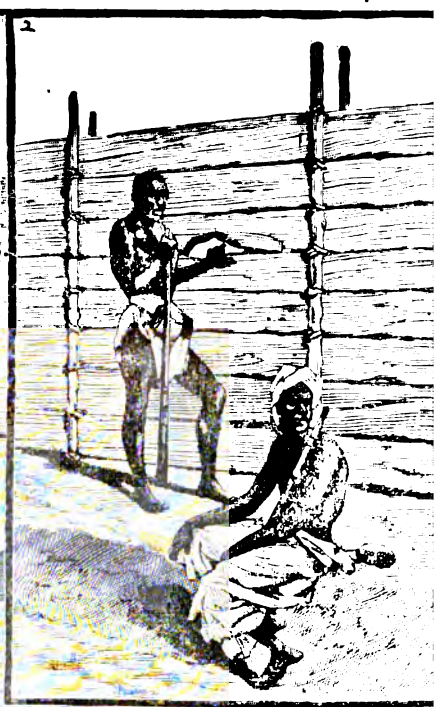
"The behaviour of some of the Pasha's people during the first few risky minutes was peculiar. Rajab Effendi, the Pasha's secretary, hid behind a tree, where he was found afterwards in a state of collapse. Araf Effendi, a clerk, a queer-looking little Circassian, ran off screaming into Selim Bey's hut, where he hid himself under an angereb (bedstead), crying out that the Pasha and Mr. Jephson were murdered; while the black sluts of the household kept up a running chorus of screams. But Vita Hassan, the Pasha's apothecary, a Jew of Tunis, immediately on seeing what was happening rushed



MR. A. J. MOUNTNEY-JEPHSON

off to the Pasha's house, and brought him his revolver. The Pasha's and Mr. Jephson's orderlies, and his boy Binza, also behaved with much courage, and were a great help in quieting down the people. It afterwards transpired that the soldier who started the mutiny was an orderly of Surore Aga's, and had been instigated by his master to create this disturbance."

This was the beginning of the rebellion. A week later, on Aug. 20, at Dufilé, Emin Pasha and Mr. Jephson, on their arrival from the northern stations, were made prisoners by order of Fadl el



1. Exterior View of Fort Bodo ("Fort Peace") at Ikwiri, commanded by Lieutenant Stairs, R.E.
 2. Structure of the Enclosure, or "Boma," constructed of bamboos fixed between pairs of upright poles, and tied with ropes of vines.

3. Bird's-eye View of the Interior of Fort Bodo, with huts and elevated platforms.
 4. Another View of the Exterior, with plantation grounds, and ditch around the fort.
 5. One of the Four Towers flanking the faces of the fort.



MEETING OF EMIN PASHA AND MR. STANLEY, APRIL 29, 1888, AT KAVALLI, ON LAKE ALBERT NYANZA

Mulla Aga, who had usurped authority in the Province. They were accused of conspiring against the Khedive and his people, and of treating his officers with injustice; and they suffered an irksome imprisonment of three months.

PROGRESS OF THE REBELLION.

Shortly after arriving at Chor-Ayu, on the day of their departure for Laboré, the Pasha received a letter from Hawashi Effendi, the senior of all his officers and chief of Dufilé Station, saying that a rebellion had broken out in Dufilé, and that he was made a prisoner in his own house.

It appeared that Fadl el Mulla Aga, chief of Fabbo Station, with two of his officers and sixty soldiers, had arrived in Dufilé. They had told the people that the Pasha was conspiring with Stanley to betray them, and that Fadl el Mulla had been asked by certain officers, Egyptian and Soudanese, to take the head of the Government. He had removed the sentries from the storehouses and magazines, and had replaced them by sentries from his own soldiers, and had placed Hawashi Effendi under arrest in his own house, with orders to the sentries to permit no one to enter or leave the compound.

The soldiers, ever ready to believe ill against the existing Government, and further excited by the stories and rumours spread abroad by the Egyptian clerks and officials, had quietly given in, and Fadl el Mulla Aga had established himself as chief of the station, and from that time was practically the chief of the Province. He had then liberated all the prisoners in the station.

The Pasha and Mr. Jephson were now indeed in a trap. The rebels of Hejaf and Laboré were to the north, the rebellion in Dufilé to the south, to the east was the Nile with its dangerous rapids, and a hostile population occupied the country to the west. The Pasha, however, had some hopes of putting down the rebellion in Dufilé; so, after considerable discussion, it was decided that, on the next day, the Pasha, with Mr. Jephson and a few followers, should march to Dufilé, which was some sixteen miles distant.

It was then Aug. 20, the Mussulman feast of Eed-el-Kebir; a bad time for the rebellion to break out, as it was a four days' holiday throughout the Province, and a great deal of drinking was going on, which would naturally make people more excitable, and ready to do mischief. However, nothing was to be gained by staying at Chor

Ayu; and the only chance that the Pasha had of putting down the rebellion was to proceed at once to the scene of the trouble, and endeavour to prevent its spreading to the southern stations, whose garrisons were supposed to be loyal.

On the road, couriers were met, with another letter from Hawashi Effendi, entreating the Pasha to come as quickly as possible, or it would be too late to do any good. The messengers were eagerly questioned as to what had taken place at Dufilé; and they gave it as their opinion that things were in a very bad way. The Pasha was in great anxiety, depressed and saddened by the thought that the people with whom he had been living so long, and for whom he had done so much, and was willing to do so much more, should have turned against him, especially when help and relief were at last near.

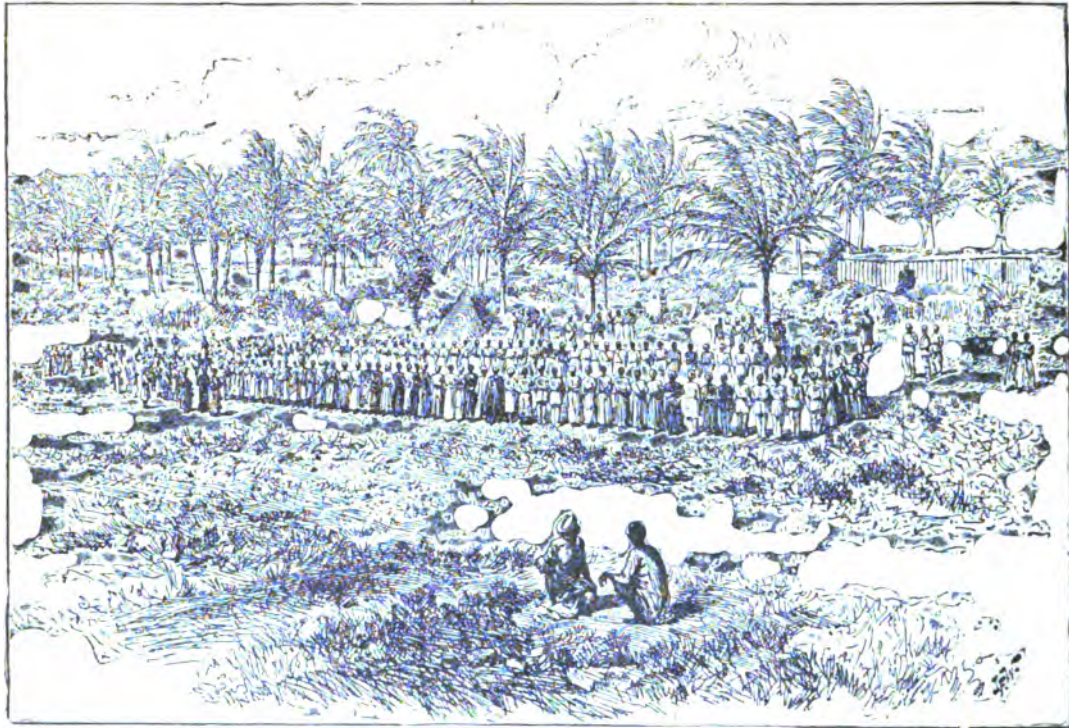
About three o'clock, the Pasha's party arrived at a hill, a mile and a half from the station: here a halt was called, to enable the rear of the column to come up. The party consisted of Emin Pasha and Mr. Mounteney-Jephson; Vita Hassan, a Tunisian Jew, who had been an apothecary in the Egyptian service, and six years ago came up to take charge of the hospital in Lado; the Pasha's two clerks, Rijab and Araf Effendi; and Sultan Aga, a Lieutenant from Wadelai Station, who was in charge of the native porters carrying the baggage.

They could see the station in the distance, with the Pasha's flag flying at the flagstaff, and large numbers of people grouped about the outside of the station and in the square in front of the postern-gate, which was at once a guard-room and the chief entrance to the station. As they neared the station people might be seen massing in great numbers, and forming up on each side of the path along which the Pasha and Mr. Jephson were to pass. No salutes were fired, as is the usual custom on the Governor's entering the station; nor were the troops drawn up in line to salute the Pasha as he passed. It had always been his custom, when the trumpeters had played the Khedivial Hymn and had given three cheers for the Khedive, to inspect his troops, and to speak a few kindly words to them before entering his house. On this occasion there was no sign or token of respect or greeting; and as the party entered the station an order was given by an Egyptian officer, and ten soldiers took their places in front of the Pasha and Mr. Jephson, while the same number followed in their rear, cutting them off from their own people.

The whole station was alive with people, who all—men, women,



MR. STANLEY'S CARRIERS IN REAR OF THE EXPEDITION APPROACHING BAGAMOYO.



THE LAST MUSTER OF THE EXPEDITION AT BAGAMOYO, DECEMBER, 1888.

and children—seemed to have turned out to see their entry, and to witness their Governor's humiliation. At a glance the Pasha saw it was hopeless to speak to his people, or to endeavour to bring them round to his side. The people pressed forward to see the prisoners, and to point at them with scorn. The clerks and officers kept somewhat in the background, as if ashamed to meet the Pasha's eye; while a party of soldiers, more or less excited by drink, began singing, and shouting out insulting words as he passed; they finally made a rush at the Pasha's immediate followers, whom they disarmed and marched off to prison.

Meanwhile, the twenty sentries, followed by the shouting fable, conducted the Pasha and Mr. Jephson through the station, every road and path to which was blocked by the crowds that came to look at them as they passed. Their entry on this day was a great contrast to their entry into the same station little more than a month before. Then, the Pasha was received by his troops paying all honour to their Governor; and Mr. Jephson was received with acclamations, as a welcome guest, who had brought them good tidings from his great chief, Mr. Stanley, one known to all the world; and the people had thronged to offer their salutations and to thank him for coming to help them. Now, on every face were to be seen indifference or scorn and derision. The Egyptian incendiaries had done their work, and all were against the Pasha.

A large concourse of people had gathered in the square, which forms the centre of the station, and on one side of which is the Pasha's compound. An officer came forward and told the Pasha that he would now be a prisoner in his own house, there to await his trial by a tribunal of officers, taken from all parts of the Province. The crimes of which he was accused were those of treachery to the Khedive and his people, and of injustice to his officers. The Pasha and Mr. Jephson were then conducted into their compound amid the jeers and shouts of the people. Sentries were posted at the gate and all round the thick boma which surrounded their quarters, and they were allowed to hold no communication with the outside world.

READING THE KHEDIVÉ'S LETTER BEFORE THE REBEL OFFICERS.

The mutineers had sent for some of the rebel officers of Rejaf, Doden, Makraka, Kiri, Muggi, Laboré, and the southern stations,

to meet at Dufilé to consider the Pasha's case. On the arrival of all these officers, a large council was held in the divan, and various witnesses were called to give evidence against the Pasha. Mr. Jephson's three orderlies were called and questioned by the rebels, who threatened to put them in chains if they did not tell the truth. They gave their evidence in a straightforward manner, telling the rebels they had come out with Mr. Stanley's Expedition by the order of Effendina (the Khedive), and showed the officers their rifles, marked with the Crescent and Star, to prove that they were Egyptian soldiers. The officers asked, Where, then, are your uniforms? They answered, They were worn out on the road. The officers then made them go through a portion of their drill, to see if they were really soldiers. Fortunately, Abdullah, the sergeant, knew his drill, and acquitted himself well. The orderlies were then dismissed, and an officer went over to Mr. Jephson's house to request his attendance before the council.

At this time the greatest excitement prevailed in the station to hear the result of the first sitting of the council, and a great crowd was collected to see the witnesses as they were conducted across the square by the sentries. Fadl el Mulla Aga and Ali Aga Djabar, the latter Chief of Rejaf, who had also rebelled, were elected Presidents of the Council. This man had, some months before, tried to take the Pasha prisoner, and had for three years been in rebellion against his authority. He had established himself in Makraka, and lived like a bandit chief, making himself feared and dreaded by his deeds of violence.

On entering the divan, all the officers and clerks rose and greeted Mr. Jephson, and Fadl el Mulla introduced him to the different officers and clerks, and to Sheik Mooragan, the chief priest, the biggest scoundrel in the Province: he was eventually the first man who went over to the Mahdists. Mr. Jephson was then questioned closely about the Expedition, its origin and aims, and was made to go over the whole story from beginning to end, but he was constantly interrupted by questions from different officers and by exclamations of incredulity. The story was disbelieved, for the officers all said that had the Expedition come from Egypt the Khedive would have sent some Egyptian officers with it; moreover, their relatives in Egypt would certainly have written to them, and sent their letters by Mr. Stanley.





LANDING OF EMIN PASHA AND CAPTAIN CASATI AT WERE ON LAKE ALBERT NYANZA.

Mr. Jephson then produced the Khedive's letter, and handed it to Fadl el Mulla; and the clerk of the station read it aloud before all the officers. After various comments had been made on the letter, all of a doubting character, certain brevets bearing the Khedive's signature were sent for, and the signatures of the letter and brevets were examined by the clerks and compared one with the other.

For a minute or two they seemed uncertain, and then the head clerk, rising from his mat, threw the letter at Mr. Jephson's feet, exclaiming: "The letter is a forgery, and you and your master are impostors." A confusion of voices followed, everyone talking at the top of his voice; and a plan was then and there made, in Mr. Jephson's presence, to entrap Mr. Stanley on his return to the Lake, and rob him of all his guns, ammunition, and stores, and then to turn him adrift to periah. Mr. Jephson was then conducted back to his house, and so ended the first day's sitting of the council.

EMIN PASHA'S AND MR. JEPHSON'S IMPRISONMENT.

The life of Emin Pasha and Mr. Jephson during their imprisonment was not a pleasant one. The rebel officers who began the revolution had behaved with some kind of decency at first, but as time went on quarrels among themselves began to be of everyday occurrence. The mornings were devoted to dealing with the affairs of the Province, and the afternoons were given up to drunkenness and debauchery. All sorts of rumours concerning their fate from time to time reached the prisoners' ears, and it was finally settled that they were to be taken down in chains to Rejaf. Nobody known to be friendly to the Pasha was spared, but was either imprisoned or his house was looted.

The two European prisoners were shut up in a small compound, some 90 ft. square, surrounded by a high thick boma, or fence. There were six huts in the compound—one occupied by the Pasha, one by Mr. Jephson, one by Vita Hassan, two for kitchen and servants, and a storehouse. The prisoners had a few books, perhaps half a dozen, which were read and read half a dozen times over. From morning to night there was nothing to do except to talk over the different rumours and reports which occasionally reached their ears. Clerks sometimes were sent over by the rebel officers with different letters they wished the Pasha to sign, all relating to his deposition. Mr. Jephson was allowed to go about the station, but was always followed by two sentries, who closely watched his movements, and reported them to the rebels. It was a pleasure he seldom availed himself of, as the people in the station were often exceedingly insulting. He was, however, obliged to go out to buy and arrange for getting food, as the rebels cut off nearly all their supplies, and only allowed them occasionally a little corn. Their servants were insulted and abused, and humiliations were heaped on the prisoners on every occasion.

The Pasha was very low in spirits, and depressed; it seemed almost impossible at times to rouse him from his melancholy. And so the weary days dragged on, until the Duflé people were electrified by the news that the Mahdi's troops were again upon them, this time burning to avenge their former defeat. The position of the prisoners seemed hopeless: accounts of the disasters experienced by the Pasha's people were constantly reported to them. They were unable to fight, and were not allowed to retire. The only thing left for them to do seemed to be to wait with what patience they might for the final blow. The rebel officers, in despair, at last appealed to the Pasha for advice; but in the struggle to retake Rejaf, Ali Aga Djabor and some of the Pasha's worst enemies were killed; and the remaining officers, being alarmed at what had happened, sent Emin and Mr. Jephson as prisoners to Wadelai. They had been just three months imprisoned at Duflé.

EMIN PASHA'S CONSENT TO DEPART.

In December 1888, Emin Pasha and Mr. Jephson, no longer held as prisoners, had left Wadelai, on the Nile, for Tunguru, one of the Egyptian stations on Lake Albert Nyanza, where Mr. Jephson could write to Mr. Stanley at Kavalli, explaining the situation of affairs, and on Feb. 6 Mr. Jephson came to report in person, telling Mr. Stanley plainly that the only remaining obstacle was a sentimental feeling in Emin Pasha's own mind—a conscientious reluctance to leave the Soudanese people so long entrusted to his care. This feeling, which was shared by his only European assistant, Captain Casati,

is worthy of respect; and we know enough of Emin Pasha's character and conduct to ensure for him a degree of personal esteem and sympathy hardly less merited than that which public opinion has bestowed on General Gordon. Though not a soldier, he had bravely and skilfully defended the Egyptian stations against the attacks of the Mahdi's forces and their native allies, while he had, during ten lonely years, administered the domestic government of a large province with the best results, maintaining orderly rule, promoting useful cultivation, improving the condition of the country and the happiness of its natives; and he trusted in the loyalty of the Soudanese black troops, whose gratitude and devotion he had amply deserved. The traitors who conspired against him were some of the Egyptians and Copts employed in the Civil Service, and some of the Arab military officers—the same class of men who proved traitors to Gordon; and it is considered, by those who should be well acquainted with these transactions, that Emin Pasha ought to have dealt sternly and severely with those ringleaders of the revolt while he had the power; and that by an undue lenity, a passive toleration of their mutinous insolence, he brought himself into a helpless position. A man of single-minded integrity, of unassuming modesty and simplicity, of humane benevolence, a philanthropist, a philosopher, a student of the natural and moral sciences, Emin Pasha was not well qualified for a despotic commander who should put down rebellion with the hand of iron; nor had he been trained in the school of military or strictly governmental service. When Mr. Jephson accompanied him to Wadelai, in April 1888, he found that "the 1st Battalion of troops, about 700 men, had long been in rebellion against the Pasha's authority, and had twice attempted to take him prisoner; the 2nd Battalion, 650 rifles, though professedly loyal, was insubordinate, and almost unmanageable; the Pasha possessed only a semblance, a mere rag of authority; and if he required anything of importance to be done, he could no longer order, he was obliged to beg his officers to do it." The events in August and the following months, which have been fully narrated, were the natural consequence of this false position; but we know not whether to admire or to reprove the amazing tenderness of Emin Pasha, after the manner in which he was treated, for the rebellious soldiery who had been so far misled, and his forgiveness of the Arab and Egyptian traitors. He never thought of himself, but of saving those people and their families, whom he would not leave behind. Perhaps it was more of the innocent women and children that he thought; for most of the black soldiers had married and settled, with plots of land, houses, and cattle, in the Province under his gentle rule. We suppose that they, being heathen, were in danger of being carried off into slavery by the Mahdi's army; while the few Egyptians would have been put to death without mercy, and some of the Arab officers, having fought against the Mahdi, were perhaps in equal danger. Altogether, the number of people for whose fate Emin Pasha was so painfully anxious was estimated at ten thousand, mostly women and children. With rare generosity and humanity, whatever may be thought of the equity of his views, this remarkable man—Jew, Mohammedan, Christian, or philosopher—declined to accept the immediate rescue of himself and his personal attendants unless he could take the people with him, and all their portable goods and chattels, under Mr. Stanley's escort to the east coast.

This was Mr. Stanley's only remaining difficulty in the first months of 1889, Emin Pasha having come to him at Kavalli, on Feb. 17, to talk over the matter with Selim Bey and seven other Egyptian or Nubian officers, and being afterwards joined by Captain Casati, while a small number of fugitives assembled who were desirous to get away. The discussions that took place on this occasion are reported by Mr. Stanley in a slightly contemptuous tone, but his impatience was quite excusable; and all the officers of his Expedition, consulted in a formal deliberation, at which Emin Pasha was present, agreed on fixing April 10 for their final departure. Mr. Stanley had some cause for suspecting a plot of the Arab officers to bring up more of their soldiers and seize the ammunition and stores of the Relief Expedition. He declared, and made Emin Pasha explain to those in camp, that he would utterly exterminate them if they attempted such a trick: In so doing, beyond all question, Mr. Stanley would have only done his duty, and would have rid East Africa of a worthless set of scoundrels, the last remnant of that vile crew which has disgraced and ruined the whole of the Egyptian dominion in the Soudan; but there would have been a great outcry at the deed among ignorant people in England.

FINAL DEPARTURE FROM LAKE ALBERT NYANZA.

On April 10, 1880, punctually as had been announced, waiting no longer for more fugitives of the Soudan, having waited for them nearly a twelvemonth, Mr. Stanley began his long and laborious march from Kavalli, by a circuitous route, avoiding so far as he could the approach to a known enemy—Kabrega, the King of Unyoro—and skirting the Unyoro territory on its western side, through the country of the Warasura, towards the Semliki valley and the high mountains south of the Ituri, whence he could turn in a south-easterly direction to the stations on the shore of the Victoria Nyanza. This was, however, under the circumstances, probably the safest, though not the shortest, homeward route—homeward meaning the route to Zanzibar, or rather to Bagamoyo, the port opposite to the isle of Zanzibar, on the seacoast of East Africa, which was reached at the beginning of December.

It turned out, when the Expedition finally started from Lake Albert Nyanza, that Emin Pasha's calculation of their being ten thousand people dependent on his care in the Soudan, who would need to be escorted to the seacoast, was a prodigious mistake. Very few of the Soudanese black soldiers, with their large families, were at all disposed to quit the country. The whole number of fugitives mustered at Kavalli on April 10 is stated at 514, of whom 134 were men, 84 married women, 187 female domestic servants or slaves, 74 children above two years of age, and 35 infants in arms. Emin Pasha wanted animals to be provided for the women to ride, but Mr. Stanley told him that it would do the women good to walk; and we should observe that, in an African journey, the usual marching is seldom more than ten miles in a day. Selim Bey, a Colonel of Emin Pasha's army, had gone back to fetch 200 of his men, who would, he said, join the departing multitude; but he wrote insolent letters, complaining that the soldiers were expected to carry loads; and as he did not appear on April 10, Mr. Stanley very properly set forth without him, leaving word that he might follow if he chose to do so. The baggage of the fugitives, as much as could possibly be taken, was carried by 350 natives enrolled for this service. Shukri Aga, the faithful officer of the Mawa station on the Lake, was the only one of Emin Pasha's trusted military assistants who departed with the Relief Expedition.

THE ORDER OF MARCHING.

One of our Illustrations represents the way in which the column marched through countries where the natives were peaceful, and where there was no fear of any danger to the Pasha's people. In front were from ten to fifteen men as guides or scouts. Then came Mr. Stanley, riding on his donkey, with a donkey-boy and two gun-bearers. Close behind these was his orderly, Uledi, carrying the Expedition flag, which is the Khedivial flag with three stars. Next came another chief, with the "No. 1 Company's flag," a yellow one, with Arabic characters on it. The No. 1 Company followed close, in Indian file, being the picked men of the Expedition. In the rear of No. 1 Company was Mr. Jephson, who commanded them. The next in order was either the No. 2 or the No. 3 Company, commanded, respectively, by Lieutenant Stairs, R.E., and Captain Nelson. These two officers took it in turn, on alternate days, to do rearguard duty with their companions. The No. 4 Company, commanded by Surgeon Parke; and the Nubians, with Mr. Bonny in charge, marched next. Close behind the Nubians came Emin Pasha's little daughter Ferida, in a hammock carried by two trustworthy Zanzibaris. Then came the Pasha, her father, and Captain Casati, Signor Marco, and Hawashi Effendi, a Major in the Khodivial service. After these followed the Pasha's people; the strongest keeping close up, but the weaker ones gradually falling to the rear, so that when the column made a long march the stragglers would stretch out the column until sometimes it became nearly three miles long; and the last behind, though urged on by the rearguard, would not reach camp for three or four hours after the advance had arrived. But in rear of all, the company whose turn it was to do rearguard duty marched slowly along. This was the order of marching, for months, over generally open country, where no hostilities were to be feared.

THE ROUTE TO THE SOUTHERN LAKES.

From the Unyoro highlands, at the southern extremity of Lake Albert Nyanza, there is a descent to the north-west shore of Lake Albert Edward, where lies the district of Usongora. The great

tongues of swamp between this and the mountain show how far the Lake must at one time have spread. But the plain is a desert, though there are evidences that at one time it must have been thickly populated. The raids of the Waganda and Warasura have depopulated the land of the Wasongora, and left only a miserable remnant. Here the course is north-east to Toro, then south and south-east by Grant's Lake Windermere to Karagwé and Usinja, towards Lake Victoria Nyanza. The Ankori plateau to the south of Unyampaka Mr. Stanley describes as a large country, thickly peopled. The plateau is 5000 ft. above the sea, but the mountains rise to a height of 6400 ft. Mr. Stanley gives details of much interest concerning the various tribes among whom he passed—tribes mostly in a state of constant apprehension from the raids of their powerful neighbours. The Wakonju are the only people who dwell upon the mountain: their villages are found at a height of 8000 ft. above the sea. When the Warasura invaded their country they retreated still higher, up to the edge of the snow. The lower slopes of the mountain are extensively cultivated by the Wakonju, who became very friendly with Mr. Stanley and his people. The inhabitants of Usongora Mr. Stanley describes as a fine race, but in no way differing from the best types of men seen in Karagwé and Ankori, and the Wahuma shepherds of Uganda. The natives of Toro are a mixture of the highest class of negroes, somewhat like the natives of Uganda. Mr. Stanley maintains that the Ethiopic (Abyssinian) type is thickly spread through these Central African uplands. Ruanda, beyond Lake Albert Edward, is evidently a fine country, with a people quite equal in numbers and strength to those of Uganda.

Mr. Stanley's own notes on the physical geography of the Lake region are highly interesting. If, he says, you will draw a straight line from the debouchure of the Nile from Albert Nyanza in a south-west direction, you will have measured the length of a broad line of subsidence from twenty to fifty miles wide, that lies between 3 deg. North latitude and 1 deg. South latitude, in the centre of the African Continent. On the west of this is a great upland, rising to 1000 ft. to 3000 ft. above the chasm, to which its eastern face slopes almost perpendicularly down, and the western side bears away gently westwards to the Ituri and Louva basins. To the right or east is another upland, rising from 1000 ft. to 3000 ft. above the chasm, and trending gently eastwards to the Unyoro plateau. In this section lies the Albert Nyanza. The central section of the so-called chasm, ninety miles long, consists of the Ruwenzori range, from 4000 ft. to 15,000 ft. above the average level of the trough of the Semliki River valley. The remaining section of the upland is from 2000 ft. to 8500 ft. higher than the trough, and consists of the plateau of Usongora, Unyampaka, and Ankori. In the south section, only fifty miles long, lies Lake Albert Edward, and the plains between the lake and the mountain. Thus, it will be seen, Lake Albert Edward is comparatively small, not more than half the length of the north lake. The part of the Semliki valley which extends from the lake south-westerly is very level; for thirty miles not more than 60 ft. above the lake, and, in Mr. Stanley's opinion, of quite recent formation. At some distance south of the lake everything is saturated with moisture. At about seventy-five miles from the Albert Nyanza the valley attains a height of about 900 ft. above the lake, where the forest region abruptly ends, and a new climate is reached, in its drought a complete contrast to the moisture-laden region in the north.

RUWENZORI: "THE MOUNTAINS OF THE MOON."

The land between the Albert Edward Nyanza and the Victoria Nyanza, with a central line from north to south about the 31st degree of East longitude, rises into lofty mountain ranges. A few of their high summits, which had been only seen at a distance by Mr. Stanley in his former journeys, were then named Mount Gordon Bennett, Mount Edwin Arnold, and Mount Lawson; and these were marked in the map of Central Africa. In June 1889, many months after his distant sight of those mountains from the southern extremity of Lake Albert Nyanza, Mr. Stanley, with his second in command, Lieutenant Stairs, R.E., the Expedition having travelled southward through the Unyoro country, crossing the Semliki River, and approaching the mountains through the valley of Awamba, were enabled to gain a nearer acquaintance with this remarkable feature of a region hitherto unknown.

Mr. Stanley's letter of Aug. 17, 1889, to the Royal Geographical



A. FORESTIER



Society describes the Ruwenzori range of mountains, rising above the Semliki valley; and he considers them identical with what the ancients called "The Mountains of the Moon." This name is mentioned by an Arab geographer, who says that the Nile takes its rise from these mountains, a little south of the Equator; which is now proved to be the fact, so far as the western branch of the Upper White Nile is concerned.

Lieutenant Stairs, the only member of the Emin Pasha Relief Expedition who actually ascended Ruwenzori to the height of 10,677 ft., on June 6, 1889, has favoured us with a sketch of "The Mountains of the Moon," and with the following description:—

"For centuries the sources of the Nile have been wrapped in mystery. Many attempts to reach the southernmost fountains have failed. We have been able to add a great deal to our knowledge of the Nile sources, and have discovered a range of mountains to the S.E. of the Albert Nyanza Lake stretching away to the southwards and westwards, and then east again in a decidedly crescent-like form. The name given to the highest points of the range is Ruwenzori, though among different tribes it goes by different names.

"The scenery afforded by these mountains, as one passes by their feet, is most splendid: deep valleys of an intense darkness run up from the forest beneath. A distinguishing feature of the range is the clear and well-defined character of the hilltops: almost invariably on the southern side these are of a conical shape, with extremely steep slopes, some of them being quite 45 deg. in steepness. The lower spurs and gullies are covered with ordinary forest growth, up to a height of some 6000 or 7000 ft.; above this there is generally a forest of bamboo going up to 9500 or 10,000 ft.; above this, again, for another 1500 ft. of altitude, the hillsides are covered with tree-heath, and all above this is bare rock and earth to the summits. A peculiarity to be observed in this range is the intense depth of the ravines or gullies between the spurs of the hills. Though the streams start from almost the summit, still they have very little fall, comparatively, as their channels appear to be cut right into the heart of the mountains; in some places the ravines down which these streams flow are quite 6000 ft. or 7000 ft. deep. The height of the highest point of the range is about 17,000 ft., with about 2000 ft. above the snow-line.

"The country at the foot of the range is among the most fertile passed through by us. Bananas, Indian corn, beans, and matams are the chief products of the natives."

The position of Ruwenzori, as shown in the new map, is within less than one degree north of the Equator, and in the thirtieth degree of East longitude. The mountain range to which it belongs, parallel with the Semliki River, which is the outlet of Lake Albert Edward Nyanza and the most southerly feeder of the Nile, extends in a south-west direction from a point of the Unyoro tableland opposite the south end of Lake Albert Nyanza, and is about ninety miles in length. It is remarkable that these mountains, nearly 18,000 ft. high, with snow-covered peaks, were not visible to Sir Samuel Baker, who supposed the Albert Nyanza to extend hundreds of miles farther south.

RUWENZORI TO THE VICTORIA NYANZA.

Leaving that part of the Semliki valley, below the Ruwenzori mountain range, which is called Awamba, the Expedition, on its second day's march, entered Usongora, a country bordering Lake Albert Edward Nyanza on its northern and north-western side; and three days later arrived at the important native town of Kativé. This place is situated between an arm of the Albert Edward Nyanza and a salt lake, about two miles long and three quarters of a mile wide, which consists of pure brine of a pinky colour, and deposits salt in solid cakes of salt crystals. It was the property of the Wasongora, but the value of its possession has attracted the cupidity of Kabega, the King of Unyoro, who gets from it a considerable revenue, while Toro, Ankori, Ruanda, Ukouju, and other countries demand the salt for consumption. The Wasongora fled at the approach of the Expedition. The road from Kativé lay east and north-east, round the bay-like extension of the Albert Edward Nyanza lying between Usongora and Unyampaka: it happened to be the same taken by the Wasongora people in their hasty retreat from the salt lake. On entering Uhaiyana, which is to the south of Toro, and in the uplands, Mr. Stanley had passed the northern head of the Albert Edward Nyanza, or Beatrice Gulf, and the route to the south was open—not, however, without another encounter with the Wasongora.

A few days later Mr. Stanley entered Unyampaka, which he had visited in January 1876. Ringi, the King, declined to enter into the cause of Unyoro, and allowed Mr. Stanley's people to feed on the bananas. After following the Lake shore until it turned too far to the south-west, the Expedition ascended to the uplands of Ankori, and thence marched through Karagwé and Uhaiya to Uzinja.

In approaching Uzinja, on the south-west shore of Lake Victoria Nyanza, Mr. Stanley made another geographical discovery. He found an extension of that greatest of the African lakes, in a south-west direction, bringing it to within 165 miles of Lake Tanganyika; this makes the whole length of the Victoria Nyanza 270 miles, and gives it an estimated area of 27,000 square miles, much larger than any of the North American lakes, except Lake Superior, which has an area of 32,000 square miles. The shore at Uzinja, in all maps drawn previously, was marked as taking a north-westerly direction; but Stanley now discovered that this supposed shore-line, which he had seen in his circumnavigation of the Lake in 1876, was only a succession of islands lying close behind each other, and that the Lake extended far beyond them to the south-west, adding about 6000 square miles to its total area.

VICTORIA NYANZA TO THE SEACOAST.

On Aug. 28, having continued their journey south-east from Uzinja into the Unyamwezi country, which is directly south of the Victoria Nyanza, the eyes of the European members of the Expedition were gladdened by the sight of a cross, rising above the foliage of a grove of banyan-trees, surmounting the thatched roof of a Christian church. They were at Msalala, the present missionary station of the worthy Mr. Mackay, one of the ablest, most skilful, and most courageous men labouring in heathen Africa for the spread of true religion and civilisation. Mr. Mackay is the sole remaining member, in that country, of the party sent out to Uganda by the Church Missionary Society in 1876; but two of his colleagues, the Rev. C. T. Wilson and Dr. R. W. Folkin, of Edinburgh, have related in a very instructive book, "Uganda and the Egyptian Soudan," published in 1882, their successful work during the reign of the late King Mteza; and a sequel to it is furnished by Mr. R. P. Ashe, in his volume, produced last year, "Two Kings of Uganda," narrating the change that took place under King Mwanga, the cruel persecution and slaughter of the native Christian converts, in 1886, the murder of Bishop Hannington, and other deplorable events, which have since been followed by a revolution and civil war in Uganda, compelling Mwanga to fly from his kingdom. This happened in October 1888, since which time the deposed King, with a band of partisans, has been residing on an island near the north-west corner of the Lake, awaiting an opportunity to attack his rival, Kilema; while the English missionaries, Mr. A. M. Mackay, the Revs. E. C. Gordon and R. H. Walker, and Mr. D. Deekes, have been at the south end of the Victoria Nyanza, quietly working and abiding the issue of events. The latest news, while we write (Feb. 12, 1890) received by telegram through Dr. Schweinfurth at Cairo, is that Mwanga has re-established his authority in Uganda, and that he is now friendly to the Christians.

With this "brave little Mr. Mackay," as Stanley calls him, the Expedition rested twenty days at Msalala, while arranging for the return carriage of the surplus stores which had been deposited there for its service, and sending express messengers to the coast with letters for England. On Sept. 16 its march was resumed through Uaikumu and Ihuru, by the ordinary route of traders and travellers, to the well-known station of Mpwapwa, which is not much above a hundred and fifty miles from the sea. Mpwapwa was reached on Nov. 10, the European party being joined on the road by two French missionary priests, Father Girault and Father Sohizze, who had, like Mr. Mackay and his companions, been driven out of Uganda. It must be sorrowfully confessed that the numbering of Mr. Stanley's followers, on their arrival at Mpwapwa, showed an enormous loss of life among the Egyptians or Arabs, the Zanzibaris, and the negroes, since they quitted Lake Albert Nyanza. out of nearly 1500 in all, scarcely half were left, the others, reckoned at 750, having either strayed or succumbed to disease and fatigue, in a march of 240 days.

But the end of this toilsome journey was near. The Mawa station, only five days from the coast, was reached on Nov. 30, when they were met by Mr. Stevens, the correspondent of the *New York Herald*, and by a representative of Major Wiseman, the German official authority on that coast; and they were supplied with needful

comforts in the way of food, clothing, and cordials. Then, by easy stages, to Mbugani, Bigiro, and crossing the Kingani River—a tedious process with one ferry-boat—they arrived on Dec. 4 at Bagamoyo.

On Dec. 6, Mr. Stanley and his comrades arrived at Zanzibar, crossing the channel in the German despatch boat *Sperber*, escorted by the British and German naval squadrons.

Nearly the whole coast of Africa is now occupied and controlled either by the European powers, or by a very few independent governments. The latter governments are Zanzibar, Liberia and Morocco, and the organized tribes of Umzilas, Mozambique, and the Somalis. Of the numerous small tribal inland countries, a few, like Dahomey and Ashantee, are known to us only by their attacks on the settlers of the coasts; others, like those on the Niger and round Lake Tchad, and the Equatorial States between Congo and Zanzibar, are being made known by the reports of travelers. There is very little governmental organization among them beyond that embraced in military chieftainship.

Up to the date of the International Conference in Brussels in 1874 most of the countries of Africa were under a kind of barbaric home rule. Aside from the shadowy control of Egypt by Turkey, less than one-tenth of the area was under any sort of domination by foreign governments, Portugal, the largest alien proprietor, claiming a little more than 612,000 square miles, chiefly in Mozambique and Angola. France claimed in Algeria and Senegambia an area of about 300,000 square miles, and Great Britain about the same area in the Cape and elsewhere. Spain had also a comparatively small holding of about 3,500 square miles. The vast remainder was subject only to the rule of conquering native chiefs.

From the date of the Brussels Conference the system of invasion with a view to territorial domain began. Progress was slow at first, but eight years later it became exceedingly rapid. The great powers severally constructed maps according to their own pleasure, and often in such way as to overlap a rival's claims; and this work has gone on until the present time, when scarcely one-fifth remains for future grabbing. The great bulk of the land of the whole continent is now under foreign ownership. Portugal has been prevented from increasing her African domain except in Angola, and her entire area in Africa is now estimated at only 774,993 square miles, inclusive of the Maduras, Cape Verd, St. Thomas, and Principe Islands.

Spain has made great advances, though some of her claims are disputed by France. She declares her ownership, however, of the coast from Cape Blanco to Cape Bojador, and territories in Adrar and Muni, aggregating 210,000 square miles. Italy officially claimed no soil in Africa until 1880; but now her flag floats, metaphorically, over no less than 360,000 square miles, mostly in Abyssinia, Shoa, Harrar and Somali-land.

Germany is also a new invader; for while Von der Decken in 1866 had urged the seizure of all East Africa from the Zambesi to the Red Sea, down to 1876 not an acre had been formally seized. But now the empire holds possession of 450,000 square miles in Eastern Africa, back of the Zanzibar Coast; 385,000 in Southwestern Africa; 193,000 in the Cameroons country, and 7,720 in Togo Land—a total of 1,035,220 square miles; practically all grabbed in 1884-85, and all conceded now by the other powers.

Great Britain, looked upon as the greatest of land-grabbers, has increased her 279,165 square miles in 1876 to 1,909,445 in 1890; including such considerable plots of ground as 500,000 square miles in the Cape region, 400,000 in the Niger country, 500,000 in the territory of the South Africa Company, and

400,000 in that of the East Africa Company, with smaller parcels on the West Coast, the Somali Coast, and at Natal and elsewhere. France, however, is the greatest annexer. In 1876 she had 283,450 square miles. Since that date she has extended her claims in Algeria from 123,000 to 184,480 square miles, and in the Senegal country from 154,400 to 580,000. She has seized 965,000 in the Sahara and the Soudan, 270,000 in Gaboon and on the Congo, 232,600 in Madagascar and neighboring isles, 44,790 in Tunis, and minor areas elsewhere—giving her now 2,300,248 square miles in all, and making her by far the greatest land-holder in Africa.

If to these areas we add the more than 1,000,000 square miles of the Congo Free State, Turkey's 380,000 in Tripoli, Egypt's 400,000, the 1,000,000 of the Eastern Soudan which Egypt once possessed, the independent Central Soudan, Morocco, Orange Free State, and the Transvaal, there will be found to remain, of Africa's 11,900,000, less than 2,500,000 now open to preëmption.

A treaty was signed Aug. 5, 1890, between England and France, giving to the former the right to establish a protectorate over Zanzibar, and to the latter the power to extend the French sphere of influence in Algeria and Senegal.

On Aug. 20, 1890, an agreement was reached by which England obtained the region north of the Zambesi, bordered on the west by that river from the point where it commences to flow southward; on the north and east by Lake Nyassa, including the Blantyre district, where are many English Mission Stations; and on the north also by the German possessions and the Congo State. England also relinquished to Germany all claim to the east Africa coast from Ravenna southward to the mouth of the Zambesi river. It was a part of the bargain that in consideration of the transfer of this territory, and of this final adjustment of boundaries, that England should transfer to Germany the island of Heligoland, in the North Sea, off the coast of Jutland.

Portugal, which had long claimed territorial rights extending across the African continent, along the southern boundary of the Congo Free State to the Indian Ocean, vigorously protested against the new territorial arrangement, but England refused to allow the Portuguese claim. On Jan. 1, 1891, the German Emperor officially announced the raising of the German flag upon the east coast of this African acquisition, and upon the island of Heligoland.

AFRICAN ASSOCIATION. See NYASSALAND.

AFRICANDER, a name given to the descendants of European parents born in South Africa. The *Africander-Bond* is an association of the Dutch population in South Africa, aiming to extend their political influence. It became prominent in Cape Colony after the Transvaal war.

AFRICAN METHODIST EPISCOPAL CHURCH, a religious denomination organized in 1816 by colored members of the Methodist Episcopal Church. It holds substantially the same doctrines and follows the same forms of worship as the parent church. It has four academies, one university, two weekly newspapers, and a membership of 620 ministers and 200,000 communicants.

AFRICAN M. E. ZION CHURCH, a religious denomination formed in New York, in 1820, by a secession from an African Methodist Episcopal congregation. Its doctrines and systems are principally copied from the M. E. Church. From the small beginning in 1820 the denomination has attained a membership at the present time of over 700 ministers and 165,000 members.

AFRIT, a name given in the Mohammedan mythology to a powerful evil genie or demon.

AGADIR, a seaport town on the south coast of Morocco, situated at the mouth of the Sûs. It has the best harbor on the coast, and was once a place of importance; but the rise of Mogador, in consequence of the revolt of 1773, has lessened its importance.

AGALACTIA, a want of the due secretion of milk. It may depend either on organic imperfection of the mammary gland or upon constitutional causes. In the latter case the secretion may often be excited by warmth and moisture, and by the stimulus of the act of sucking. If this fail, by the application of leaves of the castor-oil plant to the breast.

AGAMENTICUS, Mr., an important elevation near York, Me., 697 feet high, seen for some distance from land.

AGAMI, a genus of birds of South America, which differ little from the crane. But two species are known.

AGAMIDÆ, a family of lizards, of which the Thorn-devil of Australia, the smooth Egyptian form (*Trapelus Egyptiacus*), the Levantine Thorny-tailed Lizard (*Stellio spinipes*), and the Dab of the Arabs (*Uromastix spinipes*), are common representatives. Most of them measure less than a foot in length, and the skin is frequently covered with thorny scales. They are natives of stony and sandy regions.

AGAMOGENESIS, reproduction without sex; a process exceedingly common in plants and among the lower animals. It is a discontinuous growth by division, budding, etc., in which there is no union of sexual elements.

AGAPEMONE, a community of religious visionaries founded in 1859 at Charlinch, Somersetshire, by Henry James Prince, a former clergyman of the Church of England.

AGAPETÆ, a name given to virgins and widows, who, in the early days of the church, were made deaconesses, and who resided with the ministers, sharing their duties. While generally the relation was maintained blameless, still it resulted in immorality, and councils were summoned which put an end to it.

AGAPETUS, name of two Roman Catholic popes. The first was elected in 535, died 538; the second in 946, died 957.

AGAR, a town of India, in the state of Gwalior, situated 1,598 feet above the sea. Population, 30,000.

AGAR-AGAR, the dried sliced stem of a seaweed, resembling gelatine. It is used in cookery under the name of Bengal or Japan isinglass.

AGARDH, JAKOB GEORGE, Swedish botanist, born in Lund, Dec. 8, 1813. He became professor of botany in Lund in 1854, and later wrote many celebrated works on botanical subjects. He is the possessor of a fine collection of algae.

AGARDH, KARL ADOLPH, a Swedish botanist, born Jan. 23, 1785. He studied at Lund, and in 1812 became professor of botany there. He took orders and became a bishop. He was the author of several works on the algae, and to him we are indebted for the foundations of our knowledge of these plants; he also wrote on economics. He died in 1859.

AGASSIZ, ALEXANDER, American geologist and zoölogist, born in Neuchatel, Switzerland, Dec. 17, 1835. He followed his father, Louis Agassiz, to the United States in 1849, was graduated at Harvard in 1855, and received the degree of B. S. from the Lawrence Scientific School in 1857. Two years later he collected numerous specimens of fish for the Harvard Museum, while on a trip to California as an assistant on the coast survey. On his return

in 1860, he became assistant in the museum, and accepted the opportunity to complete his studies in zoölogy and geology.

In 1866 he became connected with the Lake Superior copper mines and developed these deposits until they became the most valuable mines in the world. Through these copper speculations he became wealthy and has since been engaged in visiting foreign collections and museums, and in deep-sea dredging, making many important contributions to science. He is a member of numerous scientific societies both in this country and in Europe, and the author of several scientific works.



A. AGASSIZ.

AGASSIZ, Mr., extinct volcano of Arizona, near the cañon Colorado; one of the San Francisco mountains, 10,000 feet in height.

AGATHA, St., a noble lady of Sicily. She rejected the love of the Perfect Octavianus, and suffered martyrdom in the persecution of Christians under Decius, 250 A. D.

AGATHON flourished about 416 B. C.; a tragic poet of Athens, and friend of Euripides. The dinner which he gave to celebrate his first dramatic triumph was made by Plato the ground work of his *Symposium*. Most of his writings are lost.

AGAVE, a genus of plants of the order *Amaryllidææ*. They are natives of the warmer parts of America, where several species are found. They are often mistaken for aloes. They have a very short stem, bearing at its summit a crowded head of large fleshy leaves, which are spiny at the margin, and from the middle of which shoots up the straight upright scape, 23 to 37 feet high, and at the base almost a foot in diameter, along which are small oppressed lanceolate bractææ with a terminal panicle, often bearing as much as 4,000 flowers. In South America they blossom once every eighth year, but in our hot-houses not until an advanced age, from which arises the gardener's fable of their blossoming only once in a century. The plant dies down to the ground after flowering, but the root continues to live and sends up new shoots.

AGE. Legal divisions of human life differ considerably in different countries, being sometimes arbitrary, and sometimes founded on nature. The whole period previous to 21 years of age is generally spoken of as infancy; but, notwithstanding this general division, which is common in both sexes, the ages of male and female differ for different purposes. In England a male at the age of 12 may take the oath of allegiance, at 14 consent or disagree to marriage, choose his guardian, and be an executor, but cannot act until of age. At 21 is at his own disposal, may alien and devise his lands, etc. A female at seven years may be given in marriage, at 14 choose a guardian, at 17 be an executrix, and at 21 dispose of herself and her lands.

In Scotland, marriageable—14 in males and 12 in females. Both sexes are of age at 21.

France, 18 in males and 15 in females. These are the ages at which they may respectively marry; 21 the age at which men are eligible for public office.

In the United States, a person becomes of legal age when he or she is 21—males being marriageable at 18, female at 16. An American citizen cannot be a representative before 25 years of age, senator before 30, or a president before he is 35.

AGELÆINÆ, an American subfamily of the *Icteridæ*, taking the place, to some extent, of the old world *Sturnidæ*, or starlings. This subfamily includes the marsh-blackbirds of the genus *Agelæus*; the cow-bird, *Molothrus ater*; and the bobolink, *Dolichonyx oryzivorus*.

AGEN, a town of France, situated in a fertile region on the right bank of the Garonne, and the chief town of the department of Lot-et-Garonne. It is an important railway centre, and carries on an active trade in woolen and linen fabrics, leather, colors, cordage and sailcloth. It was the birthplace of Joseph Scaliger. Population, 18,743.

AGENDA: in theology, practical duties. Distinguished from *credenda*, doctrines or matters of faith.

AGENOIS, that part of the province of Guienne, in France, which now forms the department of Lot-et-Garonne.

AGENOR, mythological king of Phœnicia, son of Neptune, sire of Cadmus, Europa and Phœnix.

AGENT. In the United States an agency may be created by deed, or other written instrument, or by verbal delegation of authority. It may be implied from the relation and acts of the parties and the nature of the employment, without any express appointment. The agency may terminate by revocation of the power conferred. A person cannot act as agent in a transaction wherein he has an adverse interest or employment. The death of either principal or agent terminates the agency. (See *Britannica*, Vol. I, p. 280.)

AGGLOMERATE, or **VOLCANIC AGGLOMERATE**, a rock made up of a confused mass of angular and subangular blocks of various sizes. These blocks may consist of igneous rocks, or of sedimentary rocks, or of both, set in a more or less meagre matrix of finer-grained detritus of the same materials. The rock, which is of volcanic origin, is frequently found in Scotland, filling up vertical holes which seem to have been the throats of ancient volcanoes.

AGGLUTINATE LANGUAGES are those intermediate between the monosyllabic and the inflectional. Examples of these may be found in the Indian languages of North America, and the Turanian of Asia.

AGHMAT, or **AGAMET**, a fortified town of Morocco. Population, 6,000.

AGNADELLO, a village of northern Italy, 10 miles east of Lodi, near which Louis VII. completely defeated the Venetians in 1509, and the Duke of Vendôme gained a victory over Prince Eugene in 1705.

AGNES, SAINT, a celebrated Christian virgin of Rome. She suffered martyrdom A. D. 303.

AGNES SOREL (1409-1450), lady of honor to the Queen of France, and mistress to Charles VII, over whom she exercised a powerful influence.

AGNEW, CORNELIUS REA, American physician, born in New York city, Aug. 8, 1830. He graduated at Columbia College, and studied medicine at the College of Physicians and Surgeons. After he received his degree he held several important medical posts—one being director of the N. Y. State volunteer hospital. In 1868 he established an ophthalmic clinic in the College of Physicians and Surgeons, and later founded the Brooklyn and Manhattan eye and ear hospitals. For years Dr. Agnew was connected with the State hospital for the insane at Poughkeepsie, and was deeply interested in the educational institutions of New York city. He contributed numerous papers to medical journals on diseases of the eye and ear. He died in 1888.

AGNEW, DAVID HAYES, American surgeon, born

in Lancaster county, Pa., Nov. 24, 1818. After studying at Jefferson and Newark Colleges, he graduated in medicine at the University of Pennsylvania, in 1838. He lectured in the Philadelphia school of anatomy, and established the school of operative surgery. Subsequently, he became a surgeon in the Philadelphia hospital, and also in the Pennsylvania hospital. For several years he was a professor in the medical department of the University of Pennsylvania; and he was also, for some time, a surgeon at Will's ophthalmic hospital. Dr. Agnew has been connected with numerous cases of great public and scientific importance, the best known being that of President Garfield; and he has made many valuable contributions to medical literature. Among his works are: *Practical Anatomy* (1867); *Lacerations of the Female Perineum and Vesico-vaginal Fistula* (1867); *Anatomy and its Relation to Medicine and Surgery*; and *Principles and Practice of Surgery* (1878).

AGNI, an Aryan deity: a Hindu god of fire; a bearer of incense and purifier, and a mediator between man and gods.

AGNOMEN was, in ancient Rome, the fourth or honorary name bestowed on account of some extraordinary action, virtue or accomplishment.

AGNOSTICISM, a word introduced into the English language by Professor Huxley in 1869. The term was suggested to him by the inscription, *Agnosto Theo* ("To the Unknown God"), which the Apostle Paul saw on an Athenian altar, as recorded in Acts xvii. 23. It connotes the doctrine that man does not know anything about spiritual existences, whether divine or human, or about a future life; and asserts that the ultimate cause and the essential nature of things are unknowable, or at least unknown. "The only meaning," says Professor Huxley, "of the law of causation in the physical world is that it generalizes universal experience of the order of the world;" and if experience shows (and he asserts that it does) a similar order to obtain among states of consciousness, the law of causation will properly express that order. As regards the existence of a God, agnostics say that, having regard to the universality of causation, they cannot refuse to admit an eternal existence; and that, in view of the doctrine of the conservation of energy, they must also admit the possibility of an eternal energy; and that an eternal existence possessed of consciousness and energy may be the First Cause of all things. They frankly admit that there is more than matter and force in the universe. The phenomena of consciousness and mental activity cannot, they grant, be put in the same category with the properties of matter. But why phenomena fall into this order the agnostics do not profess to know. Owing to their reverence for the law of causation they repudiate the ascription to man of free-will, as ordinarily understood. Agnosticism may be regarded as Positivism without its dogmatism.

AGONARA, a large raccoon of South America, said to live on crabs.

AGONISTICI, North African Christians of the fourth century, who renounced matrimony and thought it wrong to work.

AGOULT, MARIE DE FLAVIGNY, COMTESSE D', a French authoress born at Frankfort, Dec. 31, 1805, and educated at a convent in Paris. In 1827 she was married to the Comte d'Agoult, but left him and formed a connection with Liszt. She wrote under the literary pseudonym of "Daniel Stern." Among her works may be mentioned *Nelida*, *Lettres Républicaines*, *Histoire de la Révolution de 1848*, and *Mes Souvenirs*, but *Esquisses morales* is considered her best work. She died in Paris, March 5, 1876.

AGRICULTURE

FOR the history and development of agriculture in various countries, including the several American States, together with an elaborate discussion of numerous economic and practical questions relative to the departments of agricultural industry, see *Britannica*, Vol. I, pp. 219 to 416. It is only required in these Revisions and Additions that such later facts should be furnished as are needed to mark the progress and rapidly increasing interest in agricultural pursuits that are now characterizing our current national history.

I. PERSONS ENGAGED IN AGRICULTURAL PURSUITS.

In the official returns of the United States, reported by decades, are numerous, elaborate and carefully prepared tables relating to the "gainful and reputable occupations." In this term are included only those which are productive of compensation in the shape of wages, subsistence or profit. In the number of persons engaged in such pursuits only those who are above ten years of age are counted. The large number of women engaged in housework for their own families are not enumerated, while the women engaged in housework, or in the field, or shops, or stores, or in professions for hire, are included. This distinction in classification, while open to criticism at first view, is, probably, the best for logical and helpful comparison.

The last census gives the total number of those engaged in gainful and reputable occupations as 17,392,099. Of these 7,670,493 were engaged in agriculture. These constituted 44 per cent. of the whole number of "bread-winners," while those counted in the department of trade and transportation were 11 per cent. of the whole; those engaged in manufactures 22 per cent., and those in other professional and personal services 23 per cent. The figures indicate the relative value of the agricultural industry in the United States. The rapid and comparative progress during the decades since 1850 is shown by the following census totals: In 1850 the number engaged directly in agricultural pursuits was 2,400,586; in 1860, 3,305,135; in 1870, 5,922,471; in 1880, 7,670,493.

II. THE PROGRESS IN THE AGRICULTURAL INDUSTRY OF THE UNITED STATES IS SHOWN BY THE INCREASED ACREAGE OF THE COUNTRY DEVOTED TO AGRICULTURE.

The census of 1850 shows that the number of acres specifically included in farms was 293,560,614; in 1860, 409,212,538; in 1870, 407,735,051 (the lack of increase in this decade arising from the prevalence of the civil war); in 1880, 536,081,835. The growth in the improved or cultivated acreage of the farm was also remarkable. The number of acres in improved farms in 1850 was 113,032,614; in 1860, 160,110,720; in 1870, 188,921,099, and in 1880, 284,771,042. The increase in the number of farms is equally remarkable. The number of farms in 1850 was 1,449,073; in 1860, 2,044,077; in 1870, 2,659,485; in 1880, 4,006,907.

III. IMPROVEMENT OF FARM SOILS.

Millions of acres of lands, in various sections of our wide domain, which a few years ago were regarded as of little or no value for agriculture, have been transformed into thrifty fields, burdened with growing cereals or with luxuriant crops of grass or covered with the productions of garden, orchard or vineyard. As a remarkable illustration of what has been done with lands known as "barrens" in

some of the States, attention is called to the wonderful field of corn grown from a single acre in South Carolina in 1889 by Z. J. Drake, of Marlborough county in that State. "A prize contest" had been suggested and promoted by the "American Agriculturist," offering a generous award to the farmer who should obtain the largest yield of corn from a single acre during that year. Mr. Drake entered the contest, selecting for the purpose an acre which, three years before, was regarded as a fair specimen of what was familiarly called "Starvation's Empire." Eight dollars per acre was regarded as a fair valuation for it. The preparation of the ground and the method of its cultivation, together with the wonderful figures showing the yield, are a matter of interesting record in the journals of that year. The crop from that single acre measured 255 bushels of shelled corn—the greatest yield of corn on a single acre ever recorded. In the following year, as a result of a prize contest for a premium offered by the same paper for the greatest yield of potatoes from a single acre, the premium was awarded to W. J. Sturgis, of Buffalo, Johnson county, Wyoming, whose acre crop yielded 974 bushels and 48 pounds of potatoes! A description of the improved and improving methods of increasing the value of farm soils would require a discussion extending through pretentious volumes on agricultural subjects, and to such volumes the interested reader must be referred.

IV. AVERAGE SIZE OF FARMS.

It is an interesting fact that in any country where the statistics show a rapid advance in agricultural industries there is a constant tendency to diminish the average size of the farms of that country. The more the people learn of the possibilities of farm soils, the better will they know that the truest and most abnormal success in agricultural life consists, not in the multiplication of acres, but in the increase of products from a given amount of acreage. Hence it is that in the United States, where there is no feudal entailment of estates or of hereditary preserves, we should expect to find in the real growth of agricultural knowledge a diminution in the average quantity of land self-assigned to individual workers. The census figures of the several decades show this to be true. As care in the tillage has increased, the size of the individual farm has gradually lessened. In 1850 the size of the farm was 203 acres; in 1860, 199 acres; in 1870, 153 acres; and in 1880, 134 acres.

V. IMPROVEMENT IN PRODUCTS.

No country in the world has shown a greater progress in this respect than the United States. In the single department of live-stock raising, Americans were behind the English stock growers in the order of time. While early seeking the importation of the best sheep and cattle, and practically adopting the breeds thus imported, they have speedily improved upon them and rapidly increased their market value. There were in this country in 1890 about 200 registered Jersey cows, famous for their butter-producing qualities; but no recorded yield of butter from any cow in England ever equaled that of the Jersey cow Eurotisana, owned by D. F. Appleton, of Ipswich, Mass., and whose milk produced in a single year (the year closing April 21, 1890) 945 pounds and 9 ounces. So also in the various great records of beef-raising, of fast horses, of hogs and of sheep, and of hog and sheep products

the later reports of the American farmers are not a whit below those of their English cousins.

VI. AGRICULTURAL PERIODICALS.

The "American Farmer," the first journal distinctively established in the interest of American farmers, was issued April 2, 1818, in Baltimore, by John S. Kinner, a gentleman well known in those days in connection with the farm and turf. He retired after 35 years' effective service. In 1821 Solomon Southwick, of Albany, N. Y., began the publication of the "Plough-Boy," and about a year later, viz., in August, 1822, Messrs. T. W. Fessenden and T. W. Shepard began the publication of the "New England Farmer." These were the pioneer agricultural papers of the country, each with its "day of small things," but each had its after growth and "power of influence." At the date of this writing (1891) the number of agricultural journals in the United States, including those devoted to dairying, horticulture, live-stock, poultry and bee-keeping, is about 350; and these in their frequency of publication make up a list embracing dailies, semi-weeklies,

weeklies, semi-monthlies and monthlies. Many of these are ably edited and claim a very large circulation, reaching in, some cases, a subscription list of more than 100,000. The influence of these journals in suggesting and promoting agricultural progress is beyond the estimate of figures, and to this influence is to be added that of the constantly increasing number of books on agriculture and its cognate branches.

VII. AGRICULTURAL MACHINERY.

The United States Patent Office report for 1890, in its great list of new patents issued during the calendar year 1889, furnishes the names of nearly 1,600 new agricultural machines and attachments gazetted during that year. The record is suggestive of the increasing interest felt in this great industry, as well as the genius and tact of American inventors. The United States leads the world in improved appliances for the tillage of the soil and for use in all the cognate branches of industrial life. We make room in these pages for illustrations of a few of the many recent devices whose



Fig. 1.—SULKY PLOW.

names and descriptions appear in the catalogues of American agricultural machinery. The first is that of a modern "sulky plow," for which are claimed these special advantages, viz., the ease of the plowman, convenience in regulating the depth



Fig. 2.—CUTAWAY HARROW.

of the furrow (by means of a lever), and diminished friction (by the use of wheels), with less fatigue on the part of the team. The second is that of a "Cutaway Harrow" in place of the old-fashioned, burdensome harrows universally in use for many

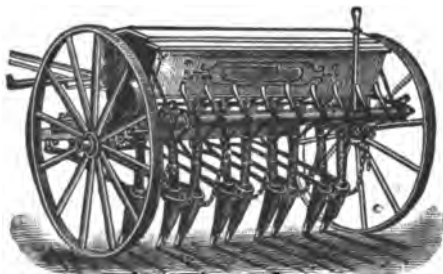


Fig. 3.—EMPIRE DRILL.

years. The third is the "Empire Drill," one of the many devices of its class for depositing the grain seed more evenly, more certainly and much more rapidly, as well as more economically, than by the old methods of hand-sowing. Next comes the "Walking Cultivator," made in a variety of ways and for use with a single or double team, and for one, two or three rows at a time, as the farmer may desire. Next follow the "mower" and the "reaper" whose utility has been long recognized. To the latter are attached, when desired, self-raking and self-binding appliances, marvels of simplicity, convenience and economy. Fig. 8 is the "hay-tedder" for use in



Fig. 4.—WALKING CULTIVATOR.

the lifting and drying of the ready-cut grass. Then follow the illustrations of machines for the rapid gathering and storing of hay, in the use of which, in a large crop, it is alleged, there is a saving of about four-fifths of the former cost under the old methods. Figs. 13 and 14 will also explain themselves. A good two-horse thrashing machine and separator, driven by a tread-power, would thrash and clean 160 bushels of wheat in a day; a ten-horse steam engine will do six times as much. The business of manufacturing these and similar machines has assumed immense proportions. More than 10,000 skilled workmen are employed, and a

capital of many millions of dollars is required. The sales in a single year reached over \$150,000,000. A single firm is reported as having manufactured in one year 18,000 machines, and another 40,000 machines in the same year. These figures indicate the greatness of this branch of American industry.

The wonderful advance in helpful labor-saving devices makes it possible for some of the western farmers to cultivate with economical results their great domains of from 5,000 to 40,000 acres each. The largest farm in the world, located, in the southeast corner of the State of Louisiana, is described as follows: It measures 100 miles north and south and 25 miles east and west, and is

owned by a syndicate of capitalists. The 1,500,000 acres of the tract were purchased in 1883 from the State of Louisiana and from the United States Government. At that time it was a vast grazing land for the cattle of the few dealers of the neighborhood, over 30,000 of half-wild horses and cattle being thereon. Now this immense tract is divided into convenient pasture stations, or ranches, located about six miles apart. The fencing alone cost in the neighborhood of \$50,000. The land is best adapted for rice, sugar, corn and cotton. All cultivating, ditching, etc., is done by steam power. A tract of about half a mile wide is taken and an engine is placed on each side. The engines are port-

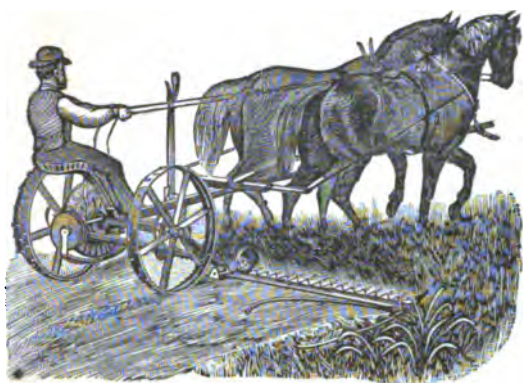


Fig. 5.—MOWER AT WORK.

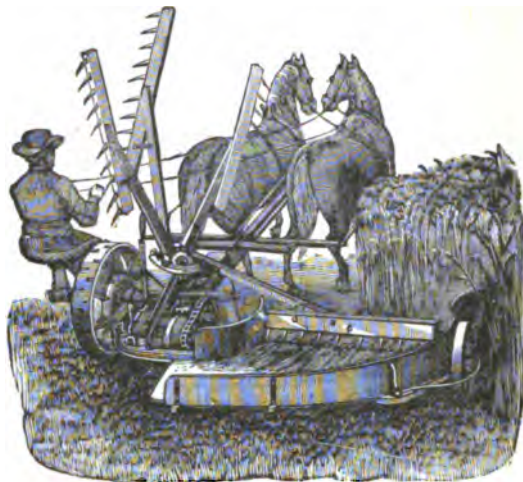


Fig. 6.—REAPER AT WORK.

able and operate a cable attached to four plows, and under this arrangement 30 acres a day are gone over with only the labor of three men. Harrowing, planting and other cultivation are done in

a like manner. There is not a single draught horse on the entire place. Of course horses are used for the herding of cattle, of which there are 18,000 head.

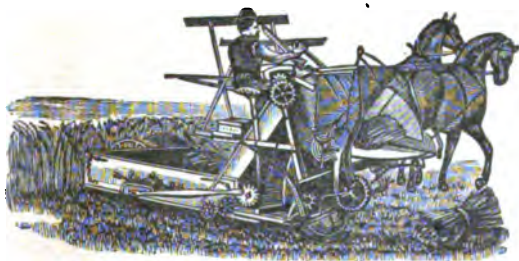


Fig. 7.—SELF-BINDER AT WORK.



Fig. 8.—HAY-TEDDER.

VIII. AGRICULTURAL ASSOCIATIONS.

At the opening of the year 1891 there were in the United States about 4,000 regularly organized associations, including those devoted to specialties usually classed under the head of agricultural products. They embrace the State, county and town and club organizations, and hold annual and, in not a few cases, semi-annual fairs. They furnish an immense stimulus to progress in their line in every part of the country. Their number and educating influence upon the rural population of the States have awakened the interested attention of foreign visitors, and the favorable reports of

the latter have led the people of even remotely located countries to similar movements at home. In the autumn of 1890 a very successful exposition was held over in Russian Turkestan, resulting in an extraordinary increase of interest in all departments represented in the great show.

An "International Agricultural Congress" was held at Vienna, by invitation of the Austria-Hungarian Government in September, 1890. It was attended by over 1,100 delegates, including distinguished representatives of agricultural interests from every county in Europe, from Japan, from Australia, from India and from South Amer-

ica, and at it were discussed subjects of profound interest to agriculturists throughout the world. Unfortunately the United States was not represented because of lack of adequate governmental provision. This was greatly regretted by the new secretary of agriculture, and in his annual report, dated at Washington, D. C., Oct. 25, 1890, he very properly urged that Congress should make ample provision for any such needs as may arise in the future. Other international congresses are promised, and it is hoped one may be held at Chicago during the progress of the Columbian Fair in 1893.

IX. NATIONAL CONGRESS ON AGRICULTURAL QUESTIONS.

On Feb. 1, 1889, both houses of Congress at Washington passed, with remarkable unanimity, and after a carefully prepared report by a joint conference committee, a bill enlarging the powers

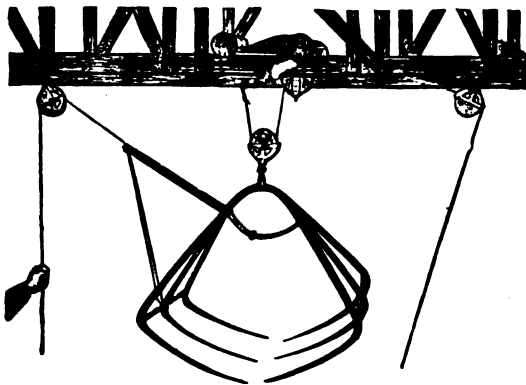


Fig. 9.—GRAPPLING HAY-FORK AND RAILWAY HAY CONVEYER.

legislated liberally for the encouragement of sugar-beet and sorghum cane culture in the United States. See those topics.

X. ADULTERATION OF FOODS.

The work of the chemical division of the Department of Agriculture relating to the adulteration of human foods is now being pushed forward with diligence and success. The investigations in 1890

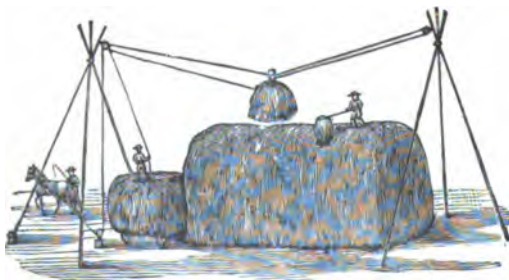


Fig. 11.—STACKING HAY.

although some of them have been found to be deleterious. In the case of coffee the chief adulterations have been found in the ground coffees, the difficulty of adulterating the berry, whether roasted or unroasted, being so great as to almost exclude this kind of fraud. With the green berry, the chief adulteration seems to be in exposing it to a moist atmosphere that it may absorb moisture and thus increase in weight; but this is a species

and duties of the Department of Agriculture and elevating the chief officer of that department to that of a full Cabinet secretaryship. The bill was approved by the President, Feb. 11, and became a law at once, and soon after Hon. J. M. Rusk, of the State of Wisconsin, was appointed Secretary of Agriculture.

The same Congress made liberal appropriations providing for the opening of artesian wells in various belts of territory, and for testing their value for irrigation purposes in numerous agricultural districts. See WELLS, Artesian, in these Revisions and Additions. The increased liberality of Congress toward the department was shown also by providing for continued work in the botanical department in further investigating the habits of the insects (and their antidotes) destructive to farm, orchard and garden products. See INSECTS in these Revisions and Additions. Congress also

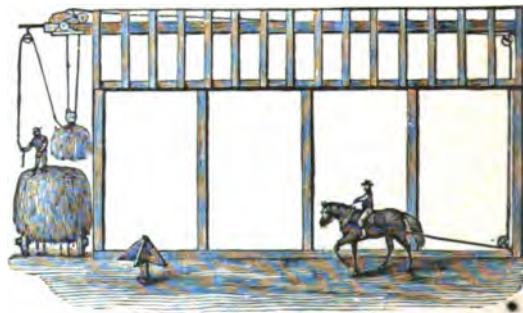


Fig. 10.—PUTTING HAY IN BARN.

related largely to tea, coffee, chocolate and other table beverages. They showed that the adulteration of these articles is not very extensive, and, except in the case of tea, is easily detected. The most frequent one is the introduction of substances to give additional weight, such substances as will attach themselves readily to the leaves and yet not be easily distinguished by the eye. These substances are mostly of a harmless character,

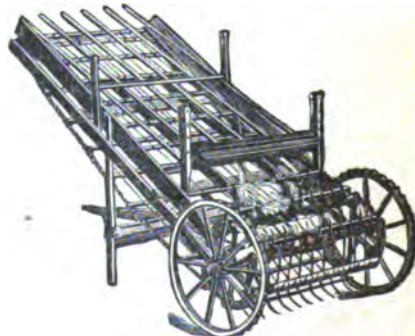


Fig. 12.—HAY-LOADER.

of fraud which is easily distinguished, since the simple drying of the berry and the estimation of the water contained therein is sufficient to determine whether or not it has been thus exposed. Extensive investigations have also been made in regard to the adulteration of sugar, molasses, honey and confections, and the publication of these reports will speedily be given to the public.

XI. EXPORT TRADE IN ANIMALS AND THEIR PRODUCTS.

Concerning this trade Secretary Rusk's report (December, 1890) states:

"Step by step, as it were, with the vigorous prosecution of the work of exterminating pleuro-pneumonia and controlling Texas fever, and with a more general appreciation of the benefits derived from a judicious exercise of the powers conferred on this department, we find a gratifying improvement in the export trade in live animals. The total value of animals and fowls exported for the fiscal year ending June 30, 1890, was over \$33,000,000, an increase of something over \$15,000,000 as compared with the year previous. The increase in the number of cattle was from 205,786 in 1889 to 394,836 in 1890, while the number of hogs exported increased from 45,000 to 91,000, over 100 per cent. In horses there was a slight reduction of exports, far more than counterbalanced, however, by the large increase in the number of mules exported.

A very large increase is shown in the export trade in beef and hog products, while in dairy

products the export trade in butter was especially gratifying, the figures for 1889 being 15,504,978, and in 1890 29,748,042. The increase in the value of meat and dairy products exported between 1889 and 1890 was over \$34,000,000. At a time when our domestic markets are overcrowded with animals and their products this increase in the export trade is very encouraging. The prices realized abroad have, as a rule, been good, and but for the unjust restrictions placed upon both animal and meat products abroad the increase in the amount exported would have been much greater."

Eradication of Pleuro-pneumonia.—The regulations for the eradication of contagious pleuro-pneumonia have been vigorously enforced during the entire year, and rapid progress has been made. In New York no cases have occurred during the year ending June 30, 1890, except on Long Island. There have been no cases in Maryland since October, 1889. Pennsylvania has remained free from the disease during the entire year. In both Maryland and Pennsylvania constant inspection has been maintained and the complete eradication of the contagion thereby assured. During the two months of May and June, 1890, but 13 affected animals were purchased in the whole infected district as compared with an average of 71½ per month during the preceding ten months. At this writing it would seem that the disease is practically banished from American soil.

A "trans-Atlantic inspection," under the supervision of British and American authorities, is

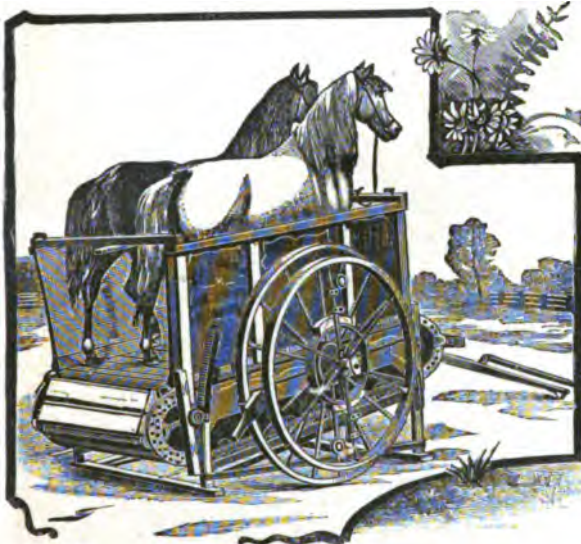


Fig. 13.—HORSE-POWER MOTOR FOR FARM USE.

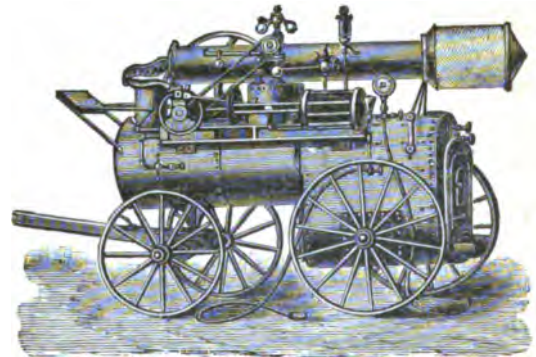


Fig. 14.—FARM ENGINE.

now in progress in Great Britain, and the gratifying announcement is now made that not a single case of pleuro-pneumonia has been reported in that country since March, 1890.

XII. TEXTILE FIBER INDUSTRIES.

The department at Washington during the last two years has been investigating the practicality of enlarging these industries in the United States with encouraging results. During 1890 nearly 400 specimens of fibers and fiber plants have been received from farmers and others who are anxiously and hopefully seeking for best results in their culture here. Among the examples of American flax received by the department are several fine samples grown in Wisconsin, Minnesota, Iowa and on the Pacific coast, one of which, from the first named State, is declared by a leading manufacturer to be "good enough for even fine linens." A fine sample was also received from Texas. A beautiful example of linen thread, grass-bleached in New Jersey, demonstrates that this branch of the linen industry can be carried on in the United States as successfully as in Europe;

while the entire linen series proves conclusively that even fine flax, in any quantity, can be produced in this country with skill and careful culture. The new tariff law raises the duty on dressed linen from two cents to three cents per pound, and gives to the manufacturer of crash and the coarser linens an immediate additional protection of 15 per cent. ad valorem. This would seem to insure an American flax industry. The early establishment of large linen factories in this country will assure a market for American-grown flax, and the duty of three cents per pound on the dressed linen, it is thought, will enable the American grower to produce flax fiber with profit to himself.

Hemp culture has been largely extended in States north of the Ohio river, and a perceptible increase in the employment of native hemp in binding twine (in preference to the higher-priced imported sisal and manilla hems) has been noted. Considerable areas of sisal hemp are growing in Florida, and it is thought that with a little encouragement at the outset sisal hemp might readily be produced within our borders. New Zealand flax is growing in California, from which strong fiber

has been experimentally produced. Seeds of this plant and of the manilla-hemp plant, have recently been imported and distributed for experiment in southern localities.

Several indigenous plants producing bast fiber, growing throughout the South, are under investigation and will be reported upon when the investigations are completed.

XIII. GOVERNMENT ENDOWMENT OF AGRICULTURAL COLLEGES.

The Fifty-first Congress, whose term expired March 4, 1891, also passed a bill to increase the endowment of agricultural colleges. Under its provisions there is appropriated to each State and Territory, severally, of the United States, annually, the sum of \$15,000 with an annual increase of this sum by \$1,000 for ten years until the annual appropriation shall reach a yearly total of \$25,000 to each State and Territory. This sum is equivalent to an agricultural endowment for each State or Territory of from \$500,000 to \$800,000, according to the rate of interest allowed in each case. The act is expressive of the present purpose of both the legislative and executive departments of the Government to encourage, in a most effective way and to a liberal extent, the best possible educational training for our agricultural industries. The following is the full text of the new law:

IN AID OF AGRICULTURAL EDUCATION.

A BILL (S. 3714) to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges for the benefit of agriculture and mechanic arts established under the provisions of an act of Congress approved July 2, 1862.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled, That there shall be, and hereby is, annually appropriated, out of any money in the treasury not otherwise appropriated, arising from the sale of public lands, to be paid as hereinafter provided, to each State and Territory for the more complete endowment and maintenance of colleges for the benefit of agriculture and the mechanic arts now established, or which may be hereafter established in accordance with act of Congress approved July 2, 1862, the sum of \$15,000 for the year ending June 30, 1890, and an annual increase of the amount of such appropriation thereafter for ten years by an additional sum of \$1,000 over the preceding year, and the annual amount to be paid thereafter to each State and Territory shall be \$25,000, to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction.

Provided, That no money shall be paid out under this act to any State, or Territory for the support and maintenance of a college where a distinction of race or color is made in the admission of students, but the establishment and maintenance of such colleges separately for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such State or Territory be equitably divided as hereinafter set forth.

Provided, That in any State in which there has been one college established in pursuance of the act of July 2, 1862, and also in which an educational institution of like character has been established, or may be hereafter established, and is now aided by such State from its own revenue, for the education of colored students in agriculture and the mechanic arts, however named or styled, or whether or not it has received money heretofore under the act to which this act is an amendment, the legislature of such State may propose and report to the Secretary of the Interior a just and equitable division of the fund to be received under this act between one college for white students and one institution for colored students established as aforesaid, which shall be divided into two parts and paid accordingly, and thereupon such institution for colored students shall be entitled to the benefits of this act and subject to its provisions as much as it would have been if it had been included under the act of 1862, and the fulfillment of the foregoing provisions shall be taken as a compliance with the provision in reference to separate colleges for white and colored students.

Section 2. That the sums hereby appropriated to the States and Territories for the further endowment and support of colleges shall be annually paid on or before the 31st day of July of each year, by the Secretary of the Treasury, upon the warrant of the Secretary of the Interior, out of the treasury of the United States, to the State or territorial treasurer, or to such officer as shall be designated by the

laws of such State or Territory to receive the same, who shall, upon the order of the trustees of the college or the institution for colored students, immediately pay over said sums to the treasurers of the respective colleges or other institutions entitled to receive the same, and such treasurers shall be required to report to the Secretary of Agriculture and to the Secretary of the Interior, on or before the first day of September of each year, a detailed statement of the amount so received and of its disbursement. The grants of moneys authorized by this act are made subject to the legislative assent of the several States and Territories to the purpose of said grants; *Provided,* That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of the legislature meeting next after the passage of this act shall be made upon the assent of the governor thereby duly certified to the Secretary of the Treasury.

Sec. 3. That if any portion of the moneys received by the designated officer of the State or Territory for the further and more complete endowment, support and maintenance of colleges, or of institutions for colored students, as provided in this act, shall, by any action or contingency, be diminished or lost, or be misapplied, it shall be replaced by the State or Territory to which it belongs, and until so replaced no subsequent appropriation shall be apportioned or paid to such State or Territory; and no portion of said moneys shall be applied directly or indirectly, under any pretense whatever, to the purchase, erection, preservation, or repair of any building or buildings. An annual report by the president of each of said colleges shall be made to the Secretary of Agriculture, as well as to the Secretary of the Interior, regarding the condition and progress of each college, including statistical information in relation to its receipts and expenditures, its library, the number of its students and professors, and also as to any improvements and experiments made under the direction of any experiment stations attached to said colleges, with their cost and results, and such other industrial and economical statistics as may be regarded as useful, one copy of which shall be transmitted by mail free to all other colleges further endowed under this act.

Sec. 4. That on or before the 1st day of July in each year after the passage of this act, the Secretary of the Interior shall ascertain and certify to the Secretary of the Treasury as to each State and Territory whether it is entitled to receive its share of the annual appropriation for colleges, or of institutions for colored students, under this act, and the amount which thereupon each is entitled, respectively, to receive. If the Secretary of the Interior shall withhold a certificate from any State or Territory of its appropriation the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separate in the treasury until the close of the next Congress, in order that the State or Territory may, if it should so desire, appeal to Congress from the determination of the Secretary of the Interior. If the next Congress shall not direct such sum to be paid it shall be covered into the treasury. And the Secretary of the Interior is hereby charged with the proper administration of this law.

Sec. 5. That the Secretary of the Interior shall annually report to Congress the disbursements which have been made in all the States and Territories and also whether the appropriation of any State or Territory has been withheld, and, if so, the reasons therefor.

Sec. 6. Congress may at any time amend, suspend, or repeal any or all of the provisions of this act.

AGRIMONY, a popular name for plants of the genus *Agrimonia*, of the natural order *Rosaceæ*. The common Agrimony (*Agrimonia eupatoria*) is a native of Europe, and is also found in the United States; it attains a height of two feet or more, and has interruptedly pinnate leaves, with the leaflets serrate and downy beneath. The flowers are small and yellow. The plant has a pleasant and slightly aromatic smell, and is bitter and styptic. A decoction of it is used as a gargle, the dried leaves for making herb tea, and the root as vermifuge.

AGUE, a common name for an intermitting fever, accompanied by paroxysms of fits. The exciting causes of this disease are invisible effluvia from the surface of the earth. A certain degree of temperature seems necessary. The treatment of aguish fever consists generally in calomel given in purgative doses, followed by a preparation of cinchona-bark, and in applying during the paroxysm external warmth to the body.

AGUESSEAU, d' HENRI FRANÇOISE, a distinguished lawyer and chancellor of France (1668-1751). He was a steady defender of the rights of the people, and of the Gallican church. He successfully opposed the decrees of Louis XIV and of the chancellor Voisin in favor of the papal bull *Unigenitus*.

AGUILAS, a fortified port in the Spanish province of Murcia. It has considerable export trade in argentiferous lead, iron ore, sulphur, esparto and figs. Population, 8,947.

AGUSTINA, "Maid of Saragossa," attained fame and also a lieutenancy in the Spanish army by her services in aid of Saragossa, when that city was besieged by the French, 1808-9. She died in 1857.

AGYNIANS, a sect of Gnostics of the 7th century, who condemned marriage. They used only certain kinds of meat.

AHAB, king of Israel from 918 to 896 B. C. He married Jezebel, the daughter of the king of Sidon, and through her influence the Phœnician worship of Baal was introduced among the Israelites. Ahab prosecuted three wars against Ben-hadad, king of Syria, in the last of which he was killed. An extended biography of this ruler is given in the Old Testament Scriptures.

AHLQUIST, AUGUST ENGELBERT, Finnish philologist, born Aug. 7, 1826. He studied philosophy and philology at Helsingfors, and in 1847 founded a Finnish newspaper, the "Suometar." The years 1853-58 were spent in travel through northern Russia and Siberia, and on his return he became professor of Finnish in the University of Helsingfors. He has published grammatical and lexicographical works, a volume of poems, an account of his travels, and several translations from the German.

AHLWARDT, THEODORE WILHELM, a distinguished German orientalist, was born July 4, 1828. In 1861 he was appointed to the chair of oriental languages in the University of Greifswalde. He has published several important historical works.

AHMED IV (1725-1789), Sultan of Turkey, under whose rule the Crimea and other territories were lost.

AHMEDNUGGUR, an important town in the presidency of Bombay. It was founded in 1494 by Ahmed Nizam Shah. The town has increased rapidly since it came under British protection and rule. In addition to its wall, it possesses a most singular defense consisting of an immense prickly-pear hedge about twenty feet high, which is so full of sap that no fire will kindle it, and so vigorous that it is almost impossible to force one's way through it. There are several places of the same name in Hindustan. Population, 33,481.

AHMEDNUGGUR, or **EDUR**, a Rajpoot state of Guzerat, in the Mahi Kanta agency, politically connected with the presidency of Bombay. Population, 217,000.

AHMEDPUR, a town of India in the native state of Bhawalpoor. Population, 30,000.

AHMOOD, or **AMOD**, a town of India, in the British presidency of Bombay, contains a population of about 14,000.

AHN, JOHANN FRANZ, educationist, was born at Aix-la-Chapelle, in 1796, and died Aug. 21, 1865. His French grammar for Germans has gone through more than 200 editions. It was succeeded by similar works on English, Italian and Dutch. Ahn's method is that of making the example precede the rule.

AHNFELD, ARVID, Swedish writer, born in Lund, Aug. 16, 1845. He was associate editor of the "Aftonblad" from 1870 to 1881, and since the latter date has been editor-in-chief of "Ur Dagens Kronika." He has published *Verlds-litteraturens Historia* (1874-76); and a number of monographs on distinguished Swedish writers. Since then he has been engaged on a great work, *Ur svenska hofvets och aristokratiens lif* (the life of the Swedish court and aristocracy).

AHRENS, HEINRICH, was born at Kniestedt, Hanover, July 14, 1808. He was educated at Gottingen,

and subsequently went to France, and studied the language and literature of that country. He wrote for French periodicals, and from 1839 to 1848 was professor of philosophy at Brussels. In 1850 he became professor of legal and political science at Gratz, and in 1859 of practical philosophy and political science at Leipsic. He published, in French, *Cours de Psychologie* (1837-8); and *Cours du Droit Naturel* (1838). He published a revision of the last in German as *Die Rechtsphilosophie oder das Naturrecht auf philosophisch-anthropologischer Grundlage* (1870-71), and it has been translated into Italian, Spanish, Portuguese and Hungarian. To this work he added, in 1850, a second part, containing *Die organische Staatslehre*. In 1855 he published *Die Juristische Encyclopadie* and in 1873 *Die Abwege in der neuen Deutschen Geistesentwicklung*, etc. Prof. Ahrens died in Salzgitter, Aug. 4, 1874.

AI (ah-e), an edentate mammal, which takes its name from the loud cry it utters. It is sometimes called the three-toed sloth. It is as large as a cat, and entirely adapted for living in trees. It is found in the tropical parts of South America.



AI.—(Three-toed Sloth.)

AIDE, HAMILTON, English poet and novelist, born in Paris in 1830. After serving seven years in the British army he established himself in the New Forest and devoted himself to literature.

AIDONE, a town of Sicily, in the province of Caltanissetta. One of the settlements of the Lombards who accompanied Roger the Norman in his conquest of Sicily. Population, 5,940.

AIDS. Originally, these were merely benevolences granted by a tenant to his lord in times of distress, but gradually they came to be regarded as matters of right and not of discretion. There were three principal objects for which aids were demanded; namely, to ransom the person of the lord if taken prisoner, to make his eldest son a knight, and to provide a dowry for his eldest daughter.

AIGNAN, ÉTIENNE, a French publicist and littérateur, was born at Beaugency-sur-Loire in 1773. He became a member of the Academy in 1814. He executed an excellent translation of the Iliad into his native tongue, and wrote an important work on *The Condition of the Protestants in France*. He died in 1824.

AIGRETTE: in botany, a term used to denote the plume or down which is attached to many vegetable seeds, as, for instance, the dandelion and the thistle. In English zoölogy the name is applied to a white heron, an elegant bird with a white body and feathery crest. It is also used in reference to the feathery tuft on the heads of several birds. More recently the usage has been still further extended; any head-dress bearing an analogy to a plume, even a bouquet of flowers fastened with precious stones, being denominated an aigrette.

AIGUEBELLE, DE PAUL A. N., a Frenchman who entered the Chinese navy and became mandarin and grand-admiral of the Chinese fleets. He was born in 1831.

AIGUEBELLE, a town of France, on the river Arc, is the scene of the defeat of Duke Charles Emmanuel III, of Savoy, by the French and Spanish armies in 1742, and the site of Napoleon's commencement of operations in building the road over Mont Cenis.

AIGUES-MORTES, a town in France, in the department of Gard, which the Roman Marius is sup-

posed to have founded. It is three miles from the Mediterranean Sea, with which it is connected by a canal. St. Louis sailed from Aigues-Mortes in 1248, and again in 1270, for the Crusades.

AIGUILLE (*Fr.* a needle), an instrument used by engineers to pierce a rock for the reception of gun-powder.

AIGUILLON, ARMAND V. D. R., Duke of (1720-1782), statesman and prime minister of France under Louis XV.

AIKEN, county seat of Aiken county, a noted health resort of South Carolina, 17 miles east of Augusta, is salubriously situated, at an elevation of 600 feet, upon a dry, sandy plateau, in an exhilarating climate of mild and equable temperature.

AIKEN, CHARLES AUGUSTUS, a noted American educator, was born in Manchester, Vt., Oct. 30, 1827. He became professor of Latin language and literature at Dartmouth in 1859, and at Princeton in 1866; president of Union College in 1869; afterwards professor of Christian ethics and apologetics in the Princeton Theological Seminary. He has been a voluminous contributor to various important theological works.

AIKEN, WILLIAM (1806-1887), governor of South Carolina, 1844-1846, distinguished by wisdom in politics, immense wealth and great benevolence.

AILANTHUS, or **AILANTUS**, a lofty and beautiful tree of the natural order *Simarubaceæ*, a native of southeastern Asia, and introduced in the middle of the eighteenth century into France, Italy, Germany, Britain and the United States. It grows well on chalky soils and is easily propagated by suckers and cuttings of the roots. The wood is suited for cabinet-making, and the leaves afford nutriment to a species of silkworm (*Bombyx cynthia*).

AILANTHUS SILKWORM, raised extensively in China; hardy and not subject to so many diseases as the European variety.

AILLY, PIERRE D', or **PETRUS DE ALLIACO**, "the Eagle of the Doctors" (*Aquila Doctorum*), of France, and the "Hammer of Heretics" (*Malleus Hæreticorum*), theologian and nominalist philosopher, born at Ailli-le-haut-Clocher in 1350. He was educated at the University of Paris, and in 1389 became chancellor of that institution and almoner and confessor of Charles VI. In 1411 he was made cardinal, and was sent as papal legate to Germany. He was among the leaders in the council of Con-



PANDA.—(*Ailurus Fulgens*.)

Panda, and, from its peculiar cry, *Wah*. It is somewhat larger than the domestic cat, and is remarkable for its beautiful and rich fur.

AIMARD, GUSTAVE, novelist, born in Paris Sept. 13, 1818. He came to America in his boyhood, spending ten years of adventure in Arkansas and Mexico, which furnished themes for most of his novels; he also traveled in Spain, Turkey and the Caucasus; served as officer in the French army, and after several years' confinement in an asylum, died June 20, 1883. Twenty-six of his novels have been translated into English.

AIMÉ, MARTIN LOUIS (1786-1847), a noted French educational writer and biographer, and editor of "Bernardin de St. Pierre."

AIN, a river in France, flows through the departments of Jura and Ain; after a course of 100 miles it falls into the Rhone 18 miles above Lyons.

AINSLIE, HENRY, Scottish-American poet, born in Bargeny Mains, Ayrshire, April 5, 1792. Both before and after his emigration to the United States in 1822, he was connected with numerous business pursuits, retiring about 1840. His best known book is *A Pilgrimage to the Land of Burns* (1820), and his most popular poems are *The Ingle Side*, and *On wi' the Tartan*. He died in Louisville, Ky., March 11, 1878.

AINSWORTH, LABAN, American clergyman, born in Woodstock, Conn., July 19, 1757; graduated at Dartmouth College in 1778, and in 1782 was made pastor of the church at Jaffrey, N. H., remaining until his death in 1858—seventy-six years. This is the longest pastorate on record.

AINSWORTH, WILLIAM FRANCIS, English traveler, physician, and geologist, born at Exeter, 1807. He was one of the founders of the West London hospital.

AINSWORTH, WILLIAM HARRISON (1805-1882), a well-known writer of fiction. He edited "Bentley's Miscellany" for a time, and in 1842 began *Ainsworth's Magazine*.

AIR-BEDS, or **AIR-CUSHIONS**, were known in Europe as early as the beginning of the eighteenth century, but, being made of leather, they were very expensive. It was only after the invention of air-tight or Mackintosh cloth that it became possible to use air in this way at a moderate cost. It consists of a sack in the form of a mattress, divided into a number of compartments, each air-tight. A projection at one end forms a bolster. Each compartment has a valve, through which the air is blown in by bellows. The advantages of such beds in point of cleanness, coolness, lightness and elasticity are obvious. They are especially valuable in sick-rooms.

AIR-BLADDER: in fishes, an organ apparently intended to aid them in ascending in deep water, and for the accommodation of their specific gravity to various depths. The air-bladder of fishes affords the finest kind of isinglass.

AIR-CELLS, or **AIR-SPACES**, in plants, are cavities in the stems or leaves. They consist chiefly of intercellular spaces or of cavities formed by rupture. In terrestrial plants they communicate with the exterior by means of the *stomata*; an interchange being thus established between the living cells and the outer air which aids the passage of gases necessary for the life of the plant. The buoyancy of aquatic plants is largely due to the air-cells, which in them are especially large and numerous.

AIRE, or **AIRE-SUR-LE-LYS**, town of the department of Pas-de-Calais, France. Population, 8,380.

AIR-LOCK. In the construction of bridge-piers under water, hollow iron cylinders are used in which it is now the custom to use condensed air, the pressure usually not exceeding two atmospheres beyond ordinary atmospheric pressure. This iron shell is open at the bottom, but, being air-tight and water-tight at all other points, water is prevented from rising in it. It is necessary to have, in some part of this caisson, a chamber to allow of the entrance and exit of men and materials. This small chamber is called an *air-lock*. When the outer door is closed after entrance the air of the chamber is compressed before opening the inner one.

AIROLO, an Italian-Swiss village, in the upper valley of the Ticino, and near the southern mouth of the great St. Gothard Tunnel. Population, 4,000.

AIR-PLANTS is the common name applied to *Epiphytes*, or plants unconnected with the ground,

and apparently deriving their substance from the atmosphere. The name is usually restricted to the epiphytic orchids, but the lichens and mosses growing upon trees, walls, fences, rocks, etc., are air-plants.

AIR-SACS are remarkable cavities connected with the respiratory system in birds. They are distributed along the inside of the whole cavity of the chest and abdomen. In birds of rapid flight and strong wing they often send prolongations into the bones. The sacs in the lungs of the mammalia, into which the air is conveyed by minute ramifications of the windpipe in order to be brought into contact with the blood distributed on their walls, are very small, only about $\frac{1}{10}$ part of an inch in diameter in man. In insects they form a spiral fiber within a membranous coat.

AIRY, GEORGE BIDDELL, F. R. S., K. C. B., etc., Astronomer Royal (1835-1881), born at Alnwick in 1801. He has obtained the reputation of being one of the most able and indefatigable of living savants, and in 1891 is devoting his researches to a new method of treating the lunar theory.

AISNE, a tributary of the Oise, France, rises in the department of Meuse. Its course extends 150 miles, of which 70 miles are navigable.

AIVAZOVSKI, GABRIEL, Armenian author, born at Theodosia, in the Crimea, May 22, 1812. In 1843 he became professor of languages, philosophy and theology in the College of St. Lazarus, and in 1848 accepted the position of prefect of studies in the Armenian College of Samuel Moorat, near Paris. He is a member of numerous societies, and has published several historical works in Armenian. He founded the new Armenian College of Grenelle, near Paris.

AIRWALYK, a seaport in the northwest of Asia Minor, situated on the Gulf of Edremid. It has considerable trade in olives and oil. Population, chiefly Greeks, 35,000.

AIZANI, a ruined town of Asia Minor, is noted for its immense theatre, which is still in an excellent state of preservation.

AJAIGARH, a hill-fort of India, in the Northwest Provinces. It was captured by the British in 1809. Within the walls are the ruins of two Jain temples, elaborately sculptured.

AJALON, the modern *Yalo*, a town of the Levites in ancient Palestine. It was there that the battle between Joshua and the five Canaanitish kings took place, in which it is narrated that Joshua bade the sun and moon stand still.

AJODHYA, an ancient city of Oudh, situated on the right bank of the Gogra. Its site is said to have covered 96 square miles, now marked by heaps of ruins overgrown by jungle. The modern town, Ajodhya, has 7,500 inhabitants, nearly 100 temples, and the fair of Ramnamie, which attracts half a million pilgrims yearly.

AKBARPUB, a town of India, in the British district of Cawnpore, and capital of a pergunnah of the same name.

AKEE, fruit tree belonging to the natural order *Sapindaceæ*, used as a remedy in diarrhoea, and the distilled water of the flowers as a cosmetic by the negro women.

AKERS, BENJAMIN PAUL (a-kers), American sculptor, born in Saccarappa, Westbrook, Me., July 10, 1825. He took lessons in Boston in modeling, his first work being a head of Christ, which was afterwards put in marble. He located in Portland and made portrait busts of Henry W. Longfellow and of many others of equal or less note; also a

head of Charlotte Corday and a bas-relief entitled *Evening*, both of which were masterpieces. He studied a year in Florence, where he made several busts and a *Morning*, as a companion to *Evening*. While there he also put in marble several of his previous works. In the winter of 1853-54 he modeled the *Benjamin in Egypt*, and while in Washington the busts of many noted men of the time. In 1855 he traveled through Europe, making in two years *Peace, Una and the Lion, Girl Pressing Grapes, Isaiah, Milton, Dead Pearl-Diver, Paul and Francesca, Diana and Endymion, Saint Elizabeth of Hungary, Reindeer*, and Schiller's *Diver*. His constant labors on damp clay in a sunless studio impaired his health, and he died in Philadelphia, Pa., May 21, 1861.

AKHLAT, town of Asiatic Turkey. The old city of Akhlat was the residence of many kings of Armenia, and the scene of many conflicts between the Greeks, Armenians and Persians. It was taken and devastated, in 1228, by Jelal-ud-deen, and completely destroyed by an earthquake in 1242. Population about 6,000.

AKJERMANN, town of Russia in Bessarabia, on the Black Sea. The treaty concluded at Akjermann, in 1826, between Russia and Turkey, secured to Russia the free navigation of the Black Sea. Population, 29,609.

AKKA, a wandering tribe of dwarfs in Central Africa. Their average height does not exceed 4 feet 10 inches, and they are ape-like in appearance. They are timid, shunning communication with strangers. The Akka live entirely by hunting. They were made known by Schweinfurth in 1874, and visited by Junker in 1882.

AKMOLINSK, Russian province and town in Central Asia. Area, 244,280 square miles; population, 226,789.

AKRON, a beautiful city of Ohio, county seat of Summit county, situated on the highest point of land between the Ohio River and Lake Erie, known as Portage Summit, to which the canal rises suddenly by a series of locks. The manufactures of this city are various and extensive, aggregating about \$15,000,000 a year. Among its interesting features are the water-works, public library, high school, and a beautiful cemetery. Akron is the seat of Buchtel College, and the headquarters of an important and active trade in agricultural implements. Population, in 1890, 27,702.

AKSAKOF, IVAN SERGEJEVICH, member of a Russian family of *littérateurs*, born Oct. 7, 1823, and died Feb. 8, 1886. He wrote lyrics, but is best known as the representative of Pan Slavism.

AK-SHEHR (White City), a city of Asia Minor, in the province of Konia. Population, 6,000.

AKSEE, Aksoo or Aksou, a river of Asiatic Turkey. There is also a small town of that name situated about 18 miles east of Brusa.

ALABAMA, a navigable river of the State of Alabama, formed by the confluence of the Coosa and Tallapoosa rivers in Elmore county, and running thence westerly and southwesterly with a very tortuous course until it unites with the Tombigbee river in Clarke county, forming the Mobile river. The Alabama river is about 300 miles long, and except in seasons of unusual drought it is navigable for vessels of light draught its entire course.

ALABAMA, STATE OF. Area, 52,250 square miles; population (1890), 1,513,017. Capital, Montgomery. Alabama was so named from a Creek or Muscogee word, meaning "Here we rest." De Soto passed through its territory in 1540. Bienville built a fort near Mobile Bay in 1702. Mobile was founded in 1711. The territory north of the thirty-first parallel of latitude was ceded to Great Britain by



AKEE FRUIT.

the French in 1763, and transferred to the United States in 1783. Alabama was a part of the Mississippi territory which was confirmed to the United States by Spain in 1819. It was admitted as a State in the same year. It was the theater of the Creek war of 1813-14. After the restoration of peace a tide of immigration set in, the Indians were removed to the west, the slaveholding interests of the State were jealously and ably guarded, and Alabama enjoyed an era of marked material prosperity. In 1860 Alabama declared for secession, and in 1861 the convention of Southern States met at Montgomery, which was made the capital of the Confederacy whose provisional government was there organized and of which Jefferson Davis was elected president. During the civil war Alabama was the scene of sanguinary conflicts in Mobile bay, and at Mobile, Selma, Talladega, Tusculumbia, Montevallo, Scottsboro and Athens. Under the reconstruction act, State conventions met in 1865 and 1867; and in 1868 a new constitution was submitted to the people and adopted and the State was readmitted to representation in Congress.

Alabama lies almost entirely within the Gulf slope. Its northern section, except the rich agricultural and grazing land of the Tennessee valley, is widely and picturesquely broken, and abounds in minerals, including gold, silver, lead, copper, ochre, steatite, clays, slate, soap and flag-stones, manganese, graphite, marble, granite and other building stone. Iron and coal are found in great abundance. The output of gold, since its discovery in 1836, has been more than a quarter of a million dollars. Some parts of this section also abound in mineral springs. The middle section is level, declining toward the gulf, and includes the great cotton belt and the principal corn-producing district. South of this are the vast pine forests and a light soil yielding grain and semi-tropical and other fruits. The agricultural products of the State include also large quantities of tobacco, cereals, sugar-cane and ramie. The forests, streams and bays produce large quantities of game and fish. Lumber, staves and railroad ties are exported through Mobile, the only port of entry. The principal manufactures are of cotton, iron, lumber and machinery. There are only sixty miles of coastline. Transportation is effected by rail and by the navigation of the Mobile, Alabama, Coosa, Tallapoosa, Cahawba, Tombigbee, Chattahoochee and Tennessee rivers. Other rivers are the Choctaw-hatchee, Conecuh, Tensas and Perdido.

The educational system of the State is directed by a State superintendent of education, assisted by county and township superintendents. State normal schools are located at Marion, Florence, Huntsville and Tuskegee. Tuscaloosa is the seat of the University of Alabama; Auburn, of the Agricultural and Mechanical College, Mobile, of the State Medical College; Greensboro, of the Southern University. There are also many excellent private and normal schools, and a number of professional and scientific schools. The State has a blind asylum at Mobile, an institute for the deaf, dumb and blind at Talladega, and an insane asylum at Tuscaloosa. The public and principal private libraries contain more than half a million volumes. The press and the various religious denominations and benevolent and other societies are well represented.

GOVERNORS OF ALABAMA.

William W. Bibb, 1819-20; Thomas Bibb, 1820-21; Israel Pickens, 1821-25; John Murphy, 1825-29; Gabriel Moore, 1829-31; John Gayle, 1831-35; Clement C. Clay, 1835-37; Arthur P. Bagby, 1837-41; Benj. Fitzpatrick, 1841-45; Joshua L. Martin, 1845-

47; Reuben Chapman, 1847-49; Henry W. Collier, 1849-53; John A. Winston, 1853-57; Andrew B. Moore, 1857-61; John G. Shorter, 1861-63; Thos. H. Watts, 1863-65; Lewis E. Parsons, 1865; Robert M. Patton, 1865-68; William H. Smith, 1868-70; Robert B. Lindsay, 1872; David P. Lewis, 1872-74; George S. Houston, 1874-79; Rufus W. Cobb, 1879-81; Edw. A. O'Neal, 1882-84-86; Thomas Seay, 1886-88-90.

The population of the State in 1820 was 127,901; 1830, 309,527; 1840, 590,756; 1850, 771,623; 1860, 964,201; 1870, 996,992; 1880, 1,262,506; 1890, 1,513,017.

ALABAMA, ALIBAMO, ALIBAMON, or ALIBAMOU, as variously written—a tribe of Indians represented by Pickett, the historian, as having been driven from Mexico at the time of the conquest by Cortez; and he traces them to the banks of the Missouri, the Ohio, the Yazoo and the Alabama rivers. They were subdued by the Creek confederation, and have since lived in Polk county, Texas, under the care of the government. They now number a little more than two hundred and have adopted the language, dress and habits of the whites.

ALABAMA CLAIMS. The settlement of the claims of the United States against Great Britain (known as the A. C.) by a tribunal of arbitration was one of the most important international events of modern times. These claims arose from the depredations upon American commerce during the civil war by vessels—of which the Alabama was the chief—fitted out in British ports under the direction of the Confederate government, in direct opposition to the "Three Rules relating to Neutrals" which were adopted by the parties to the Treaty of Washington. The rules are as follows:

A neutral government is bound—

"1. To use due diligence to prevent the fitting out, arming or equipping, within its jurisdiction, of any vessel which it has reasonable ground to believe is intended to cruise or carry on war against a power with which it is at peace; and also to use like diligence to prevent the departure from its jurisdiction of any vessel having been specially adapted, in whole or in part, within such jurisdiction, to warlike uses.

"2. To permit or suffer either belligerent to make use of its ports or waters as the base of naval operations against the other, or for the purpose of the renewal or augmentation of military supplies or arms or recruitments of men.

"3. To exercise due diligence in its waters, and as to all persons within its jurisdiction, to prevent any violation of the foregoing obligations and duties."

The tribunal of arbitration was composed of five members: Sir Alexander Cockburn, appointed by the Queen; Charles Francis Adams, appointed by the President of the United States; Count Frederic Sclopis, appointed by the King of Italy; M. Jacques Staempfli, appointed by the President of the Swiss Confederation; and Viscount d'Itajuba, appointed by the Emperor of Brazil. The court met at Geneva, Switzerland, Dec. 15, 1871, and not until Sept. 14 of the following year was the final conclusion announced. The decision was signed by all the arbitrators except Sir Alex. Cockburn, of England, and it awarded \$15,500,000 as a compensation to be paid to the United States for the satisfaction of the damages suffered by the American commerce. The settlement of the "Alabama claims" gave general satisfaction in the United States, and is believed to have furnished a lasting vigor to international peace.

ALABASTER BOX (*alabastrum*), a box, casket or vase used by orientals for perfumes, unguents, etc., formerly made exclusively of alabaaster, but in later years made also of other materials.

ALACOQUE, MARGUERITE MARY, a French nun (1647-90), the founder of the devotion of the Sacred Heart.

ALA DAGH ("beautiful mountain"), a range of the great tableland of Erzerum, in Turkish Armenia, north of lake Van. The Murad, the eastern head-stream of the Euphrates, rises on its northern slope. Its greatest elevation is about 11,000 feet.

ALAGON, a river in Spain, about 120 miles in length, emptying into the Tagus, above Alcantara, after draining the plains of Placencia. It is noted for the size and flavor of its fish.

ALAMAN LUCAS (ah-la-man), Mexican statesman and historian, born in the State of Guanajuato, Oct. 18, 1792. He was graduated at the College of La Concepcion, and at the Mexican School of Mines, and traveled through Europe. He was minister of foreign affairs in 1825, and again in 1830. He gave his support to Santa Anna, and became minister of foreign affairs in 1853. He published *Dissertations on Mexican History*, and also the standard history of that country, *Historia de Méjico*. He died in Mexico, June 2, 1853.

ALAMANDA, a tropical American genus of *Apocynaceæ*, cultivated in hot houses. *Alamanda cathartica*, a native of the West Indies, has violently emetic and purgative qualities.

ALAMEDA, a town in Alameda county, California, near the Leandro creek, on the Alameda branch of the Central Pacific Railroad. It contains seven churches, a high school and two newspapers.

ALAMO, a post-village in Tennessee, county-seat of Crockett county, about 75 miles northeast of Memphis.

ALAMO, THE, often spoken of as "the Thermopylae of America," is a fort at San Antonio, Tex., celebrated as the scene of a fierce combat, in which, from February 11 to March 5, 1836, a few Texans resisted an overwhelming force of Mexicans, until, reduced to a hopeless remnant of six, these were compelled to surrender, and were butchered by their captors.

ALAMOSA, a small town in Conejos county, Colorado, 130 miles southwest of Pueblo.

ALANGIACEÆ, a natural order of plants allied to the *Myrtacæ*. See TUPELO in these Revisions and Additions.

ALAPAYEVSK, a town of Russia in Asia, government of Perm, on the Alapaika, about 50 miles northwest of Irbit. It has large iron foundries. Population, about 6,000.

ALARCON, PEDRO ANTONIO DE, Spanish author and politician, was born at Guadix in 1833, and early devoted himself to journalism. In 1859 he served as volunteer in the Morocco campaign; he entered the Cortes as Liberal deputy for his native town, and worked for the restoration of the constitutional monarchy in the person of Alfonso XII, who after his accession made him a councilor.

ALARM, or ALARUM, originally a call to arms, as the loud and hurried peal of an alarm-bell. It is now commonly applied to an apparatus for awakening sleepers—usually attached to a clock. There are many ingenious *burglar alarms*. An *alarm-whistle* may be attached to a boiler, so as to give warning when the water sinks below its proper level.

ALARODIAN, a name used by Sayce for the group of languages of which Georgian is the type.

ALASKA

SUPPLEMENTAL HISTORY AND STATISTICS.

Alaska has an area of 580,107 square miles. It is therefore about one-fifth the size of the United States, or nearly equal to the combined areas of the New England, Middle and Southern States east of the Mississippi River. Of the interior of this vast area we are practically ignorant. Three or four reconnoissances have been made by officers of the army through portions of the territory, and the courses of several of its great navigable rivers have thus been determined. These expeditions, however, were inadequately prepared for the work of exploration; the journeys were necessarily made in very great haste, and were confined to the rivers. No systematic exploration of the interior has ever been attempted by the government, and the topography, resources and capabilities of Alaska are practically unknown.

The territory comprises six divisions or great districts, as follows:

1. The Arctic division, containing 125,245 square miles, and comprising all that portion of the North American continent between 141st meridian in the east and Cape Prince of Wales, or Bering Strait, in the west, the Arctic Ocean in the north, and having for its southern boundary a line indicating the watershed between the Yukon River system and the streams emptying into the Arctic and impinging upon the coast of Bering Sea just north of Port Clarence.
2. The Yukon division, containing 176,715 square miles and comprising the valley of the Yukon River as far as it lies within our boundaries and its tributaries from the north and south. This division is bounded by the Arctic division in the north, the 141st meridian in the east, and Bering Sea in the west. The southern boundary lies along a line

indicating the watershed between the Yukon and the Kuskokvim, Sushetno, and Copper River and runs from the above mentioned meridian in the east to the coast of Bering Sea, in the vicinity of Hazen Bay in the west. The island of Saint Lawrence, in Bering Sea, is included in this division.

3. The Kuskokvim division, containing 114,975 square miles, bounded on the north by the Yukon division, and comprising the valleys of the Kuskokvim, the Yogiak and the Nushegak rivers, and the intervening system of lakes. The eastern boundary of this division is a line running along the main Alaskan range of mountains from the divide between the Kuskokvim and Yennanah Rivers down to the low, narrow isthmus dividing Moller Bay from Zakharov Bay, on the Alaska peninsula. Bering Sea washes the whole west and south coasts of this division, which also includes Nunivak Island.

4. The Aleutian division, containing 14,610 square miles, and comprising the Alaska peninsula westward of the isthmus between Moller and Zakharov bays and the whole chain of islands from the Shumagin group in the east to Attou in the west, including also the Pribyloff, or Fur Seal Islands.

5. The Kadiak division, containing 70,884 square miles, and comprising the south coast of the Alaska peninsula down to Zakharov Bay, with adjacent islands, the Kadiak group of islands, the islands and coasts of Cook's Inlet, the Kenai peninsula and Prince William Sound, with the rivers running into them. The main Alaskan range bounds this division in the north and west. Its eastern limit is the 141st meridian, which intersects the coast line in the vicinity of Mount Saint Elias, while the south shores of the division are washed by that section of the North Pacific named the Gulf of Alaska.

6. The southeastern division, containing 28,980 square miles, and comprising the coast from Mount Saint Elias in the north to Portland Channel, in latitude 54 degrees 40 minutes, in the south, together with the islands of the Alexander Archipelago between Cross Sound and Cape Fox. The eastern boundary of this division is the rather indefinite line established by the Anglo-Russian and Russian-American treaties of 1824 and 1825 respectively, following the summits of a chain of mountains supposed to run parallel with the coast at a distance not greater than three marine leagues from the sea between the head of Portland Channel and Mount Saint Elias.

POPULATION—CENSUS OF 1880.

DIVISIONS.	White.	Creole.	Innuit.	Aleut.	Tinneh.	Thlinket.	Hyda.	Total.
Arctic	1	19	3,004	.....	.....	.....	.....	3,004
Yukon	1	19	4,276	.....	2,557	.....	.....	6,870
Kuskokvim	3	111	8,036	255	506	.....	.....	8,911
Aleutian	82	479	.....	1,890	.....	.....	.....	2,451
Kadiak	84	917	2,311	.....	864	326	.....	4,352
Southeastern	293	230	.....	.....	.....	6,437	788	7,748
Total	480	1,756	17,617	2,141	3,927	6,763	788	33,426

The ratio of population was one inhabitant to each 17½ square miles for the entire country; the ratio in each district being as follows:

Southeastern division	1 inhabitant to	8½ sq. miles.
Aleutian	1	6
Kuskokvim	1	13
Kadiak	1	16½
Yukon	1	25½
Arctic	1	40½

ORIGIN OF THE PRINCIPAL TRIBES.

The Eskimo (or Innuvit) inhabit the coast line west of the 141st meridian, excepting the northern part of Cook's Inlet, that portion of the Alaskan peninsula west of the 157th meridian, and the Shumagin and Aleutian groups of islands. Recent investigators believe that their migration to Alaska occurred at the time of general tribal migration resulting in the settlement on Greenland. This opinion is strengthened by the fact that all the Eskimo tribes, whether on the Alaskan coast, the eastern coast, or in Greenland, use the same kind of skin-covered canoes, and are similar also in their modes of living.

The Aleuts inhabit the northern coast of the Alaskan peninsula, from Cape Stroganof westward, and its southern coast from Pavlof Bay westward, the Shumagin Islands, and the whole group known as the Aleutian chain, extending from the Shumagins in the east to the island of Attoo in the west. As to their origin, there are various opinions. Some believe they have a common origin with the people of Kamtchatka; others, however, urge that they could not have migrated from Asia, owing to lack of facilities, and must have descended from the earliest nations of America.

They are divided into two tribes, Oonalashkans and Atkhas, speaking different dialects. They wear ornaments in the nose and upper lip. Their weapons consist of barbed darts, lances, spears, harpoons and arrows. They also carry a sharp stone knife, 10 or 12 inches long. Their household utensils are made of stone, wood, and bone, mats and baskets neatly woven of grass and tree-roots, bone needles, thread and cord of sinews, etc. They are very hospitable, and fond of dancing and pantomimes.

ALEUTIAN TRADITIONS.

The Aleuts have a tradition that in olden times the climate of their country was clearer and warmer, and the winds moderate; that their forefathers came from their original dwelling-place in the west—a great land called *Aliashka*, or Continent; that in that early country peace and prosperity prevailed; but that in the progress of time dissensions arose, resulting in war, separation, and divergent emigration. They also say that in their old country there was a very great flood sent upon the people, because of their disregard of sacred customs. An able and learned Russian priest (Veniaminof) says:

"The Aleuts consider as their relatives the Kenaitze, Chugarch, Yakutats, and Kolosh; but the Kolosh do not acknowledge this. In substantiation of their claim the Aleuts say that one prominent individual, the father of a numerous family, was from necessity compelled to leave his village on Oonalashka; in one summer he collected all his family and relatives, and departed in large bidarkas to the northern side of the Aliashka, with the intention to travel (*agoulaghan*) and to search for a better and richer country. He landed at first at one of the Aglemute villages; but the Aglemutes looked upon them as enemies, and in a general attack put them to flight. Finding it inconvenient or impossible to settle near the sea-coast, the Aleuts proceeded to the headwaters of some large river, and, having selected a convenient spot, settled down for good. Their descendants made peace with the natives of the country, and increased; but with their increase came a greater change in their former customs, appearing principally in the greater inclination to war and hunt. After the lapse of considerable time a quarrel ensued between the descendants of the original Oonalashkans and the creoles or half-breeds, finally resulting in a war. Their village was situated on both sides of the stream, one-half opposite the other. They had adopted the habit, for the sake of accustoming themselves to war, of making sham attacks, one upon the other, shooting spears and arrows without points; but, during one of these sham attacks, some one placed a head upon his arrow, and hit an enemy in the eye. The attack was at once changed from sham to reality; but, as the creoles outnumbered the Oonalashkans, the latter were defeated and compelled to move farther eastward, and passed from river to river, finally emerging upon the shores of the gulf of Kenai, where they finally settled down. The present Kenaitze are their descendants. The creoles left behind rapidly increased, and divisions of them moved to the north-eastward, and finally became the founders of the Chugarchs, Yakutats, and Kolosh."

In their traditions the Aleuts maintain that in former times the sea-shore along the whole group of islands was more deeply indented. In some localities this is even yet perceptible. The grandfathers of the present Aleuts in their youth heard from their grandfathers that they found on elevated spots, and often far distant from the sea, signs of former dwellings, such as whale-ribs and large logs of drift-wood. Between these places and the shore-line they also found small pebbles tied with whalebone fiber, such as are now used for sinkers, fish-lines and nets. From these indications the Aleuts came to the conclusion that at one time these elevated positions, showing the remains of dwelling-places, were on the sea-shore, and over the places where the sinkers were found the sea once extended. But all this was subsequent to the flood.

With regard to the volcanoes the Aleuts believe that in olden times all the "fire mountains" on

Oonalashka and Ounimak islands quarreled among themselves as to which had the largest body of fire within, and after a prolonged dispute, in which not one would yield to the others, they concluded to settle the dispute by a trial of strength. Immediately a terrible conflict ensued, lasting for many days, the mountains throwing fire and rocks at each other. The smaller peaks could not withstand the larger ones, and, recognizing their weakness, bowed down and went out forever. The conflict continued until but two craters remained, one on Oonalashka—Makushin (Ayak), and the other on Ounimak—Recheshnaia (Ismak). These, having vanquished all the others, engaged in a single-handed conflict, with the most disastrous consequences to their surroundings. Fire, rock and ashes were thrown in such quantities that all animals inhabiting the neighborhood perished, and the air became heavy. The Ounimak crater finally could not keep up with its rival, and, seeing destruction impending, gathered all its strength, jumped up with a bound and collapsed. The Makushin volcano, being victor and but little injured, and seeing no more enemies around him, gradually calmed down, and now only smokes occasionally.

PRINCIPAL TOWN.

Sitka is the capital of Alaska, but Juneau, although but ten years old, is to-day the largest town. It is situated about 80 miles northeast of the capital, opposite Douglas Island, at the foot of a range of sheltering mountains, which rise abruptly two thousand feet from the end of every street. These streets seem to follow the gulches or ravines. At present Juneau is simply a mining camp, founded in 1880 by Joseph Juneau and Richard Harris, but it is destined to become the most important commercial point upon the entire coast. This is owing to the proximity of the precious metal, the "Silver Bow Basin" gold placer mines lying immediately back of the town, while in front, but three miles away, on Douglas Island, is the famous Treadwell mine. It is believed several other good "claims" exist in the immediate neighborhood which have not yet been developed. The town contains a number of shops, where a system of barter is carried on between the Indian hunter and the white trader. Upon arriving in town with the skins the red man visits every shop and trader before he parts with his goods, and finally disposes of his skins to the highest bidder. He receives in payment a number of blue or red tickets which are taken by the store-keeper in exchange for such commodities as he may require to carry back to his Inuit home.

NATIVE ALASKAN HOMES.

All native villages on the Alaskan coast are built directly on the beach, not only because the Indians look to the sea for a living, but to make homes inland means such labor of felling trees and clearing the ground as only the white race undertakes. In the genuine Alaskan lodge there is no window, but one door, and no second story. In the center of the floor on the ground is a fireplace, around which, at a distance of several feet, runs a continuous platform, which constitutes the sleeping apartments. Occasionally the room is divided by curtains. The ground beneath the platform constitutes kitchen and reception room. The head of the house sits opposite the door, his family and friends on either side, while slaves, if there be any, sit with their backs to the door. In front of many of the houses stand one or more large poles, carved from top to bottom, generally representing bears, whales,

eagles, ravens or wolves. These are the genealogical trees of the natives, of which they are very proud, and tell the family history.

INDUSTRIES.

The chief industry of Alaska is the seal-fur trade, which is described elsewhere. In addition to this there is considerable traffic in sea-otter, land-otter, and other furs, and in fish, and a small production of minerals and timber. The present annual yield of sea-otter skins is 5,500, worth \$500,000; beavers 10,000, worth \$25,000; silver foxes 200, worth \$20,000; marten 20,000, worth \$60,000; red and cross foxes 10,000, worth \$15,000; and other miscellaneous skins, valued at \$25,000. Notwithstanding efforts made by the United States government for the preservation of the fur-bearing animals in Alaska, the supply (excepting the fur-seals which are adequately protected) is continually decreasing, and will ultimately become extinct.

On the other hand, the fisheries of Alaska are annually increasing in importance, and are destined to become the staple industry of the future. The catch of salmon is already assuming large proportions, and the number of canneries is rapidly increasing. The present annual production is about 23,000 cases per annum, besides 5,000 barrels of salted salmon. The largest fishing port is at Killisnoo, and at this port alone 300,000 gallons of herring oil are shipped annually. There are also large shipments of dog-fish oil and whale oil.

In minerals, there is on Douglas Island a mountain of gold ore, but of low grade. The cost of securing the ore is, however, very small. There is no descending into the bowels of the earth with hydraulic machines. The miners chip away in broad daylight, with ore enough in sight to last a score or more of years, and within a stone's throw of the mountain is the mill, which receives and reduces the ore. The summit and part of one side of the mountain have already been eaten up. The present annual production is nearly \$1,000,000.

THE GREAT SEAL ISLANDS OF THE WORLD.

The only important breeding grounds of the fur-seals at present are the Pribyloff (or Pribylov) Islands, lying in the heart of Bering Sea, about 192 miles north of Oonalashka, 200 miles south of Matthews, and about 200 miles westward of Cape Newenham, on the main land. Two of these islands, St. George and St. Paul, by reason of their temperature, surface, and facilities for landing, are specially adapted for the perfect life and reproduction of these valuable fur-bearing animals. They are located in the Japan Ocean current, and hence the normal temperature is much warmer than that of the surrounding seas. These islands are also so enveloped by dense fogs as to furnish a comparatively secure hiding-place for the seals. St. Paul is about 13 miles long and six miles in its greatest width. It has a superficial area of 21,120 acres, with a shore line of 42 miles, over sixteen of which are adapted for the passage of the seals. St. George is about 10 miles long and over four miles in width, and contains about 27 square miles.

During the short summer the fur seals seek these islands in immense numbers to rest for two or three months on land, on a hard smooth surface, with a cooling, moist atmosphere, which they must have during their breeding season. They find here the admirably adapted grounds of basaltic rock and of volcanic cement, slopes of gradual ascent from the sea furnishing a quiet resting place for millions of this intelligent species.

THE AMERICAN FUR TRADE.

For the past twenty years the Alaska Commercial Company, of San Francisco, under a lease granted by Congress, have had the exclusive right of taking seal from Alaskan waters. Their lease expired in 1890, and during that year a new lease was made with the North American Commercial Company for a like term of twenty years, after a public competition wherein that company proved to be the highest and best bidder. The pecuniary conditions of the lease are the payment of an annual rental to the United States of \$60,000, a revenue tax of \$2, and a royalty of \$7.62½ for each fur-seal skin taken and shipped from the islands of St. Paul and St. George, and 50 cents for each gallon of oil taken from seals killed and sold. The lease provides that the number to be taken yearly shall not exceed 100,000; no female seal is to be slain, and the seals are only to be taken during the months of June, July, August and September. The lease also contains covenants for the care, maintenance and improvement of the native inhabitants of the leased islands, requiring the lessees to supply them free of charge with dried salmon, fire-wood, salt, and empty barrels for preserving the necessary supply of meat.

DISTRIBUTION OF THE PRINCIPAL FUR-BEARING ANIMALS.

The islands of St. Paul and St. George in Alaska are the only known breeding grounds of the fur-seal. From early spring until late autumn fur-seals are found in all that part of the North Pacific inclosed by the Alaska coast from latitude 54 deg. 40 min. to Mount St. Elias and thence westward along Prince William Sound to the east side of Kenai peninsula, and along the Alaska peninsula, and its continuation, the Aleutian chain of islands. In Bering Sea the fur-seal has not been seen north of latitude 58 deg. In the spring only are they found in large numbers in the vicinity of the Straits of Fuca and along the coast of Vancouver and Queen Charlotte Islands. During the general migration to and from the breeding grounds several of the passes through the Aleutian chain are crowded with adults in the spring and young seals in the autumn. After leaving their breeding grounds they scatter over the broad Pacific to localities where elevated submarine plateaus furnish them with abundant feeding grounds (of fish), until the instinct of reproduction calls them from all directions to the islands named above.

The sea-otter seems to make its home chiefly on a line parallel with the Japanese current, from the coast of Japan along the Kurile Island to the coast of Kamtchatka, and thence westward along the Aleutian chain, the southern side of the Alaskan peninsula, the estuaries of Cook's Inlet and Prince William's Sound, and thence eastward along the Alaskan coast, the Alexander Archipelago, British Columbia, Washington Territory, and Oregon. Sea-otters are most abundant from the island of Ounimak northeasterly along the Alaskan peninsula.

The land-otter is one of the most widely distributed of fur-bearing animals, ranking in this respect next to the common fox. The skin, however, is much more valuable, and is used in the manufacture of an imitation seal-skin. In Alaska the land-otter is found on the whole coast from the southern boundary to the northern shore of Norton Sound, also on most of the islands, and along the whole coast of the Yukon as far as known.

The beaver, the brown bear, the mink, the cross, blue, and white fox, the marten, and a few other fur-bearing animals are also found in many parts

of Alaska, and some of them widely distributed and in immense numbers.

ALA-TAN, a name given to a range of mountains forming the boundary between Turkestan and Mongolia, and the northern limit of the great tableland of Central Asia. It consists of five sub-ranges grouped around Lake Issik-Kul as a central point. The mountains are principally of granite formation, general elevation 10,000 to 15,000 feet. The highest peak, Khan Tengri, is 24,000 feet above the sea.

ALATERNUS, according to some a genus of plants of the natural order *Rhamnaceæ*, but more generally regarded as a sub-genus of *Rhamnus*, comprising evergreen shrubs, of which the best known is *Rhamnus alaternus*, the buckthorn, which is particularly hardy, withstanding any kind of clipping, and growing tall and rapidly. For this reason the garden walls in English towns are often almost entirely concealed beneath a luxurious growth of this shrub. The ovate leaves grow alternately, and the small flowers, which are abundant, grow upon a raceme. They furnish a pleasant food for bees. A dye has been obtained from the bark and wood of the plant.

ALATYR, a town in the Russian province of Simbirsk, on the Sura. Population, 15,000.

ALAUDA (Lat., *a lark*), a genus of granivorous singing-birds, order *Insectores*, family *Icteridæ*, common in all parts of the globe. Their principal characteristics are a long and straight hind claw, strong straight bill, and ability to elevate the feathers on the back of the head into the form of a crest. They are migratory, and build their nests on the ground.

ALAUSI, a town of Ecuador, in the province of Chimborazo, elevation 7,980 feet above the sea. Population, 6,000.

ALBANENSES, an early and mediæval religious sect, embraced under the general name Cathari.

ALBANI, a rich and celebrated Roman family, many members of which filled high positions in the church. It was Cardinal Alessandro Albani (1692-1779) who formed the famous collection of objects of art in the Villa Albani, outside the Porta Salaria at Rome. It is still a rich collection, although part of it was removed by the French. The pieces taken away were restored in 1815; but their owner being unable to pay for their removal to Rome, sold them to the king of Bavaria.

ALBANI, MADAME (*née* Enna La Jeunesse), vocalist, was born at Chambly, in Canada. She was trained in music by her father, and at the age of twelve made her debut at Albany, from which she assumed her professional name of "Albani." She afterward studied at Paris and Milan, and in 1870 sang at Messina with a success that has since attended her to London and Paris, the United States, Berlin, etc. In 1878 she married Ernest Guy, eldest son of the director of the Royal Italian Opera, London.

ALBANY, or ALBAINN, meaning a country of heights, is the name anciently given by the Celts to the whole of Britain, and later on to the north-west part, when they were driven by foreign invaders into those highlands. In a Scottish council held at Scone, June, 1398, the brother of Robert III, who was then regent of Scotland, was given the title of Duke of Albany. The title has since occasionally been conferred upon second son of kings of Scotland and England.

ALBANIA, a country of considerable extent, which forms the southwestern province of European Turkey. The exports consist almost entirely of unmanufactured produce, live-stock and provisions; and the chief imports consist of woollen clothes, used for winter coverings, fire-arms, cutlery,

gunpowder, hardware, coffee and sugar. A lengthy article may be found in *Britannica*, Vol. I.

ALBANY is a division of the eastern province of Cape Colony, Southern Africa, in which Graham-town stands.

ALBANY, a seaport town of Western Australia, on King George's Sound.

ALBANY, an important manufacturing town and railroad centre of Georgia, county seat of Dougherty county, delightfully situated at the head of high-water navigation on Flint River, and noted for the pure medicinal waters of its artesian wells, which have made it a popular health resort.

ALBANY, a small village in Kentucky, county seat of Clinton county, 126 miles south of Frankfort. It has a court house, three churches, an academy, tannery, and steam flour mill.

ALBANY, a post-village in Oregon, county seat of Linn county, on the Willamette river, about 27 miles south of Salem. It contains a court house, seven churches, a collegiate institute, bank and four newspapers.

ALBANY, the oldest chartered city in the United States, capital of the State of New York, and county seat of Albany county, stands upon the west bank of the Hudson, 145 miles above the city of New York. Here, in 1614, the Dutch established a trading-station and built a block-house. In 1624 they erected Fort Orange, or Aurania, calling the village Beaverwyck, which name was changed in 1646 to Willemstedt, and in 1664 to Albany, in honor of the Duke of York and Albany (afterwards James II of England), to whom the colony was granted on its cession to Great Britain. The city received its charter in 1686. The first general congress of the English colonies met here in 1764. Albany became the permanent capital of the State in 1807. The principal public edifice is the new State capitol, one of the most magnificent and costly structures of its kind in the world: 390 feet in length, 290 in width, four stories high, and built of drilled granite throughout at a cost of more than sixteen million dollars. Prominent among the public institutions and architectural works are the new custom-house and post-office; the city hall, built of rough granite; the cathedral of the Immaculate Conception; the state museum of natural history in the marble state hall; the agricultural museum; the astronomical observatory, and numerous handsome church edifices, hospitals, charitable institutions, and places of amusement. The Albany Institute for the Promotion of Science, founded in 1791, the medical school, law school, State normal school, and other educational institutions render the city an important centre of learning. Albany manufactures annually about four million dollars' worth of stoves; its lumber trade amounts to more than ten millions; it is the centre of the cattle trade for New York and New England from the west; and its numerous other branches of industry include twenty breweries, twelve iron foundries, two blast furnaces, a cracker bakery and several extensive shoe factories. An abundant supply of good water from an artificial lake, a beautiful park of eighty-one acres, the excellence of its drainage—which is greatly facilitated by its hilly and irregular site—combine to make Albany, notwithstanding the severity of its winter climate, an exceptionally healthy and attractive city. Population in 1890, 93,523. See *Britannica*, Vol. I, p. 448.

ALBEMARLE SOUND, an inlet in the northeastern part of North Carolina, running inland for 60 miles, with a breadth of from four to fifteen miles. It receives the waters of the Roanoke and Chowan rivers, and is connected by canals

with Chesapeake Bay and by natural channels with Pamlico Sound.

ALBERTI EUGENIO, an Italian author, born at Padua in 1817, graduated from the Padua University, and at once devoted his energies and talents to literary pursuits. He wrote many valuable works, principally historical. Among them may be named *Vita de Caterina di Medici* (1838); *Guerra d'Italia del principe Eugenio di Savoia* (1839); and an edition of the works of Galileo, which he edited. He died in 1878.

ALBERT, a town of France, department of Somme, about 18 miles northeast of Amiens. It contains cotton and woolen factories, saltpeter works, paper mills, foundries, etc. It was formerly called Ancre. Population, 4,019.

ALBERT, or ALBRECHT, the Pious, third son of Maximilian II, of Austria, was born in 1559 and died in 1621. He spent his childhood and youth at the Spanish court, and he dedicated himself to the church. His character was mild, and he was distinguished for his uprightness and his love for study. In his eighteenth year he was made cardinal, and seven years after he was made archbishop of Toledo. In 1594 he became viceroy of Portugal, which office he held for two years. The remainder of his life he was Stadtholder of the Netherlands, the representative of the Spanish monarch. In 1598 he abandoned his religious profession and married the infanta Isabella.

ALBERT EDWARD. See PRINCE OF WALES, in these Revisions and Additions.

ALBERTA, one of the four provisional districts into which the Northwest Territories of Canada were divided in 1882. It has an area of about 100,000 square miles, and contains the great cattle-ranges of Canada. Large tracts of these grazing lands are leased to ranching companies and individuals. Fort MacLeod and Calgary, both thriving towns, are great centers for ranchmen. Coal is abundant; timber is plentiful; and there are petroleum deposits.

ALBERT LEA, a town of Minnesota, in Freeborn county, situated on a lake of the same name. It is the centre of a fertile agricultural section, and contains flour mills, grain elevators and machine shops.

ALBERT MEDAL, a decoration instituted in 1866, in England to reward heroic acts of mariners and others in saving life at sea. In 1867, in place of one decoration, two were instituted, called the Albert Medal of the First Class and the Albert Medal of the Second Class. In 1877 the Albert Medal was extended to acts of gallantry in preventing loss of life in mines, on railways, at fires, and in other perils on land. Albert Medal is also the name of a distinction granted since 1864 by the English Society of Arts to notable men of science of many nationalities.

ALBERT RIVER, North Queensland, has a course of about 200 miles, and empties into the Gulf of Carpentaria, below Burktown.

ALBIA, county seat of Monroe county, Iowa, situated on the Burlington and Missouri River Railroad, the southern terminus of the Iowa Central Railroad, is 25 miles west of Ottumwa, and 24 miles southwest of Oskaloosa.

ALBION, Illinois, county seat of Edwards county, situated 56 miles northwest of Evansville, Ind., on the New Albany and St. Louis Railroad.

ALBION, a town of Michigan, situated on the Kalamazoo River, 96 miles west of Detroit. It is the centre of a grain district, and contains several large flour mills and manufactories of agricultural implements. It is also the seat of a Methodist college.

ALBION, a town of Nebraska, county seat of Boone county, is one of the most thriving villages in the northern part of the State. It contains a number of flouring mills, and carries on a brisk trade in general merchandise.

ALBION, New York, the county seat of Orleans county, is a post-village 30 miles west of Rochester and 52 miles northeast of Buffalo, on the Erie Canal and New York Central Railroad. This village is the seat of Phipps Union Seminary, the Albion Academy and a Roman Catholic college.

ALBION, a post-village in the township of Albion, Dane county, Wis., situated on Koshonowong Lake, three miles from Edgerton and 14 miles from Janesville.

ALBION (White Island) is the most ancient name of Great Britain. The supposition that it was so called by its inhabitants, the Celts, on account of the chalky cliffs of Kent, does not come from good authority.

ALBITE, or **SODA FELDSPAR**, is a silicate of alumina and soda, found in granite veins, and as a constituent of many crystalline rocks.

ALBONI, MARIETTA, a celebrated Italian singer, pupil of Rossini, born at Cesena, Italy, in 1824. She visited the United States in 1850, and became an established favorite. She married the Count de Pepoli in 1854, and on his death, which occurred in 1866, retired to private life. Her voice was a rich contralto, of great purity and strength.

AL BORAK: literally, "the Lightning," was the miraculously fleet mule on which Mohammed was supposed by his disciples to have made his journey between Jerusalem and the heavenly regions.

ALBRIGHT, JACOB, founder of the Evangelical Association, familiarly known as the German or Albright Methodists, was born near Pottstown, Pa., in 1759, and died at Muehlbach (now Klinefeltersville), Pa., May 18, 1808.

ALBUGO, a term employed in surgery to designate the white opacity that often follows ulceration of the cornea of the eye. If occurring in infancy it may diminish to some extent, but in after life it does not undergo absorption, nor admit of surgical relief.

ALBULA, a pass and mountain stream in the Swiss canton of Grisons. The pass (elevation, 7,595 feet) is a marshy plateau three-fourths of a mile long, with granite and limestone summits towering on either side. The stream rises close by, has a course of about 20 miles, and joins a tributary of the Rhine.

ALBUMINURIA, a symptom of Bright's disease of the kidneys.

ALBUNOL, a small town of Spain, near the coast of the Mediterranean. Population, 8,923.

ALBUQUERQUE, a city in New Mexico, fifty-six miles west of Santa Fé. It is the county seat of Bernalilli county.

ALBURNUM, or **SAP WOOD**, is the newly formed layers of exogenous plants which are added continually as the tree grows older. These layers, which are formed on the outside of the older layers and inside of the bark, constitute the digestive system of the tree; for they are porous, allowing the free circulation of sap, while the under and older layers become compact and hardened, and cease to aid in growth. These under layers are, however, the more valuable for building and other purposes. The alburnum is of a pale color in all woods, even in ebony, in which the duramen or under-layer is black.

ALCANDITE (ancient *Uditunum*), a town of Spain. Population of commune, 8,500.

ALCANIZ, a town of Aragon, Spain, in the

province of Ternel, on the Guadalope. It has a magnificent collegiate church. Population, 7,366.

ALCATRAZ, or **ALCATRAS**, a rocky island off the northwest coast of Africa.

ALCATRAZ, an island four miles north of San Francisco, Cal. It has a lighthouse 36 feet high, and a fortified post which serves as a military prison.

ALCEDINIDÆ, or **ALCEDIDÆ**, is a natural family of birds represented by the common Kingfisher. It is sometimes called *Halcyonidæ*. It is divided into the subfamilies *Alcedininae* and *Daceloninae*, and consists of about 20 genera and 120 species. See **KINGFISHER**, *Britannica*, Vol. XIV, pp. 81, 82.

ALCIDÆ, or **ALCAIDÆ**, is a family of marine birds, order *Pygopodes*, consisting of the *Alcinae* and *Urinae*, and including about 12 genera and 25 species. The gare-fowl, or great auk, and all but one of the other auks belong to this family. See **AUK**, *Britannica*, Vol. III, p. 85.

ALCMÆON, a son of Amphiarus and Eriphyle, one of the heroes who took part in the successful expedition of the Æpigoni against Thebes.

ALCO, the native name of the domesticated wild dog of Peru and Mexico. It is small, and is characterized by a very small head and large pendulous ears.

ALCOCK, SIR RUTHERFORD, K. C. B., was born in London, 1809. He studied medicine there at King's College, and served three years on the medical staff of the British auxiliaries in Portugal and Spain. In 1844 he was sent out as a British consul to China, in 1858 made consul-general in Japan, and the next year received the rank of minister plenipotentiary. He filled this post until 1865, from which time until 1871 he was envoy to the Chinese government. He was made a C. B. in 1860, a K. C. B. in 1862, a D. C. L. of Oxford in 1863, and President of the Royal Geographical Society in 1876. Among his works are *Medical Notes on the British Legion of Spain; The Capital of the Tycoon; and Art in Japan*.

ALCOHOL, from two Arabic words meaning "the koh'l," or powder of antimony used for painting the eyebrows, is a liquid ethyl hydrate obtained by the destructive distillation of an organic body or by the fermentation of an aqueous saccharine solution. More loosely, the term is applied to any liquor containing this spirit in considerable quantity. Chemically speaking, an alcohol is a compound corresponding to the hydroxide of the metals, regarded as derived from a normal hydrocarbon by replacing its hydrogen with an equivalent hydroxyl. See *Britannica*, Vol. I, pp. 469-71. See also **CHEMISTRY**, *Britannica*, Vol. V, pp. 562-64.

ALCOHOLIC BEVERAGES are any liquids containing a proportion of alcohol and used as beverages by mankind. They are classified according to the materials from which the alcohol is procured and the manner of their preparation.—*Malt liquors* are beverages which are prepared by the fermentation of malted grain, and include beer ale and porter. In malt liquors the percentage of alcohol varies from 1.5 to 9 per cent.—*Fermented liquors* are those which are prepared by the fermentation of the juices of fruit, and include wines properly so called, cider, and fruit wines prepared from other than grape juice. Wines restricted to the product of the grape contain 7.77 to 20.2 per cent. of alcohol,



ALCEDINIDÆ.

and other fermented fruit beverages from 2 to 7 per cent.—*Distilled liquors* are prepared by the distillation of fermented saccharine liquid. To this class belong ardent spirits, such as brandies, rum, whiskey, etc. The percentage of alcohol in ardent spirits considerably exceeds that of wine, varying in spirits from 45.0 to 55.0, and in liquors from 33.9 to 58.93 per cent.

ALCOHOLOMETRY is the process of estimating the percentage of absolute alcohol in a sample of spirits.

ALCORA is a Spanish trading-town, situated forty-five miles northeast of Valencia, from which fruits are exported.

ALCORN, JAMES LUST, American statesman, born near Golconda, Ill., Nov. 4, 1816. He removed to Kentucky, and was educated at Cumberland College. He was made deputy sheriff of Livingston county, and in 1843 was elected to the legislature. In 1842 he removed to Mississippi, where he served in the legislature till 1865. Mr. Alcorn declined the Whig nomination for governor in 1857, but accepted a nomination for congress. He was, however, defeated by L. Q. C. Lamar. In 1858 he became president of the levee board of the Mississippi-Yazoo Delta, and three years later was elected brigadier-general by the State convention; but his commission was refused by Jefferson Davis on account of political differences. Although elected to the United States senate in 1865 he was not allowed to take his seat; but he was elected governor four years later by the Republican party, which position he resigned in 1871 when he was made United States senator. In 1873 he was defeated for governor of his State on the Independent ticket.

ALCOTT, AMOS BRONSON, American educator, born in Wolcott, Conn., Nov. 29, 1799. When a boy he learned a trade, at which he worked while pursuing his studies. In 1823 he started an infant school in Wolcott, and in 1828 established



AMOS BRONSON ALCOTT.

another one in Boston. His plan of teaching was by conversation instead of by books, and his methods attracted considerable attention. His school was denounced by the press, and Mr. Alcott gave it up and took to the lecture platform. He visited Europe, and made many friends. On his return he led the life of a peripatetic philosopher, lecturing on a wide range of practical questions. He published, after he had passed his seventieth birthday, *Tablets*, *Concord Days*, *Table Talk* and *Sonnets and Canzonets*, and also wrote for the "Dial." Mr. Alcott was attacked with apoplexy, Oct. 24, 1882, and died at his home in Concord, Mass., March 4, 1888.

ALCOTT, LOUISA MAY, American authoress, daughter of Amos Bronson Alcott, born in Germantown, Pa. (now a part of Philadelphia), Nov. 29, 1832. She received her education principally from her father, and began to write for publication at the age of 16, but with little success until she was more than 30. In 1862 she became a volunteer nurse in the military hospital at Washington, and wrote many letters, containing sketches of hospital experiences, which were published. After her labors were finished at Washington, she went to Europe to recuperate her health, and the following year (1867)

published the work that made her famous—*Little Women*. Her other popular stories are: *Flower Fables or Fairy Tales*; *Hospital Sketches*; *An Old-Fashioned Girl*; *Little Men*; *Aunt Jo's Scrap Bag*; *My Boys*; *Shawl Straps*; *Cupid and Chow-Chow*; *My Girls*; *Jimmy's Cruise in the Pinafore*; *An Old-Fashioned Thanksgiving*; *Work: a Story of Experience*; *Eight Cousins*; *Rose in Bloom*; *Silver Pitchers*; *Under the Lilacs*; *Jack and Jill*; *Moods*, *Proverb Stories*; *Spinning Wheel Stories*; and *Lulu's Library*.



THE LATE LOUISA MAY ALCOTT.

She died March 6, 1888, two days after the death of her father.

ALCOTT, MAY (Mrs. Ernest Nieriker, daughter of Amos B. Alcott), American artist, born in Concord, Mass., in 1840. She studied at Boston, London and Paris, and attained considerable power as a copyist and painter of still-life, in oils or water colors. She died in December, 1879.

ALCOTT, WILLIAM ALEXANDER, American author, born in Wolcott, Conn., Aug. 6, 1798. He studied medicine at Yale, and practiced for several years, when he associated himself with William Woodbridge in the preparation of school textbooks. Mr. Alcott published upwards of 100 books and pamphlets on reform in education and moral and physical training. He died in Auburndale, Mass., March 29, 1859.

ALCOVE, a recess or part of a chamber in which a bed of state or seats may be placed, and shut off by a balustrade or by draperies. The name is commonly applied to any arched recess or niche in the wall of an apartment.

ALCYONARIA, one of the two orders of *Actinozoa*, including polyps, with eight tentacles and radial partitions. They usually form colonies, and have always some sort of skeleton. Dead-men's fingers, sea-pens, red corals and orange-pipe corals are common representatives of the order.

ALCYONIUM, or **DEAD MEN'S FINGERS**, a common cœlenterate of the sub-class *Actinozoa*, belonging to the same order as the sea-pen, red coral, etc. It is often found on the coast, in somewhat deep water, as a white, creamy or orange mass attached to stones and shells. The mass, about the size of a man's hand, is a myriad colony of animals. When undisturbed the individual polyps may be seen projecting from the surface, about the size of a snail's horns.

ALDEBARAN, the Arabic name of a star of the first magnitude in the constellation Taurus. It is the largest and most brilliant of a cluster of five called by the Greeks Hyades.

ALDEHYDE is a volatile fluid produced by the oxidation and destructive distillation of alcohol and other organic compounds.

ALDEN, JOSEPH, D. D., LL. D., American educator, born in Cairo, N. Y., Jan. 4, 1807. He was graduated at Union College in 1829, became pastor of the Congregational church at Williamstown, Mass., then professor in Williams College, later President of Jefferson College, and from 1867 to 1872 President of the New York State Normal School at Albany. He was a prolific writer, and published more than seventy volumes of Sunday-School literature. He died in New York city, Aug. 30, 1885.

ALDEN, JOHN, magistrate of the Plymouth colony, born in England in 1599. He shipped as cabin boy in the *Mayflower* in 1620, and married Priscilla Mullens the following year. Shortly after the



THE MAYFLOWER.

landing of the Puritans his integrity and wisdom won for him the post of magistrate of the colony. He died in Duxbury, Mass., Sept. 12, 1687.

ALDERSON, JOHN DUFFY, American Congressman, born at Nicholas Court House, W. Va., Nov. 29, 1854. He was admitted to the bar in 1875, and was appointed prosecuting attorney in each of the counties of Nicholas and Webster. In 1876 he was elected prosecuting attorney of those counties and was twice reelected, serving until 1889, when he became a member of the Fifty-first Congress as a Democrat.

ALDRICH, HENRY, born at Westminster in 1647, and died Dec. 14, 1710. He was canon of Christ Church, Oxford, in 1682, and dean in 1689. He was the designer of the Peckwater Quadrangle, and wrote *Hark the Bonny Church Bells*; but he is less remembered as an architect or a composer than as the author of the *Artis Logice Compendium* (1691), of which a new edition appeared in 1862.

ALDRICH, NELSON WILMARTH, U. S. Senator, born at Foster, Rhode Island, Nov. 6, 1841. He received an academic education, and then engaged in mercantile pursuits. He was president of the Providence common council in 1871-73, and was a member of the Rhode Island General Assembly in 1875-76, serving the latter year as speaker of the House of Representatives. He was elected to the House of Representatives of the Forty-sixth Congress and received a reelection to the Forty-seventh Congress. In 1880 he was elected to the U. S. Senate as a Republican, and reelected in 1886.

ALDRICH, THOMAS BAILEY, American author, born in Portsmouth, N. H., Nov. 11, 1836. His boyhood days were spent in Louisiana, but at the death of his father he entered the office of his uncle, a banker in New York city, when he began writing prose and verse for various journals. His contributions won universal favor and he joined the staff of the New York "Home Journal." Subsequently he edited the "Boston Every Sunday," and later "the Atlantic Monthly."



T. B. ALDRICH.

me of his most popular works are: *The Ballad*

of *Babie Bell*, and other Poems (1856); *The Course of True Love Never Did Run Smooth* (1858); *Pampinea and other Poems* (1861); *Out of His Head, a Romance in Prose* (1862); two volumes of Poems (1863 and 1865); *Story of a Bad Boy* (1870); *Cloth of Gold and other Poems* (1874); *Marjorie Daw and other People* (1873); *The Queen of Sheba* (1877); *The Stillwater Tragedy* (1880); *From Ponkapog to Peath* (1883); and *Mercedes* (1883). All of his prose writings and some of his verse have been reprinted in England, France and Germany.

ALDRIDGE, IRA, American negro tragedian, known as the "African Roscius." The date and place of his birth are unknown. Some biographers claim that he was born at Bellair, near Baltimore, about 1810, while others say, probably on better authority, that he was born in New York city, about 1805. They all agree that as a boy he had a passion for the stage, and that when he made his *début* in London, at the Royalty theater, as Othello he met with immediate success. He appeared in various countries, and everywhere was received with enthusiasm—honors being conferred on him by nearly all the crowned heads of Europe. Aldridge was an honorary member of numerous academies of arts. He died in Lodez, Poland, Aug. 7, 1867, leaving a widow, an English lady, in London.

ALECSANDRI, VASSILI. See ALEXANDRIA, in these Revisions and Additions.

ALECTORIDES, a group of birds formerly of uncertain extent, but in Nitzsch's classification of 1829 limited to the genera *Otis* and *Dicholophus*, is also an order or sub-order including the rails, the cranes and their allies.

ALECTOROMORPHÆ, a superfamily of carinate birds, sub-order *Schizognathæ*, including the families *Phasianidæ*, *Megapodidæ*, *Cracidæ*, and, until 1867, the *Turnicidæ* and *Pteroclidæ*, nearly corresponding, in the older sense, to the *Rasores*, or *Gallinæ*; but, in the later (that of Huxley), restricted to the groups *Alectoropodes*, containing the fowls proper, and *Peristeropodes*, containing the curassows and mound-birds.

ALECTOROPODES, one of Huxley's two groups or sub-divisions of alectoromorphous birds, contains the pheasant, guinea-fowl, grouse, turkey, quail, partridge and all true fowls.

ALEDO, county seat of Mercer county, Ill., a post village on the Chicago, Burlington & Quincy Railroad, east of the Mississippi River, and 37 miles west of Galva. Coal mines are found extensively in this region.

ALEMÁN, MATEO, Spanish novelist, born about the middle of the 16th century, at Seville, and died in Mexico in 1610. He was author of several works, one of which, *Guzman de Alfarache*, published at Madrid in 1599, ran through twenty-six editions, consisting of not less than 50,000 copies, in six years. In delineation of manners and purity of style it was a masterly creation, ranking next to the most celebrated of all Spanish "picaresque" novels, Mendoza's *Lozarillo de Tormes*.

ALEUTS. See ALASKA.

ALESHKI, a Russian town in the government of Taurida, on the Dnieper, noted for its melon culture and its fisheries. Population, 8,915.

ALESIA, a town in the east of ancient Gaul, the siege and capture of which formed one of Cæsar's chief exploits. Alesia was destroyed by the Normans in 864. The modern village of Alise-Sainte-Reine stands near the site of the ancient town.

ALESIIUS, ALEXANDER (original name, ALANE), a noted divine and reformer, born in Edinburgh, April 23, 1500. After studying at St. Andrew's he became canon of the collegiate church there; but, being won to the side of the reformers, he was

obliged to flee to the Continent, and in his absence was tried and condemned. He settled down at Wittenberg and signed the Augsburg Confession. In 1535 Alesius went over to England, was well received by Cranmer and Cromwell, and lectured for a time on theology at Cambridge. On his return to Germany he was appointed successively to a theological chair in the universities of Frankfurt-on-the-Oder and Leipzig. He died at Leipzig, 17th March, 1565. He was the author of about thirty exegetical and polemical works.

ALESSANDRIA DELLA ROCCA, a town of Sicily, in the province of Girgenti. It is picturesquely situated in a mountainous district. Population of commune, 5,214.

ALETSCHE, the largest glacier in Europe, 12½ miles in length, sweeping round the southern side of the Jungfrau, and following the valley in a majestic curve. It has two tributary glaciers, the Upper and Middle Aletsch, which branch off to the northwest. At its eastern extremity there is a blue mountain lake, the Merjelen-See; and to the northwest lies the Aletschhorn, the second highest peak of the Bernese Alps, first ascended by Mr. Tuckett in 1859.

ALEWIFE (*Alosa tyrannus*), a fish of the same genus with the shad. In the beginning of summer it appears in great numbers on the east coast of North America, ascends the rivers as far as the tide extends for the purpose of spawning, and returns to the sea in the middle of summer. It appears on the coasts of New York and New England in April, and on those of the British provinces about the first of May; abounds in the Bay of Fundy, is more rare in the Gulf of St. Lawrence, and the Bay of Miramichi is its northern limit. Its length is about 12 inches.

ALEXANDER II AND ALEXANDER III. See **RUSSIA**, in these Revisions and Additions.

ALEXANDER, ARCHER, born in slavery near Richmond, Va., about 1810, but lived in Missouri with his master when the civil war began. He learned that the confederates had weakened a certain bridge so that it would fall under a train carrying national troops, and he saved the detachment by informing a well-known Union man, but was suspected, and fled to St. Louis—a "contraband." He was liberated by the Emancipation Proclamation, in 1863, and afterwards served as the model for "The Freedman" in the bronze group known as "Freedom's Memorial," standing in the Capitol grounds at Washington. He died in St. Louis, Mo., Dec. 8, 1879.

ALEXANDER, STEPHEN, American astronomer, born in Schenectady, N. Y., Sept. 1, 1806. He was graduated at Union College in 1824, and in 1833 he became professor of mathematics and astronomy at Princeton, which position he held until 1878. He was the leader of the expedition that went to the coast of Labrador to observe the solar eclipse of July 18, 1860; and also of the party sent to the West for the same purpose in August, 1869. Mr. Alexander wrote numerous valuable scientific works, and furnished many papers to different journals. He died at Princeton, N. J., June 25, 1883.

ALEXANDER, SYDENHAM B., American statesman, born at Rosedale, N. C., in December, 1840. He was graduated at the University of North Carolina, entered the Confederate army in 1861, and served until the end of the war. Besides occupying numerous other local offices he sat in the State senate for five consecutive terms from 1879, and in 1890 was elected to Congress from North Carolina by the members of the Farmers' Alliance.

ALEXANDER, WILLIAM, called Lord Sterling, American soldier, born in New York city, in 1726.

He prosecuted his claim to the earldom of Sterling, but without success, and on his return to America joined the army. He fought in several battles of the Revolution, and for his acts of bravery and discretion was made major-general. Lord Sterling was one of the founders and the first governor of Columbia college, and he wrote several papers, principally astronomical and mathematical. He died in Albany, N. Y., Jan. 15, 1783.

ALEXANDER, WILLIAM LINDSAY, D. D., LL. D., an eminent scholar and divine of the Scottish Congregational church, was born at Leith, Aug. 24, 1808, and died at Pinkieburn, near Edinburgh, Dec. 20, 1884. He studied at Edinburgh, St. Andrew's and Glasgow. He was classical tutor and afterwards president of Blackburn Theological Seminary (1828-31), and in 1832 minister of a chapel in Liverpool. In 1835 he removed to Edinburgh, where he labored as preacher for forty-two years. He was principal of the Theological Hall in connection with the Congregational church in Scotland; was a member of the Bible Revision Committee, and the publisher of many volumes of sermons and lectures. He also edited a new issue of Kitto's *Cyclopædia of Biblical Literature*.

ALEXANDERS (*Smyrnum olusatrum*), a biennial plant of the natural order *Umbelliferae*. It is found in waste ground and near ruins in Britain and the South of Europe. It was formerly cultivated and used in the same way as celery. Another genus, *Zizia*, is called Golden Alexanders in North America.

ALEXANDRA PARK, a place of public recreation in northern London, opened in 1863.

ALEXANDRI, or **ALEKSANDRI VASILIO**, a Roumanian poet and patriot, born at Jassy in 1821. He was educated at Paris, and after his return to Jassy in 1839 he devoted himself to the cause of Roumanian independence and unity. He was foreign minister under Ghika in 1859-60. He published his first volume of verse in 1852. His complete works fill seven volumes; his theatrical pieces, four volumes.

ALEXANDRIA, La., county seat of Rapides parish, on the Red River, about 200 miles from its mouth and 360 miles northwest of New Orleans. It carries on trade by water at all seasons, exporting mainly fruits, sugar, cotton and rice.

ALEXANDRIA, county seat of Douglas county, Minn., a post village situated about 38 miles from Melrose, and 140 miles northwest of St. Paul, in the vicinity of several small pure-water lakes.

ALEXANDRIA, N. Y., a village of Jefferson county, near the St. Lawrence and opposite the Thousand Islands. It is widely known and frequented as a summer resort.

ALEXANDRIA, a commercial and manufacturing city of Virginia, county seat of Alexandria county, beautifully situated on the west bank of the Potomac, seven miles below Washington, D. C., was, at an earlier period, a considerable mart for foreign commerce; but is now the center of an extensive domestic trade by railroad, river and canal. It has an excellent harbor, and a large number of vessels are engaged in carrying to Northern ports the coal of the Cumberland region, which is brought here by canal. Its manufactures are chiefly of ships, cotton, flour, furniture, leather, machinery and plaster.

ALEXANDROPOL, an important fortress and the largest town in the Erivan district of Russian Armenia. It has accommodation for a garrison of 10,000 men, and is the stronghold which gives the Russians command of the headwaters of the Euphrates. There is considerable silk trade carried on in the town. Population, 20,477.

ALEXANDROV, a town in the Russian government of Vladimir. It has dyeworks, and muskets and ironware are manufactured. Population, 6,200.

ALEXANDROVSK, a Russian town in the government of Ekaterinoslav; also a Russian settlement in East Siberia.

ALEXINATZ, a town of Serbia, on the Moravitz. In 1876 it suffered severely in its capture by the Turks, and near it is a memorial to the Russians who fell there. Large quantities of tobacco are produced in the neighborhood. Population, 5,108.

ALEXISBAD, in Anhalt, Germany, situated near Harzgerode, is noted for its mineral water springs.

ALFA, one of the varieties of esparto, valuable for paper making.

ALFONSO, JOSÉ, JUDGE, a distinguished delegate to the Pan-American Congress. He was trained to the law, beginning its practice in 1856. He was appointed on the bench of the Court of Commerce temporarily in 1862, and soon after made a permanent judge of that important court—a position which he held during eighteen years. In that time he compiled the vast body of legal decisions and mercantile usages into a Code of Commerce since adopted by the Chilean congress for the whole country. In 1879 he received the appointment of Judge-Advocate of the Army of the North. He was obliged to resign this position on the ground of ill health, but was shortly afterwards elevated to the bench of the Court of Appeals. In 1875, at the request of the President, he withdrew from the bench for a time to fill the position of Minister for Foreign Affairs in the cabinet. He was also Secretary of the Treasury in 1880. He has been a leader in the cause of education.

ALFORD, a village of Aberdeenshire, Scotland. It was here that Montrose defeated the Covenanters under Baillie, July 2, 1645.

ALFRED CENTRE is a village of Alleghany county, N. Y., the seat of the Alfred University (Seventh-Day Baptist). It is situated about 10 miles from Hornellsville, not far from the Erie Railroad.

ALFRETON, a market-town of Derbyshire. It has manufactures of hats, stockings and brown earthenware. There are collieries and iron-works in the vicinity. Population, 4,492.

ALGAROVILLA, an astringent substance procured from the seeds and husks of a number of plants found in South America, is much used in dyeing, and is a very powerful agent in the tanning of leather.

ALGECIRAS, a town of Spain, province of Cadiz, on the Bay of Gibraltar. It was the first town of Spain taken by the Moors (711), and remained in their possession seven centuries. It was retaken in 1344 by Alfonso XI, King of Castile, after a twenty months' siege. Alfonso destroyed the old Moorish town. The modern one was built by Charles III, in 1760.

ALGER, RUSSELL ALEXANDER, American soldier and politician, born in Lafayette, Medina county, Ohio, Feb. 27, 1836. At the age of eleven he worked on a farm and attended school in the winter. At 18 he taught, and later studied law, being admitted to the bar in 1859. He practiced in Cleveland, but soon went to Grand Rapids, Mich., where he engaged in the lumber business. At the beginning of the civil war he entered the army and served till June 11, 1865, when he received the brevets of brigadier-general and major-general, and then resumed the lumber business. While at war he fought in several bat-

tles of note, was twice wounded, and once taken prisoner, but escaped the same day. From 1885 to 1887 he served as governor of Michigan.

ALGER, WILLIAM ROUNSEVILLE, A. M., American clergyman, born in Freetown, Mass., Dec. 30, 1822. He studied for the ministry and became pastor of a Unitarian church in Roxbury in 1852. Later he accepted pastorates at Boston, New York, Denver, Chicago and Portland. He has published the following works, all of which have passed through several editions: *Metrical Specimens of the Thought, Sentiment and Fancy of the East; Legislative Prayers; The Genius of Solitude; The Friendships of Women; Critical History of the Doctrine of a Future Life; Introduction to the Poetry of the Orient; The School of Life.*

ALGERIA, the historic record given in Britannica, Vol. 1, pp. 562-69, was brought down to 1871. In that year an insurrection was quelled, and some concessions being made to the insurgents a season of peace and prosperity was assured. The following is the later chronological record:

Gen. Chanzy, the French ruler, accused of governing despotically; his resignation not accepted by Marshal M'Mahon, July; replaced by Albert Grévy, 1878.

An insurrection soon quelled, June, 1879.

Dispute with Tunis; outrages of the savage tribes, Kroumirs, etc., April, 1881.

Arab insurrection, headed by Bou Ameema, June; he is said to be defeated and a fugitive, July 13, 1881.

Troops sent from France in anticipation of insurrection, about Aug. 26, 1881.

Bou Ameema defeated by the French, July 13, 1881.

Skirmishing, August, 1881.

Resignation of Governor Grévy announced, Nov. 6, 1881.

M. Tirman appointed governor, December, 1881.

Topographical expedition attacked; 40 reported killed, April, 1882.

Annexation of the province Mzab to Algeria announced, Dec. 1882.

Submission of insurgents announced June 13, 1883.

Government.—A civil governor-general at present administers the government of Algeria, which is now regarded as a detached part of France rather than as a colony. A small extent of territory in the Sahara is still administered by the military authorities, represented by the commandant of the 19th Army Corps. The present governor-general is M. Louis Tirman, appointed Nov. 26, 1881.

The French Chambers have alone the right of legislating for Algeria, while such matters as do not come within the legislative power are regulated by decree of the President of the Republic. The governor-general is assisted by a council, whose function is purely consultative. A superior council, meeting once a year, to which delegates are sent by each of the provincial-general councils, is charged with the duty of discussing and voting the colonial budget. Each department sends one senator and two deputies to the National Assembly.

Area and Population.—The boundaries of Algeria are not very well defined, large portions of the territory in the outlying districts being claimed both by the French government and the nomad tribes who inhabit it and hold themselves unconquered. The colony is divided officially into three departments, consisting as a whole of the "Territoire civil," and a "Territoire de commandement." The following table gives the area of each of the three de-

partments of Algeria, according to the returns of 1886:

Departments.	Area sq. kilom.	Population.			Pop. per sq. kilom.
		Civil Dept.	Military Dept.	Total.	
Algiers	170,801	1,302,768	177,773	1,380,541	8.1
Oran	115,585	752,359	117,961	870,346	7.5
Constantine ..	191,527	1,369,153	197,266	1,566,419	8.2
Total	477,913*	3,324,316	492,990	3,817,306	8.0

* 184,465 square miles.

To this must be added what is designated the Algerian Sahara, of indefinite extent, but estimated at 350,000 square kilometres, or 135,000 square miles, and with a population vaguely estimated at 50,000. The civil territory is constantly increased in area by taking in sections of the military territory. Of the population in 1886, 2,014,013 were males, and 1,791,671 females. In 1884 the marriages among whites were 3,543, the births 15,618, and deaths 13,123—showing an excess of 2,495 births over deaths. In 1886, of the total population, there were 25,972 of French origin or naturalization, 43,182 naturalized Jews, 3,262,849 French indigenous subjects, 4,344 Tunisians, 18,194 Moroccans, and 217,386 foreigners—Spaniards, Italians, Anglo-Maltese, Germans.

The population of the city of Algiers was 74,792 in 1886; Oran, 67,881; Constantine, 44,960; Bône, 29,640; Tlemçen, 28,204; Philippeville, 22,177; Blidah, 24,304; Sidibel-Abbès, 21,595.

Crime.—Before the assize courts in 1886, 573 persons were convicted of crime; before the correctional tribunals 12,408 (4,122 to fines); before the police courts, 59,981 (50,765 to fines). For the maintenance of order there are 1,200 gendarmes, 79 police commissaires, 691 police agents, 316 *maires*, 2,474 police officials of various kinds, and 892 custom-house officers.

Finance.—The receipts of the government are derived chiefly from indirect taxes, licenses, and customs duties on imports. The natives pay only direct taxes. The cost of maintenance of the army is not included in the budget; a proportion of the sums spent on public works also is paid by the state. For 1888 the expenses of the civil government of Algeria were set down at 43,602,387 francs; for military services, 53,352,489; and extraordinary expenses, 26,658,797 francs; total expenses, 123,614,173 francs, including 2,815,000 francs for "colonization." The revenue for the same year from all sources was given as 44,034,065 francs. The actual revenue was 36,935,300 francs. The budget for 1890 estimated the expenditure at 42,915,917 francs, and revenue at 44,432,192 francs. A special return shows that in the period 1830-88 the total expenditure in Algeria has been 5,018,066,462 francs, and the total receipts 1,256,041,004 francs—showing an excess of expenditure of 3,785,684,255 francs, or over 151 millions sterling; this excess being almost entirely for military services. The total expenditure on colonization has been 144,205,504 francs.

Defence.—The military force in Algeria constitutes the 19th Army Corps; in time of war it can be divided into two. It consists of 53 battalions of infantry, 52 squadrons of cavalry, 16 batteries of artillery, and a due proportion of other subsidiary branches—in all, about 54,000 men and 15,000 horses. The strictly local forces consist of four regiments of "Zouaves," three regiments of "Tirailleurs indigènes," three battalions of "Infanterie légère d'Al-

rique," and two foreign legions. Of these the Tirailleurs or Turcos only are native. There are also three regiments of Spahis, corresponding closely to the Indian irregular cavalry.

Industry.—The bulk of the population are engaged in agriculture—3,089,224, 187,033 of whom were Europeans, in 1887. About 20,000,000 hectares (2.47 acres) are colonized by the agricultural population. Of this area 4,014,980 hectares were under cultivation in 1887; under cereals, 2,803,224 hectares, chiefly wheat, barley and oats; the area under vines (1887) 70,041 hectares, the produce being 1,665,995 hectolitres of wine. Of olives the crops in 1876 weighed 54,764,000 lbs.; the oil manufactured was 9,034,652 gallons. About 11,000 hectares were under tobacco in 1887, the yield being 5,631,945 metric quintus. There are five million acres under forest, but the yearly value of the produce is small. In 1887 there were 1,198,157 cattle, 9,357,774 sheep, 4,666,119 goats, the bulk belonging to natives. Of the total animal stock, 15,498,019 belong to natives, and 687,251 to Europeans.

In 1886 there were engaged in mining 2,565 workers; 432,671 tons of iron ore, value 3,804,028 francs, were extracted and exported, chiefly to the United States. Of other ores the extraction was: 551 tons of silver and lead, 10,343 of copper, 6,299 of zinc, and 67 of mercury, all worth 730,400 francs; 29,500 tons of other ores than iron ore were exported. Salt was extracted to the amount of 26,364 tons.

Commerce.—The commerce of Algeria, like that of France, is divided into general (total imports and exports) and special (imports for home use and exports of home produce). The latter was as follows, 1888 (in francs):

Countries.	Imports from.	Exports to.
France	173,630,107	159,488,872
Foreign countries and French colonies	61,278,018	38,261,198
Total	234,908,120	197,699,565

The total special commerce was as follows for the five years 1884-88 (in francs):

Years.	Total.		Foreign countries and French colonies.	
	Imports.	Exports.	Imports from.	Exports to.
1884	217,369,575	154,006,150	70,656,567	51,992,061
1885	226,683,390	197,260,725	54,985,657	69,347,810
1886	242,274,279	182,255,123	50,092,512	54,907,741
1887	211,337,555	185,959,302	52,502,475	45,956,008
1888	234,908,120	197,699,565	54,391,844	33,254,943

The following table shows the trade of Algeria with various countries for 1888 (in francs):

Countries.	Imports from.	Exports to.
France	173,630,107	159,488,872
French colonies	16,298,879	.....
Russia	4,729,644	5,967,998
Great Britain	7,654,088	17,991,732
Spain	8,475,419	12,481,265
Italy	2,134,241	3,644,178
Tunis	3,613,985	6,254,016
Morocco	4,302,581	5,173,658
Turkey	1,086,120	1,086,435
Belgium	240,485	8,306,976
United States	809,944	2,141,496

The principal exports to France in 1888 were—cereals, 32,003,325 francs; wines, 42,928,445 francs; animals, 34,047,699 francs; wool, 20,914,706 francs. The chief imports from France were—cotton goods, 26,948,554 francs; leather goods, 14,882,790 francs; metal goods, 8,426,079 francs; haberdashery, 7,078,280 francs. The subjoined statement shows the commerce of Algeria with Great Britain and Ireland in each of the five years 1884 to 1888:

Exports and Imports.	1884	1885	1886	1887	1888
Exports to Great Britain.	£ 832,559	£ 885,621	£ 701,898	£ 575,955	£ 636,371
Imports of British produce	£ 350,889	£ 356,716	£ 371,142	£ 298,253	£ 252,255

The most important articles of export to Great Britain in 1888 were—esparto and other fibers, for making paper, of the value of 449,781*l.* (including rags); iron ore, of the value of 72,939*l.*; copper ore, 11,518*l.*; and lead ore, 8,491*l.*; barley, 22,255*l.* (82,056*l.* 1887). The British imports consist principally of cotton fabrics and coal; the former of the value of 163,947*l.*, and the latter of 63,469*l.*, in the year 1888.

Shipping and Communications.—In 1888 3,727 vessels, of 2,172,048 tons, entered Algerian ports from abroad, and 3,327, of 1,974,721 tons, cleared; of these 1,566 vessels (1,227,075 tons) went to France. There is also a very large coasting trade. On Jan. 1, 1888, the mercantile marine of Algiers consisted of 166 vessels, of 4,550 tons, mostly coasters, besides many small fishing vessels.

In 1889 there were 1,600 English miles of railway open for traffic in Algeria. The total receipts in 1887 amounted to 21,069,098 francs, including the Tunisian extension.

The telegraph of Algeria, including branches into Tunis, consisted in 1888 of 7,000 miles of line, and 16,000 miles of wire, with 279 offices. The "réseau algéro-tunisien" of telegraphs is worked by a private company subventioned by the French government.

For information concerning currency, religion, education, weights and measures and judiciary system, see those topics in these Revisions and Additions.

ALGIERS, a suburb of New Orleans, La., was laid out as a village in 1815, but dates its growth from the building of the dry-docks in 1846. In 1852 it was incorporated as a city, and grew rapidly until the commencement of the civil war, during which it suffered severely. It was made a ward of the city of New Orleans in 1870. It has iron-works, ship-yards, dry-docks and machine and boiler shops. It is connected with the city proper by steam ferry-boats.

ALGIN, a substance discovered by Mr. E. C. C. Stanford, of Glasgow. It is procured from certain species of seaweed—notably those belonging to the genus *Laminaria*. In the soluble form Algin is a viscous gum, drying up to a transparent, elastic film. It is used as a dressing for textile fabrics. It has been found to go further and do more work than any of the ordinary gums, and it has the advantage of being easily rendered insoluble in water. Algin also makes an excellent thickening for soups.

ALGONA, capital of Kossuth county, Iowa, is a village about fifty-two miles from Mason City, on the Chicago, Milwaukee & St. Paul Railroad, situated on the eastern division of the Des Moines River.

ALGONQUIN, Ill., a post-village of McHenry county, has a pleasant position on the Fox River, forty-eight miles N. W. of Chicago. It is one of the Chicago & Northwestern Railroad stations.

ALGONQUINS, OR ALGONKINS, the most prominent of the three aboriginal races that occupied the great basin of the St. Lawrence at the beginning of the 17th century. The Algonquin tribes occupied all the coast region from the north-eastern limit to the James River in Virginia, and nearly as far westward as the Rocky mountains. At present the name is applied to a remnant of an Indian people in the province of Quebec, Canada.

ALGUAZIL, the general name applied in Spain to officers intrusted with the execution of justice.

ALHAGI is an Arabic name for a genus of trees from which manna exudes.

ALHAURIN-EL-GRANDE (*al-ow-reen-el-Grandé*), is a Spanish town in Andalusia, near Malaga. It is noted for its beautiful parks, its numerous fountains and the ruins of an ancient Roman aqueduct and of a Moorish fortification. In its mountains are quarries of granite, marble and freestone.

ALIEN. The citizen of one nation when resident of another, unless naturalized, is an alien. A comprehensive article on this subject may be found in *Britannica*, Vol. I, p. 574.

ALIMA, a tributary of the Congo. It rises in the neighborhood of the Ogowe Springs and flows west. Its course was traced by Balloy in 1878, and De Brazza founded two stations on its banks. It is navigable for steamers for some distance.

ALIMENTARY CANAL, a name given to the principal part of the digestive apparatus. It extends from the mouth to the anus, having in man an average length of about thirty feet.

ALIMONY, the allowance which a married woman is entitled to receive from her husband's estate after separation or divorce, or during a suit for the same. An article under this topic may be found in *Britannica*, Vol. I, p. 576.

ALIQOT PART, one quantity or number is said to be an aliquot part of another when it is contained in that other an exact number of times without a remainder.

ALISMACEÆ, small order of monocotyledonous plants, containing about ten widely distributed genera of herbaceous plants, usually growing in water or floating.

ALIWAL, a Punjab village on the left bank of the Sutlej. It was the scene of a conflict between the British under Sir Henry Smith and the Sikh forces, June 28, 1846.

ALKAHEST, the universal solvent of the alchemists.

ALIZARINE, a red coloring matter extensively used as a dye stuff, was discovered by Robiquet and Colin in 1824. From the root of the madder plant, *Rubia tinctorum*, digested with alcohol and treated with sulphuric acid, they obtained a black mass to which they gave the name "charbon de garance;" which, being heated, yielded an alizarine sublimate in long needle-shaped crystals of a brilliant red color. The discovery of this coloring principle gave to madder its great commercial importance and value. Alizarine is now, however, produced on a large scale by artificial chemical means from anthracene, a product of the distillation of coal-tar.

ALKALIMETRY, the process of determining by the use of an alkalimeter the strength of alkalies and acids. The same instrument has recently been employed in many other ways, such as the determination of the strength of a solution of silver, for which purpose it is employed by the assayers of the mint and other metallurgical chemists. This mode of analysis, being very simple, is every day becoming of more importance, and has given rise to a new department of analytical chemistry designated *volumetric analysis*.

ALKALOIDS are an important class of substances discovered by modern chemistry. They are of two classes, natural and artificial. The natural alkaloids are found in plants and animals, and are sometimes designated organic bases. Those obtained from plants are likewise called vegetable alkalies. They are composed essentially of carbon, hydrogen and nitrogen. The greater number also contain oxygen. The alkaloids have generally an energetic action on the animal system, and hence are often used in small doses as medicine, while in comparatively large doses they are powerful poisons. They have, in a low degree, the characteristic alkaline effect on vegetable colors, and have usually a bitter, acrid taste, and form the active principles of the plants in which they are found. The artificial alkaloids are those organic bases which are not found in any known plant or animal, but of which the late researches of chemists have contrived to form a large number. An article on alkaloids may be found in *Britannica*, Vol. I, p. 578.

ALLAN, SIR HUGH, Canadian ship-owner, born in Saltcoats, Ayrshire, Scotland, Sept. 29, 1810. At an early age he entered a counting-house in Greenock, and at 14 sailed for Canada, where he was for three years a clerk in a dry-goods store at Montreal and subsequently in the shipping-house of James Miller. He aided in suppressing the rebellion of 1837, and rose to a captaincy. Mr. Miller died in 1838, and Allan, with a partner, carried on the business under the firm-name of Edmonston & Allan. This firm built the screw-steamers *Canadian* and the *Indian*, which the British government used in the Crimean war; and, with these and the *North American* and *Anglo-Saxon*, the Allan line of royal mail steamships was established in 1856. Mr. Allan was connected with numerous mining, railroad and telegraph enterprises, and in 1871 he was knighted by Queen Victoria in recognition of his services to Canadian and British commerce. He died of heart disease in Edinburgh, Dec. 8, 1882.

ALLAN, JOHN, American soldier, born at the Castle of Edinburgh, Scotland, Jan. 13, 1746. He emigrated to Nova Scotia in 1749, and was brought up as a farmer. In 1770 he went into politics, occupied several local offices, and gained a decided influence over the Indians. In 1777 Congress gave him a colonel's commission, and with his Indians he protected the exposed line of the northeastern frontier. The authorities of Nova Scotia offered a price for his arrest; his house was burned and his wife thrown into prison. In compensation for the losses he had sustained the Massachusetts government gave him 22,000 acres of land, and Congress granted him 2,000 acres in Ohio. He died in Lubec, Me., Feb. 7, 1805.

ALLAN, JOHN, American antiquarian, born in Kilbirnie, Ayrshire, Scotland, Feb. 26, 1777. He worked on a farm until 1794, when he emigrated to America and secured employment as a book-keeper. Later he became a commission agent and collector of house rents, through which he accumulated a moderate amount of wealth. At 17 Vandewater street, New York, where he resided until his death, he collected old books, pictures, autographs and all rare and curious articles attractive to the antiquary. Mr. Allan's collection was sold at auction for \$37,689.26. He died Nov. 19, 1863.

ALLANTOIN, a colorless crystalline matter occurring in the allantoin of the oow; also produced by boiling uric acid with lead dioxide and water.

ALLANTOIS, a sac-like foetal membrane formed in the embryos of reptiles, birds and mammals, as an outgrowth from the posterior end of the alimentary tract, just in front of the anus. It never really occurs in animals lower than rep-

tiles, though represented to some extent in the fish *Lepidosiren* and in the amphibia by a urinary bladder. See *Britannica*, Vol. XV, p. 369.

ALLARD, JEAN FRANÇOIS, was born in France in 1785, and died Jan. 23, 1839. In 1815 he was adjutant to Marshal Brune, after whose assassination he quitted France. He entered the service of Abbas-Mirza of Persia, and went to Lahore in 1820. He was made generalissimo of the Sikh army, which he organized and trained in the European modes of warfare. On his return to Paris he was received with distinction, and in 1833 was made *chargé d'affaires* in Lahore. He subsequently distinguished himself in the battles of Runjeet Singh with the Afghans.

ALLATOONA, Bartow county, Ga., is a station on the Western & Atlantic Railroad, forty miles from Atlanta.

ALLEGAN, county seat, a village of Michigan, on the Kalamazoo River, 160 miles west of Detroit, carries on an extensive trade in lumber.

ALLEGHANY, or ALLEGANY, a manufacturing town in Cattaraugus county, N. Y. It is the seat of a Roman Catholic college and Franciscan convent. ALLEGHANY COLLEGE. See COLLEGES, in these Revisions and Additions.

ALLEGHENY, or ALLEGHANY, an important manufacturing city of Pennsylvania, situated on the Allegheny River, opposite Pittsburg, with which it is connected by six bridges. It is the terminus of important railway lines, and has numerous public institutions of importance, such as the Western University of Pennsylvania, and the Western (Presbyterian) Theological Seminary. There are three theological schools, an astronomical observatory, three national banks, about fifty churches, a college for colored persons, several hospitals and charitable institutions, and a city park of 100 acres. It has numerous factories, including rolling-mills for iron, woolen and cotton mills, foundries, breweries, a blast furnace, a steel factory, and locomotive works. It is a favorite place of residence for the business men of Pittsburg, and in many respects is really a suburb of that city, although it has a separate municipal organization. Nearly half of the inhabitants are Germans. Population (in 1890), 104,967. See *Britannica*, Vol. XIX, p. 151.

ALLEGHANY SPRING is a post-village of Virginia, in Montgomery county, about eighty miles W. of Lynchburg. It is noted for its springs of saline water, and is much frequented as a summer resort.

ALLEGRETTO, in music, is the diminutive of *Allegro*, denoting that the time is slower than that of *Allegro*.

ALLEGRO, the fourth of the five principal degrees of movement in music, implying that the piece is to be performed in a lively style. It is often modified by other terms.

ALLEMANDA is a German national dance in various kinds of waltz *tempo*. The name has also been applied to an orchestral composition in slow measured time, not for dancing.

ALLEN, EDWARD P., American Congressman, born in Sharon, Washtenaw county, Mich., Oct. 28, 1839. He was graduated at the State normal school in 1864, taught for three months in the Union school at Vassar, Mich., and then enlisted in the 29th Michigan infantry. He served one year, when he was mustered out of the service with his regiment as captain. He studied law at Ann Arbor, and was admitted to practice in 1867. He was elected alderman of Ypsilanti in 1872, and again in 1874; mayor of the city in 1880, and was prosecuting attorney of Washtenaw county in 1872. He was elected to the Lower House of the legislature in 1876, and again in

1788. He became assistant assessor of internal revenue in 1869, and U. S. Indian agent for Michigan in 1882-85. He was elected as a Republican to the Fiftieth Congress, and again to the Fifty-first.

ALLEN, ETHAN, American soldier, born in Litchfield, Conn., Jan. 10, 1737. He was made colonel of an armed force known as "Green Mountain Boys," raised in order to protect holders of the land granted by New Hampshire which was claimed by the colonies of New York and New Hampshire; and £150 was offered for Allen's capture by Gov. Tryon, of New York. When hostilities with Great Britain began the Green Mountain Boys



ETHAN ALLEN.

captured Ticonderoga and Crown Point. In consequence of this proof of patriotism the New York Assembly resolved that Allen should raise a regiment, not to exceed 500 men. Allen at the head of his command placed valuable stores at the disposal of the Americans, and did other invaluable work. He was captured Sept. 25, 1777, and sent to England, where he was cruelly treated, but on May 6 of the following year he was exchanged for Col. Campbell. On his return he was placed in command of the Vermont militia, and he also received a commission as lieutenant-colonel in the Continental army. An attempt to bribe him to use his influence in order to effect a union between Vermont and Canada was unsuccessful. After the war he settled in Burlington, and subsequently became a member of the legislature and a special delegate to Congress. He published a history of the controversy between New York and Vermont, and *Reason the Only Oracle of Man*, besides several political pamphlets. His death occurred in Burlington, Vt., Feb. 13, 1789.

ALLEN, GEORGE, American educator, born in Milton, Vt., Dec. 17, 1808. He was graduated at the University of Vermont, studied law, and subsequently studied theology, and became rector of an Episcopal church at St. Albans, Vt. Later he became professor of languages in Delaware College, and then in the University of Pennsylvania. In 1847 he joined the Roman Catholic church, and for several years was the consular representative of the Papal States. He died in Worcester, Mass., May 28, 1876.

ALLEN, GRANT, English author and naturalist, born in Kingston, Canada, Feb. 24, 1848. He was graduated at Oxford in 1871, and became professor of logic and philosophy at Queen's College, Spanish Town, Jamaica, in 1874. Three years later he removed to England, where his attractive scientific articles constantly appear in *The Fortnightly*, *Contemporary*, and *Westminster* reviews, and various magazines. His published works are: *Physiological Aesthetics* (1877); *The Color Sense* (1879); *Anglo-Saxon Britain* (1880); *Vignettes from Nature* (1881); *The Colors of Flowers* (1882); *Strange Stories* (1884); *Flowers and their Pedigrees* (1884); *Charles Darwin* (1885); *Phyllostia* (1885); *For Mamie's Sake* (1886); *Babylon* (1886); *In all Shades* (1886); *The Evolution-*

ist at Large (1881); and *Colin Clout's Calendar* (1882). He writes under the pen-names of J. Arbuthnot Wilson and Cecil Power.

ALLEN, HARRISON, American physician, born in Philadelphia, Pa., April 17, 1841. He studied medicine and entered the U. S. army in 1862 as surgeon, resigning in 1865, after attaining the brevet rank of major. Since then he has been professor of physiology in the University of Pennsylvania, professor of anatomy and surgery in the Philadelphia dental college, and surgeon of the Philadelphia hospital. He has made numerous contributions to various medical journals, and he has published *Outlines of Comparative Anatomy and Medical Zoology* (1867); *Studies in the Facial Region* (1874), and *An Analysis of The Life Form in Art* (1875).

ALLEN, HEMAN, American lawyer, born in Poultney, Vt., Feb. 23, 1779. He was graduated at Dartmouth College in 1795, and then studied law; subsequently he was sheriff of Chittenden county, Vt., chief-justice of the county court, a member of the legislature, U. S. marshal for the district of Vermont, and from 1823 to 1827 minister to Chili. Mr. Allen was president of the Burlington branch of the United States Bank from 1830 to 1836. He died in Highgate, Vt., April 9, 1852.

ALLEN, HENRY WATKINS, American soldier and statesman, born in Prince Edward county, Va., April 29, 1820. He fought in the Texan war against Mexico, and in the civil war as a confederate colonel, always acquitting himself honorably. He was twice elected to the legislature, and in 1864 was made governor of Louisiana. He died in the City of Mexico, April 22, 1866.

ALLEN, IRA, American soldier, born in Cornwall, Conn., April 21, 1751. He was associated with his brother, Ethan Allen, in the dispute between New Hampshire and New York over the land grants; and when the Revolution broke out he was inclined to be a loyalist, but soon decided to serve in the American army, became colonel of the militia, and took part in the battle of Bennington. From 1776 to 1777 he was a member of the Vermont legislature, and later of the constitutional convention of Vermont, the first secretary of the State, then treasurer, and surveyor-general. He was one of the leaders in the founding of the University of Vermont, giving considerable land, labor, and money to that institution. While on a trip to France to purchase arms for the State of Vermont he was seized by the English and thrown into prison on a charge of furnishing the Irish rebels with arms, and not until after eight years of litigation in the court of admiralty was he acquitted. He was the author of *The Natural and Political History of Vermont* and of *Statements Appended to the Olive Branch*. He died in Philadelphia, Pa., Jan. 7, 1814.

ALLEN, JOEL ASAPH, American naturalist, born in Springfield, Mass., July 19, 1838. He studied at Wilbraham Academy, then at the Lawrence Scientific School, under Agassiz, and was with him on the expedition to Brazil in 1865. He accompanied scientific exploring parties to Florida and the Rocky mountains, and was at the head of an expedition sent out by the Northern Pacific Railroad in 1873. He became assistant in ornithology at the Museum of Comparative Zoology at Cambridge in 1870, one year later receiving the Humboldt scholarship, and since 1885 has been connected with the American Museum of Natural History at New York. He is a member of several scientific societies, and has written numerous reports and scientific papers. Since 1886 he has had charge of "The Auk," a journal of ornithology published quarterly.

ALLEN, JOHN BEARD, American lawyer and senator, born at Crawfordsville, Indiana, May 18

1845. He lived at or near his native town, educating himself as best he could until the spring of 1864, when he enlisted in the 128th Indiana infantry and served in Tennessee and Alabama until mustered out in 1865. He then removed to Rochester, Minn., and entered the office of Judge Wilson as a student at law, subsequently graduating from the law school at Ann Arbor, Mich. He was admitted to the bar in 1869, and in 1870 removed to Olympia, Washington Territory, and entered upon the practice of his profession. Within a twelvemonth his practice grew to unprecedented dimensions for one so young, and he was regarded as a lawyer of great promise and an orator of unusual force and ability. In 1875 he was appointed United States attorney for Washington Territory—a position which he held for more than ten years. In 1887 he was elected to Congress, and in 1889 he was chosen to represent the new and vigorous State of Washington in the U. S. Senate.

ALLEN, JOHN M., American Congressman, born in Tishomingo county, Miss., July 8, 1847. He received a common school education up to the time of his enlistment in the Confederate army, in which he served through the war. He then studied at the law school of the Cumberland University, and subsequently at the University of Mississippi, being admitted to the bar in 1870. In 1875 he was made district attorney for the First Judicial District of Mississippi, retiring four years later. He was elected to the Forty-ninth, Fiftieth and Fifty-first Congresses as a Democrat.

ALLEN, RICHARD, a Methodist minister, and first bishop of the African M. E. Zion Church, was ordained by Francis Asbury in 1799; became bishop in 1820, and died in 1831.

ALLEN, WILLIAM, an American author and educator, was born at Pittsfield, Mass., Jan. 2, 1794. He became a minister at the age of eighteen. He was chosen president of Dartmouth College in 1817, and Bowdoin College in 1820. He was a voluminous writer, his best known work being his *American Biographical and Historical Dictionary*. He died July 16, 1868.

ALLEN, WILLIAM, an American statesman, born in Edenton, N. C., in 1806. He studied at Chilli-cothe, Ohio, academy, entered the law office of Judge Scott, and later that of Col. King, and was admitted to the bar in 1827. When Allen was twenty-four years of age he gained a wide reputation by successfully defending a client charged with murder, and in consequence of his brilliant pleading received the nomination and election to the Twenty-third Congress in 1832. He was the youngest member of the House, and in 1837 took his seat in the Senate at an earlier age than any other U. S. senator. He was reelected in 1843, and in 1848 refused the Democratic nomination for President. He was made governor of Ohio in 1873, and was a candidate again in 1875, but was defeated by R. B. Hayes, afterward U. S. President. He died July 11, 1879.

ALLEN, WILLIAM, cardinal, was born at Rossall, Lancashire, England, in 1532. He was elected Fellow of Oriel College, Oxford, in 1550, and although a Catholic retained this office until 1560. The following year he sought refuge in Flanders. He received priest's orders at Mechlin, founded the English college at Douay in 1568, and in 1587 was created cardinal, during his fourth visit to Rome. He possessed intellectual and moral gifts of a high order, and as long as he lived was the unrivaled leader of his co-religionists. He wrote several works on the religious and political controversies of his time. Died at Rome, Oct. 16, 1594.

ALLEN, WILLIAM FRANCIS, American educator, born in Northborough, Mass., Sept. 5, 1830. He was

graduated at Harvard College in 1851, became instructor in the ancient languages and literature in 1867, and later professor of Latin in the University of Wisconsin. He published a number of text-books.

ALLEN, WILLIAM HENRY, an American educator, was born in Readfield, Me., March 27, 1808. He was successively professor of Latin and Greek in the Cazenovia Methodist Seminary, of chemistry and natural philosophy in Dickinson College, of philosophy and English literature in the same college, president of Girard College, of the Pennsylvania Agricultural College, and again of Girard, for which he wrote his *Manual of Devotion*. In 1872 he became president of the American Bible Society. He died Aug. 29, 1882.

ALLENTOWN, a city of Pennsylvania, county seat of Lehigh county, situated on the right bank of the Lehigh River, is an important center of transportation between the anthracite coal region and Philadelphia and New York. Immense quantities of coal and iron ore pass through this city, and extensive blast furnaces, rolling-mills and iron works are in constant operation. There are also numerous tanneries, machine shops, tube works, shoe manufactories, firebrick works, and woolen and other mills. Allentown contains a prison which cost a quarter of a million dollars, a handsome court house, and is the seat of Muhlenberg College and of Allentown Female College. Pop., 25,183.

ALLER, a navigable river of Germany, about 150 miles in length, rises near Magdeburg and flows northwestward to the Weser.

ALLERTON, ISAAC, born about 1583, sailed for America, one of the "Pilgrim Fathers," in the first voyage of the *Mayflower*, and was an enterprising member of the colony until 1631, when he had a dispute with the settlers and removed to Marblehead, establishing several trading-stations. He died in New Haven in 1659. Allerton's daughter was the last survivor of the *Mayflower* company.

ALLIA, a small stream in ancient Latium, which emptied into the Tiber. It was the scene of the defeat of the Roman army by the Gauls under Brennus in 387 B. C.

ALLIACEOUS PLANTS are primarily those of the genus *Allium* (onion, leek, garlic, etc.), or others nearly allied to it. The term is usually employed to denote the peculiar odor and taste of all members of that genus.

ALLIANCE, a village of Ohio, in Stark county, on the Mahoning River, about fifty-seven miles from Cleveland and eighty-three miles from Pittsburg.

ALLIBONE, SAMUEL AUSTIN, American author, born in Philadelphia, Pa., April 17, 1816. While in the mercantile business he engaged in literary pursuits and prepared an important work entitled *A Critical Dictionary of English Literature and British and American Authors*, in three volumes, containing 46,499 authors. He has also published *A Review by a Layman of a Work entitled "New Themes for the Protestant Clergy"* (1852); *New Themes Condensed* (1853); *An Alphabetical Index to the New Testament* (1868); *Union Bible Companion* (1871); *Poetical Quotations, from Chaucer to Tennyson* (1873); *Prose Quotations, from Socrates to Macaulay; Great Authors of all Ages, being Selections from the Prose*



S. AUSTIN ALLIBONE.

Works of Eminent Writers from the time of Pericles to the Present Day (1880); *Explanatory Quotations on the Gospels and the Acts* (1869). He has also written for numerous periodicals, and since 1879 has been librarian of the Lenox Library in New York.

ALLIES, THOMAS WILLIAM, born at Bristol in 1813. He was examining chaplain to Bishop Blomfield, who in 1842 presented him to the rectory of Taunton, Oxfordshire. He joined the Roman Catholic communion in 1850, and published the *See of St. Peter*, in which he accounted for his conversion. He was excluded from the priestly office by his marriage, and subsequently became secretary to the Catholic Schools Committee. He published a number of controversial works.

ALLIGATOR PEAR. See CUSTARD APPLE, *Britannica*, vol. VI, p. 729; also AVOCADO PEAR in *American Additions and Revisions*.

ALLIGATION, from a Latin word signifying "to bind together," is a rule of arithmetic relating to the solution of questions concerning the compounding or mixing of different ingredients or ingredients of different qualities or values.

ALLINGHAM, WILLIAM, a popular poet of English origin, born at Ballyshannon in Ireland, in 1828. While a commissioner of taxes in London, he contributed to the "Athenæum," "Household Words," and other journals. In 1847 he succeeded Froude as editor of "Frazer's Magazine." He published a volume of poems in 1850; in 1855 *Day and Night Songs*, illustrated by Rossetti and Millais; *Laurence Bloomfield in Ireland*, a narrative poem of contemporary Irish life, in 1864; and, later, *Songs, Ballads and Stories*.

ALLISON, WILLIAM B., American statesman, born in Ohio in 1829, educated at the Western Reserve College. Practiced law in Ohio until 1857, when he removed to Iowa. On the breaking out of the civil war, he became a member of the Governor's staff, and aided in the organization of the Iowa volunteers. He was elected to Congress in 1862, and has been a Representative and Senator from that time until the present, except between 1871 and 1873, when he declined an election, and he has been an important factor in all the legislation that has been enacted during and since the civil war. He was one of the few Congressmen who were depended upon by the President and the Secretary of the Treasury to devise ways and means for raising the money needed for the support of the government. He is an advocate of lower rates of tariff duties, and a friend of the land grant railroads. He is also a strong supporter of the National bank system.

ALLIUM, a genus of *Liliaceæ*, containing about 150 species. They are perennial, or rarely biennial, herbaceous plants, natives chiefly of the temperate or colder regions of the northern hemisphere. Some of the more common cultivated species are the garlic, onion, leek, shallot and chive.

ALLOBROGES, a Celtic race of Gaul, allies of Hannibal at the time of his invasion 218 B. C. They were subjected to the Roman yoke in 121 by Quintus Fabius Maximus, and from that time governed as a part of Gallia Narbonensis.

ALLOCATION. In the language of the Vatican it denotes the address delivered by the pope at the College of Cardinals on any ecclesiastical or political circumstance. When the Papal court desires to guard a principle which it is obliged to relinquish in a particular case, or to reserve a claim for the future which has no chance of present recognition, it makes use of this form of address. Allocutions are published by being affixed to the doors of St. Peter's.

ALLODIUM, ALLODY, or ALLOD, probably from the Old High German *al* and *ot*, "entire property,"

and not to be confused with the accidentally similar *od* and *al*, "estate patrimonial," is a freehold estate, one which the owner holds as his absolute property, independently of any acknowledgment, in rent or service, to a superior. It is thus opposed to land held by a vassal in feudal tenure, wherein the property was in the lord, the usufruct in the tenant. See *Britannica*, Vol. I, p. 587.

ALLOMERISM, in chemistry, is the property of remaining unchanged in crystalline form while the chemical constituents or their proportions vary.

ALLON, HENRY, D. D., an English Congregational minister and author, was born Oct. 13, 1818, at Welton, Yorkshire, England. He was educated at Chestnut College, Hertfordshire, and in January, 1844, was ordained assistant pastor of Union Chapel, Islington, and in 1852 sole pastor of the congregation. He became eminent in his denomination, and was chosen chairman of the Congregational Union in 1864 and 1881. In addition to his ministerial duties he has been a prolific writer, and in 1865 was elected editor of the "British Quarterly Review," a position which he still retains. Besides numerous contributions to various periodicals he has published the *Congregational Psalmist*, *Memoir of the Rev. J. Sherman*, and *The Vision of God*, the latter being a volume of his own sermons which have had an extensive sale. That his abilities and merits are recognized on this side of the Atlantic is evidenced by the action of Yale College in conferring upon him the honorary degree of D. D.

ALLOPATHY, a name invented by Hahnemann for the standard system of medical treatment, as opposed to Homœopathy.

ALLOTMENTS. In England allotments are small plots of land let to agricultural laborers, who cultivate them during their spare time. The custom of letting allotments varies in different parts of the country, a quarter of an acre being about the average size of plots. When wisely applied it has been found to be a beneficial system.

ALLOTROPHY is the existence of the same substance in different forms, each endowed with different properties arising, not from differences in their chemical nature, but in their molecular arrangement. The carbon, as DIAMOND, GRAPHITE, and CHARCOAL is a striking example of allotropy.

ALLOWAY, situated on the right bank of the Doon, south of the town of Ayr. It is noted as the birth place of Burns. The house in which the poet was born on Jan. 23, 1759, was in 1880 converted into a Burns museum. The "haunted kirk" is still standing, a roofless ruin, and near by is the Burns monument.

ALLOXANTIN, a compound obtained by the mixture of dialuric acid with alloxon. It forms small, white, hard, brilliant prismatic crystals, is freely dissolved by boiling water, and its solution reddens litmus.

ALL-SAINTS' BAY, in the province of Bahia, on the coast of Brazil. It has a fine natural harbor, in which the navies of the world might ride at anchor. Its length from north to south is 37 miles, its breadth 27.

ALLSOPP, SAMUEL (born 1780), was a member of the brewing establishment of Allsopp & Sons at Burton-on-Trent. He was a descendant of an old family, and was noted for the charities of his public and private life. At his death, in 1838, he was succeeded in the business by his sons, Charles, James and Henry. The latter entered parliament in 1874, and in 1880 was created a baronet. After his retirement from the firm he was raised to the peerage. He died April 3, 1887.

ALL-SOULS' DAY, a festival of the Roman Catholic church, occurring on the 2d of November.

The object of it is to alleviate the sufferings of the souls in purgatory by prayers and almsgiving. It was first instituted in the monastery of Clugny in 993.

ALLSPICE, the fruit of *Eugenia pimenta* and *E. acris*, also called pimento and Jamaica pepper. It is supposed to combine the flavor of different spices.

ALLSTON, WASHINGTON, American painter, born in Waccamaw, S. C., Nov. 5, 1779. He was graduated at Harvard in 1800, and went abroad to study at the Royal Academy, and also at Rome. He returned to America in 1809, and then went to England in 1811 and spent seven years, during which



WASHINGTON ALLSTON.

time he produced *The Dead Man Revived*, *Uriel in the Sun*, and *Jacob's Feast*, besides several smaller pictures. In 1818 he removed his studio to Boston, where he painted *Jeremiah*, *The Witch of Endor*, *Mariam*, *Rosalie*, *Madonna*, *Spanish Girl*, *Spalatro's Vision of the Bloody Hand*, and *Belshazzar's Feast*. He also painted portraits of Coleridge the poet, Benj. West, and one of himself. He was also a man of brilliant literary tastes, and published *The Sylphs of the Season* (1813); *The Paint King*; *The Two Painters*; *Monaldi* (1841) and *Lectures on Art, and Poems* (1850). He died in Cambridge, Mass., July 9, 1843.

ALLUVION takes place where land is formed by the washing up of sand and earth by the sea. By the law of England, if the addition to the soil is made by imperceptible degrees, it goes to the owner of the land behind it; but if it be a considerable acquisition, suddenly made from the shore, the ground so acquired belongs to the crown. In Scottish law alluvion made insensibly belongs to the owner of the property to which the addition is made, but if caused by flood or any convulsion of nature the ground so added still remains the property of the person of whose soil it originally formed a part. In the United States alluvion signifies the additions gradually made on the bank of a river, and belongs to the owners of the bank.

ALLYN, ROBERT, an American clergyman and educator, was born in Ledyard, Conn., Jan. 25, 1817. He has been successively principal of Wilbraham and Providence Conference Academies, commissioner of public instruction and legislator in Rhode Island, professor of ancient languages in Ohio University, and president of Wesleyan Female and McKendree Colleges.

ALMA, a city of Nebraska, county seat of Harlan county, situated on the left bank of the Republican River, is one of the most important business centers in the southern part of the State.

ALMA is the county seat of Buffalo county, Wis., situated at the junction of the Mississippi and Buffalo Rivers.

ALMACANTAR, a name for circles of altitude parallel to the horizon, and hence for an astronomical instrument for determining time and latitude. It is also used for determining the apparent places of the heavenly bodies.

ALMACK'S, a suite of rooms in King street, London, used for assemblies, etc., built in 1765 by Almack, inn-keeper, and from that time were called Almack's Rooms;—now generally called Willis Rooms from the name of the present proprietor;

but the name Almack's is chiefly associated with the balls that have, since the opening of the rooms, been held there under the management of a committee of ladies of high rank, and has become synonymous with aristocratic exclusiveness.

ALMADA, a town of Portugal, in the province of Estremadura. It is built upon a height over the Tagus, opposite Lisbon. Population, 5,091.

ALMADEN is a township of Santa Clara county, Cal., so named on account of its famous quicksilver mines, from the Spanish Almaden, where were situated the most famous quicksilver mines ever known.

ALMAGRO is a finely built Spanish city of New Castile, containing a park and several buildings of note, among which are Latin schools. It is a manufacturing place, and chiefly exports lace.

ALMA MATER (*Lat.*, "nourishing mother") is a name which has been given to a university in relation to its students, to distinguish it from inferior schools of learning.

ALMANSUR (ARU-JAFER-ABDALLAH-BEN-MOHAMMED-AL-MANSUR), second caliph of the house of the Abbassides, reigned 752-775. The whole of his rule was cruel. He persecuted the Christians in Syria and Egypt, removed the seat of the caliphate from Kufa to Bagdad, and died during his pilgrimage to Mecca in his 63rd year.

ALMA-TADEMA, LAWRENCE, R. A., a distinguished artist, is a native of the Netherlands, having been born at Drouryp, Jan. 8, 1836, of a very ancient family. In 1852 he entered the academy of Antwerp, and subsequently studied under Baron Henry Leys. He became a British subject and settled permanently in England in 1873. His works are distinguished for their careful composition, accuracy of design, and the beauty and finish of their coloring. The following may be mentioned as a few of the works embodying the general characteristics of his art: "Entrance to a Roman Theatre" (1866); "A Roman Amateur" (1868); "The Vintage" (1870); "The Mummy" (1872); and "The Way to the Temple"—the artistic diploma work for the Royal Academy (1883). In 1876 Alma-Tadema exhibited a series of three pictures at the Grosvenor Gallery, entitled respectively, "Architecture," "Sculpture," and "Painting;"—and at the same gallery in 1883 there was a special exhibition of his works. He has also executed several notable works in portraiture. He was elected A. R. A. in 1876, and he became R. A. in 1879.

ALMIEDA, a Brazilian town in the province of Espirito Santo, founded in 1580 by the Jesuits. It is situated at the mouth of the Reis-Magos.

ALMODOVAR DEL CAMPO, a town of New Castile, Spain. The inhabitants are chiefly employed in agriculture and silver-mining. Population, 10,362.

ALMONACID DE TOLEDO, Spanish town in the province of Toledo, noted as the place where King Joseph defeated the Spaniards in 1809.

ALMONDS, OIL OF. A fixed greasy oil exudes when almonds are subjected to pressure. Either bitter or sweet almonds may be employed; the former are generally used, and are not as expensive as the sweet. The expressed cake is valuable in the preparation of the essential oil. One cwt. of the almonds generally yield from 48-52 lbs. of the fixed oil. It has a specific gravity of 918, and solidifies when reduced to 13 F°. It has no odor. It is used as medicine, and possesses a mild laxative property when administered in large doses.

ALMONDS, VOLATILE OIL OF. The cake which is left after the expression of fixed oil from the bitter almonds contains, among other matters, a portion of two substances, called amygdalin and emulsion. When the cake is made into paste with water

the synaptase acts as a ferment upon the amygdalin. The volatile is not originally present in the bitter almonds. It does not contain a trace of the oil already formed, so the oil is purely the product of the fermentation of amygdalin, 100 parts of which yield 47 crude oil. Commercial oil of the bitter almond has a golden color, but can be purified until almost colorless. The crude oil is very poisonous, owing to the prussic acid dissolved therein.

ALMOND (*á-mund*), a genus of the order *Rosaceæ*, sub-order *Amygdaleæ*, or *Drupaceæ*, consisting of trees, and distinguished by the wrinkled covering of the drupe and by the young leaves being conduplicate or having their sides folded together. According to many botanists it includes the peach, constituted by some into the distinct genus *Persica*, of which the drupe has a fleshy covering (sarco-carp), while in the almond the drupe is a dry, fibrous husk that shrivels as the fruit ripens, and finally opens of its own accord. The almond tree grows to the height of 20 or 30 feet, is a native of the East and of Africa, but has now become completely wild in the entire south of Europe. It appears to have been cultivated from a very early period, and is mentioned in the Old Testament. It was introduced into Britain before the middle of the 16th century as a fruit tree, but it is only in the most favored situations of the south of England that it ever produces good fruit. The wood of the almond tree is of a reddish color and hard; it is used by cabinet-makers, etc. It is chiefly valued on account of the kernel of its fruit. Almonds are of two kinds, sweet and bitter. The bitter appear to be the original kind, and the sweet a variety improved by cultivation. Large quantities of almonds are annually imported into Britain and America from France, Spain, Italy and the Levant. See *Britannica*, Vol. I, p. 594.

ALMONTE, JUAN NEPOMUCENO (*al-maú-n-te*), Mexican statesman, born in Valladolid, Mexico, 1804. He received his education in the United States, and returned to Mexico to enter upon a military career. He served in the Texan campaign, and was made prisoner at the battle of San Jacinto. He also took part in the war against the United States, and fought in the battles of Buena Vista, Cerro Gordo, and Churubusco. He held several important political offices, among them being secretary of state, minister at Washington, first minister of war, and minister to Paris, and he was also a member of the triumvirate to whom the French intrusted the management of affairs in Mexico. Maximilian appointed him lieutenant of the empire in April, 1864, and shortly after marshal of the empire; but when Maximilian was executed, Almonte fled to Paris, where he died in exile, March 20, 1869.

ALMORA, the principal town of the British district of Kumaun, Northwest Provinces of India. It was an important center in the Gurkha war of 1815. It is situated on the crest of a ridge of the Himalayas, 5,337 feet above the sea. Pop., 8,000.

ALMSHOUSES, termed poorhouses in Scotland and workhouses in England. They are institutions for the benefit of the sick and poor. In London almshouses were established in the reign of William and Mary, and in Ireland in 1838. Compulsory labor for all paupers able to work was introduced in 1600. In the United States almshouses are maintained by municipal or county authorities, and town farms are attached in several States. Blackwell's Island in New York, Tewksbury and Deer Island in Massachusetts, and Philadelphia County Almshouse in Pennsylvania, are among the celebrated institutions of this character.

ALMUNECAR, a Mediterranean seaport town in Andalusia, Spain. Its chief exports are sugar, fruit and cotton.

ALMY, JOHN J., American naval officer, born in Rhode Island, April 25, 1814. He entered the navy as midshipman, and rose through all the successive grades to be rear-admiral. He was retired April 24, 1877, after nearly sixty years of service.

ALMY, WILLIAM, American philanthropist, born in Providence, R. I., Feb. 17, 1761. Among his important charities was the establishment of the New England yearly boarding house, where he educated eighty young persons at his own expense. He died Feb. 5, 1836.

ALOES WOOD is the heart-wood of *Aquilaria ovata* and *A. agallochum*, trees of the order *Aquilariaceæ*, natives of the tropical parts of Asia, and supposed to be the lign-aloës of the Bible. Aloës wood contains a dark-colored, fragrant, resinous substance, much esteemed in the East as a medicine and for the pleasant odor it diffuses in burning. A similar substance, still more esteemed, is obtained from the central part of the trunk of *Alcorylm agallochum*, a tree found in Cochin-China and the Moluccas.

ALOFSEN, SOLOMON, historian, born in Amsterdam, Netherlands, Nov. 22, 1808. He came to the United States in early manhood and became connected with the railroad business. He accumulated a considerable fortune, and pursued the study of history and ethnology, becoming a member of various historical societies, at the meetings of which he read many papers. He died in Arnheim, Holland, Oct. 10, 1876.

ALOPECIA (Gr. "fox-mange"), the technical term for baldness.

ALORA, a town of Spain, in the province of Malaga. There are ruins of an ancient castle. Pop., 10,014.

ALPACA, a fabric very much in demand from about 1865 to 1875, manufactured from alpaca wool. The fiber is very enduring in character, and is used in the manufacture of lining, braids, etc., as well as for dress-goods. The source of the supply of raw material to the American manufacturer is from South America. See *Britannica*, Vol. I, p. 597.

ALPACA PERUVIAN SHEEP, a variety of the Llama. Inhabits the more elevated parts of the mountain ranges, living almost on the border of perpetual snow. The Peruvians keep vast flocks of them for the sake of the silky luster and fineness of their wool, which furnishes material for the best of fabrics.

ALPENA, a city of Michigan, county seat of Alpena county, is situated on the shore of Lake Huron, at the head of Thunder Bay. The harbor is an excellent one; the annual manufacture of lumber is about 130,000,000 feet; and this city is the headquarters of an extensive trade in extract of hemlock. Population in 1890, 11,228.

ALPHEUS, a mythical river-god, lover of the nymph Arethusa, whom he pursued under the sea when she fled to the island of Ortygia, and to whom he became united when she had been transformed into a fountain.

ALPHEUS, the modern Roupheic, a celebrated river of Greece, which rises in Acadia and flows into the Ionian Sea.

ALPINE CLUB, a mountaineering club formed in 1857-58. De Saussure, who ascended Mont Blanc in August, 1787, may be considered the father of mountaineering. For many years climbing was almost confined to this peak and was not considered a great amusement, but with the organization of the Alpine Club it sprang into fashion. The club numbers about five hundred members, including

men of the most varied tastes and pursuits in life. Among the most famous first ascents by members of the Alpine Club may be mentioned those of the Matterhorn (Whymper, 1865); the Schreckhorn (Stephen, 1861); Ebbenz in the Caucasus (Freshfield, Grove, 1868, 1874); Cotopaxi and Chimborazo in the Andes (Whymper, 1880); Mount Cook, New Zealand (Green, 1882). There are Austrian, Swiss, Italian and German associations, having thousands of members.

ALPINE PLANTS, an appellation given to plants which are found at elevations approaching the limit of perpetual snow in the Alps of Central Europe, also to plants of other mountainous regions in any part of the world, whose natural place of growth is near snows that are never melted. The small spaces clear of snow in the highest regions have a very characteristic flora, the plants of which are distinguished by a low diminutive habit, and an inclination to form a thick tuft; the stems are often partly or altogether woody, and their flowers are in proportion large, brilliantly colored, and in many instances very odoriferous. With these are associated a number of delicate ferns and beautiful mosses.

ALPNACH, a Swiss village, in the canton of Unterwalden, at the foot of Mount Pilatus. It is known principally on account of its "slide," now disused. It was by means of this slide, 8 miles in length, that timber was brought to the village from Mount Pilatus. Population, 1,679.

ALRANNEN, or **ALRUNE**, were an ancient sect of German prophetesses. Little images carved from wood represented these women, and were used by the Germans as household gods and as idols of their religious ceremonies.

ALSACE-LORRAINE. For the earlier history and the narrative of the transfer of this "Reichsland," or Imperial Land, from France to the German Empire, see *Britannica*, Vol. I, pp. 637-38. The laws under which the country is governed were voted by the German Reichstag June 9, 1871, June 20, 1872, June 25, 1873, May 2, 1877, July 4, 1879, and Sept. 28, 1885. By the law of June 9, 1871, it is enacted, "The provinces of Alsace and Lorraine, ceded by France in the peace preliminaries of Feb. 26, 1871, under limits definitely fixed in the Treaty of Peace of May 10, 1871, shall be forever united with the German Empire." The Constitution of the German Empire was introduced in Alsace-Lorraine on Jan. 1, 1874. The administration is under a Governor-General, bearing the title of "Statthalter."

The present incumbent, January, 1891, is Prince Hohenloe-Schillingsfürst, born March 31, 1819. Ambassador from the German Empire to the French Republic, 1874-85; appointed Statthalter of Alsace-Lorraine, July 22, 1885; assumed office November, 1885.

According to the constitutional law of July 4, 1879, the Emperor of Germany appoints the Statthalter, who exercises power as the representative of the Imperial Government, having his residence at Strassburg. A ministry composed of three departments, with a responsible secretary of state at its head, acts under the Statthalter, who also is assisted by a council of state, comprising the Statthalter as president, the secretary of state at the head of the ministry, the chief provincial officials, and eight to twelve other members appointed by the Emperor, of whom three are presented by the Landesauschuss, or provincial committee. This committee, which attends to local legislation, consists of fifty-eight members.

The Reichsland has an area of 14,509 square kilometers, or 5,668 English square miles. It is administratively divided into three Bezirke, or dis-

tricts, called Ober-Elsass, Unter-Elsass, and Lothringen, the first of which is subdivided into six, and the other two each into eight Kreise, or circles. The following table shows the area, population, and the inhabitants per square mile of each of the districts and of the whole:

Districts.	Area, English square miles.	Population.		Density per square mile.
		1880.	1885.	
Ober-Elsass	1,370	461,942	462,549	337.6
Unter-Elsass	1,866	612,015	612,077	328.0
Lothringen	2,431	492,718	498,729	201.4
Total	5,668	1,566,670	1,564,355	275.9

Finance. The budget estimates of public revenue of Alsace-Lorraine in the year ending March 31, 1890, amounted to 44,917,871 marks, and the estimates of expenditure to 43,347,799 marks. There was also an extraordinary revenue of 954,571 marks and an expenditure of 2,514,643-marks. More than half of the total revenue is derived from customs and indirect taxes, while one of the largest branches of expenditure is for public instruction. Alsace-Lorraine has a debt consisting of three per cent. rentes in circulation to the amount of 782,310 marks,—equivalent, if capitalized, to a debt of 28,077,000 marks.

In 1889 the number of farms was 233,866, supporting a population of 627,800, of whom 302,593 were actively engaged in agriculture. Alsace-Lorraine yields the usual cereals, and it is also a great wine-producing country. In 1888-89, 1,543 hectares were planted with tobacco, and yielded 3,195 metric tons of dried tobacco.

The cotton manufacture is the most important in Germany; woollens are produced on a smaller scale. In 1888, minerals to the value of 11,786,957 marks (exceeded only in Prussia and Saxony) were raised in the Reichsland. There were 910 miles of railway in Alsace-Lorraine in 1889, of which 820 belonged to the State.

For information concerning currency, religion, education, weights and measures, and judiciary system, see those topics in this Supplement.

ALSATIA, a cant name for the precinct of Whitefriars, which until 1697 was privileged as a debtor's sanctuary, and consequently was peopled with swindlers.

ALSEGNO, in music, directs the performer to return to that part of the movement indicated by the sign : S :

AL SIRAT: literally, "the way," is a bridge over hell, as narrow as a razor's edge, believed by the Mohammedans to extend from earth to heaven.

ALSOP, JOHN, born in Middletown, Conn. He was one of the Continental Congress and also a member of the first American Congress. He died in Newton, Long Island, Nov. 22, 1794.

ALSOP, JOHN, American poet, born in Middletown, Conn., Feb. 5, 1776. His poems were never in book form, but always appeared in various periodicals and collections. He died in Middletown, Nov. 1, 1841.

ALSOP, RICHARD, American author, born in Middletown, Conn., Jan. 23, 1761. He studied at Yale College; but in order to devote himself more closely to literature he left college before the completion of his course, and organized the "Hartford Wits," a kind of literary league, which made a target of everything that offered a mark for the active wits of its members. Alsop published *Monody on the death of Washington* (1800); *The Enchanted Lake* o-

the *Fairy Morgana* (1808); *The Natural and Civil History of Chili*; and *The Captivity and Adventures of J. R. Jewett Among the Savages of Nootka Sound*. He died in Flushing, Long Island, Aug. 20, 1815.

ALSTER, a river in Holstein. Near Hamburg it forms a lake called the Great or Outer Alster, and within the town the Inner Alster. It flows into the Elbe.

ALSTROEMERIA, or ALSTRÖMER'S LILY, a genus of *Amaryllidaceæ*, cultivated for its flowers and curious leaves. The *A. salsilla*, a native of Peru, is cultivated in the West Indies for its tubers, which are eaten like those of the potato. A kind of arrow-root is prepared in Chili from the roots of *A. pallida* and other species.

ALT, in music, is a term applied to the notes contained in the first octave above the staff.

ALTAMAHA, a river of Georgia, which flows south-eastward for nearly 150 miles, entering into the Atlantic a little below Darien. It is formed by the Ocmulgee and Oconee Rivers.

ALTAMIRANO, IGNACIO M. (al-tah-me-rah-no), Mexican jurist, born in the State of Guerrero. He was of pure Indian parentage, but studied under a Spaniard and devoted himself to politics. He has filled with success many high offices, and has been a member of Congress several times. Altamirano published considerable, both in prose and verse.

ALTAZIMUTH, an astronomical instrument for determining the apparent places of the heavenly bodies in the celestial sphere. The principal one in existence is that at Greenwich, designed by Sir George Airy. Small instruments of this kind are used in surveys.

ALTEN, KARL AUGUST, Count of, Hanoverian general, entered the army in 1781. In 1803 he left Hanover for England, where he was made commander in the German Legion. He took a prominent part in the Spanish war of liberation, and distinguished himself at Quatre-Bras and Waterloo. On his return to Hanover he was made minister of war. He died April 20, 1840.

ALTENA, a town of Prussia, in the district of Arnsberg. It manufactures needles, pins and hardware. Population, 8,787.

ALTENESSEN is a Prussian town near Essen, noted for its coal mines.

ALTENGAARD, a hamlet in Finmarken, the northernmost province of Norway, situated on the south side of the Alten Fiord, in 69° 55' N. latitude. No cultivation is attempted farther north than this point, and even here only potatoes and barley are produced. There is a meteorological and magnetic station located here.

ALTER EGO is a term some times given as a title to one who is at complete liberty to act for another. It was originally applied to a Spanish viceroy when exercising regal power.

ALTERATIVES: in medicine, a term applied to remedies which tend to gradually improve the health without sensibly affecting individual organs. This group includes a number of substances of diverse properties, of which the action is obscure, but the results often of great value. Among the most important alteratives are various preparations of arsenic, mercury, iodine, phosphorus, gold, cod-liver oil, colchicum, sarsaparilla—many of them violent poisons when taken in improper doses.

ALTHAM, JOHN, American missionary. He accompanied Calvert to Maryland in 1633, where he established what was known as "the first chapel in Maryland," an Indian hut used for religious purposes. He converted several chiefs, and through his influence with the Red Men strengthened the infant settlement.

ALTHÆA, a genus of plants, of the natural order

Malvaceæ, including the hollyhock, *Althæa rosea*, and the marsh-mallow, *Althæa officinalis*. It is a common name for the *Hibiscus Syriacus* of botanists. Sometimes called *shrubby althæa* and *Rose of Sharon*. It thrives very well in the warmer parts of Europe, and in America it is one of the most frequent ornaments of gardens. There are a great number of varieties raised by florists. It is also cultivated in Japan, where it is called "Mukinge" and is used for hedges.

ALTHING, the parliament or general assembly of Iceland. It was formed soon after the first settlement, when the inhabitants organized themselves into a republic and adopted one constitution for the whole island. The first Althing met in the year 930, and adopted a code of laws arranged by one Ulfjot, who, it is said, spent three years in Norway fitting himself for the task. The Althing, in which all authority was vested, both legislative and judicial, met once a year, in the month of June, and was presided over by a "speaker of laws." In 1263, when Iceland was united with Norway, the Althing was deprived of its legislative authority, but continued to meet as a judicial body until the year 1800, when it was abolished. It was, however, reorganized in 1843 as a parliament to consider Icelandic local interests, and in 1874 its powers were considerably increased.

ALTITUDE, in astronomy, is the height of a heavenly body above the horizon. It is measured by the angle which a line drawn from the eye to the heavenly body makes with the plane of the horizon, or by the arc of a vertical circle intercepted between the body and the horizon. The correct determination of altitudes is of great importance in most of the problems of astronomy and navigation.

ALTMAYER, JEAN JACQUES, D. C. L., Belgian historian, was born at Luxemburg, Jan. 24, 1804, and educated at the athênæum of his native place and the University of Louvain. He first held the position of professor of rhetoric in the college at Ypres. In 1834 he took charge of the department of history in the Free University at Brussels, and in 1837 was placed in charge of the department of political economy and commercial law in the commercial and industrial school afterwards annexed to the Royal Athênæum. The Belgian government employed him in 1840 to make historical research in the north of Europe. After his return Dr. Altmeyer published *The Diplomatic and Commercial Relations of the Netherlands with the North of Europe in the Sixteenth Century*. The great work of his life, in which he spent forty years, was his labor among the archives of Belgium for the purpose of publishing an exhaustive work on *The Netherlands in the Sixteenth Century*. He had published five volumes when he was compelled by failing health to desist from the work. He died at Brussels, Sept. 15, 1877. At his death the government took possession of his manuscripts, and will probably publish additional volumes. Among his most important works are a *Course of Philosophy of History* (1840); *Margaret of Austria, her Life, Policy, and Court* (1840); *Summary of Modern History* (1842); *The Sea-Beggars and the Capture of Brille* (1863); and *Campaigns of Louis XIV in Belgium* (1864).

ALTMÜHL, a branch of the Danube River, rises in Bavaria near Kelheim. The Ludwig Canal, which runs from this river, connects the Rhine and the Danube.

ALTO, in music, is properly the same as counter-tenor, the male voice of the highest pitch. The lowest female voice is properly contralto, though in printed music the second part in a quartet is always entitled *alto*.

ALT-OFEN, a town of Hungary, on the right bank of the Danube. It is a decayed place of great antiquity, and is believed to occupy the site of a Roman town, *Sicambria* or *Aquineum*. It has remnants of a Roman aqueduct, a bath, and an amphitheater. Attila made this his capital. Population, 12,000.

ALTON, an important manufacturing city of Illinois, county seat of Madison county, is situated on a high bluff of limestone on the left bank of the Mississippi, near the mouth of the Missouri. The city has an active shipping trade in stone, lime, fruit, grain, hay, and the products of its extensive foundries, factories and glassworks. One of the principal points of interest is the large Roman Catholic Cathedral. Alton is the seat of a female seminary, and Upper Alton, two miles distant, of Shurtleff College. Population in 1890, 10,184.

ALTON BAY, a village of New Hampshire on Lake Winnipiseogee, frequented as a summer resort.

ALTOONA, a city of Pennsylvania, lies at the foot of the Allegheny mountains, which are here crossed by the Pennsylvania railroad. The summit is pierced by a tunnel two-thirds of a mile in length, and affords some of the grandest views in the world. The city contains the immense car and locomotive building works of the railroad company, extensive water-works, and planing and rolling mills. The mechanics' library contains about 3,000 volumes.

ALTÖTTING, an ancient place of pilgrimage in Upper Bavaria, not far from the river Inn. The chapel, said to have been built on the site of a heathen temple, contains the famous black image of the Virgin Mary, dating from the eighth century, and a very rich treasure of gold, silver and precious stones. Another chapel contains the tomb of Tilly. Population, 3,232.

ALTRICES is the name given to that class of birds, whose young are at birth, helpless and generally almost naked. This is the case with the majority of land birds and with a few water birds.

ALTRUISM, a word introduced into the English language by the translators and followers of Comte. In meaning it is opposed to selfishness, signifying devotion to the welfare of others.

ALUCONIDÆ, a family of owls consisting of the genera *Aluco* and *Phodilus*, commonly called barn-owls. They are distinguished from ordinary owls in having the sternum entire and simply amarginate behind, the furculum ankylosed with the sternal keel and the middle claw pectinated. The facial disc is highly developed, and triangular in shape.

ALUDELS, in chemistry, were glasses or earthen jugs of a pear shape, and in appearance much like the ancient alembic. They are open at both ends so that they may be joined to form a series, and are employed in sublimation. The name is also given to tubes of glass or earthenware formed of more than one piece.

ALUMINIUM is one of the metals present in clay, feldspar, slate and many more rocks and minerals. It is silver-white in color, having a brilliant luster, is about as hard as zinc and very malleable and ductile. Its most remarkable characteristic is its low specific gravity, which is about one-third that of iron and less than that of marble. See *Britannica*, Vol. I, p. 647.

ALUMINA, the most abundant of the earths, is the oxide of the metal aluminium. It occurs in nature abundantly in combination with silica, associated with other bases. The most familiar of its native compounds is feldspar, one of the constituents of granite, and several other kinds of igneous rocks.

ALUMNI: literally, "foster-children," applied to the graduates of a college or university, expresses their relation to the *alma mater*, or "fostering mother."

ALUM ROOT. This name is given to two plants very different from one another, but agreeing in the astringency of their roots, which are medicinally used. One of these plants, *Geranium maculatum* contains more tannin than kino does. The other plant to which the name alum root is given is *Heuchera americana*, a plant of the natural order *Saxifragaceæ*. They are both natives of America.

ALUM SCHIST, **ALUM FLATE**, or **ALUM SHALE** are terms to denote a kind of clay in combination with iron pyrites and carbonaceous or bituminous matter, from which is obtained, by double composition, the common alum of commerce.

ALUMINITE, otherwise known as **ALUM STONE**, is a subsulphate of alumina and potash, once largely used in the preparation of Roman alum.

ALUNNO, **NICCOLO**, one of the earliest of the old Umbrian painters, born at Fuligno about 1430. His works were frescoes, subjects mainly religious.

ALUNOGEN is a simple aluminium sulphate occurring as an efflorescence on the walls of quarries and mines, and found in certain clays and in volcanic solfataras.

ALURED, or **ALFRED**, of Beverly, in Yorkshire, an English historian of the time of Henry I. He was treasurer and sacrist of the church of Beverly, where he wrote his *Annales*, in nine books, a work commencing with the fabulous period of British history and extending down to the year 1129—the date of his death. It was published at Oxford in 1716 by Thomas Hearne.

ALVARADO, a town of Mexico, situated on the Gulf of Mexico, at the mouth of the River Alvarado. Population, 6,000.

ALVARD, **HENRY ELIJAH**, C. E. B. S., American educator, born in Greenfield, Mass., March 11, 1844. He entered the army as a volunteer in 1862, and passed through the successive grades to that of major in the 2d Massachusetts cavalry. After the war he was appointed captain of cavalry in the regular army, which position he held for several years. In 1886 he became professor of agriculture at the Massachusetts agricultural college, Amherst.

ALVAREZ, **BERNARDO D'** (al-vah-reth), Spanish adventurer, born in Seville in 1514. He went to Peru when a boy, where he accumulated a large fortune, which he devoted to charitable purposes. He founded the benevolent order of St. Bernardine, and established hospitals in several cities in New Spain. He died in Spain in 1584.

ALVAREZ, **DIEGO D'**, Mexican priest, born in Guadalajara about 1750. At the age of sixteen he had finished his education, and later wrote twenty-three volumes of manuscript on a large range of subjects, but only one of them was published. He died in 1824.

ALVAREZ, **JUAN**, Mexican soldier, born about 1790. He was of Indian blood, and in 1853, while he was governor of Guerrero, he roused his mountaineers to insurrection. Santa Anna's power was overthrown in 1855, and Gen. Carrera was intrusted with the government, which he relinquished in favor of Alvarez; but Alvarez tendered his resignation two months later, and, after procuring \$200,000 and what arms he could get, returned to southern Mexico. He died in 1867.

ALVORD, **THOMAS GOLD**, American politician, born in Onondaga, N. Y., Dec. 20, 1810. He was graduated at Yale, admitted to the bar, and in 1844 was sent to the New York legislature, where he remained for ten consecutive terms. He was twice speaker of the house, lieutenant-governor once, and

a member of the State constitutional convention in 1867-68.

ALZATE Y RAMIREZ, JOSÉ ANTONIO, Mexican scientist, born in Ozumba in 1729. He attained high reputation as a zoölogist and botanist, and he was a corresponding member of the French and Spanish academies of science. He published the *Gaceta de Literatura*, and also an essay entitled *La limite des neiges perpetuelles en Volcan Popocatepetl*. He died in the City of Mexico, Feb. 2, 1790.

ALZOG, JOHANN BAPTIST, a German Roman Catholic church historian, was born in Ohlan, in Silesia, June 29, 1808. He was ordained priest in 1834, and the next year received an appointment to the professorship of church history and exegesis in the theological seminary at Posen. He was made capitular of the cathedral and professor and director of the seminary at Hildesheim in 1845, and in 1853 he became professor in the University of Freiburg. He died at Freiburg, March 1, 1878. His most important work is his *Universalgeschichte der Christlichen Kirche* (1840), which has reached its tenth edition. The American edition differs considerably from the original work. His *Grundriss der Kirchengeschichte* (1868) was a briefer treatise on the same subject.

ALZEY, a town of Rhenish Hesse, on the Selz. Population, 5,932.

AMADIS, a name much used in the chivalric poetry of the middle ages. Of the numerous romances grouped under it, that which contains the adventures of Amadis of Gaul is the oldest and best. It is believed that the earliest forms of this story were a lost Castilian version, about 1250, and a Portuguese version, also lost, composed about 1370. Instead of these we have a Spanish version, written by Garcí-Ordóñez de Montalvo in 1465, first published in 1508. A French translation appeared in 1540, an Italian in 1546, an English in 1548, and a German version was published in 1583.

AMALEK, the chief of Edom, was the son of Eliphaz, whose father was Esau. The Amalekites, the first of all nations, were named after Amalek.

AMALTHÆA was the name of the goat which the Greeks supposed to have become Jupiter's nurse. The famous horn of plenty, which the god presented to the daughters of Melissus, by which they were supplied with every necessary nourishment, came from this goat. It was also supposed that the one who guarded the animal bore the same name.

AMANITA, a genus of hymenomycete fungi, closely allied to mushrooms (*Agaricus*). There are several edible species, but the majority are poisonous.

AMAPALA is a Pacific seaport of Honduras, on the Tigre island, noted for its invigorating climate and charming scenery. The harbor is well adapted for foreign commerce.

AMARANTE, a town of Portugal, in the province of Minho, on the Tamega. The town is well built, but dull and decayed. A church erected in the 16th century is an interesting specimen of the Flamboyant style. Amarante was the scene of a fierce conflict between the French and the Portuguese in 1809. Population, 5,500.

AMARANTHACEÆ, a natural order of tropical plants, bearing dry and persistent in heads or spikes, and including the genus *Amaranthus* and the globe amaranth, whose flowers retain their purple beauty for years.

AMARI, MICHELE, an Italian historian and orientalist, was born at Palermo, July 7, 1806. He devoted himself to Sicilian history, and in 1841 published his famous investigation into the history of the Sicilian Vespers, a masterpiece of historical criticism. It was quickly prohibited, and was, con-

sequently, widely read. The author fled to France, but the revolution of 1848 recalled him to Sicily, where he was made vice-president of the committee of war, and sent on a diplomatic mission to France and England. The restoration in 1849 made him once more an exile, but he was recalled in 1859 to fill the chair of Arabic, first at Pisa and afterward at Florence. After the accession of Sicily to the kingdom of Italy he was made a senator. He presided over the Congress of Orientalists at Florence in 1878. His most important works are his *Storia dei Musulmani di Sicilia* (1853-73); *Bibliotheca Arabo-Siculo* (1857); *Nuovi Ricordi Arabica sulla Storia di Genova* (1873); and *Le Epigrafi Arabiche di Sicilia* (1875).

AMARYLLIDÆÆ, a natural order of petaloid monocotyledons, including many species distinguished by the beauty of their flowers. There are about four hundred known species, natives of tropical or sub-tropical, and more sparingly of temperate regions, but particularly abundant at the Cape of Good Hope. A few species only are European.

AMARYLLIS, a genus of bulbous-rooted herbs of the natural order *Amaryllidææ* containing a large number of species. They are natives of warm regions.

AMATEUR, one who does anything from liking, as distinguished from one who makes it a profession. The term amateur, in connection with different sports and associations, does not admit of a general definition, as it varies considerably in application.

AMATHUS, or AMATHUSIA, a city which the Greeks dedicated to Venus, and now named Amathusia. It is situated in the southern part of Cyprus.

AMATRICE, a town of South Italy, in the province of Aquila, on the right bank of the Tronto. It was formerly a place of considerable importance. The inhabitants are chiefly employed in agriculture and the manufacture of blankets. Population, 2,242.

AMAZONAS, the northernmost province of Brazil, having an area of 753,439 square miles and an estimated population of 80,942. Also the name of a department of Peru, bounded on the north by Ecuador, with an area of 14,129 square miles. Population, 34,245.

AMBALLA, or UMBALLAH, is a fortified town of India, and the capital of the Umballah division. It is an important British station.

AMBER, a decayed city in the Rajput state of Jaipur, India, formerly its capital. It is situated on the margin of a small lake, in a hollow among the hills. Few of its houses are now inhabited, and its temples are empty. On the slope of an adjacent hill is the vast palace of Amber, now silent and deserted.

AMBIDEXTER is a term applied to persons who readily make use of both hands, and is also appropriated to a juror who is bribed to act for each party in a lawsuit.

AMBITUS, in Roman history, was the "going about" of a candidate for office to solicit the votes of the people.

AMBLYOPSIS, a fish found in the Mammoth Cave of Kentucky. It is interesting as illustrating, by the condition of its eyes, the effect of darkness and consequent disuse. It only measures a few inches in length, is colorless, and has small eyes covered by the skin. It is able to hear acutely.

AMBLYSTOMA, a genus of amphibians in the Salamandroid sub-order. It is the adult form of Axolotl.

AMBOISE, GEORGE OF, cardinal and prime minister under Louis XII of France, was born in 1480, near Amboise. In his fourteenth year he became Bishop of Montauban, and in 1498 Archbishop of

Rouen. By his services he secured the confidence of Louis of Orleans, who, on his accession to the throne in 1498, made him his chief minister, and from that time he was prime mover in all the affairs of the realm. After the death of Pope Alexander VI (1503) Amboise endeavored to attain to the papal see, but, failing in this, became the enemy of the succeeding popes. To secure his own election he engaged in various intrigues, resulting in a schism between the French church and the see of Rome, and convened a separate council. His plans were frustrated by the failures of the French arms in Italy. He died at Lyons, May 25, 1510.

AMBOY, a manufacturing town in Lee county, Ill., situated near Mendota.

AMBRIZ, the northern division of the Portuguese territory of Angola, West Africa, extending from the Congo to the river Ambriz.

AMBROS, AUGUST WILHELM, born 1816, died 1876. An Australian pianist, composer, critic and historian. By virtue of his *Geschichte der Musik*, he is considered the greatest German authority on the history of European music from ancient Greece to the present time.

AMBROSIA: in Greek mythology, the food of the gods. It was said to impart immortal youth and beauty to those who ate of it, and used as a salve had the property of preserving bodies from corruption. Hindu mythology has its *amrita* to which similar properties are ascribed; and the gods of the Scandinavian pantheon were kept in perpetual vigor by eating the apples guarded by Indun.

AMBRY, a recess in the wall of a church, closed by a door, and used for the purpose of holding vestments and utensils employed in the service of the mass. In monastic buildings ambries were used for various purposes, such as keeping plate, hanging towels, etc. In this sense the term ambry seems to have been applied to any secure cupboard, and is so used in Scotland at the present day.

AMBULACRAL SYSTEM, a term applied to a partly locomotor partly respiratory system in the Starfish group of animals. The term water-vascular is perhaps preferable.

AMBUSCADE, a term applied to any attempt to attack an enemy by lying in wait and coming upon him unexpectedly. Ambuscade is unusual in the civilized warfare of modern times.

AMELANCHIER is a widely dispersed genus of small trees belonging to the order *Rosaceæ*, sub-order *Pomææ*. They are frequently planted because of their pretty foliage and early blossoming. The American variety (*Amelanchier botryapium*) is sometimes called june-berry.

AMELIA, or **AMERIA**, is an Italian town near Spoleto. It was one of the earliest cities of Umbria.

AMELIA ISLAND, situated three miles off the northeastern coast of Florida. It is about four miles wide and sixteen miles long.

AMEN, a Hebrew word equivalent to "yea," "truly," commonly adopted in forms of Christian worship. According to the catechism of the English Church it signifies, at the conclusion of prayer, *So be it*; after the repetition of the Creed, *So is it*. In the Roman Catholic version of the New Testament *amen* is substituted for the "verily" of the Authorized Version.

AMENDE-HONORABLE (*Fr.*, "honorable compensation") was in France in the 9th century a public confession made by traitors and other culprits in court, after having had various indignities inflicted upon them by the executioner. In England the phrase is applied to a frank apology, sufficient to atone for the wounded honor of another.

AMENDMENT, in judicial proceedings, means the correction of any errors or the supplying of any omissions in the records of a civil action or in criminal indictment. The changes and additions made to the constitution of the United States during the last hundred years are called the amendments. In British parliamentary procedure the object of an amendment is usually to make such a change in a motion as will secure the vote of members who would otherwise vote against it.

AMENIA, or **AMENIAVILLE**, is a village of Dutchess county, N. Y. It is the seat of the Amenia Seminary.

AMENOPHIS, a name borne by three Egyptian kings of the 18th dynasty, beginning with Amasis about 1525 B. C.

AMENTACEÆ, a vast order of trees and shrubs whose flowers are unisexual—the male flowers, and frequently the female flowers also, being disposed in *amenta* or catkins, and the perianth either wanting or incomplete.

AMENTHES, the ancient Egyptian name for the unseen world, the Hades of the Greeks. The islands of the blessed, the judgment of the dead, Cerberus, and the passage across the river, all have their original in amenthēs, and are described in the famous Book of the Dead.

AMENTUM is a kind of inflorescence which is present in the birch, poplar and willow. It is deciduous.

AMERBACH, JOHANN, a celebrated printer of the fifteenth century, was born in Swabia, but removed to Bale, Switzerland, where he published magnificent editions of the writings of the fathers, including those of St. Augustine, in which he was the first to use Roman type instead of Italian and Gothic. He died in 1515.

AMERCEMENT, or **AMERCIAMENT**, is a court punishment having the character of a fine. It has long remained unused, but in some of the States a sheriff may be amerced for acting contrary to a statute.

AMERICA. This name designates the western continent and its adjacent islands, forming the main body of land found in the western hemisphere. America has an area of about 16,500,000 square miles, and occupies about 150 degrees of longitude and about 135 degrees of latitude. Population 94,510,000. See Britannica, Vol. I, p. 669.

AMERICA, BRITISH, a former name for what is now called the Dominion of Canada, together with Newfoundland and Labrador. In a wider sense it includes the islands and colonies of America which belong to Great Britain.

AMERICA, RUSSIAN, a name once applied to what is now known as Alaska, including the Aleutian Islands. This region was purchased by the United States from Russia, in 1867, for \$7,200,000. It was occupied by the Russians for more than a century, and the language, religion and manners of the natives bear their indelible impress.

AMERICA, SPANISH, at present includes only the islands of Cuba and Porto Rico, with their dependencies. In a wider sense the term is frequently applied to all those parts of America where the Spanish language is commonly spoken by the people. In this sense, it would also include the South and Central American republics and Mexico.

AMERICAN ANIMALS. See those topics severally in the Encyclopædia Britannica.

AMERICAN ART. See FINE ARTS, Britannica, Vol. IX.

AMERICAN BLIGHT, the apple-bark plant-louse, or woolly aphid, which forms a cottony film on neglected apple-trees.

AMERICAN CONTINENT. Authorities differ widely as to the actual American area. Some estimate it at a little over 14,000,000 square miles, while others make it as high as 17,000,000 square miles.

It may be safely set down at 14,215,000 square miles. About 7,180,000 square miles of this area are in North America; 175,000 are in Central America; 6,700,000 belong to South America, and the remaining 100,000 square miles are divided among the various American islands.

The American area is, therefore, about four times that of Europe; nearly a third greater than that of Africa, and about six-sevenths that of Asia. Geographically, America lies within the arctic, the northern and southern temperate, and the tropical zones. It consequently possesses every conceivable variety of climate and soil, and has a capacity to sustain multifarious forms of life, unsurpassed by any equal area of the globe.

1. North America is constituted of three political divisions, known as the United States, British America and Mexico. The United States has an area of 3,600,000 square miles and a population of 62,600,000. British America possesses an area of 3,500,000 square miles, with a population of 5,000,000. Mexico has an area of 800,000, and a population of 10,000,000.

2. Central America is the tortuous strip of territory connecting North and South America. It extends in length from 800 to 900 miles, and varies from 30 to about 300 miles in breadth. It comprises five republics, as follows: Costa Rica, Guatemala, Honduras, Nicaragua and San Salvador.

The united area is 175,000 square miles, and the total population about 3,000,000.

3. South America is constituted of eleven political divisions, as follows: Venezuela, the United States of Colombia, the Republic of Brazil, Uruguay, Paraguay, Bolivia, the Argentine Republic, Patagonia, Ecuador, Peru and Chili. The combined area is 6,760,000 square miles, with a total population of about 40,000,000. To these must be added the islands of America, as follows: 1. The Greater Antilles, including Cuba, Hayti, Jamaica and Porto Rico; 2. The Lesser Antilles, comprising Barbadoes and about thirty other small islands; 3. The Bahamas, comprising about five hundred islands, most of them insignificant in size. Their total area is about 100,000 square miles, with a population approximating 5,000,000. To these there may be also added Greenland, belonging to Denmark, the population of which is too insignificant to mention.

The area and population of the American continent may be summed up in round numbers as follows:

	Area, Sq. m.	Popu- lation.
North America.....	7,180,000	77,000,000
Central America.....	175,000	3,000,000
South America.....	6,760,000	40,000,000
Islands of America.....	100,000	5,000,000

This gives America a grand area of 14,215,000 square miles, and a total population of 125,000,000 souls. When Columbus crossed the wide wastes of a strange and storm-smitten sea he was destined in the discovery of America to change the world's center of political force and moral gravity.

AMERICANISMS enter extensively into the daily speech of the people of the United States. They have been defined as "certain modes of expression which are, or which are supposed to be, peculiar to the United States in distinction to English usage." But not a few of these so-called "Americanisms" are really good old English words, which, in the land of their birth, have lost their original significance, while it has been retained here. Another class consists of words that have been coined to express new ideas or describe new processes existing only in the Western world. Americanisms, of course, are more noticeable in speech than in books; and, in the best American writers, it is difficult to detect anything of the sort, except when introduced intentionally. While it is undoubtedly true that many words which were once slang have in course of time become part of our legitimate vocabulary, yet it is the province of the lexicographer to say when they shall be so included. Some are simply vulgarisms, and will always remain such, yet others are in the borderland between coarseness and purity of speech. It must be confessed, however, that the line between American slang and "Americanisms" is oftentimes very faint. The extent to which, in the United States, the nautical term "aboard" has extended its meaning to land affairs is quite amusing. Travelers by rail are urged to *go aboard the cars*, as railway carriages are called, the conductor finally crying out: "*All aboard!*" The dismissal of government employees is figuratively spoken of as being "guillotined" or "beheaded."—*Baggage-car* and *Luggage-van* are the synonymous terms in vogue respectively on American and English railroads. Similarly, what we call "baggage" the English term "luggage." Whereas, in England, attendants at bars and refreshment counters are women, termed "barmaids;" in the

United States the same place is invariably filled by a man, who is called a "bartender," or "barkeeper," often facetiously abbreviated to "barkeep."—The significance borne by the word *bee* in the United States constitutes a pure Americanism. The new settler generally built his log cabin without help, but when he proposed to erect a house he had a "raisin," as the setting up of the timbers was called. All the neighbors gave their aid, calling it a "building-bee," or a "raising-bee." In like manner we find the phrases "chopping-bee," "husking-bee," "quilting-bee," and even "spelling-bee." The bee-hunter has enriched England with the phrase "to strike a bee-line." An energetic pursuit, or rapid, direct course toward a certain goal, is called "making a bee-line" for that point.—*Benzine* is a colloquial term for strong drink in the Eastern States. In Virginia crown grants were commonly "blazed out" or "blazoned," by cutting some marks in the bark of a tree. The word "blaze" (from the French *blason*) has grown into an Americanism. A newcomer "blazes out" his preëmption right on the tree-trunks, or he "deadens" the tree for the same purpose by belting or "ringing it"—*i. e.* cutting off a circular piece of bark, so as to prevent the sap from rising.—*Blizzard* is a modern American word, probably more or less onomatopoeic. Suggestive words are "blow," "blast," "blister," "bluster." The French *blesser*, to wound, has also been conjectured, but there is nothing to indicate a French origin. As applied to a bitter snow storm, the word became general in the American newspapers during the severe winter of 1880-81; but, according to the "Milwaukee Republican," March 4, 1881, it had been so applied in the "Northern Vindicator," Esherville, Ill., between 1860 and 1870. Some of the great American railroads use various colored envelopes for different branches of their business.

On some of these a blue envelope contains a notice of dismissal; hence, the use of the phrase "to get the blue envelope" signifies a loss of one's employment. A yellow envelope is sometimes used.—The most plausible explanation of the common term *bogus*, meaning "counterfeit" or "fraudulent," is that the assumed name of a remarkably successful swindler, *Borghese*, was in course of time not only reduced to "bogus," but finally applied to everything false and fraudulent. It spread rapidly over the whole Union, and is now one of the most familiar of Americanisms.—*Bonanza* is a Spanish term of similar meaning to *Placer*. It is a nautical word, and means fair weather at sea. If the reader will refer to St. Matthew viii, 26, he will read that, after the Lord rebuked the wind and the sea, "there was a great calm." And if reference is next had to the Spanish version of the New Testament he will find the phrase there given, "una grande bonanza." It is easy to understand how the word came into its figurative use as meaning a happy calm and good hope after a weary search.—The word "boss" is derived from the Dutch *baas*. Originally used in its primitive meaning of master or overseer, it became customary to speak of a "boss tailor," or a "boss carpenter," meaning a mechanic who employed several *hands*, or workmen. Soon the word became widely popular. It has even been turned into a verb, and "to boss a job" is a common expression for undertaking a business. The word, harmless in itself, has passed, into politics, and become part of the history of the nation. The head of a party, the manager of an intrigue, the patron of a bill in Congress, each is called the "boss." The term is current from the Gulf of St. Lawrence to the Gulf of Mexico, from the Narrows to the Golden Gate. In the South the house and stable servants were universally called "boys," no matter what their age. From this arose the custom of dubbing the male help in American hotels "boys," as bell-boy, waiter-boy, though they may be gray-haired men. Among his own race in the far South the negro still clings to the term *buckra*, imported from the west coast of Africa, and originally meaning a spirit or powerful being, and then, by a natural transition, white man. In his new home he used it to designate anything specially good, as the *bucra yam*, which, to deserve the epithet, must be white and good at the same time.—Even students of language may be surprised to hear that the word *bummer* is not only not slang, but it is not even pure Americanism, being found in the "English Market By-Laws" of 200 years ago, and appears in several advertisements in the London "Publick Intelligencer" of the year 1660 under the form "bummaree." It originally meant a man who retails fish by peddling outside of the regular market. These persons being looked down upon and regarded as cheats by the established dealers, the name became one of contempt for a dishonest person of irregular habits. The word first appeared in the United States during the "Fifties" in California, and traveled eastward until, during the civil war, it came into general use.—The word *bush* has in some places, notably in Australia and South Africa, taken the Dutch meaning of a region abounding in trees and underwood, (*bosch*). It is not likely that the term "bush-whacker" is a pure Americanism; though it is hardly known in England, it is heard in Australia and South Africa. Originally used to designate the process of propelling a boat by pulling the bushes on the banks of the stream, it became afterward a name for lawless persons and fugitives from justice who took refuge in the bush.—The American minister who wishes to find a field of usefulness waits for a *call*, or invitation, from a congregation to come and min-

ister to their spiritual wants. When it is accepted he is "settled," and receives a "stated salary." The English "election contest" becomes in America a "political campaign." On American railroads the passenger vehicles are called "cars" or "coaches," while in England they are called "carriages."—*Chores* is a pure Americanism, naming collectively the hundred-and-one odd jobs that need daily attendance about the house or farm. When a stream of water is suddenly hemmed in between high and narrow banks, and thereby forced to reach a lower level with more or less velocity, such a place is termed a "chute." In mining parlance, too, the name is given to an artificial stream of water confined within narrow limits.—*Clever* is one of the most cruelly ill-treated Americanisms. It has assumed two very different meanings, designating in the North a good-natured, obliging person, while at the South it means gifted and talented. The American pet word *smart* has, however, largely superseded it.—The use of *delightful* for *delicious* in such a sentence as, "The ice-cream is delightful," is very common in the Southern States. The word "digging" has become familiar to English ears from its use in the gold-mines of Australia. There it generally denotes only a place where precious metals are dug for, but as an Americanism it serves to designate any special locality. The "drummer" so named, it is supposed, from his habit of traveling about the country to solicit or drum up custom, is, in the United States, the equivalent of the "bagman" or "commercial man" of Great Britain. The word "dry-goods" is universally used in the United States for the wares known in England as "linen-draperies" or "haberdashery." Dry goods for men's use are called "men's furnishings."—*To dump*, in the sense of tilting a cart and thus unloading it, is an Americanism; and open lots, where "rubbish may be shot," as is said in England, are in America called "dumping-grounds." The expert who handles the throttle of an English locomotive is called the "engine-driver"—a wise distinction, as compared with our American use of the term "engineer," which confounds men of vastly different callings.—*Expect* is the equivalent in the Middle States for the New England "guess." The "fireman" of American locomotives and steamships becomes the "stoker" on similar English conveyances. "To fix," says a writer, "may be said to be the American word of words, since there is probably no action of mind or body which is not at some time or other represented by this word." Whatever is to be made, whatever needs repair, whatever requires arrangement—all is "fixed." The President *fixes* his cabinet, the mechanic his work-bench, and the seamstress her sewing-machine. And yet "fix" may mean trouble and embarrassment. The "New York Herald" speaks of President Arthur being in a *fix*, and a young lady hesitating between two suitors is in a painful *fix*.—*Fixings* naturally abound also, and denote well-nigh everything, from the "railway fixings" of a new branch to the "chicken-fixings" of the West and the South.—The meaning given to the word "fizzle" in the United States constitutes an Americanism. The old-fashioned musket would frequently refuse to explode, the priming in the pan going off with a fizzling sound. Hence the word "fizzle" signifies any ridiculous failure after great expectations had been aroused. Articles shipped by railway are called "freight" in America, and "goods" in England. Thus we have the American "freight-train" and the English "goods-train" or "luggage-train." The English never speak of matter sent by ship as "freight," but use the term "cargo," or "lading." The pointed iron plates placed where two lin-

of railroad part are called "points" in England; in the United States they are called "frogs," resembling the marks on a horse's hoof. The apparently contrary expressions "gone up," "gone under," stand for one and the same thing in Western parlance—i. e. to fall, to "go to smash," or even to die. The first may be supposed to be drawn from the sudden elevation attending an explosion; the second probably arose from the fate of some luckless pioneer who was drawn under the rapids of a river. "Of the facility with which the slang of England rises to the rank of unobjectionable words in the mouths of Americans, the term 'going up' is an instance. It arose from the spout or tube through which the pawnbroker sends the goods he has advanced upon to an upper story. Hence, at first the phrase ran 'to go up the spout,' and meant simply disappearance or destruction. Then the *spout* was deemed superfluous, and when the city of Richmond fell at the close of the civil war the newspapers reported gravely that it had *gone up*."—*Grit* and *clear grit* are pure Americanisms, standing for pluck, or energy, or industry, or all three. Reference is probably had to the sandstones used for grindstones—the more "grit" they contain the better they wear.—*Guess*, says a recent authority, "is probably, of all words in the dictionary, the most thoroughly abused and the most passionately discussed." Quoted by almost every writer on America as one of the most obtrusive Americanisms, there is ample evidence that the word has been used in England from time immemorial in the precise sense in which the Yankee uses it now. The only difference, in our day, is perhaps that the English "guess" is a fair, candid supposition, while the American who "guesses" is apt to be quite sure of what he professes to doubt. As he only "calculates" when he has already solved his problem, so he "guesses" after having made sure of his fact. "I guess I can" means, from his lips, "I am sure I can."—*Gulch* is really a resurrected Old English word, meaning a dry water-course or gully, and contrary to general belief has no connection with the Spanish. To "fly off the handle" is to lose one's temper, or, in the case of a lady, to jilt her lover. The phrase has a back-woods flavor, and probably arose from the great value of the trusty ax to the hardy pioneer; when the head flew off the handle, the tool was useless. The word "help" was probably coined to avoid the use of the word "servant" in this "land of the free." *Hired man* and *hired girl* are two other terms used in the United States with the same end in view. Americans say a girl is "homely" when they mean she possesses plain features, and thus a word denoting a woman's most lovable quality is perverted into a term of reproach.—*Honey-fugling* is a genuine Americanism, meaning to cheat or defraud one's creditors.—*Horn* is another name for a dram or "drink" of liquor. The term "jack-knife" has been supposed to be derived from "jack-a-legs," which, as a name for a clasp-knife, has queer history. In New England we call, to-day, a particular kind of cutting implement a jack-knife. In the fifteenth and sixteenth centuries communication between Scotland and France of a social and mercantile character was constant. There was a famous French cutler whose name was *Jacque le Coultre*. To this day there are fine razors made in France, having this name stamped on them. The knives of this *Jacque le Coultre* were sent to Scotland, and so, beyond a doubt, the name jack-knife, or jack-a-legs, derived its origin.—*Jersey Lightning* is a colloquial term for the apple-jack sold in the State of New Jersey. It is popularly supposed to be extraordinarily rapid in its intoxicating effects. A common Southernism is the use of

"like as if," or "like," for the words "as if." "She looked like she knew me" is a common expression, or, "She looked like as if she'd die." This is very common in Washington, and in all the States South of Mason and Dixon's line.—*Lot* is a word which, in its application to land, is unknown to England and universal in the United States. It has its rise in an old Puritan custom. The first settlers in the seaboard plantations of New England owned the extensive salt-marshes, which produce such excellent salt-hay, in common, and every man cut and cocked, saved and salted, as much of the latter as he wanted. When, however, the population increased, and the first simplicity and harmony were no longer maintained, it was agreed to divide out these commons in equal parts to all the families. This was done after the Biblical precedent in the election of a twelfth Apostle, by "lot;" and the choice of every man, as his name was drawn, and he became entitled to select his piece of land, was known as *his lot*. The firm belief of the Puritans in a special providence watching over them and their interests made them continually resort to this manner of distributing lands or other articles of value, held heretofore in common, and thus the term "lots" soon came to designate any great quantity. In the United States "lumber" means manufactured timber; hence, we have the terms "lumber-yard" for the English "timber-yard," and the "lumber-camp" for a colony of tree-fellers, who are said to be engaged in "lumbering," and are called "lumber-men."—*Mad*, in the sense of angry, and as a substitute for the English *wild*, has been recognized as excellent Old English. Captain John Smith says: "This made him halfe madde." Even the familiar phrase "like mad" has old and high authority.—The Negro nurse of Southern white children was called "mammy," generally sounded *mawmer*. This last has invaded the North as the too frequent substitute for the "mamma" among white children.—In Louisiana the word *métif* denotes the child of a white man and a quadroon.—*Muss* is a colloquial word meaning to throw into confusion, to muddle, to litter. As a noun it signifies rubbish, dirt, etc. A third meaning makes it do duty for a fight, a fracas, or a quarrel.—*Notion*, in the sense of small, trifling wares, is probably the word which, of all Americanisms, is regarded as the most absolutely American, both in origin and in usage. "Yankee notions" is a phrase known the world over. But so grave and didactic a poet as Young, than whom none could be less American, used it nearly one hundred and fifty years ago exactly in the sense in which it is now used in New England. In the days of the petroleum excitement in Pennsylvania the finding of oil meant fortune to the lucky prospector. Hence the phrase "struck oil" passed into current speech to signify sudden riches. An American speaks of his "people," meaning his immediate kindred, where an Englishman would say "relations." The word "folk" is similarly used.—*Pickayune* indicates something small, mean, or contemptible. The pickayune is a Carib coin, worth six and a quarter cents.—The miner or the merchant who has grown rich is said to have "made his pile"—a phrase imported from the camp of the gold hunter. "If a man asks for the milk-jug," says R. G. White, "be sure that he is British bred; if for the milk-pitcher, be equally sure that he is American."—*Placer*, an American mining term of Spanish origin, meaning at first simply "pleasure" at coming unawares to a rich gold mine, has become familiar, and now means not only the drift-sand which contains gold, but any good thing which promises a liberal return of profit. The British government in old times used to make grants to

all who were willing to "plant" colonies. Hence, these colonies were called "plantations" at the North as well as at the South. An American term for whisky is "poison." "What's your poison?" is often heard as an invitation to drink. Among colloquial terms derived from commerce, none are more frequently heard than "posting" and "posted." The terms arise, of course, from accounts which, when fully entered on the ledger, are said to be "posted." As Americanisms, however, they are used to express full knowledge of any subject. A would-be farmer thus says: "I require much 'posting' (information) before I can begin;" and a scholar of various learning is reputed to be "posted" on all grave questions.—The *pound party* is a variation of the surprise party, in which every person participating is supposed or expected to contribute a pound of something to the general stock. Frequently the unopened packages are auctioned off for the benefit of some charity. Among Southerners "pretty" is a word very often misused; for instance: "Isn't this a pretty day," and this error is a very general one. North Carolinians say the scenery is "pretty"—meaning picturesque; the day is "pretty"—meaning fine; and that a person's manners are "pretty"—meaning well-bred. In Louisiana, the term "quadroon" denotes the offspring of a white man and a griffin.—The *railroad*, as Americans uniformly say instead of *railway*, as in England, has brought with it a number of terms peculiar to the New World. The English "station" becomes a "depot;" the "trucks" of the Old World are called freight-cars, and there are "palace-cars," and even "silver palace cars." The "rails" of American railroads are the "metals" of English lines.—*To raise*, applied in England only to vegetables and animals, is used in America also in reference to men. Nothing is more common than the question, "Where were you raised?"—The *ranch* was the farm of the Spaniard in Mexico, and the *ranchero* was the farmer himself. In the great West the term "ranch" indicates the home of the stock-raiser. The word "rapids" is peculiar to New World English, and serves to indicate the difference between a rapid descent or a series of descents in a river and a waterfall or cascade. The Southern equivalent for the "guess" of New England and the "expect" of the Middle States is "reckon."—*Right away*, used for *straightway*, excited the wrath and ridicule of Dickens on his first visit to Boston. Now the phrase is heard all over the Union, and has made its way to England also. If we happen to hear any body say "*rye cheer*" we may know it is intended to mean "right here." For instance, a South Carolinian will say: "He stayed *rye cheer* with me."—*Right smart* is a pet Southern phrase, where one often hears of a "right smart lawyer," or "a right smart preacher." In the Southern States the word "rock" means a pebble or a stone.—*Rubbed out* is a Western euphemism for death. Very expressive of American haste and hurry is the comparatively modern use of "to run," in the sense of to manage or to keep, when applied to any kind of business, from a gigantic hotel to a petty grocery.—Who *runs* this business now? means "Who is the manager?" The phrase "run on a bank" is not a pure Americanism, being often heard in England. The corner public-house of English cities gives place, in America, to the more pretentious "saloon."—*Salt* and *salting* are Western Americanisms. In the parlance of the mining camp, to "salt" a worthless mine is to secretly place or scatter therein samples of rich ore for the purpose of effecting a sale. The rich ore is the "salt," and the practice is known as "salting a mine."—*Sample-room* was once a name for a liquor

saloon, supposed to embody the fiction that patrons enter only to "sample" or try the beverages within. This, and the kindred term, "shades" (*q. v.*) is probably an outgrowth of the temperance agitation, which sought to render drinking vulgar in "bar-rooms" and "saloons."—*Sand* is an Americanism, whose first meaning is the same as "grit." A man with "sand in his craw" is supposed to be very plucky. A second colloquial use of the word makes it stand for money, but though very common in the States it is doubtful if it is a pure Americanism. In New England "garden sass" means any kind of small vegetables. "One of the few French words which have become naturalized in American speech is the *chantier*, thoroughly adopted in the shape of *shanty*.—Originally used by *voyageurs* and Canadian immigrants, it is universally employed to designate a slight wooden shed or shelter."—*Shebang* is the name of a college student's sanctum, of a low drinking den, and of a cheap theater or variety show. The word is thought to be a corruption of the French *cabane*, and is common throughout the United States.—The word *shinney*, denoting a stick with a crook to it, used by boys to strike a ball with, and also applied to the game itself, is from the North of Ireland. It was in common use in the United States fifty years ago, but is not so commonly employed to-day. The outer covering of the spike or fruit of the maize is the *shuck*. This name is peculiar to the South. In the Western and Northern States the equivalent term is "husk." So a certain rural gathering is, in the South, a "shucking-bee," and in the other localities named a "husking-bee."—*Sick*, applied in England solely to nausea, is in America used for any kind of indisposition.—*Sink-holes* are abrupt indentations in the soil, from the bottom of which mineral springs frequently issue.—*Skedaddle* is an Americanism which obtained currency during the civil war, and signifying precipitous flight. The word claims sometimes Irish, sometimes Scottish, descent. But of all explanations the most plausible is, strangely enough, the theory that the word comes from a Greek word, meaning "I scatter, I disperse tumultuously," and used by both Herodotus and Homer.—*Slip* has acquired a new meaning in its new home. It means an opening between two wharves or in a dock; hence many localities in the city of New York bear such names as "Peck Slip."—*Small Potatoes* is applied to anything or anybody small, mean, or petty. The complete phrase is "Small potatoes and few in a hill." To "smile" is the Americanism, once immensely popular from Maine to California, used to denote the act of drinking liquor. "Let's smile" was a universally understood talisman.—*Snuffed out* is a California euphemism for death. The humorous son of the West speaks of the discontented settler as a man who has "soured" on his "section." The jilted lover "sours" on his former flame, and to lose money by the failure of a bank has "soured" the stockholders.—The *stoop*, as designating the place between the steps leading up to the house and the door, is a genuine Americanism due to the Dutch, for the burghers loved to sit on their *stoeps* (seats) smoking their pipes. Now *stoop* is the name for any covered or open porch in front of a house.—*Store* is the universal equivalent for the English "shop." In a country newly reclaimed from the forest tree-stumps remain for years a conspicuous feature of the landscape. Such often formed a convenient platform for political speakers, and hence "to take the stump," or to "stump the country," signifies a traveling from place to place, speaking and canvassing for votes. Such a man is known as a "stump speaker." In the Northern States and

in Canada, a gathering in the maple grove for the purpose of making sugar, which is obtained from syrup drained from "tapping" the sugar-maple, is a "sugar-camp."—A grove of sugar-maple trees is called a "sugar-orchard" in the Northern States and Canada. A social gathering, in which the family visited is not forewarned, being therefore "surprised," and on which account visitors bring their own refreshments, is called a "surprise party." The Americans "switch" a train where their English cousins speak of "shunting" one. The "switchman" or "switch-tender" of American railroads is the "pointsman" of English roads. A law against the game of nine-pins having been evaded by the addition of the tenth pin, the man who bowled over the whole number was said to make a "ten-strike," so the phrase "to make a ten-strike" passed into current phraseology to indicate a lucky stroke. The word "timber" is used throughout the West for any woodland or forest growth. Hence "to take to the timber" is to hide in the forest. The phrase "presidential timber" is also used of men considered available for that high office. As none but the tallest and straightest trees are selected by the woodman's axe, so only the most eminent men are likely to be talked of for the highest office in the gift of the people. Our American custom of calling the prong of a fork a "tine" is a Lincolnshire peculiarity, and came over with our fathers. The more general word "prong" is, indeed, driving it out, and the word "tine" is understood in Lincolnshire alone. "To get to go" is essentially a Georgia expression. They say: "Don't fail to come to-night," and the reply is, "I've tried 'to get to go' three weeks, now, so I reckon I'll be there t'night." The expression "Do don't" is heard in Georgia and South Carolina, but rarely elsewhere. The road-bed of a railroad, which we name the "track," is called the "line" in England. The practice, common to hunted game, of seeking refuge in the branches of a tree, led to the phrase "to tree" one's self, or "to tree" game. In an opossum chase the dogs often mistake the tree up which the creature has sought safety, and are then said to be "barking up the wrong tree," a phrase which has come to be applied to similar blunders in real life. The phrase "up a tree," meaning "in a predicament," is also of the same origin. Kitchen-garden produce in America is known as "truck," "garden-truck," or "garden-sass." Another meaning of the Americanism "truck" is its equivalent use for the English words "lumber," "litter," or "rubbish," of any sort. The vehicle known as a "truck" in the cities of the United States is the "van" or the "dray" of the English. As strange a perversion of a word as can be found in the long list of Americanisms is the use of the word "ugly" for "ill-tempered" or "angry." Throughout the Middle States, especially in the rural portion, the "voodoo" signifies an auction sale of goods and chattels. It is, of course, a corruption of *vendue*. Like the term *crevasse*, the word "wash-out" also signifies a break in an embankment; but while a "crevasse" has reference to a river dike, a "wash-out" applies more especially to a railway embankment, and also to the dropping out of the bottom of a canal.—*You all*, or as it should be abbreviated, *y'all*, is one of the most ridiculous of all the Southernisms we can call to mind. It usually means two or more persons, but is sometimes used when only one person is meant. For instance, a caller, on taking her departure, says: "Y'all must come to see us." She means that the lady upon whom she is calling and her husband may call.

AMERICANIST, a term applied to one who is devoted to the study of subjects especially relating to

America. It differs from American in that it may be properly applied to a person of any nation who interests himself prominently in the study of subjects relating to America.

AMERICAN RIVER (Cal.), a branch of the Sacramento, formed by the junction of three small confluents, which rise in the Sierra Nevada, and wind among those mountains in narrow, deep cañons. The land surrounding these branches affords a valuable supply of gold.

AMERICUS, the county-seat and market-town of Sumter county, Ga., carries on a brisk trade in general merchandise, and is the seat of a number of flourishing graded schools, a male high school, and a female college. Population in 1870, 3,259; in 1880, 3,635.

AMES, a village of Iowa, in Story county, near Des Moines, and 105 miles west of Cedar Rapids. It is the seat of the Agricultural College of Iowa.

AMES, ADELBERT, U. S. soldier, born in Rockland, Me., Oct. 31, 1835. He was graduated at West Point, and assigned to the 5th artillery. He was brevetted for gallantry in the battle of Bull Run, at which time he received a wound. He took part in the siege of Yorktown, and the battles of Gaines' Mills, Malvern Hill, Fredericksburg, Chancellorsville, Antietam, and Gettysburg, besides several other minor engagements throughout the civil war. On several occasions he was brevetted for "gallant and meritorious conduct on the field," and rose through the successive grades to be lieutenant-colonel, 24th infantry. In 1868 he was appointed provisional governor of Mississippi, under acts of Congress providing for such temporary government, and in 1869 Gen. Ames was elected U. S. Senator. In 1873 he became governor of Mississippi by the popular vote, but in 1876 resigned and removed to Minnesota.

AMES, EDWARD RAMOND, M. E. bishop, born in Athens, Ohio, May 20, 1806. In 1828 he opened a school at Lebanon, Ill., which afterwards became McKendree College. In 1830 he joined the Methodist Episcopal church, and ten years later was chosen corresponding secretary of the missionary society. He became a presiding elder in 1844, and filled that position till he was chosen bishop in 1852. Ames was the first Methodist bishop to visit the Pacific coast. He died in Baltimore, April 25, 1879.

AMES, JOSEPH, American painter, born in Rockbury, N. H., in 1816. He was wholly self-taught when some of his best works were produced, but later he studied at Rome. He returned to the United States, and two years before his death he was elected a member of the national academy of design (1870.) Some of his best-known works are: *Ristori*, *Prescott*, *Emerson*, *Rachel*, *President Felton of Harvard*. Among his ideal paintings are *Miranda*, *Night*, *Morning*, *The Death of Webster*, and *Maud Muller*. He died of brain fever in New York, Oct. 30, 1872.

AMES, MARY CLEMMER (Mrs. Hudson), American authoress, born in Utica, N. Y., in 1839. At a very early age she began writing for various newspapers, and later in life she wrote numerous biographies and several novels. Among her books were *Victoria* (1864); *Eirene* (1870); *His Two Wives* (1874); *Ten Years in Washington* (1871); *Outlines of Men, Women and Things* (1873), and a volume of poems (1882). She died in Washington, D. C., Aug. 18, 1884.

AMES, NATHAN P., American manufacturer, born in 1803. In 1829 he became known as a skillful sword-maker, and furnished large numbers to the U. S. Government. In 1834 he incorporated the Ames Manufacturing Co., and it soon became famous, furnishing most of the brass cannon for the

U. S. army. This foundry also turned out the statues of De Witt Clinton in Greenwood cemetery, Brooklyn, N. Y.; of George Washington, Union Square, New York, and of Franklin in School street, Boston. Mr. Ames died in Cabotville, April 23, 1847.

AMES, OAKES, American manufacturer, born in Easton, Mass., Jan. 10, 1804. At an early age he became a member of the firm of Oliver Ames & Sons, manufacturers of shovels and picks, and during the gold excitement in California and later in Australia, turned out enormous quantities of supplies. During the civil war they furnished the government with a large proportion of the swords and shovels used. In 1861 Mr. Ames became a member of the executive council of Massachusetts. From 1862 to 1873 he served continuously in Congress as representative of the Second Massachusetts District. He died in North Easton, Mass., May 8, 1873.

AMES, OLIVER, American manufacturer, born in Plymouth, Mass., Nov. 5, 1807. He was a member of the firm of Oliver Ames & Sons, manufacturers of shovels, picks, swords, etc., and at his brother's death became president of the firm. He was a member of the Massachusetts senate from 1852 to 1857, and was elected president of the Union Pacific railroad company in 1868. He died in North Easton, Mass., March 9, 1877.

AMES, SAMUEL, American jurist, born in Providence, R. I., Sept. 6, 1806. After he was graduated at Brown in 1823, he became a member of the Rhode Island bar. He was a member of the city council of Providence, and for many years served in the State Assembly, being speaker of that body in 1844 and 1845. During the period of the rebellion in 1842 he was a quartermaster of the State troops, and in 1853 was appointed to the legislature to represent the State in the adjustment of the boundary between Rhode Island and Massachusetts. He was one of the commissioners in 1855 to revise the statutes of Rhode Island, and in 1856 was elected chief justice of the State supreme court. Mr. Ames published *Angell and Ames on Corporations, and Rhode Island Reports*. He died in Providence, Dec. 20, 1865.

AMESBURY, a village of Massachusetts, about forty miles north of Boston, is noted as being the home of the poet Whittier. It contains an excellent high school, and is the headquarters of extensive manufactures of boots and shoes, carriages and woolen goods.

AMHARA, the middle and largest of the three divisions of Abyssinia, extends from the Tacazze to the Blue Nile. Capital, Gondar.

AMHERST, J. H., actor, born in London, England, in 1776. After appearing in his native city he emigrated to Philadelphia, and acted in several plays. He was an accomplished classical scholar and wrote many plays, among his most popular being: *Will Watch*; or, *the Black Phantom* (1825); *Napoleon Bonaparte's Invasion of Russia*; or, *the Conflagration of Moscow* (1850); *Ireland as it Is* (1850); *The Battle of Waterloo* (1850); and *Ireland as it Was* (1850). He died in Philadelphia, Aug. 12, 1851.

AMHERST, JEFFERY, English soldier, born in Riverhead, Kent, England, Jan. 29, 1717. When a boy he served in Flanders, where he won distinction and became a favorite of the king. In 1760 he was appointed governor-general of the British possessions in America, and in 1763 he was made governor of Virginia. In 1776 he was raised to the peerage, and in 1787 received a patent as Baron Amherst of Montreal. He died Aug. 3, 1797.

AMHERSTBURG, one of the oldest towns of Ontario, Canada, situated on the Detroit River, near its entrance into lake Erie, was during the war of 1812-14 first dismantled by the British under General Proctor, and afterwards destroyed by the

Americans under General Harrison. Its manufactures consist chiefly of mill products and iron. The principal buildings are the court-house and a lunatic asylum.

AMHERST COLLEGE is situated in the town of Amherst, Hampshire county, Massachusetts. It was founded as "The Collegiate Institution at Amherst" in 1821, and incorporated under the name of Amherst College in 1825. See COLLEGES, in American Revisions and Additions.

AMHERST ISLANDS are a group lying west of the southwestern extremity of the peninsula of Corea, in the Yellow Sea.

AMI, HENRY M., Canadian scientist, born in Belle-Riviere, Quebec, Nov. 23, 1858. After he was graduated at McGill College in 1882, he was appointed on the staff of the geological survey of Canada, became assistant paleontologist in 1886, and the same year was engaged in classifying the fossil remains of Canada. He has published numerous reports on stratigraphic and paleontologic subjects. In 1883 he became a permanent civil service officer.

AMIA CALVA, a species of fishes representing the family *Amiidae*, is found in the fresh waters of North America, and is variously known as dog-fish, lawyer, bow-fish, mud-fish, brindle and grindle.

AMICUS CURIAE: in law, a friend of the court; a person in court who, not having any employment or interest in the case, informs the judge of some error, or makes a suggestion on a point of law in aid of the duty of the court.

AMIDES, a name originally applied to a group of organic compounds derived from ammonia. At present the term *amide* is restricted to the case in which one or more atoms of hydrogen are replaced by an *acid radical*, and the amides are called primary, secondary, or tertiary according as one, two, or all three of the atoms of hydrogen are replaced by the acid radical.

AMIDOGEN, or DIAMIDE, formerly looked upon as a hypothetical body. Curtius, however, has recently produced the sulphate of amidogen, from which amidogen itself is obtained by the action of an alkali. It is a gas possessing a peculiar odor, and when inhaled strongly affects the nose and fauces.

AMIEL, HENRI FREDERIC, was born at Geneva in 1821. He studied at Berlin, where he read industriously, returning to Geneva thoroughly imbued with German science and philosophy. In 1849 he was appointed professor of *Esthetics* and French Literature at the Academy (University) of Geneva, which post he exchanged four years later for the professorship of Moral Philosophy. He died in 1881. He was a man of wide culture and considerable critical power.

AMIRANTE ISLANDS, a group of eleven low, wooded islands situated southwest of the Seychelles, opposite the eastern coast of Africa. They belong to Great Britain, and form a dependency of Mauritius.

AMITE, a river about 150 miles long and navigable for about 50 miles, rises in the southwestern part of Mississippi, and flows in a southerly direction through Louisiana into Lake Maurepas.

AMLETH, an ancient, or, perhaps, fabulous prince of Jutland, whose story is told by Saxo Grammaticus, and who is believed by many to be the original hero of Shakespeare's *Hamlet*.

AMMAN, or AMMON (the ancient Rabbah, rebuilt and called Philadelphia by the Greeks), a ruined city of Syria on an affluent of the Jordan. It has numerous remains of Greek edifices.

AMMELINE is a white crystalline substance produced by the action of an acid or an alkali on melam, and regarded as an amic acid of cyanuric acid.

AMMEN, DANIEL, American naval officer, born in Ohio, May 15, 1820. He entered the navy as midshipman, and continued in its service for 49 years and six months, when he was made rear-admiral and placed on the retired list, Dec. 11, 1877.

AMMEN, JACOB, American soldier, born in Botsourt county, Va., Jan. 7, 1808. He was graduated at the United States Military Academy in 1831, and then served as instructor in mathematics at West Point, Bacon College, Jefferson College, and the University of Indiana. He served during the civil war through all the successive grades from captain of volunteers to brigadier-general. He resigned Jan. 14, 1865.

AMMIDOWN, EDWARD HOLMES, American merchant, born in Southbridge, Mass., Oct. 28, 1830.



EDWARD H. AMMIDOWN.

His family is one of the oldest in New England, having started in this country with Roger Ammidown, a Huguenot refugee, who came to Salem in 1640, and subsequently settled in Boston, where succeeding generations became prominent. Edward H. Ammidown passed his boyhood and youth in Boston. In 1860 he removed to New York and entered the dry-goods commission business, and in a few years became one of the leading men in that line of trade.

AMMODYTE is a poisonous serpent related to the viper. There is an Eastern species whose sting causes speedy death.

AMMONIAPHONE, the name of an instrument for improving the quality of the singing and speaking voice by inhaling air saturated with peroxide of hydrogen and free ammonia. It was invented about 1880 by Dr. Carter Moffat, who ascribed the superiority of Italian vocal organs to the presence of those gases in the air of Italy.

AMMONITES, a genus of fossil shells, nearly allied to the recent genus *Nautilus*. The family to which they belong ranged from Palæozoic to Mesozoic times, and embraced a number of different forms, varying greatly in size.

AMMONITIDÆ, a genus of cephalopodous mollusks, represented solely by the extinct *Ammonites*.

AMMONIUM, the site of the famous temple of Ammon in the Libyan Desert, the modern oasis of Sinah.

AMMUNITION. See **ARMS**.

AMNESIA, loss of memory; specifically, a condition in which a person is unable to recall a word that is wanted, or, perhaps, understand it when spoken. In Zoology, a genus of coleopterous insects.

AMNION is a fetal membrane, which immediately invests the embryo, appearing very early in the development of the latter, and adhering closely to it.

AMNIOS, in botany, is a thin, semi-transparent substance, composed of gelatine, which protects and nourishes the young seed.

AMCEBA, a name given to a number of the simplest animals, or protozoa, which consist of masses of minute living matter. They are found in fresh water or in mud, and occasionally in damp earth.

AMCEBEAN VERSES are such as answer one another alternately, as in some of Virgil's Eclogues.

AMORPHOUS, a term used in chemistry to

describe the uncrystallized in opposition to the crystallized condition of bodies.

AMOMUM, a genus of *Zingiberaceæ*, to which belong the plants yielding Cardamoms and Grains of Paradise.

AMORGOS, an island among the Sporades group, in the Grecian Archipelago, eighteen miles southeast of Naxos. It is thirteen miles long and six miles wide, and contains many mountains. The chief town is Amorgos, and the port, situated on the northeast coast, is Santa Anna.

AMOROSO, in music, is descriptive of passages to be rendered in a manner expressive of love—affectionately, tenderly.

AMORY, ROBERT, American physician, born in Boston, May 2, 1842. He was graduated at Harvard in 1863, and after studying medicine in Paris and Dublin he settled in Longwood (Brookline), Mass. He occupied several important offices in the town, and in 1869 was elected lecturer at Harvard College, and later professor at Bowdoin. He resigned in 1874, and became assistant-surgeon in the Massachusetts volunteer militia, surgeon two years later, and then medical director. He has published *Bromides of Potassium and Ammonium* (1872), and *Action of Nitrous Oxide* (1870), and has contributed numerous important papers to various scientific periodicals.

AMORY, THOMAS, an eccentric author of Irish descent, who was born about 1691 and died in 1788. He was a son of Councillor Amory, who went to Ireland with William III, and was made secretary of the forfeited estates. Amory lived a retired life. His chief works are: *Lives of Several Ladies of Great Britain; A History of Antiquities, Productions of Nature*, etc. (1755), and the *Life of John Bunce* (1756).

AMORY, THOMAS COFFIN, American lawyer, born in Boston, Mass., in 1809. He was graduated at Harvard College in 1830, and was admitted to the bar four years later. For many years he was connected with the government of Boston. He published numerous reports, and contributed on historical subjects both in prose and verse to various magazines.

AMORY, THOMAS J. C., American soldier, born in Massachusetts about 1830. He was graduated at West Point in 1851, and served in several battles of the civil war. He became major of volunteers in September, 1864, and was brevetted brigadier-general on the first of October of the same year, but died seven days later of yellow fever in Newbern, N. C.

AMOS was an ancient prophet from the town of Tekoa, near Bethlehem. He was called from his humble occupation of tending herds and gathering the fruit of the sycamore to become the fourth messenger of God.

AMOTION, in law, is removal from office, as of an officer of a corporation, and is distinguished from disfranchisement, which is the removal of a member.

AMPELIC ACID, a white solid, is the product of nitric acid acting on schist oils.

AMPELIDÆ: in ornithology, a family name variously applied to oscine passerine birds. The family was founded by Swainson in 1831, without peculiarities by which it may be defined. It has been restricted of late by American authorities to the *Amplinx* proper, and placed between *Tyrannidæ* and *Cotingidæ*.

AMPELINE, the name given to a watery looking, odorless oil produced by a distillation of sulphuric acid and alum-slate oil.

AMPELOPSIS, a genus of the *Vitacæ*, closely resembling the vine.

AMPHIBIA, in popular language, applied to animals living both on land and in the water—those which, though unable to breathe under water, habitually enter that element. In this class belong the walrus, or morse, and the tortoise. In Zoology, a class of vertebrates between fishes and reptiles. The term



WALRUS.

was used by Linnæus to include reptiles, amphibians and some fishes, and by Cuvier as synonymous with the title "reptiles," which he applied to all animals between fishes and birds. The application of the term was soon narrowed, and the amphibia were separated on the one hand from



COMMON OR GREEK TORTOISE.

the reptiles which never breathe by gills, and on the other from the fishes which, with the exception of the Dipnoi, never breathe by lungs. Since the amphibia are more nearly related to fishes than to reptiles, Huxley united them in 1863 with the former in the genera.



HAWK-BILL TURTLE.

AMPHIBOLE, the name of a group of minerals which are essentially silicates of lime and magnesia. The most important minerals in this group are Tremolite, Actinolite, Nephrite, and Hornblende.

AMPHICTYONIC COUNCIL, a celebrated council of the ancient states of Greece. Originally *amphictyony* meant an association of several tribes for the purpose of protecting some temple common to them all, and for maintaining worship within it. Later it acquired a political sense. There were several such associations, but the most important was that at Anthela, near Thermopylæ, afterward transferred to Delphi.



HAWK-BILL TURTLE (under side).

AMPHIMORPHÆ, a term zoologically equivalent to *Odontoglossæ*, and applied by Huxley to a super-family of desmognathous carinate birds. It contains only the flamingoes, *Phenicopteridæ*. See *FLAMINGO*, *Britannica*, Vol. IX, p. 286.

AMPHISSA is a Grecian town on the inlet of the Gulf of Corinth. It is situated at the base of Mt. Parnassus, eighty-seven miles W. N. W. of Athens. It is noted for its acropolis, which contains the remains of an ancient citadel.

AMPHITHERIUM, a genus of extinct insectivorous mammals, resembling in many points the living *Myrmecobius*.

AMPHITRYON: in Greek mythology, a king of Tiryns, son of Alcaeus, and husband of Alcmena. The story has been treated by Plautus in his *Amphitruo*, and after him by Molière in his *Amphitryon*.

AMPHIUMA, a North American tailed amphibian, which loses the external gills of its youth. It belongs to the caducibranch group of the order *Crodele*. The form is eel-like and about two feet in length; the eyes are covered with skin, and there are numerous teeth. *A. meaus* is found in the southern and south-western states burrowing in the mud in the ditches of the rice-fields. The negroes call it the Congo snake.

AMPIPODS, an order of small sessile-eyed crustaceans. The order includes a great number of common forms, such as the familiar Sandhopper (*Talitrus saltator*); the abundant *Gammarus* of running water; the blind *Niphargus* of under-ground fresh water, and many more.

AMPUTATION is the cutting off of a part which, through being injured or diseased, endangers the whole body. The amputation of a limb in ancient times was attended with great danger to the patient, as surgeons had no means of restraining the bleeding. The desired power of controlling the hæmorrhage was obtained by the invention of the tourniquet, in 1764, by a French surgeon (Morel). The question *when* amputation of a limb is necessary is often, especially after an accident, one of the most difficult in surgery.

AMRITA: literally, "without death," denotes in Hindoo mythology the ambrosia of the gods, or water of immortality, the product of the churning of the ocean.

AMROHA, a town in the North-west Provinces of India. Population, 36,145, mainly Moslems.

AMSTERDAM, a city of New York, is situated on the north bank of the Mohawk, about thirty miles northwest of Albany. Its local trade in general merchandise is extensive. There are large manufactories of knit goods and carpets, and numerous other industries include the making of paper, brooms, and steel springs. Amsterdam is the seat of a Roman Catholic institute, an academy, and excellent public and private schools. Population in 1890, 17,264.

AMSTERDAM ISLAND. See **MAURITIUS**.

AMUCK, in the phrase *to run amuck*, signifies, literally, "in a state of murderous frenzy;" referring to the plan of suicide of the Malay nasheesh-eater, who, crazed by the habitual use of the drug, runs frantically through the street, wounding or killing with a dirk all whom he can reach; thus inviting the death by which alone the community can put a stop to the indiscriminate slaughter.

AMURNATH, a cave in Cashmere, among the mountains on the North-east boundary. It is believed to be the residence of the god Siva, and is visited by multitudes of pilgrims.

AMYCLÆ, an ancient town of Laconia, on the eastern bank of the Eurotas. It was the home of Castor and Pollux, the "Amyclæan brothers." Also, the name of an ancient town of Latium, which claimed to have been built by a colony from the Greek Amyche.

AMYGDALIN is a crystalline principle existing in the kernel of bitter almonds, the leaves of the *Prunus lauro-cerasus*, and various other plants, which by distillation yields hydrocyanic acid.

AMYGDALOID, an igneous, crystalline or vitreous rock containing numerous cells. As cells and cellular structure occur in many different kinds of igneous rock, the term *amygdaloid* no longer denotes a rock species, and has fallen into disuse. It is now only employed in the adjective form, *amygdaloidal*, indicating a cellular or slag-like structure, in which the pores and cells are more or less filled up with mineral matter.

AMYL is an alcohol radical, obtained by heating amyliodide with an amalgam of zinc in a closed

tube at a temperature of about 350° F., and is one of the natural products of the distillation of coal. It enters into a large number of chemical compounds.

AMYLENE, a lipid liquid produced by the dehydration of amyl alcohol, is sometimes used as an anæsthetic, but is extremely dangerous.

AMYLOID, a term used in chemistry and botany, and is generally equivalent to "starchy." Amyloids are substances like starch, dextrine, sugar, gum, etc., which consist of carbon, hydrogen, and oxygen, the latter two being always in the proportion in which they occur in water.

AMYOT, JOSEPH, oriental scholar, was born at Toulon in 1718, and lived as a Jesuit missionary in China from 1750 till his death in 1794. His knowledge of the Chinese and Tartar languages enabled him to acquire his knowledge of the antiquities, history, language, and arts of China from the most authentic sources. His principal writings may be found in the *Mémoires concernant l'Histoire, les Sciences et les Arts des Chinois* (16 vols. Paris, 1776-1814).

AMYRIDACEÆ, a sub-order of *Terebintheceæ*, consisting of trees and shrubs remarkable for the abundance of their fragrant resinous juice.

ANABLEPS, a genus in Agassiz's cyprinodont family of bony fishes with open air-bladders. They are remarkable for their projecting eyes. The outer covering, or *cornea*, is crossed by a dark band, and the inner *iris* is similarly divided, so that there are really two pupils instead of one. This unique structure is supposed to be associated with a habit which these fishes are said to have of swimming with the eyes partly out of the water. *A. tetropthalmus* inhabits the rivers of Guiana and Surinam.

ANABOLISM, assimilation, processes within the protoplasm, by which a substance is transformed into another which is more complex or more highly organized and more energetic till it finally becomes living matter.

ANACHARIS, a genus of plants of the natural order *Hydrocharidææ*. It is a native of North America, growing in ponds and slow streams. It has been introduced into Britain, where it is now very abundant and troublesome in some of the rivers—in fact, much more so than it ever becomes in America.

ANACLACHE, a lofty peak of the Bolivian Andes, is more than twenty-two thousand feet above the ocean level, and is covered with perpetual snow.

ANAHEIM, a village of southern California, in the center of the largest valley in the State, is the headquarters of the wine interest of that region, producing annually more than one million gallons.

ANÆMIA, a term employed to denote conditions in which there is a diminished quantity of blood or a smaller number of its corpuscles than in health.

ANÆSTHESIA, ANÆSTHETICS. The former is a term used to express a loss of sensibility to external impressions, which may involve a part or the whole surface of the body. It may occur naturally as the result of disease, or may be produced artificially by the administration of *anæsthetics*. The anæsthetics almost exclusively used for the production of general anæsthesia are ether, chloroform, and nitrous oxide (laughing gas). Their employment in surgery has greatly increased the scope of the surgeon's usefulness, and has been a great boon to suffering humanity.

Local anæsthesia, artificially produced, is of great value in minor operations, and in painful affections of limited areas of the body. *Local anæsthesia* is

often produced by freezing the part with ether spray. Of medicinal agents, the best is *cocaine*, prepared from the cocoa shrub of Peru (*Erythroxylon coca*). In the form of a five to ten per cent. watery solution, this drug is introduced into the tissues by a hypodermic needle, and produces complete anæsthesia of the part thus treated in from three to fifteen minutes. Thymol, menthol, aconite, belladonna, chloroform, phinol, chloral, and Indian hemp have also a local anæsthetic action, if rubbed on the skin or applied to abraded surfaces. See *Britannica*, Vol. I, p. 789.

ANAKIM, a people living in the south of Palestine, especially about Hebron, called at that time Kirjatharba. They were described in the Bible as a race of giants. They were also called "Sons of Anak."

ANALCITE, or ANALCIME: literally, "not strong" (because by friction it becomes but feebly electrified) is a hydrated silicate of alumina and soda found in the trap-rocks of Nova Scotia, Lake Superior, Ireland and Scotland.

ANALEMMA, in geometry, denotes an orthographic projection of the sphere on the plane of the meridian, the eye being supposed to be at an infinite distance and in the east or west point of the horizon. The word also denotes an instrument in use before the invention of trigonometry for drawing such a projection in the solving of astronomical problems.

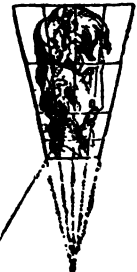
ANAL GLANDS, pouches from the end of the intestine beside the anus, consisting of cells which exhibit a special development of the general glandular properties so abundantly associated with the skin. They occur especially in mammals, but also in snakes, lizards and other reptiles. The secretions of the glandular cells has usually a strong smell. They are sometimes of protective advantage, and in other cases doubtless auxiliary to sexual attraction.

ANALOGUE, a technical term in biology for an organ in one species or group having the same function as an organ of different structure or origin in another species. It denotes physiological; independent of morphological resemblance.

ANALYST, PUBLIC, a person appointed by the authorities as analyst of all articles of food and drugs sold within his district, for the purpose of detecting dealers guilty of selling adulterated articles.

ANAM: area 200,000 square miles, population 21,000,000, is an empire including Tonquin, Cochinchina, part of Cambodia, and some islands in the China Sea. It is nominally subject to China, but really a dependency of France, through whom in 1874 the ports were opened to commerce and toleration of the Christian religion secured. In 1884 Anam and Tonquin were placed under the administration of a French resident-general residing at Hué. The present emperor, Bien-Lauh, ascended the throne Jan. 31, 1889, on the death of his father. He was born in 1879.

ANAMORPHOSIS, in perspective, is a distorted picture, which appears in its proper form only when viewed from a particular point, or through a polyhedron, or reflected by a curved mirror. In natural history the term is used for that gradual change of form which is traced in a group of plants or animals, the members of which succeed each other in a point of time; called also ANAMORPHISM.



ANAMORPHOSIS.

ANAMOSA, a city of Iowa, on the Buffalo and Wapesecon rivers, contains a State penitentiary, and is noted for its quarries of excellent building stone.

ANANIEV, a town of Southern Russia, in the government of Kherson. Population, 16,449.

ANAPA, a seaport town on the eastern shore of the Black Sea, in Russian Caucasia. It is an important garrison and naval station, having a brisk trade with Trebizond. Population, 5,037.

ANAPHORA, in rhetoric, is that figure of speech which consists in repeating the same word at the beginning of two or more successive clauses or sentences, as in 1 Cor. i. 20. The word is also used in liturgies of that part of the communion service which begins with the Sursum Corda.

ANARCHISM has quite a distinct meaning from *Anarchy* in the usual acceptation of the word. *Anarchism* is the name adopted by a phase of revolutionary socialism—an exaggerated idea of individual freedom, which considers government of man by man to be oppression. Anarchism has two aspects: it has a political theory, the negative of government or of external authority; and it has an economic theory as to land and capital, which is common to it with other forms of socialism. The acknowledged father of anarchism, as a form of recent and contemporary socialism, is Proudhon (1809-1865).

ANAS, a Linnæan genus, including ducks, geese, swans, etc.

ANASTASIUS, the name of four popes, the first and most eminent of whom held office for only three years (398-401). He enforced celibacy on the higher clergy.

ANASTOMOSIS, a term used in anatomy to express the union of the vessels which carry blood or other fluids, and also, for the sake of convenience, the junction of nerves.

ANASTROPHE is a placing of words in a position different from the common method of construction; as, *there they lie, for they lie there*. The Latin phrase *robiscum* is an anastrophe for *cum vobis*.

ANATHOTH was a Levitical city of refuge, situated about four miles from Jerusalem. It is supposed to have been the native place of Jeremiah.

ANATIDÆ, a family of birds corresponding to the genera *Anas* and *Mergus*, and equivalent to the order *Lamellirostres*, exclusive of the flamingoes. It includes ducks, geese, swans, and mergansers. They are commonly divided into five sub-families: *Cygninæ*, the swans; *Anserinæ*, the geese; *Anatinæ*, the river or fresh-water ducks; *Fuligininæ*, the sea-ducks; and *Merginæ*, the mergansers. There are upwards of 175 species, and numerous modern genera so closely related as not to be easily divisible into sub-families. They are called collectively *wild fowl* or *water-fowl*. Their distinctive characteristics are: Bill lamellate or toothed, invested with a tough, leathery membrane hardened at the end into a horny nail more or less distinct, short legs, feathered nearly or quite to the suffrago; feet four-toed, palmated, the hind toe elevated, free, and either simple or furnished with a flap; wings strong and of moderate length; tarsi scutellate or reticulate, or both; tongue thick and fleshy, denticulate along the sides, with greatly developed glossohyal bone.

ANATINÆ, a sub-family of the *Anatidæ*, to which all ducks properly belong. This fowl, of which there are many species, is generally found upon the water either of lakes or rivers, but some inhabit the sea-shore, existing upon vegetables, shell-fish, or insects. The most important species is the *Anas*, or common duck.

ANATOMY, in law. The difficulty of obtaining

a sufficient supply of human bodies for dissection for purposes of surgical and medical instruction was made the subject of legislation (for England, Ireland, and Scotland), and is now governed by the Anatomy Acts of 1832 and 1871. These acts authorize the Home Secretary to grant licenses for the practice of anatomical dissection to any qualified medical practitioner, or any student or teacher of anatomy. The system is understood to have met the evils it was intended to obviate; and under it the supply of bodies of persons dying friendless, in poor-houses, hospitals, and elsewhere, is stated to have proved sufficient for the wants of the profession.

ANBURY, or **CLUB ROOT**, a disease of the turnip, produced by a fungus, *Plasmiodophora*, belonging to the family of slime-fungi *Myxomycetes*. It attacks the plant most readily when the growth is restricted by unfavorable conditions. It is identical with club-root in cabbage, but is quite distinct from "fingers and toes," another disease of the turnip. See *Britannica*, Vol. I, p. 368; Vol. IV, p. 95.

ANCACHS, a department of Peru, lying between the Andes and the Pacific, north of the department of Lima; it is rich in undeveloped silver mines and in gold; the people, however, are almost exclusively devoted to farming and cattle-raising.

ANCESTOR: in law, one who has gone before in a family. This term differs in its application from that of predecessor, in that it refers simply to families, while by the latter are meant ex-officers of a corporation, etc.

ANCESTORS, WORSHIP OF, a form of religion which arises naturally from the primitive conception of a soul during life animating the body and exercising influence over it, and after death retaining its power, and continuing into the unseen world the life and social relations of the living world. Having become a deity it goes on protecting its people and receiving service from them. The worship of ancestors is really a sub-division of animism, and its universality has led Herbert Spencer to the opinion that it was the origin of religion everywhere. It is not mere affection, but actual fear that impels this reverence among the North American Indians, the ancient Aztecs, the negroes in Guinea, the natives of Polynesia, and most strongly perhaps among the Zulus. See *Britannica*, Vol. XVII, p. 141; Vol. XXIII, p. 467.

ANCHITHERIUM, an animal that lived in Europe and North America during Upper Eocene times. It had affinities to the tapir-like *Palaotherium* and true horse. The *Anchitherium* was about the size of a small pony, having three hoofs on each foot, all reaching to the ground. It is looked upon as one of the ancestors of the existing horse. See *Britannica*, Vol. XI, pp. 173, 174.

ANCHORAGE, a toll levied on the owner or captain of a ship for the privilege of casting anchor on special anchoring-grounds. It is usually payable to the State, but sometimes the right is vested in corporations or individuals. Anchorage also signifies "anchor-ground." See *Britannica*, Vol. II, p. 8.

ANCHOR-ICE, or **GROUND-ICE**, a kind of ice which forms upon the beds of rivers, or shallow, brackish seas. It forms most readily where the flow of the water is most interrupted and tumultuous. It begins to form when the temperature of the atmosphere falls to within 10° F., and does not adhere strongly to the bottom until zero is reached. When it rises to the surface it frequently brings with it the stones to which it is attached.

ANCHORITE. The terms "anchorite" and "hermit" are now used as synonymous, but originally there was a distinction made between them. Ar

chorite signified one who, having no fixed dwelling place, made mountains and deserts his place of retreat, where, alone with God and Nature, he could perform works of penance and subject the flesh and the devil. The most famous anchorites of the East were St. Paul, popularly called "first hermit," St. Anthony, and St. Hilarion. In the West there were few followers of this sort of life. The term "hermit" was originally applied to one who occupied a cell attached to some religious house. In course of time the title was extended to include all solitary ascetics in distinction from "monk," which was assigned to ascetics living in communities.

ANCHOVY PEAR (*Grias cauliflora*), a tree growing in boggy places in the mountainous districts of Jamaica and other West Indian islands. The fruit is pickled and eaten like the East Indian mango.

ANCHYLOSIS. See **ANKYLOSIS.**

ANCIENT LIGHTS: in law, windows or openings in the wall of a building, which have remained unobstructed for a sufficient length of time to assure the uninterrupted privilege to the owner of the premises. In England the enjoyment of such privilege for a term of twenty years secures title thereto. It is generally held in the United States that such right can be acquired only by express grant. Exceptions are the States of Louisiana, Illinois, and New Jersey, where the practice is in accordance with English law.

ANCIENTS, COUNCIL OF, an assembly (1795-99) of the legislative body of France, dissolved by the revolution of the 18th Brumaire. It consisted of 250 members, none of whom might be less than forty years of age.

ANCILE, a Roman shield of brass adopted in the reign of Numa Pompilius. It was supposed to have been thrown down from heaven with a promise of the preservation of Rome as long as this shield was retained. By order of the king, the *ancile* with twelve other shields made to resemble it, was placed in the temple of Mars, and twelve priests were appointed to keep a continual guard over them. The shields were carried every year, on the first of March, through the city by the guards, who sang warlike songs and struck the *ancilia* with rods.

ANCRE, CONCINO DE CONCINI, marshal and marquis d', a Florentine by birth, who went to the French court in 1600, in the train of Maria de' Medici, the wife of Henry IV. He married one of the queen's women, and aided her in promoting the disagreement between the king and queen. After Henry's death he was the chief favorite and adviser of the queen-regent. He became marquis, and, in 1614, marshal of France, though he had never seen service in war. He was hated alike by the nobility and the populace, and was assassinated in the Louvre in open day, April 24, 1617, the young king Louis XIII himself being privy to the plot.

ANCRUM MOORS, in Roxburghshire, Scotland, in 1544, the scene of the defeat of 5,000 English under Sir Ralph Evars and Sir Brian Latoun, by a Scotch force under the Earl of Angus and Scott of Buccleuch.

ANCYLUS, a fresh-water gasteropod inhabiting stagnant water, where it clings to stones or aquatic vegetation. The shell resembles that of the patella.

ANDA, a genus of *Euphorbiaceæ*, from the seeds of one of whose species, *A. braziliensis*, a fine oil is obtained.

ANDAGOYA, PASCUAL DE (1522-1584), a Spanish traveler, born in the province of Alva, Spain. He went to Darien when very young, and in 1522 became inspector-general of the Indians on the isthmus. The same year he heard of a province further south called Peru, and he set out for that place;

but before he reached the empire of the Incas a serious illness forced him to return to Panama. It was through the information received from him that Francisco Pizarro was sent to conquer Peru. Andagoya was banished in 1529 by the governor to Santo Domingo, but returned a few years later as lieutenant to the new governor and acted as agent to the conquerors of Peru until 1536, when he was sent back to Spain. In 1540 he became governor of the country around the San Juan River, but owing to a dispute with a neighboring governor went back to Spain. He returned five years later to Cuzco, Peru, where he died June 18, 1584.

ANDALUSITE, a silicate of aluminium. It is met with not infrequently as a constituent of certain metamorphic rocks, as *Andalusite slate*.

ANDANTE: in music, a movement somewhat slow, but in a gentle and soothing style. It is often modified as to time and style by the addition of other words.

ANDERAB, or INDERAB, a town in Afghan Turkestan, on the northern slope of the Hindu Kush mountains. It is an entrepot of commerce between Persia and India. Population, 6,500.

ANDERMATT, a Swiss village in the canton of Uri, situated at the crossing of the St. Gothard road and that over the Furca pass. It has long been famous as a tourist center, and has a considerable transit trade.

ANDERSEN, CARL CHRISTIAN, Danish poet and archæologist, born in Copenhagen, Oct. 23, 1826. He was sent, at the age of nine years, to a relative of his mother in Iceland to be educated. Returning to Copenhagen in 1848, he devoted himself to the study of law, but soon turned to literature, in which he ranks high both as poet and scholar. He has also given evidence of considerable power as a prose-writer. Among other works he has published *Rosenborg* (1867); *De danske Kongers Kronologiske Samling* (1870); *Gule, serbiske Folkesange paa Dansk* (1875); and *Islandske Folkesagn* (1862, '64, '77). The two last mentioned are collections of Serbian and Icelandic folk-tales and ballads. His largest work is *Genrebilleder* (1867-1879, 6 volumes), which has passed through many editions and been translated into German and other tongues.

ANDERSEN, HANS CHRISTIAN, the most widely popular of Danish authors, and one of the great story-tellers of the world, born at Odense in Funen, April 2, 1805, died at Copenhagen, Aug. 6, 1875. The son of a poor shoemaker, he worked for some time in a factory, but his wonderful singing and extraordinary talent soon procured him friends. He went to Copenhagen, hoping to obtain an engagement in the theater, but was rejected because of his lack of education. He next tried to become a singer, but soon found that his heavy face and ungraceful form were not fitted for the stage. Through the assistance of generous friends he was placed at an advanced school, and was thus enabled to remedy his defects of education. Some of his poems, particularly the one entitled *The Dying Child*, had already been well received, and he became better known by the publication of his *Walk to Amak*, a literary satire. He published his first volume of poems in 1830, and in 1831 a second. A traveling pension, granted him by the king in 1833, afforded him opportunities for mental development, and some of its fruits were his *Traveling Sketches*; *Agnes and the Mermaid*; and *The Improvisatore*. It was through these that he first attained general popularity. In 1840 he made a somewhat lengthened tour in Italy and the East, and in 1844 visited the court of Denmark by special invitation, receiving an annuity the following year. Among other works of Andersen may be mentioned *O. T.* (1836);

Only a Fiddler (1837); a drama entitled *The Mulatto* (1840); *The Story of My Life* (1855); *Tales from Jutland* (1859); and *Tales for Children* (1861). His fame has long been more than European. On his seventieth birthday he was presented with a book containing one of his tales in fifteen languages.

ANDERSON, a manufacturing city on the west fork of the White River, in Indiana, is noted for its hydraulic canal, which has a fall of forty-four feet. Population in 1890, 10,759.

ANDERSON, ALEXANDER, American wood engraver, born in New York city, April 21, 1776, died in Jersey City, N. J., Jan. 17, 1870. At the age of twelve he commenced engraving on copper and type-metal, and continued his interest in this work, although he received a degree at the Columbia Medical College, and practiced medicine. In 1798 he produced the first wood engraving ever made in the United States, and from that time devoted his attention exclusively to engraving.

ANDERSON, CHAPMAN L., U. S. Congressman, born in Noxubee county, Miss., March 15, 1845. He attended the public schools until the beginning of the civil war, when he entered the Confederate army, and served through the successive grades from private to second-lieutenant. After the war he entered the law department of the University of Mississippi and was admitted to the bar in 1868. In 1879 he was elected to the Mississippi legislature, in 1886 to the Fiftieth Congress, and in 1888 to the Fifty-first Congress.

ANDERSON, ELIZABETH GARRETT, born in London in 1837. She studied medicine with much credit at the Middlesex Hospital in 1860, but was prevented from pursuing her studies there by a petition from the students against the admission of women. After experiencing considerable difficulty in qualifying, Miss Garrett passed the Apothecaries' Hall examination with credit in 1865, and the next year received a dispensary appointment. In 1870 she became visiting physician to the East London Hospital, and headed the poll in the election for the London School Board. During this year, also, the University of Paris conferred on her the degree of M. D. She has practiced regularly as a physician for women and children since her marriage to Mr. Anderson, which took place in 1871.

ANDERSON, GALUSHA, American educator, born in Bergen, N. Y., March 7, 1832. He graduated at the Rochester University in 1854, and in 1856 at the Rochester theological seminary. For two years he occupied the pulpit in the Baptist church at St. Louis, when he was made a professor in Newton theological institute. In 1873 he had charge of a church in Brooklyn, and then of one in Chicago till 1878, when he was elected president of Chicago University, which position he held till 1885.

ANDERSON, GEORGE B., a Confederate general, born in Wilmington, N. C., 1831, died Oct. 16, 1862. He graduated at West Point in 1852. He commanded the Confederate coast defenses of his native State. He died from the effects of a wound received in the battle of Antietam.

ANDERSON, HENRY JAMES (1799-1875), an American educator, born in New York city, Feb. 6, 1799. He graduated at Columbia in 1818 with highest honors, and then entered the college of physicians and surgeons, from which he received his degree in 1823. In 1825 he was appointed professor of mathematics and astronomy in Columbia, but resigned after five years of successful teaching to go abroad. While in France he became intimately acquainted with the astronomer Arago, and about the same time was converted to the Catholic religion. He spent several years in Europe, Asia and Africa, and acted

as geologist on the Dead Sea expedition under Lieut. Lynch. On his return to the United States in 1851 he was elected a trustee of Columbia College, and five years later emeritus professor of mathematics and astronomy. He was a volunteer member of the American expedition to Australia sent out to observe the transit of Venus, and on his return he visited India on an exploring expedition, where he was stricken with a disease that caused his death in Lahore, Northern Hindostan, Oct. 19, 1875.

ANDERSON, JOHN A., born in Washington county, Penn., June 26, 1834. He graduated at Miami University, Oxford, Ohio, in 1853, and was ordained as a Presbyterian minister four years later. He was made trustee of the California State insane asylum in 1860, and chaplain of the Third Infantry, California Volunteers in 1862, accompanying Gen. Connor's expedition to Salt Lake. He was agent of the U. S. sanitary commission from 1863 to 1867, and president of the Kansas State Agriculture College from 1873 to 1879. He was appointed a judge by the U. S. Centennial Commission in 1876, and was elected Republican Congressman of the Forty-sixth to the Fifty-first Congress, both inclusive.

ANDERSON, JOHN JACOB, American author and educator, born in New York city in 1821. For twenty years he was the master of a large public school in New York. He is the author of numerous text-books, which include: *Common School History of the United States*; *A Manual of General History*; *A School History of England*; *The United States Reader*; *A School History of France*; and *A School History of Greece*.

ANDERSON, JOSEPH, American statesman, born near Philadelphia, Penn., Nov. 5, 1757, died in Washington, D. C., April 17, 1837. He studied law, but at the beginning of the Revolution he entered the army and served through the war, retiring with the brevet rank of major. In 1791 Washington appointed him territorial judge of the region south of the Ohio river, and he was one of the framers of the constitution of Tennessee. He served as U. S. senator from 1797 to 1815, and as first comptroller of the treasury from 1815 to 1836.

ANDERSON, MARTIN BREWER, American educator, born in Brunswick, Me., Feb. 12, 1815. He graduated at Waterville College in 1840, and then attended the Newton, Mass., theological seminary for a year. In 1842 he became tutor of Latin, Greek and mathematics at Waterville, and later professor of rhetoric and modern history. In 1850 he became editor and proprietor of the "New York Recorder," and three years later president of Rochester University. He is one of the commissioners of the State reservation at Niagara Falls, and was for thirteen years one of the New York State board of charities. He has published many literary and philosophical essays.

ANDERSON, MARY, American actress, born in Sacramento, Cal., July 28, 1859. She was educated in the Ursuline convent of Louisville, Ky., and at thirteen resolved to enter the dramatic profession. After receiving a training in music, dancing, literature and elocution she appeared as Juliet in Louisville, Nov. 27, 1875. She visited all the principal cities in the United States, playing Lady Macbeth, Parthenia in Ingomar, Pauline in the Lady of Lyons, Galatea, and other characters, and was always received with enthusiasm. She has filled three seasons at the Lyceum Theater, London (1883-84, 1884-85, 1887-88), and her success there has surpassed in profit that of any American actress that ever appeared in England. She has made several tours of the English provincial theaters,

and has especially established herself as a favorite actress in fastidious Edinburgh, critical Manchester, and impulsive but exacting Dublin. Her distinctive achievements are in the field of Shakespearean drama.

ANDERSON, RASMUS BJÖRN, author, born in Albion, Wis., Jan. 12, 1846. He was educated at the Norwegian Lutheran College at Decorah, Iowa, and in 1875 became professor of the Scandinavian languages in the University of Wisconsin, which position he held until 1885, when he was appointed U. S. minister to Denmark. He has published *Jule-grave* (1872); *America not Discovered by Christopher Columbus* (1874); *Den Norske Maalsag* (1874); *Norse Mythology* (1875); *Viking Tales of the North* (1877); and *The Younger Edda* (1880).

ANDERSON, RICHARD HERRON, American soldier, born near Statesburg, S. C., Oct. 7, 1821, died in Beaufort, June 26, 1879. He graduated at West Point in 1842, and was assigned to frontier duty. In the war with Mexico he took part in the siege of Vera Cruz and the capture of the City of Mexico. At the beginning of the civil war he accepted a brigadier's commission from the Confederate government. He fought in various important battles, and finally attained the grade of lieutenant-general.

ANDERSON, ROBERT, American soldier, born near Louisville, Ky., June 14, 1805, died at Nice, France, Oct. 27, 1871. He graduated at West Point in 1825, was appointed second lieutenant in the 3d artillery, and served as colonel of the Illinois volunteers in the "Black Hawk war" of 1832. From 1835 to 1837 he was an instructor at West Point, and in 1838 was brevetted captain for services rendered in the Florida war. He was severely wounded in the Mexican war, and in 1857 was appointed major of the 1st artillery. On Nov. 20, 1860, he took command of the troops in Charleston harbor, and owing to threatened assaults withdrew to Fort Sumter, where he was soon closely invested by the Confederate forces. On April 13, 1861, he evacuated the fort, after a prolonged bombardment, marching out on the 14th with his 70 men, with the honors of war, saluted his flag as it was hauled down, and sailed for New York on the following day. President Lincoln appointed him brigadier-general in the U. S. army, and he was assigned to the command of the department of Kentucky, and later to that of the Cumberland. He retired from active service, Oct. 27, 1863, and on Feb. 3, 1865, was brevetted major-general. Among his publications, principally text-books translated from the French, are *Instructions for Field Artillery, Horse and Foot* (1840); and *Evolutions of Field Batteries* (1860).

ANDERSON, ROBERT, an eminent Scotch writer, born in Lanarkshire, Jan. 7, 1750, died Feb. 20, 1830. His works were mostly biographical, the best known being his *Life of Dr. Johnson* and an excellent edition, in fourteen volumes, of *The Works of the British Poets, with Prefaces Biographical and Critical*.

ANDERSON, RUFUS, D. D., LL. D., American Congregational minister and author, born in North Yarmouth, Me., Aug. 17, 1796, died at Boston Highlands, May 30, 1880. He graduated at Bowdoin College in 1818, and at Andover Theological Seminary four years later. In 1824 he became assistant secretary of the American Board of Foreign Missions, and in 1832 was made secretary, which position he held for thirty-four years. He made official visits to the Mediterranean missions, to the Indian missions, and to those in the Sandwich Islands. When he resigned his office at the age of seventy, wealthy friends presented him with \$20,000 as a testimonial to his untiring, self-denying labors. From 1867 for two years he was lecturer on foreign missions at

Andover Seminary. He published: *Foreign Missions, their Relations and Claims*; *Memoir of Catherine Brown*; *Observations on the Peloponnesus and the Greek Islands*; *The Hawaiian Islands, their Progress and Condition under Missionary Labors*; *A Heathen Nation Civilized*; and *History of the Missions of the Board to the Oriental Churches*.

ANDERSON, WILLIAM, American soldier, born in Chester county, Penn., in 1763, died there Dec. 14, 1829. He served through the Revolutionary war, being present at the battle of Brandywine as colonel, at Valley Forge, Germantown, and Yorktown. He held various offices, sitting in Congress twice—1809-15 and 1817-19; was court judge of Delaware county; and subsequently collector of customs.

ANDERSON COURT-HOUSE, a village of South Carolina, county seat of Anderson county, and the local center of the corn and cotton trade. It is the seat of the Carolina High School for Boys and Girls.

ANDERSONIAN UNIVERSITY, Glasgow, Scotland, a college of sciences, in high repute as a medical institution. It contains a very valuable library and scientific apparatus, bequeathed by its founder, John Anderson, F. R. S. (1726-1796), an eminent Scotch naturalist, author of *Institutes of Physics*.

ANDERSONVILLE, a village in Georgia, noted as having been the seat of the Confederate States military prison. It was notorious for barbarity of discipline. Between February 15, 1864, and April, 1865, 49,485 prisoners were received, of whom 12,926 died in that time of various diseases. The superintendent, Henry Wirz, was tried for destroying the lives of the confined soldiers, found guilty, and hanged, Nov. 10, 1865.

ANDERSSON, KARL JOHAN, an African explorer, born in Sweden, in the province of Wermland, in 1827. In 1850 he made a journey to the territories of the Damaras and the Ovamos, accompanying Francis Galton, and in 1853-54 continued the exploration alone. On his return to England he published *Lake Ngami, or Discoveries in South Africa*. In 1858 he explored the Okvango, and in 1866 he set out with few attendants on an expedition to the Cunene. When within sight of the stream he was taken ill and was obliged to retrace his steps, dying on the homeward journey, July 5, 1867.

ANDERSSON, LARS, sometimes called Laurentius Andreæ, a Swedish reformer, was born in 1489. He studied theology in Rome, but afterwards at Wittenberg he heard and accepted Luther's teachings. While archdeacon in Strengnäs, he was instrumental in converting Gustaf Wasa to the principles of the Reformation. Andersson superintended the translation of the New Testament into Swedish (published in folio 1526), and labored successfully for the introduction of the Reformation into his native country. He became king's chancellor, and actively opposed the plan of rendering the church independent of secular power. In 1540, being accused of neglect of duties and of favoring a conspiracy against the king, he was condemned to death, but the sentence was commuted to fines. The remainder of his life was spent in seclusion at Strengnäs, where he died, April 29, 1552.

ANDERSSON, NILS JOHANN, Swedish botanist, born in Smaland, Feb. 20, 1821, died in Stockholm, March 27, 1880. He accompanied a Swedish expedition around the world in 1851-53, and on his return published a description of the journey in *En Verldsomsegling* (3 volumes, 1853-54). In 1856 Andersson became professor of botany and curator of the botanical collections in the Academy of Science in Stockholm. The following are the most important of his scientific works: *Sallicis Lapponiæ* (1845); *Conspectus Vegetationis Lapponiæ* (1845); *Atlas öfver den Skandinaviska Florans naturliga*

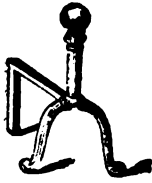
familjer (1849); *Lärebok i Botanik* (3 volumes, 1851-53); *Cyperaceæ Scandinaviæ* (1852); *Om Galapagos Öarnas Vegetation* (1854); *Inledning till Botaniken* (3 volumes, 1851-53).

ANDESITE, a group of volcanic rocks, gray, reddish, or dark brown in color. It is essentially composed of a mixture of triclinic feldspar with either hornblende or angite. There are also varieties of andesite containing considerable quartz. Andesite occurs chiefly in Tertiary and more recent strata and is widespread, especially in the Cordilleran region of North America. It is also found in Hungary, Iceland, the Andes, and Transylvania.

ANDIRA, a genus of plants of the natural order *Leguminosæ*, sub-order *Papilionacæ*. The obiculary shaped pod is one-celled and one-seeded. One species, called "cabbage-tree," is found in low savannas in the West Indies. It grows to a considerable height, and has pinnate leaves and flowers like lilacs. Its bark furnishes a valuable drug. Several other species of the plant contain the same element. The bark also contains a kind of alkaloid.

ANDIRA-GUACU, the name given by the natives in South America to the *Vampyrus spectrum* or vampire-bat.

ANDIRON, or **HANDIRON**, was the name given a pair of bars which in early times were set in the large open fireplaces. They were slightly raised from the floor and the logs of wood were laid across them, and thus held in support. The front of each these bars was decorated with a post, either of copper, iron, or brass, and they were sometimes very ornamental.



ANDIRON.

ANDKHUL, a town and khanate in Afghan Turkestan. Until the year 1840, it was subject to Bokhara. In that year it was captured by Mohammed Khan after four months' siege, and reduced to a heap of ruins. The tract in which it stands is fertile but unhealthy. The population, numbering about 15,000, consists chiefly of Turkomans with a mixture of Uzbeks and Tajiks.

ANDRAL, **GABRIEL**, born in Paris in 1797, died in 1853. A well-known and influential member of the Institute and of the Academy of Medicine. He made the study of medicine his life-work, and his untiring labors in the science were crowned with success. He published a collection of valuable medical works, among which were a paper, *Sur l'Anatomie Pathologique du Tube Digestif*, which received a hearty welcome. He had, however, established his reputation as a medical scholar before this (1823) in the publication of the first part of his *Clinique Medicale*, which treats mainly of diseases of the chest, of the abdomen, and of the brain. In 1829 he sent forth to the public a *Précis Élémentaire* of the same science; and later on, beginning in 1835, he published in rapid succession a list of books, in which he revealed the results of his close study. He was afterwards appointed professor of hygiene, and then promoted to the chair of internal pathology. In 1839 A. was appointed by his colleagues to fill the highest position in his branch of the science, which had, up to this time, been held by Broussais.

ANDRASSY, **JULIUS GYULA COUNT**, an Austro-Hungarian statesman, born in the county of Zemplen, Hungary, March 8, 1823, died at Volosca, near Fiume, Feb. 18, 1890. His family is an old one, dating back to the sixteenth century in Hungary, and to the thirteenth in Bosnia. His father, Count Charles Andrassy, was an influential member of the national diets, and a publicist of merit. Count

Julius was a member of the Presburg Diet, lord-lieutenant of the county of Zemplen, and an active mover in the revolutionary epidemic which spread over Europe in 1848. He led the militia of his district against the Austrians, who, with the aid of Russia, reduced Hungary to the condition of a province. Just before the collapse of the patriotic cause, Andrassy was sent as minister to Constantinople, and his absence from home doubtless



COUNT ANDRASSY.

saved his life, as he seems to have been condemned to death with others who suffered the penalty. The Turkish authorities refused to deliver him up at the request of Austria, but to relieve the former of any embarrassment, Andrassy went to France, and lived there and in England until amnestied in 1857. Returning to Hungary he soon entered into public affairs, and became Deak's most valued coadjutor. In 1866, when Austria granted the Hungarians an independent parliament, Andrassy became prime minister. His term of office was signalized by the institution of important reforms, one of which was the restoration of trial by jury, and another the removal of political disabilities from the Jews. In 1871 he succeeded Count Beust as foreign minister of the Austro-Hungarian Empire, and was one of the chief factors in the formation of the triple alliance known as the Dreikaiserbund. He represented Austria in the Berlin Conference of 1878, and was instrumental in adding Bosnia and Herzegovina to the Austro-Hungarian Empire, and in extending its influence in the Balkans generally. He resigned his ministerial office in 1879, since which time he held no official position, though he retained a lively interest in governmental matters, and continued to be a trusted adviser.

ANDREÆ, **JOHAN VALENT**, a German divine and author, born at Herrenberg, Aug. 17, 1586, died June 27, 1654. His works are remarkable productions of combined wit and acuteness. He directed his writings generally against the unsatisfactory condition of the social and religious affairs of his day, and he also argued strongly against the carelessness and the indifference paid to science. He was promoted from time to time to higher offices in the Protestant Church of his country, during which time he labored untiringly to promote the principles of Christianity. Andreæ was regarded as the founder of an earnest religious order called the Rosicrucians, although he afterwards attacked them severely in some points. One of his best works is his *Menippus sive Satiricorum Dialogorum Centuria*.

ANDREÆ, **LAURENTIUS**. See **ANDERSON**, **LARS**.

ANDREE, **KARL THEODOR**, German journalist and geographer, born at Brunswick, Oct. 20, 1808. He received the greater part of his education at the University of Jena, but studied also in Berlin and Gottingen. On his return to his native city he entered the field of journalism, and became in 1838 editor of "Mainzer Zeitung." He was afterwards editor in Cologne from 1843 to 1846, then for two years at Bremen, and again for a time in his native city. He removed to Dresden in 1855, and in 1858 was appointed consul of Chili. He died at Wildungen, Aug. 10, 1875. His geographical works relating to America comprise: *Nord America in geographischen und geschichtlichen Umriszen* (1850-51), *Buenos Ayres und die Argentinische Republik* (1856), ar

derungen, and afterwards a *Commercial Geography* (1876-72).

ANDREE, RICHARD, German author, son of the preceding, was born at Brunswick, Feb. 26, 1835. He studied at Leipsic. During the years 1859-1863 he was engaged in business in Bohemia, and participated in the contest between the Germans and the Czechs. His writings are principally on subjects connected with questions of race. Among his published works are *Nationalitätsverhältnisse und Sprachgrenze in Böhmen* (1871); *Tschechische Ganze* (1872); and *Wendische Wanderstudien* (1874). He has also published some noteworthy articles in geographical periodicals.

ANDREW, JAMES OSGOOD, M. E. bishop, born in Wilkes county, near Washington, Ga., May 3, 1794, died in Mobile, Ala., March 1, 1878. In 1812 he entered the South Carolina conference of the Methodist Church; was made presiding elder a little later, and in 1832 was chosen bishop. In 1844 he married his second wife, who was the possessor of a few slaves, and after marriage he conveyed all the rights in her property that the law gave him. But yet he was considered a slave-owner by the General Conference; and great excitement followed, as no bishop had ever before even been connected with slavery. After protracted discussions the General Conference, held in New York in 1844, decided by a vote of 111 to 69, "That it is the sense of this General Conference that he desist from the exercise of his office so long as this impediment remains." The representatives of thirteen Southern conferences protested against this action of the General Convention, and in May, 1846, the Methodist Episcopal Church, south, became an independent body, with Bishop Andrew as presiding officer, which position he held until his death. His most important publications are: *Miscellanies* (1854); and *Family Government* (1848).

ANDREW, JOHN ALBION, American statesman, born in Windham, Me., May 31, 1818, died in Boston, Oct. 30, 1867. He graduated at Bowdoin College in 1837, and was admitted to the bar three years later. He acquired a large practice in Boston, particularly distinguishing himself in the fugitive-slave cases, which arose under the fugitive-slave law of 1850. He became closely identified with the anti-slavery party of Massachusetts, and in 1858 he was elected a member of the State legislature. In 1860 he was a delegate to the Chicago Republican convention that nominated Abraham Lincoln for president, and the same year became the governor of Massachusetts by the largest popular vote ever cast for any candidate, and was reelected the succeeding six years, declining the nomination. As soon as he was inaugurated he began to provide for war, and sent confidential messages to the governors of the other New England States requesting them to join him in the preparation of the militia and the collection of supplies. In April, 1861, he despatched to Washington five regiments of infantry, a battalion of riflemen and a battery of artillery; and of these the Massachusetts 6th was the first to tread southern soil, shedding the first blood of the war in the streets of Baltimore, where the regiment was assailed by a mob. Gov. Andrew was active in raising the Massachusetts contingent of the three years' volunteers, and took great interest in providing for the sick and wounded. He obtained the first authorization for raising colored troops January, 1863, and the 54th Massachusetts colored infantry was despatched from Boston five months later. Under Gov. Andrew's supervision

ANDREW, JOHN FORRESTER, LL. B., U. S. Congressman, born in Hingham, Mass., Nov. 24, 1850. He graduated at Harvard College in 1872, and was admitted to the bar in 1875. He served three successive terms in the Massachusetts house of representatives, and two terms in the State senate. He was elected to the Fifty-first Congress as a Democrat.

ANDREW, SAINT, ORDER OF, an order composed of Russian knights of the highest rank, founded in 1698 by Peter the Great; the order includes members of the imperial family. The badge is mounted with a cross of blue enamel upon which is carved a crowned figure of St. Andrew, and in the four corners of the badge are the letters S. A. P. R. (*Sanctus Andreas Patronus Russiae*); an eagle in a flying attitude decorates the other side, beneath which are the name of St. A. and a short Russian legend. There is also The Order of the Thistle, which is of Scottish origin and so called from the thistle, which is the Scottish heraldic badge. This order is also called by the former name in honor of St. Andrew, the patron saint of Scotland, who, according to traditional accounts, gained a victory for the Scots in one of the early battles with the English. Its popularity was revived in 1687 by James II, of England, and in 1703 by Anne.

ANDREWS, COL. A. B., one of the vice-presidents of the Columbian Commission—the national directing board of the International Exposition to be held in Chicago in 1892.

Col. Andrews is a resident of North Carolina, and one of the prominent railroad men of the south. He was at one time general superintendent of the Raleigh and Gaston Railroad, and later president of the Western North Carolina road. He has done much toward opening and developing the country west of the Blue Ridge. He was a captain of cavalry during the war, and subsequently upon the staff of Governor Jarvis.



COL. A. B. ANDREWS.

ANDREWS, CHRISTOPHER COLUMBUS, American lawyer, born in Hillsborough, N. H., Oct. 27, 1829. He studied law, was admitted to the bar in 1850, and followed his profession in Newtown for two years. He went to Washington, served in the treasury department two years, and later settled in St. Cloud, Minn., when he was elected to the State senate. At the beginning of the war he enlisted as a private, but was commissioned captain in the 3rd Minnesota infantry. He was made prisoner in a fight near Murfreesboro, Tenn., July, 1862, was exchanged four months later and appointed lieutenant-colonel of his regiment. During the war he served in numerous important battles, and finally attained the rank of major-general. In 1869 he was appointed resident minister to Sweden and Norway and continued to serve until 1877. He was supervisor of the U. S. census in the 3rd district of Minnesota in 1880, and for three years, from 1882, was consul-general to Brazil. Gen. Andrews has published *Minnesota and Dakota* (1856); *Practical Treatise on the Revenue Laws of the United States* (1858); *Hints to Company Officers on their Military*

Duties (1863); *History of the Campaign of Mobile* (1867), and *Digest of the Opinions of the Attorneys-General of the United States* (1867).

ANDREWS, EBENEZER BALDWIN, LL. D., American geologist, born in Danbury, Conn., April 29, 1821, died in Lancaster, Ohio, Aug. 14, 1880. He studied at Williams College, Marietta College and Princeton Theological Seminary. He was the pastor of the Congregational church in Housatonic, Mass., from 1846 to 1850, and the following year had charge of a parish in New Britain, Conn. From 1851 to 1869 he was professor of geology in Marietta, and then assistant geologist to the Ohio State survey.

ANDREWS, EDMUND, American surgeon, born in Putney, Vt., April 22, 1824. He graduated at the University of Michigan in 1849, and at the medical department three years later. He has been professor at the University at Ann Arbor and at Rush, and the Chicago medical colleges. Subsequently he became surgeon to the Mercy Hospital, and later served in a similar capacity, during the civil war, with the 1st Illinois light artillery. He is a member of several scientific organizations, and has published numerous articles on surgery in various medical journals.

ANDREWS, EDWARD GAYER, D. D., LL. D., M. E. bishop, born in New Hartford, N. Y., Aug. 7, 1825. He graduated at Wesleyan University in 1847, and the following year entered the ministry. In 1855 he became a teacher in Cazenovia, N. Y., Seminary, and was chosen its president the same year. Dr. Andrews was ordained elder in 1850, and at the General Conference of the M. E. Church held in 1872 was elected bishop.



E. G. ANDREWS.

ANDREWS, ELISHA, American clergyman, born in Middletown, Conn., Sept. 29, 1768, died Feb. 3, 1840. In 1793 he was ordained as a Baptist minister and preached in various places in New Hampshire and Massachusetts. He published the *Moral Tendencies of Universalism*; *Review of Winchester's Dialogues on Universal Restoration*; *Vindication of the Distinguishing Sentiments of the Baptists*; *A Brief Reply to James Bickerstaff's "Short Epistle of the Baptists"*; and *Strictures on the Rev. Mr. Brooks's "Terms of Communion."*

ANDREWS, ELISHA BENJAMIN, D. D., an American educator. He graduated at Brown University in 1870, and entered Newton Theological Seminary, where he prepared for the ministry. He was ordained

a Baptist minister, and for a short time engaged in pastoral work. He then became connected with Denison University, and several years ago was called to Brown University as professor of History and Political Economy. In 1888 he accepted the chair of Political Economy and Finance at Cornell University, but had



E. B. ANDREWS.

been there only one year when he was elected presi-

dent of Brown University. Though but forty-five years of age Professor Andrews has achieved an enviable reputation as an original and independent educator.

ANDREWS, ETHAN ALLEN, an American educator, born in New Britain, Conn., April 7, 1787, died there March 4, 1858. He graduated at Yale, was admitted to the bar, and practiced for several years. Subsequently he was professor of Ancient Languages in the University of North Carolina and in the New Haven Gymnasium, and in 1833 he succeeded Jacob Abbott as principal of a young ladies' institute in Boston. In 1839 he returned to his home and published a series of Latin text-books. Judge Andrews was once a member of the State legislature and for several years judge of probate.

ANDREWS, GEORGE L., an American soldier, born in Bridgewater, Mass., Aug. 31, 1828. He graduated at West Point in 1851, with the highest honors, and later superintended the erection of fortifications in Boston harbor. After one year's service as professor of engineering at West Point, he resigned (1855) and was employed as a civil engineer until the beginning of the civil war, when he entered the army as lieutenant-colonel, and served through the successive grades until he attained the rank of major-general. In 1871 he went to West Point as professor of the French language.

ANDREWS, LOREN (1819-1861), an American educator, born in Ashland county, Ohio, April 1, 1819. He graduated at Kenyon College, and in 1854 became its president. At the outbreak of the war he raised a company in Knox county and was made captain. Subsequently he served in several other capacities, until he was taken home ill with a severe attack of camp fever, from which he died in Gambier, Ohio, Sept. 18, 1861.

ANDREWS, LOREN, missionary, born in East Windsor, Conn., April 29, 1795, died Honolulu, Sandwich Islands, Sept. 29, 1868. He graduated at Jefferson College, and later at Princeton theological seminary. He sailed for the Hawaiian Islands in 1827, and in 1831 established the Hawaii University occupying a position in it as professor for ten years. He was for sometime seamen's chaplain at Lahaina, in 1845 judge under the Hawaiian government, and later secretary of the privy council. He translated a part of the Bible into Hawaii, prepared a Hawaiian dictionary, and wrote several works on the literature and antiquities of the Hawaiians.

ANDREWS, SAMUEL JAMES, American clergyman, born in Danbury, Conn., July 21, 1817. He graduated at Williams College in 1839, and later was admitted to the bar. In 1846 he gave up the practice of law and was ordained in the Congregational ministry, but was compelled to give up preaching on account of throat troubles, and became an instructor in Mental and Moral Philosophy in Trinity College. He at last adopted the Irvingite doctrines, and became in 1868 pastor of the Catholic Apostolic Church in Hartford, Conn. His only publication is *The Life of Our Lord on Earth* (1863); re-published in England and translated on the continent.

ANDREWS, SHERLOCK JAMES, an American jurist, born in Wallingford, Conn., Nov. 17, 1801, died in Cleveland, Ohio, Feb. 11, 1880. He graduated at Union College in 1821, and in 1825 removed to Ohio, where he devoted himself to the profession of law. In 1840 he was elected to Congress, and eight years later became judge of the Ohio supreme court. He was a member of the constitutional conventions of 1849 and 1873; he declined the nomination for governor, preferring to remain in private life.

ANDREWS, STEPHEN PEARL, an American author, born in Templeton, Mass., March 22, 1812, died

in New York city, May 21, 1886. He studied at Amherst College, and became a lawyer. In 1839 he removed to Texas, where he acquired considerable wealth in the practice of his profession. On his return, after a visit to England, he introduced phonography and founded the present system. Mr. Andrews spoke several languages, and was familiar with thirty. While yet a young man he announced the discovery of the unity of law in the universe, and he devoted himself to the development of this theory the last thirty-five years of his life. The elements of this science are contained in his *Basic Outline of Universology* (1872). He asserted that there is a science of language as exact as that of mathematics, forming a domain of universology, and he evolved a "scientific" language destined to become "the universal" one. He called this language "Alwato" (ahl-wah-to), and for some years before his death he conversed and corresponded in it with his pupils. The philosophy evolved from Universology he called "Integralism," and he believed ultimate reconciliation of the great thinkers of all schools would be found in it by a radical adjustment of all the possible forms of thought and belief. In 1882 he instituted a series of conferences known as the "Colloquium" for the interchange of ideas between men of diversity of religious, philosophical, and political views. Mr. Andrews was a prominent member of the Liberal Club of New York, of the American Academy of Arts and Sciences, and of the American Ethnological Society. His publications are: *Comparison of the Common Law with the Roman, French, or Spanish Civil Law on Entails and Other Limited Property in Real Estate* (1839); *Cost the Limit of Price* (1851); *The Constitution of Government in the Sovereignty of the Individual* (1851); *Love, Marriage, and Divorce, and the Sovereignty of the Individual—a Discussion by Henry James, Horace Greeley, and Stephen Pearl Andrews* (1853); *Discoveries in Chinese; or, The Symbolism of the Primitive Characters of the Chinese System of Writing as a Contribution to Philology and Ethnology, and a Practical Aid in the Acquisition of the Chinese Language* (1854); *Constitution or Organic Basis of the New Catholic Church* (1860); *The Great American Crisis* (1864); *A Universal Language* (1864); *The Primary Synopsis of Universology and Alwato* (1871); *The Labor Dollar* (1881); *Elements of Universology* (1881); *Ideological Etymology* (1881); *Transactions of the Colloquium with Documents and Exhibits* (1883); *The Church and Religion of the Future* (1886); besides numerous text-books on phonography, and a posthumous publication of his Dictionary of Alwato.

ANDREWS, THOMAS, physicist, born in Belfast, Dec. 19, 1813. He filled the posts of vice-president and professor of chemistry in Queen's College, Belfast, from 1849 till 1879. His researches were more of a physical than of a chemical nature, being on the heat of combination of various classes of substances, on the nature of ozone, and on the continuity of the liquid and gaseous states of matter. He was president of the British Association at Glasgow in 1876.

ANDREWS, TIMOTHY PATRICK, an American soldier, born in Ireland in 1794, died March 11, 1868. He emigrated to America, entered the army at sixteen, was in active service in the field, and in 1822 was appointed paymaster in the army. In 1847 he took command of the regiment of voltigeurs raised for the Mexican war, and distinguished himself in the battles of Molino del Rey and Chapultepec, being brevetted brigadier-general for his conduct in the field. During the civil war Col. Andrews succeeded Gen. Larned, on the latter's death, as pay-master-general of the army, and was retired Nov. 20, 1864.

ANDREWS, WILLIAM DRAPER, an American inventor, born in Grafton, Mass., May 23, 1818. In 1840 he became connected with the New York wrecking company, and since then has received twenty-five United States and nine foreign patents on pumps, oscillating steam-engines, boilers, friction and differential power-gearing, siphon, gangwells and attachments, balanced valves, safety elevators and other similar inventions. The different apparatus patented by him has been used all over the world, and he has received numerous medals and diplomas, both in this country and abroad.

ANDRIEUX, FRANÇOIS GUILLAUME JEAN STANISLAUS, a French writer of comedies, born in Paris, May 6, 1759, died May 10, 1833. In 1798 he was elected deputy of the Seine department, and distinguished himself by his speeches on points of public interest. In 1800 he was made secretary, and soon afterward president of the Tribunal. From this post he was removed by Bonaparte in 1802, and subsequently devoted himself to literature. From 1803 to 1815 he held a professorship in the Polytechnic School, and in 1814 was appointed professor in the Collège de France. In 1816 Louis XVIII gave him a place in the Academy, of which he was made perpetual secretary in 1829. Among his most popular dramas were: *Molière avec ses Amis*; *Le Vieux Fat*; and the *Tragedy of Brutus*.

ANDROGYNOUS, an almost obsolete term applied (1) to plants where the inflorescence is monœcious—that is, consists of distinct male and female flowers; and (2) to animals which are hermaphrodite—that is, possess a distinct male and female generative system in the same individual.

ANDROMEDA, a genus of plants of the natural order *Ericaceæ*. There is but one known British species (*A. polifolia*), and that is found growing in the peat-bogs of Great Britain, and also in the north of Europe and in some parts of North America; it is a small evergreen shrub and bears a drooping flower of a rose color; it is poisonous, and sheep have been killed by eating it. The *Andromeda* has a five-valved, naked capsule, splitting up through the back of each cell; the anthers have two awns, and the corolla has a contracted orifice. There are numerous species, all of which somewhat resemble heaths.

ANDROS, SIR EDMUND, an English colonial governor, born in London, Dec. 6, 1637, died there Feb. 24, 1714. He was brought up at court and early became a soldier, distinguishing himself in the war with the Dutch, and in 1672 he received the appointment of major under Prince Rupert. In 1674 he became bailiff of the island of Guernsey, and a few months later he was made governor of New York. He immediately endeavored to extend the limits of his jurisdiction from the Connecticut to the Delaware. In 1680 he deposed Philip Carteret and seized the government of New Jersey, and in 1681 was recalled and charged with maladministration, but succeeded in clearing himself, and five years later was appointed governor of the dominion of New England by James II. On his arrival in Boston, Dec. 21, 1686, he put into execution a number of measures that were extremely obnoxious to the colonists. In October, 1687, he demanded the surrender of the Connecticut charter; but its concealment in the "charter oak" prevented him from accomplishing his purpose. By operations against the French he brought on the war with the Penobscot Indians, and enormous taxes were levied. The people could no longer restrain themselves, and on April 18, 1689, he was deposed and thrown into prison with fifty of his followers, and Simon Bradstreet was made governor. Andros was sent to

England and charges were preferred against him, but his case never came to trial. From 1692 to 1698 he was governor of Virginia, where he became very popular with the people through his efforts to promote education, manufactures and agriculture.

ANDROS, THOMAS, an American clergyman, born in Norwich, Conn., May 1, 1759, died in Berkeley, Mass., Dec. 30, 1845. At the age of sixteen he joined the Revolutionary army, and fought in several important battles. In 1781 he enlisted on a privateer in New London, was captured and confined in the Jersey prison-ship in New York, but escaped a few months later and became a student of theology. He was ordained pastor of the church at Berkeley in 1788, where he remained for forty-six years. Mr. Andros published many sermons, and also a narrative of his imprisonment and escape.

ANDROSPHINX (Gr. *andros*, a man, and *sphinxos*, a sphinx): in Egyptian art, a lion with a male human head.



ANDROSPHINX.

ANIGADA, one of the Lesser Antilles. It is situated farther north than any other of those islands, being in lat. 19° N., and long. 64° W. It has an area of thirteen square miles and has a population scarcely exceeding two hundred. It is subject to England.

ANEMONE, a genus of plants of the natural order *Ranunculaceæ*, having an involucre of three divided leaves, more or less remote from the flower, a petaloid calyx, scarcely distinguishable from the corolla, and soft wooly achenia, which in some species have tails. These species are numerous and generally beautiful. Most of them flower early in the spring. They are natives of temperate and cold climates, chiefly of the northern hemispheres. See *Britannica*, Vol. XII, p. 253.

ANEMOSCOPE, an instrument which indicates the direction of the wind, as the wind-vane. It is composed of an index placed at the end of a horizontal axis, supported by an upright staff, on top of which is the vane, upon which the wind acts. Some anemospores tell the slightest change in the wind, even in the absence of the observer.

ANEROID (from *a*, priv., and *neros*, wet), the name given to a barometer which determines the density of the air without the aid of a liquid. The face of this instrument measures five inches in diameter, and the case containing the works is about two inches deep; it contains a tightly soldered metal box, about three inches in diameter and one-fourth of an inch in depth, from which the air has been almost entirely excluded, and upon which the pressure of the air acts. The sides of the little box are rendered very elastic by being corrugated in concentric rings, held apart by means of a strong spring, attached by one end to the case, and by the other to a stalk, upon which it acts, this stalk being fixed to the side next to the face. This spring is bent inwards, more or less, from its proper position, according to the density of the air, thus contracting or expanding the metal rings. The lack of air in the soldered box makes it extremely sensitive to the slightest pressure of air; hence, the least modification in the weather has an effect in moving the rings. The rod attached to the spring is also connected with the index hand, and the

movement of the rings acting upon the spring works in turn upon the index hand, and it is moved to the right or left upon the face, which is marked like that of the mercurial barometer, according as the pressure of the air upon the rings diminishes or increases. This instrument has formed the basis upon which the "Meratic Barometer" is constructed. The A. barometer is small and easily handled; it is a valuable contrivance, but, as it alters from time to time, it has occasionally to be compared with the mercurial barometer. It was invented by M. Vidi of Paris.

ANEURIN, a Welsh poet (603), who, according to the received account, was the son of Caw ab Geraint, chief of the Outadini. Some have, however, identified him with Gildas, the British historian, while Mr. Stephens makes him Gildas's son. After being educated at St. Cadoc's College, at Llancarvan, he joined the bardic order; was present at the battle of Cattrath as bard and priest, and in his poem, *Gododin*, he mentions the hardships he endured as a prisoner. The *Gododin*, an epic poem, contains, in its present form more than 900 lines. It was published with an English version and notes in 1852, by Rev. J. Williams ab Ithel, and the text appears with a translation in W. T. Skene's *Four Ancient Books of Wales* (1866). See *Britannica*, Vol. V, p. 317.

ANGEL, BENJAMIN FRANKLIN, diplomatist, born in Burlington, Otsego county, N. Y., Nov. 28, 1815. He studied law, was admitted to the bar, and in 1838 was appointed surrogate, serving for four years. In 1842 he was appointed master in chancery and supreme court commissioner, and in 1844 he again became surrogate. He was a member of the Democratic national convention in 1852, and the succeeding year he became U. S. consul to Honolulu, Sandwich Islands. In 1856 he was appointed minister to Norway and Sweden, and on his return in 1862 gave up politics and devoted himself to agriculture. He was president of the N. Y. State agricultural society in 1873-74.

ANGELA, MERICI, OF BRESCIA, a Franciscan nun, and founder of the order of the Ursulines, born in Lombardy, Italy, in 1470, died in 1540. The association of the Twelve Maidens, of which she was made superior, organized in 1535, under the patronage of Saint Ursula, was at first a benevolent society, but very soon became a religious order, and was confirmed by the Pope in 1544.

ANGEL-FISH (*Squatina Dumeriti*), a fish from seven to eight feet long and nearly four feet in width. Its rough skin, which is covered with tubercles, is of a grayish color on the upper part and dingy white beneath. Its extremely flat head is separated from the body by a distinct neck, and on the upper part of the head are situated the small eyes, with a spout-hole back of each. The mouth is very large, and is placed at the extremity of the nostrils. The angel-fish which, is related to the rays and the sharks, is a native of the southern coasts of the United States.

ANGELL, HENRY C., an American oculist, born in Providence, R. I., Jan. 27, 1829. He graduated at Hahnemann Medical College of Philadelphia in 1853, and for the succeeding four years studied in London, Paris, Vienna, and Berlin. Since the foundation of the Boston University school of medicine he has been professor of ophthalmology in that institution. He is a member of various scientific societies, and has published; *Diseases of the Eye; How to Take Care of Our Eyes*; and numerous papers on art subjects.

ANGELL, JAMES BURRILL, LL. D., an American educator, born in Scituate, R. I., Jan. 7, 1829. He graduated at Brown University in 1849, spent for

years in Europe traveling and studying, and on his return became professor of modern languages



J. B. ANGELL.

in his alma mater. From 1860 to 1866 he was editor of the Providence "Daily Journal," when he became president of the University of Vermont. In 1871 he was called to the presidency of the University of Michigan, which office he has continued to fill. In 1880 he received leave of absence in order to accept the position of envoy extraordinary and minister plenipotentiary to China, with a commission to procure a revision of the treaties between the United States and China. He returned in 1881, after eighteen months spent in this important work, to resume his educational duties. He has published several articles in different reviews.

ANGELL, JOSEPH KINNICUT, an American legal writer, born in Providence, R. I., April 30, 1794, died in Boston, May 1, 1857. He graduated at Brown in 1813, and three years later was admitted to the bar. Among his publications are a *Treatise on Corporations*; *Treatise on the Right of Property in Tide Waters*; *Inquiry Relative to an Incorporate Hereditament*; *A Practical Summary of the Law of Assignment*; *On Adverse Enjoyment*; *Treatise on the Common Law in Relation to Water-Courses*; *Treatise on the Law Concerning the Liabilities and Rights of Common Carriers*; *A Treatise on the Law of Fire and Life Insurance*; *Treatise on the Limitations of Actions at Law in Equity and Admiralty*; and *A Treatise on the Laws of Highways*.

ANGELN, a district of Sleswick, between the bay of Flensburg and the Schlei, noted for its fertility, and supposed to be the home from which came the Angles who invaded England in the fifth century. The principal place is Kappeln.

ANGELUS BELL: in Catholic countries, a bell rung at morning, noon and sunset to invite the faithful to recite the Angelic Salutation. It gives the name to a very famous picture by Millet.

ANGELUS DOMINI, a form of prayer to the Virgin Mary in memory of the birth of Christ, beginning with the Ave Maria, and continued with three passages of Scripture repeated at intervals with this salutation. The bell called the Angelus was rung regularly three times a day, at the hour appointed for the people to repeat this prayer.

ANGER, displeasure or vexation accompanied by a desire to break out in acts or words of violence against the cause of the displeasure. It is accompanied by very marked effects on the body and mind and when frequently indulged in is apt to result in disease or even mania. In a rudimentary state of society the active exercise of anger would seem to be a necessity, imposing some restraint on the selfish aggressions of one individual upon another.

ANGERMANNLAND, a province of Nordland, and one of the four great divisions of Sweden, through which runs the Angermann River. Its forests, mountains and lakes all combine to render the landscape exceedingly beautiful and charming. This province has been classed next to Dalecarlia for wild and beautiful scenery, and it is said that Switzerland's mountain grandeur does not excel that of Angermannland, and that the banks of the river rival those of the Rhine and the Danube. The soil is very productive, and yields an abund-

ance of barley, rye and peas; it also affords excellent pasture.

ANGINA, an inflammatory affection of the throat or fauces;—sore throat. In medical parlance it is customary to append an adjective specifying the nature of the affection; as, angina rheumatica, rheumatic sore throat.

ANGIOSPERMOUS (from the Greek *angeion*, a vessel, and *sperma*, seed): in botany a term applied



ANGIOSPERMA.

tophanerogamous plants which have their seeds inclosed in a pericarp. This is the case with the most of phanerogamous plants. Those which have uncovered seeds, as the *Conifera*, are called gymnosperms. In the Linnæan system one of the two orders of the class *Didynamia* is called *Angiosperma*.

ANGLER, an American fish which grows from three to five feet in length; it is sometimes called the "goose-fish," but more often, on account of its viciousness and repulsive appearance, "sea-devil." The head and mouth are exceedingly large and depressed, and a large number of curved teeth project from the latter. The lower jaw projects far beyond the upper, and the body, which from the great, broad head rapidly narrows toward the tail, is covered with a loose, slimy skin. The angler

has two spinous dorsal fins; it has also, situated near the first dorsal, three rays, free and articulated to the head, which serve as delicate organs of touch. The nostril tube forms a membranous



ANGLER.

stalk which, aided by numerous muscles, moves freely in every direction. The upper end of this stalk may spread out like a cup, and from this project numerous leaflets, to which is attached the olfactory nerve. By means of the filaments rising from the upper part of the head and the worm-like appendages about the mouth, this fish catches and sends down its large throat the small sea animals upon which it feeds. The angler was known of in ancient time, and Aristotle called it the *fisher*, because of its peculiar manner of obtaining prey. There are several species, one of which, called the *Lophius*, is provided with a pectoral fin situated at the extremity of the elongated carpal bones, by means of which it is enabled to spring up and catch prey above it. The gill openings are small, and it can remain alive out of water for a considerable length of time. The bones are of cartilaginous substance, and much softer than those of most other acanthopterygious fishes.

ANGLESITE, a sulphate of lead, named from Anglesey, the place of its discovery, and occurring in rhombic prisms of brilliant hues, and in granular masses. It is formed by the decomposition of galena.

ANGLIA, EAST, a kingdom founded by the Angles about the middle of the sixth century, in the eastern part of central England, in what now forms the counties of Norfolk and Suffolk. At first it was to some extent dependent on Kent, afterwards on Mercia, and still later on Wessex. It retained its own kings until the Danish invasion, when it became a Danish kingdom under Guthrum (878). After a long struggle, Edward, son and successor of Alfred, forced the Danes to acknowledge him. Under his rule Wessex grew to be England,

and East Anglia was from that time part of the kingdom.

ANGLIN, TIMOTHY WARREN, a Canadian statesman, born in Clonakilty, county Cork, Ireland, Aug. 31, 1822. He emigrated to St. John, New Brunswick, in 1849, and established the "Weekly Freeman," and later the "Morning Freeman." In 1860 he became a member of the New Brunswick house of assembly, and held this position for six years. In 1867 he was elected to the Dominion house of commons, and in 1874 was made its speaker. He held this office until the end of the session of 1877, when he resigned, but was re-elected in 1878, and retained the speakership till parliament was dissolved.

ANGLICAN, belonging to the Church of England and the other churches in communion with it in Ireland, Scotland and the United States. Sometimes used specially of the High Church party.

ANGLO-CATHOLIC, a term used of the Church of England generally, but especially of the High Church section, which claims that the national church is Catholic (as opposed to Roman Catholic), and repudiates the name of Protestant.

ANGLO-ISRAELITE THEORY, an opinion as to the historical origin of the English people held by a considerable number of persons in Britain and America. They contend that the English are descended from the Israelites who were carried into captivity by the Assyrians under Sargon in 721 B. C. It is a theory that sets at defiance all ethnological and linguistic evidence.

ANGLOMANIA, the name given in ridicule to the weak attempt made by the French and Germans to imitate English customs. In the eighteenth century German literature, for a time, became affected and comparatively worthless; this German scholars laid to the unwise admiration of English writings which prevailed throughout that country. The French also, during the early part of the Revolution, incited to admiration of America by her patriotic spirit and love of freedom, took her as their example and blindly followed every little American custom, so that at length France became an object of ridicule. The Prussians also fell into the habit of imitating French literature and customs in the reign of Frederick II, and the ridicule which this excited far exceeded that caused by the Anglomania. To this the Prussians gave the name Gallomania.

ANGORA GOAT (*Capra angorensis*), a native of the district surrounding Angora in Asia Minor. There are two or three varieties of the breed, all valuable for their beautiful silky hair. This hair, in its best condition, is white, from four to twelve inches in length, and unites the qualities of luster, elasticity and great durability. The fleece of the Angora is known to commerce as mohair, and is adapted for certain uses in the fine arts. It has the appearance of silk, and is used as a partial substitute for that material in various dress-fabrics, velvets, etc. It is also used for the manufacture of braids, bindings, plushes and imitation furs. The locality in Asia Minor where the goat thrives is from 2,000 to 5,000 feet above tide-water, having a very dry temperature, extremely hot in summer and cold in winter. See *Britannica*, Vol. II, p. 710; Vol. X, p. 708; and Vol. XVI, p. 544.

ANGOSTURA BARK, or *Cusparia Bark*, the aromatic bitter bark of the *Galipea cusparia*, a native of Venezuela and other tropical countries. It derives its name from the town of Angostura, where it is a considerable article of commerce. The *Galipea cusparia* is a small tree belonging to the natural order *Rutaceæ* flourishing at an elevation

of 600 to 1,000 feet above the sea. Angostura Bark is a tonic, which owes its virtues to a volatile oil, the nature of which is uncertain.

ANGOULEME, LOUIS ANTOINE DE BOURBON, born Aug. 6, 1775, died June 3, 1844. He was the eldest son of Charles X of France, and during the king's reign was dauphin. When the Revolution broke out he went with his father on a traveling expedition for the sake of military study. In 1792 he led a force of French emigrants into Germany, but, being unfit for his position, he made a failure of the campaign, and was in consequence banished from his country. He wandered through England and other European countries until 1814, when with the French allies he returned to France, and, entering Bordeaux under British protection, March 12th, he issued a proclamation to the French granting certain rights, among which was that of complete religious liberty, on condition that they receive him back into the country. When Napoleon returned from Elba, A. was sent in haste, with such forces as he could collect, to oppose him; but he failed in the attempt, was deserted by his troops, and sent as a prisoner to Barcelona. He was again restored and again sent on a military excursion, this time to the southern provinces to quell the disturbances there arising from political and religious disputes. Subsequently, he was sent to Spain to do away with the constitution. In the revolution of July, 1830, he and his father signed an abdication favoring his nephew, the Duc de Bordeaux. The Chambers declared against the family of Charles X, and the king and his son were sent into exile. The character of this prince was weak; he was thoroughly incompetent, and was consequently made a tool of, both religiously and politically.

ANGRA-PEQUENA, a bay on the southwest coast of Africa, in 26° 27' south lat. and 15° east long. It gives name to the southern littoral of Great Namaqualand—a sandy, waterless region, but apparently rich in minerals, and having a healthy climate. In 1883 Angra-Pequena was ceded by a Namaqua chieftain to Lüderitz, a Bremen merchant, and the next year it was taken under German protection, with all the coast to the north as far as Cape Frio, except Walrisc Bay, which belongs to England.

ANGSTRÖM, ANDERAS JONAS, a Swedish natural philosopher, born Aug. 13, 1814, died June 21, 1874. In 1833 he entered the University of Upsala, where he became a privatdocent (1839), keeper of the observatory (1843), and professor of physics (1853). From 1867 till his death he acted as secretary to the Royal Society of Sciences at Upsala. His works embrace the subjects of heat, magnetism, and especially optics. His *Recherches sur le Spectre Solaire* (Berlin, 1869) was an important supplement to Kirchoff's great work on the Solar Spectrum. Other works were *Sur les Spectres des Gases Simples* (1871); and *Mémoire sur la Température de la Terre* (1871).

ANGUILLULA, a genus of nematoid worms, remarkable for tenacity of life. It includes the common vinegar-eel; the *Anguillula glutinosa*, found in sour paste; the *Anguillula fluvialis*, which, being dried to brittleness, recovers its activity when placed in water; and that of blighted wheat, which will revive after being kept dry for years.

ANGULAR MOTION: in physics, the movement of a body about a fixed central point. The movement of a pendulum is called angular motion, because it is measured by the angle formed by the supposed line drawn from the common point to the different points of its motion.

ANGULO, PEDRO DE, missionary, born in Burgos, Spain, about 1500, died in 1562. He set out for America, and, after some years spent in a Dominican convent in Mexico, was ordained priest. In 1541 he was sent to Guatemala, and about ten years later directed his efforts to the conversion of the people who lived north of there, and in company with two missionaries finally succeeded in converting the entire nation.

ANGUS, JOSEPH, D. D., English clergyman, born Jan. 16, 1816. He graduated at Edinburgh University in 1836, and took the first prize in mathematics, in Greek, in logic, in belles-lettres, the gold medal in ethics and political philosophy, and a prize of one hundred guineas for the best essay on the influence of the writings of Lord Bacon. He studied theology at Stepney College, and was ordained pastor of the Baptist church in New Park street, Southwark. He received a hundred guineas as a prize for an essay in reply to Rev. Dr. Chalmers's defense of church establishments; a prize for a series of lectures *On the Advantages of a Classical Education as an Auxiliary to a Commercial Education*; one for an essay called *Christ Our Life*; and another for an essay on the *Nature, Growth and Representation of the Church*. In 1840 he was appointed secretary of the Baptist Missionary Society, resigning in 1849 to become president of Stepney College. For many years he was the English examiner in the University of London and for the Indian civil service. He was one of the revisers of the English New Testament for the American Bible Union.

ANHALT. This duchy of Germany, whose history is given in *Britannica*, Vol. II, p. 47, has a constitution proclaimed Sept. 17, 1863, and Feb. 13, 1872. It gives legislative power to a Diet composed of 36 members, of whom two are appointed by the duke, eight are representatives of land owners who pay the highest tax, two of the highest taxed inhabitants belonging to the mercantile and industrial classes, fourteen of the other inhabitants of towns, and ten of the rural districts. The executive power is entirely in the hands of the duke, who governs through a minister of state. The present duke of Anhalt is Friedrich, who ascended the throne April 22, 1871. The duchy comprises an area of 917 English square miles, with a population of 248,166 at the census of Dec. 1, 1885. In 1875 the population was 213,565, and in 1880 it was 232,592. From 1875 to 1880 the increase was at the rate of 1.78 per cent. per annum, and from 1880 to 1885 at the rate of 1.34 per cent. per annum. Of the population in 1885, 122,676 were males, and 125,490 (or 102.3 per 100 males) were females. The capital, Dessau, had 27,766 inhabitants in 1885. Nearly the whole of the inhabitants belong to the Reformed Protestant Church, there being 5,492 Catholics and 1,601 Jews. Of the population, 32,932 were actively engaged in agriculture. There were eleven miles of railway on Jan. 1, 1889.

ANHINGA (*Plotus anhinga*), the American snake-bird, darter, or water-turkey, a bird of peculiar appearance, somewhat resembling the cormorant. It is a totipalmate natatorial bird, of the family *Plotidæ* and order *Steganopodes*. The anhingas, shunning the open coast, inhabit swamps of the warmer parts of America, from the South Atlantic and Gulf coast of the United States. They are timid, swift of flight, and expert divers. When alarmed on the perch they drop into the water, and swim with only the head and neck in sight; if alarmed on the water, they sink so quietly as scarcely to cause a ripple. The anhinga has an extremely long, snake-like neck; a straight, slender bill; mostly black plumage; and is more lightly

built than the cormorant, to which it is related. It feeds on fish, which it pursues under water. The anhinga is the only American species of *Plotus*, but there are several others inhabiting corresponding regions of the Old World.

ANHYDRIDES, a term now commonly given to the compounds formerly known as anhydrous acids. In some cases they are the result of the dehydration of acids, and in all cases they represent in their composition the acid minus water.

ANHYDRITE, a mineral consisting of anhydrous sulphate of lime, with some slight addition of sea-salt. Anhydrite is converted into gypsum by combination with a certain proportion of water, and where it is found in large masses, as on the south of the Harz mountains, near Osterode, the surface consists of gypsum. It is of no great value for building on account of its tendency to this change; but some of its varieties, especially the Siliceiferous or Vulpinite, found at Vulpino, in upper Italy, are used for sculptures, and take a fine polish.

ANHYDROUS, a term applied to a substance free from water. Thus ordinary lime-shell as it comes from the kiln is simply lime without any water, and is called anhydrous lime. Examples of anhydrous substances are also found among liquids: thus, alcohol free from water is called anhydrous alcohol; and in like manner we speak of anhydrous acetic acid, anhydrous nitric acid, etc.

ANI, a ruined city of Turkish Armenia. In the 10th century it was the capital of the Bagratide kings of Armenia. Afterwards it was repeatedly taken and sacked, and in the 14th century it was finally overwhelmed by an earthquake. Numerous ruins of buildings and massive walls remain.

ANIMAL CHEMISTRY. The objects of animal or physiological chemistry are to investigate the composition and properties of protoplasm and its various modifications, which form the tissues and organs of living beings, and to ascertain the precise nature of the constructive and destructive changes which take place in those tissues and organs during the performance of their functions.

ANIMALCULE, a term which, although etymologically applicable to any very small animal, is limited in ordinary language to those animals which are microscopical. Animalcules exist in prodigious numbers, their size being such that myriads of them find ample space for all the movements of an active life within a single drop of water. Sea water often contains them in enormous numbers, and the luminosity of the sea is often due to them. They occur only in very small numbers in drinkable water, but abound in stagnant water. All animalcules were at first supposed to belong to the same general type of structure, but are now known to be extremely varied; hence, the term has become so vague in meaning that it is disused by scientific writers. Despite their apparent insignificance, certain animalcules, by virtue of their almost imperishable skeletons, are among the most important agencies which have built up the crust of the earth.

ANIMAL HEAT. Physiologically considered, the animal body is a machine for converting the potential energy supplied by food into the actual energy of heat and mechanical work. Living protoplasm is constantly in process of disintegration and oxidation, and these changes are accompanied by evolution of heat. The greater the activity of change, the higher does the temperature tend to become. Not only, therefore, are the so-called "cold-blooded animals" really warmer than the surrounding atmosphere, but even plants recognizably evolve heat, and the temperature of certain flowers, where protoplasmic activity is highest, may

sometimes almost reach that of the human body. Even the infusoria evolve heat, as is shown by the slowness with which the surrounding water freezes. Cold-blooded and warm-blooded animals thoroughly agree in evolving considerable amounts of heat, the difference between them being that in the former the means of loss of heat by the skin, etc., are great as compared with the normal production of heat, while in the latter the loss and production of heat are kept balanced.

ANIMALS, CRUELTY TO. The first societies for its prevention were formed in England in 1824; in Scotland, in 1839; in the United States, in 1866; and the movement has extended into France and Germany. These societies have been the means of abolishing many cruel forms of amusement, as well as procuring legislation for the punishment of any wanton cruelty to animals.

ANIMA MUNDI: according to many of the early philosophers, a force or vital principle immaterial, yet not unintelligible; inseparable from matter, but giving it its form and movement, the source of all physical and sentient life. Plato believed it to be the intermediate agency between matter and pure spirit. In the system of the Stoics, it was conceived to be the sole vital force in the universe. The notion does not seem to have been entertained by the Schoolmen, but it reappears in the writings of Cornelius Agrippa, Paracelsus, and Van Helmont, and in a modified form was held by More and Cudworth. The doctrine of the immaterial *anima*, in matter, but distinct from it, was upheld by Stahl in 1720; but his term *animism* has now been adopted with a much wider signification by Dr. Tylor and other anthropologists of the new school.

ANISODACTYLS, a class of pachydermatous quadrupeds having unsymmetrical hoofs, including the hippopotamus, elephant, and mastodon. There is also a group of anisodactylous birds.

ANIL is a leguminous plant, whose stem contains considerable woody fiber. The stalks and leaves furnish indigo. The West Indian, which is larger than the Asiatic species, is cultivated for the same purpose, and is a native of the tropical regions of America and of Mexico.

ANKER, a Dutch liquid measure, containing ten wine gallons.

ANKYLOSIS, a term used in surgery to imply a stiffness in any joint. It is usually the result of disease, which either destroys the articular cartilages, leaving two bony surfaces opposed to each other, to become united by subsequent formation of bony or fibrous tissue, or thickens and shortens the natural fibrous tissues around the joint. Severe injury may also lead to the same result. There are cases on record of universal ankylosis of all the joints, and there are in various museums specimens of adult bodies in this condition.

ANNA, an Indian coin, valued nominally at $1\frac{1}{2}d$. sterling, but always the sixteenth part of a rupee.

ANNA, or ANNE, St., according to tradition the wife of St. Joachim, and mother of the Virgin Mary, the mother of Jesus. The first mention of her is by St. Epiphanius in the 4th century; but, toward the 8th century, she was all but universally held in honor. She is the patron saint of carpenters. Her festival falls on the 26th of July; with the Greeks, on the 9th of December.

ANNA PERENNA: in Roman mythology, a sister of Dido, who was kindly entertained by Æneas when she visited Italy, and to whom the Romans prayed for longevity and health.

ANNAPOLIS, a city and port of entry, capital of the State of Maryland and county seat of Anne Arundel county, situated on the Severn, near its

entrance into Chesapeake Bay. The harbor, known as Annapolis Roads, is one of the best in the United States. Annapolis is the seat of the United States Naval Academy, of St. John's College, and of St. Mary's Seminary. Among the prominent buildings are the court-house, jail, Governor's mansion, and a massive brick state-house, surmounted by a lofty dome and cupola.

ANNATTO, also known in commerce as **ARNOTTO, ROUCON,** and **ORLEANA,** is the reddish pulp surrounding the seeds of the *Bixa orellana*, a medium-sized tree growing in Guiana and other parts of South America. Annatto is used in the dyeing of cloth; it also enters into bright-colored varnishes. In the manufacture of butter and cheese it is employed to deepen the color of the article.

ANNEXATION, the adding or joining to a state territory previously independent or in possession of another power. It is generally, though not always, the result of war. As important annexations in recent times may be mentioned that of Savoy by France after the war with Austria in 1859; that of the Bolivian seaboard and part of Peru by Chili in 1884; and that of Upper Burmah by Britain in 1886.

ANNIHILATIONISTS: in a general sense, the name applied to those who deny the existence of the soul after death. Specifically, it is applied in theology to two classes: those who believe that the wicked will be punished with everlasting destruction, and those who believe that immortality is not a natural attribute, but that "eternal life" is the "gift of God" to the righteous. To this class belongs the modern school of annihilationists, who have risen in the last generation. They designate their doctrine as "conditional immortality," and defend it by the assertion that the doctrine of inherent immortality of the soul was derived, not from the Scriptures, but from Plato, and came into the literature of the Church in the second century. They construe the Scriptural phrases, "everlasting punishment," "unquenchable fire," etc., in the sense of "hopeless destruction." There are many variations of belief in both these classes. There are those who hold that the existence of the lost may be unending but unconscious; others who believe that all mankind will be ultimately restored, and still others who assert the possibility of probation after death. All these doctrines had been developed among the Jews before the coming of Christ; but Arnobius, near the beginning of the fourth century A. D., is generally regarded as the first who plainly taught annihilation. From the close of the fifth century until the sixteenth, the doctrine of endless punishment was an undisputed article of belief in the Church. From a decree of the Lateran Council of Leo X, it appears that some began to question it early in the sixteenth century. The sect of Socinians, who were scattered over Europe in the seventeenth century, believed in the annihilation of the wicked, but the belief of Protestants and Catholics alike was, as a rule, orthodox. In England one of the most prominent advocates of the theory at that time was John Locke. Among those who are said to have held the doctrine in the eighteenth century are Dr. Isaac Watts, Samuel Bourne, Bishop Law, Macknight, and Dr. Dodwell. In recent years it has found many adherents and some able advocates. Archbishop Whately and Bishop Hampden of Hereford were prominent supporters. Perhaps the best presentation made of the subject of conditional immortality is *Life in Christ* (first published in 1846, since revised and enlarged), by Rev. Edward White, a Congregational minister. The doctrine as there set forth can claim a number of adherents among Anglican and Non-conformist ministers. The leading

advocates formed the Conditional Immortality Association in 1876, which has circulated considerable literature on the subject. The majority of Adventists hold this doctrine, and it has many supporters in other denominations.

ANNUAL, a term applied to plants which complete the whole course of their development in one season, within which they germinate, flower, perfect their seeds, and perish, never to spring again from the same root. The whole duration of life in plants so designated, especially in temperate and cold climates, is usually much less than a year. Plants which are annual in one climate may be perennial or even shrubby in another.

ANNUAL REGISTER, a yearly record of public events, commenced in 1759 and continued to the present time. It was projected by Robert Dodsley, the book-seller, and for nearly thirty years Edmund Burke wrote the survey of events. The work is now published by Messrs. Rivington. Preceding works of the same kind were Boyer's *Political State of Europe* (1711-39), and the *Historical Register*, a quarterly (1716-38). Sir Walter Scott was among the contributors to the *Edinburgh Annual Register* (1808-27).

ANNUALS, the name given to a class of sumptuous books much in demand during the first half of the present century for Christmas, New Year and birthday presents. The first of them, the *Forget-Me-Not*, was begun in London in 1822, and was followed by a number of others. Among American productions may be mentioned the *Historical Annual*, the *Gift* and the *Token*. The *Book of Beauty* and the *Keepsake* (1856) were the last of their race.

ANNUITY, the yearly payment of a certain sum of money which is charged to the person or personal estate of the individual bound to pay it. An annuity may be created for a term of years, or for the life or lives of any persons named, or in perpetuity, and in the last case the annuity is reckoned among incorporeal hereditaments, because although the security is personal only the annuity may descend in the same manner as real estate. Annuities paid as a reward for meritorious services are classed as pensions; all others are defined and restricted by certain terms, such as "temporary," "contingent," "life," "joint life," or "survivorship annuity," etc. See *Britannica*, Vol. II, p. 73.

ANNUITY-TAX, a local impost for the payment of the salaries of the established clergy of the city of Edinburgh. It was first established on a limited scale in 1661, and was extended in 1809. It amounted at one time to 6 per cent. on the rent of houses and shops within the royalty. The tax was reduced in 1860; and, under an act passed in 1870, it was redeemed by payment of £56,500 by the Corporation to the Edinburgh Ecclesiastical Commissioners.

ANNULET, a term in architecture for a small fillet or band which frequently surrounds a column, etc. The annulet, a ring, is a charge in heraldry.



ANNULET.

ANNULUS: in botany, a delicate ring or membrane found upon certain plants. In most ferns the little spore-cases are surrounded by an annulus; mosses are supplied with an elastic ring extending about the orifice of each capsule, between the lid and the base, and they appear in an expanded ring upon the stem of the agaricus when the cap has opened out.

ANNUS DELIBERANDI: in Scot's law, the period of a year allowed to an heir to decide whether he would accept the inheritance with the burden of his predecessor's debts. By recent legislation, the period has been shortened to six months.

ANNVILLE, a town of Pennsylvania, five miles west of Lebanon, the seat of Lebanon Valley College, belonging to the United Brethren.

ANOA, a genus of quadrupeds belonging to the ruminants. The most important species is a small buffalo with short, straight horns, which have large bases, and which narrow toward the point. This animal, called the "cow of the woods," is undomesticated.

ANODE, a term in electrolysis introduced by Faraday to designate the positive pole, or that surface by which the galvanic current enters the body undergoing decomposition (electrolyte); as opposed to *cathode*, the negative pole.

ANOKA, a city of Minnesota, county-seat of Anoka county. It is on the left bank of the Mississippi, and at the mouth of Rum River, which affords excellent water-power for machinery of all kinds. An iron bridge 900 feet in length here spans the Mississippi. Anoka is the center of an extensive trade, and the seat of a high school and business college.

ANOLIS, a group of iguanoid saurian reptiles, composed of about sixty species, found in the warm parts of the American continent. They are remarkable for their brilliancy and chameleon-like changeableness of color, for their swiftness of movement, and for their peculiar power of inflating the skin of the throat.

ANOMALISTIC YEAR, the interval that elapses between two successive passages of the earth through its perihelion, or point of nearest approach to the sun.

ANOMALY, the angle measured at the sun between a planet in any point of its orbit and the last perihelion. It is so called because the first irregularities of planetary motion were discovered in the discrepancy between the actual and computed distance. The anomaly was formerly measured from the aphelion, the opposite point of the ellipse; but from the fact that the aphelia of most of the comets lie beyond the range of observation, the perihelion is now taken as the point of departure for all planetary bodies.

ANONACEÆ, the custard-apple order, are thal-amifloral *Dicotyledons*, closely allied to *Magnoliaceæ*. They are trees and shrubs, mostly tropical, and usually aromatic and fragrant. The fruit is sometimes dry, and in this case is usually aromatic and pungent. More frequently, however, the fruit is succulent, and is then often delicious.

ANOMIA, a widespread genus of acéphalous mollusks, of which there are numerous living and extinct species. It is characterized by two unequal and irregular thin valves, the flatter one of which is deeply notched at its cardinal margin.

ANONYMOUS, a term applied when authorship is unknown or unavowed; when an assumed name is given, the term *pseudonymous* is used. Works of this class constitute one of the great difficulties of bibliography. Formerly political articles were nearly always anonymous, as also was most of the literary criticism. It is generally admitted that anonymity secures the independence of the critic; but it is true that he frequently abuses his advantage. Perhaps the greatest abuse of anonymity is the anonymous letter, which, even when the writer is known, is punishable only in so far as it is slanderous.

ANOPLOTHERIUM, a genus of even-toed hoofed animals, *Artiodactyla*, established by Cuvier from bones occurring in great abundance in the gypseous strata of the Oligocene formation near Paris. They are found also in the same formation in the Isle of Wight and elsewhere. (Several species of *Anoplotherium* have been determined—the size

of the animal being about that of the ass. Closely allied to them are certain other genera, of which *Dichodon* and *Dichobune* are the most important. See Britannica, Vol. XV, p. 430.

ANSARS, more correctly **NOSSAIRIANS**, an Arab sect living in the mountainous region of Syria, north of the Lebanon mountains. They appear first in the tenth century, but the history of their origin is obscure. They reverence Ali, and believe in a Messiah to come; have special religious books and a kind of holy communion with the cup; in their prayers they turn towards the rising and the setting sun; they believe also in a kind of Trinity, and in a constant transmigration of souls. The name Ansars was also applied to the first adherents of Mohammed.

ANSCHUETZ, KARL, an eminent German musical director, and founder of the German opera in New York, born at Coblenz in 1813, died Dec. 30, 1870.

ANSDELL, RICHARD, A. R. A. R. A., animal and landscape painter, born at Liverpool in 1815, died April 20, 1885. Abandoning business for art, he exhibited at the Royal Academy in 1840, and at the British Institute in 1846. He thrice won the Heywood medal at Manchester, and a gold medal at the Paris exhibition of 1855.

ANSERES, an order or sub-order of birds of nearly the same extent as the family *Anatidæ*, without *Phenicopteri*, or flamingoes. The order is generally equivalent to the *Lamellirostris* of Cuvier. In the Linnean system the *Anseres* are classed as the third order of birds and include all palmipeds, corresponding to the modern *Natatores*.

ANSERINÆ, a sub-family of *Anatidæ*, including geese as distinguished from ducks, swans or mergansers. The *Anserinæ* are well distinguished from swans; and geese of the genera *Anser*, *Chen*, and *Bernicla* may be easily divided from ducks, but some members of the sub-family so closely resemble the *Anatinæ* as to be scarcely distinguishable.

ANSGAR, the Apostle of the North, was born in Picardy in 801, died at Bremen in 865. Under the patronage of Louis le Debonnaire, he went with his colleague Antbert to preach Christianity to the heathen Northmen of Sleswick. He suffered many persecutions; but had nevertheless such success that, in 831, the pope established an archbishopric in Hamburg (transferred to Bremen in 847), and Ansgar was appointed the first archbishop. He made several missionary tours in Denmark and Sweden.

ANSONIA, a village of Connecticut, situated on the Naugatuk River. It has manufactories of iron, brass and copper goods, clocks, electrical goods, webbing and knit goods, carriages and hardware.

ANSTED, DAVID THOMAS, F. R. S., geologist, born in London, Feb. 5, 1814, died May 13, 1880. After gaining a fellowship at Jesus College, Cambridge, he devoted himself to geology under Sedgwick, and in 1840 was appointed to the chair of Geology in King's College, London. In 1845 he became attached to the Indian military school at Addiscombe, and the college for civil engineers at Putney. From this time until his death he devoted his studies to the economic application of geology, and was much consulted in great mining and engineering operations. His works on his chosen subject were numerous and popular.

ANTACIDS, drugs used for the purpose of neutralizing or diminishing excessive acidity of the digestive system, or of the different excretions. Substances which act upon the former are termed direct antacids, and those that act upon the latter are called remote antacids. Many drugs act in both ways.

ANTANACLASIS: in rhetoric, that figure of speech in which a word is repeated, either in a different sense or with another inflection, by way of a kind of antithetical emphasis; also the repetition, as a reminder, of a word or phrase after a long parenthetical sentence.

ANTARES, a very conspicuous double star in the constellation Scorpio, of great importance to mariners in the computation of longitude, and so named from its apparent resemblance to Ares, or Mars.

ANTECEDENT, a term in logic, grammar, and mathematics. In logic, it is a statement or proposition from which another is logically deduced. In grammar, it is the substantive (word or clause) to which a relative refers. In mathematics, we speak of the antecedent of a ratio—that is, the first of two terms which compose the ratio; the first and third in a series of four proportionals.

ANTEDILUVIAN, anything that existed before the flood, in the patriarchal ages between Adam and Noah. The word is often employed in modern usage, in a somewhat disparaging sense, for anything antiquated or primitive.

ANTE NATI, a term applied to all Scotchmen who were "born before" the accession of James I to the English throne, and who were therefore considered as aliens. The term has also been used of those born in the American colonies before the Declaration of Independence.

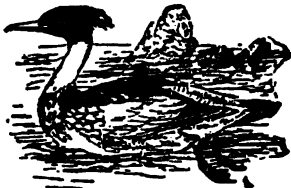
ATTENNÆ, or feelers, the anterior appendages on the head of crustaceans, insects, and myriapods. The typical crustacean, such as a lobster, has two pairs of feelers, while insects and myriapods have only one pair. The name may also be applied to sensory processes on the head of some marine worms. They are supplied with nerve branches, and are used by the animals for feeling their way, for testing surrounding objects, and apparently for communicating with one another. There are numerous observations to justify the general statement that in many cases the antennæ are sensitive to smell, sound, and probably taste. Deprived of its antennæ, an ant, for instance, is peculiarly helpless.

ANTEROS, in Greek mythology, was the name given to an active enemy of Eros or Cupid; also to the deity who punished those who failed to return the love of others.

ANTHELIA, luminous rings visible on a cloud or fog which lies opposite the sun. They occur chiefly in Alpine regions and in the polar seas; and are only seen when sunshine and cloud, or fog, occur at the same time. When, from an elevated position, as the mast of a ship, or the ridge of a hill, the shadow of an observer is projected by the sun on a cloud or fog, he sees the head encircled by a luminous ring; and when the sun shines brightly, and the fog is dense, as many as four concentric rings of this nature are seen by the observer round the shadow of his head, having their common center in the point where a line from the sun through the eye of the observer meets the fog. It is also called the Circle of Ulloa, or the White Rainbow.

ANTHELMINTICS, a general name for vermicides, or those medicines which destroy intestinal worms, and vermifuges, or those which expel them.

ANTHEMION, an ornamental series adopted by the ancient Ionians from the Orient, and derived from the honeysuckle and other floral forms.



RED-BREASTED MERGANSER.

ANTHERIDIUM, the male reproductive organs of many cryptogams (ferns, horsetails, mosses, etc.). They may consist of a single cell, but are usually multicellular sacs, within which the reproductive elements are produced. These are liberated by the rupture of the antheridium wall; and the antherozoid is enabled, by means of the lashing movement of its cilia, to reach and descend the tubular passage of the archegonium to the female cell, which it is its function to fertilize.

ANTHINÆ, a sub-family of birds; one of two divisions of the family *Motacidae*, or wagtails, represented chiefly by the genus *Anthus*, which consists of pipits or titlarks. They are small, insectivorous birds, usually found in flocks, and nesting on the ground. There are about fifty species, found in most parts of the world.

ANTHODIUM, the head or compound flower of the thistle and other *Compositæ*, in which a plurality of florets unite in a head surrounded by a common involucre.

ANTHON, JOHN, an American jurist, born in Detroit, May 14, 1784, died in New York city, March 5, 1863. He graduated at Columbia College in 1801, and was admitted to the bar when he became of age. He served in the defense of New York city during the war of 1812, and was also frequently employed during this period as judge-advocate. He urged the establishment of the supreme court of the city of New York, and was one of the founders of the N. Y. Law Institute, and its president at the time of his death. He published *Digested Index to the Reports of the United States Courts; Reports of Cases at Nisi Prius in the New York Supreme Court; An Analytical Abridgment of Blackstone's Commentaries; Anthon's Law Student; and American Precedents*.

ANTHONY, HENRY BOWEN, an American statesman, born in Coventry, R. I., April 1, 1815, died in Providence, Sept. 2, 1884. He graduated at Brown University in 1833, and took up journalism, being very successful in this adventure. He was twice elected governor of Rhode Island (1849 and 1850), and declined a third election. In 1859 he was elected, as a Republican, to the U. S. Senate, where he remained by reelection till his death, and three times he was elected president of the Senate—in 1863, 1871, and 1884. He served on numerous important committees, and was very popular in Washington.

ANTHONY, JOHN GOULD, an American naturalist, born in Providence, R. I., May 17, 1804, died in Cambridge, Mass., Oct. 6, 1877. He went into business in Cincinnati, and continued there engaged in commercial occupations for thirty-five years. Meanwhile his interest in natural history had developed, and in 1863 he took charge of the conchological department of the museum of comparative zoölogy. Mr. Anthony wrote numerous papers on shell-fish, and was recognized as an authority on American land and fresh-water mollusca.

ANTHONY, SUSAN BROWNELL, reformer, born in South Adams, Mass., Feb. 15, 1820. She was educated at a Friends' boarding-school in Philadelphia, and then taught in New York State for fifteen years. Miss Anthony first commenced her public career in 1847, when she began lecturing on temperance. In 1851 she called a temperance convention of women in Albany, and the following year the Woman's New York State Temperance Society was organized. In 1857 she became prominent as an agitator for the abolition of slavery, and also with others, in securing the passage of the act of the New York legislature of 1860, giving to married women the possession of their earnings, and the guardianship of their children. She was instrumental in obtain-

ing for women the right to speak, vote, and serve on committees in educational and other conventions, and her energies have always been directed to secure equal civil rights for women. Since 1855 she has addressed annual appeals and petitions to the legislature pleading for the cause of female suffrage, and in 1867 she went to Kansas with Elizabeth Cady Stanton and Lucy Stone, and obtained about 9,000 votes in favor of woman suffrage. In 1872 Miss Anthony cast ballots at the State and congressional election in order to test the application of the 14th and 15th amendments of the United States constitution. She was indicted and fined \$100 for illegal voting, but she declared that she would never pay the penalty, and it has never been collected. From 1870 to 1880 she lectured more than one hundred times a year in the United States, and in 1881, with Elizabeth C. Stanton and Matilda Joslyn Gage, wrote *The History of Woman Suffrage*.

ANTHONY, WILLIAM ARNOLD, an American physicist, born in Coventry, R. I., Nov. 17, 1835. He graduated at Sheffield scientific school in 1860, and the same year began teaching, and occupied positions in various institutions of learning until 1872, when he accepted the professorship of Cornell University. He has constructed two turbines, one of which gave an efficiency of 81 per cent., a gramme dynamo-electric machine for 25 amperes and 250 volts, and a tangent galvanometer which measures accurately currents from 1-10 to 250 ampères. Prof. Anthony is a member of several scientific societies, and has contributed numerous articles to different magazines and reviews.

ANTHONY'S NOSE, SAINT, the name of two bold promontories in the State of New York: the extremity of the Klips, or "Cliff," a mountain on the north bank of the Mohawk, and a projection, 1230 feet in height, from Breakneck Hill, at the entrance to the Highlands, on the east bank of the Hudson, 57 miles from New York city.

ANTHOSIDERITE, a hydrated silicate of iron found in Brazil, having a fibrous radiated structure.

ANTHOXANTHUM, a genus of graminaceous plants, producing a dull yellow flower, and including the fragrant sweet vernal grass of the meadows of Europe, which has been naturalized in America.

ANTHOZOA, one of the three classes of Cœlenterates, including sea-anemones, dead-men's fingers, corals, etc. The commoner term is *Actinozoa*.

ANTHRACENE, a substance obtained in the distillation of coal tar. Although long known to chemists, it is as the source of artificial Alizarin that it has become of commercial value.

ANTHRENOUS SCROPHULARIÆ, or CARPET BUG, a species of beetles of the family *Dermestidæ*, introduced from Europe into the United States by way of California. It is very destructive to carpets, and is extremely difficult to eradicate.

ANTHROPOLATRY, the worship of man; the giving of divine honors to a human being; a term always employed in reproach. The term is chiefly known in ecclesiastical history in connection with the employment of it by the Apollinarians against the orthodox Christians of the fourth and fifth centuries, with reference to the doctrine of the perfect human nature of Christ.



ANTHOZOA.

ANTHROPOMETRY, the measurement of the human body to discover its exact dimensions and the proportions of its parts, for comparison with its dimensions at different periods, or in different races or classes. Cranial measurements have long been adopted by anthropologists as the basis of their classifications of races; but the conformation of the skull and the relation of its height to its breadth vary so much within the same tribe as not to be of themselves sufficient data on which to rest generalizations. As a basis of comparison, M. Quetelet's method is infinitely more valuable. He defined the general types of mankind by measuring, with reference to such particular qualities as height, weight, complexion, and the like, a certain number of men, and selecting as the standard the most numerous group, on both sides of which the groups decrease in number as they vary in type, and thus arrived at the typical *mean* man of a population.

ANTICHLOR, the name formerly applied to commercial sulphite of soda by paper-makers, but now usually restricted to hyposulphite of soda.

ANTICLINE: in Geology, applied to strata which are inclined in opposite directions from a common axis—that is, in a roof-like form. *Saddleback* is another term for the same structure. *Syncline* is the converse of anticline, and is applied to strata which are inclined in opposite directions towards a common axis.



ANTICLINE.

Anticlinal and synclinal structures have resulted from the lateral compression and consequent folding of formerly horizontal or approximately horizontal strata.

ANTIDOTES. In a general sense the term may be applied to whatever counteracts injurious influences, whether physical or mental. In medicine, an antidote is a substance employed to overcome the effects of some poison upon the animal system. See **POISONS**, *Britannica*, Vol. XIX, p. 275.

ANTIFEBRIN, or **ACETANILID**, a white colorless powder, with burning taste. It is almost insoluble in cold water, though readily soluble in alcohol. It is derived from anilin, to which it is closely allied. It was introduced in 1886 as a febrifuge; and its cheapness, its rapidity of action, and its non-poisonous nature, have brought it rapidly into favor as a substitute for quinine.

ANTI-FEDERAL PARTY. See **POLITICAL PARTIES**, in these Revisions and Additions.

ANTIGUA. See **LEWARD ISLANDS**.

ANTILOCAPRA, a genus of ruminants constituting the family *Antilocapridæ*, and represented solely by the American antelope or pronghorn. It is distinguished from the antelopes of the Old World by the annual shedding of the sheaths of its horns.

ANTILOCAPRIDÆ. See **ANTELOPE, AMERICAN**, *Britannica*, Vol. II, p. 102.

ANTI-MASONRY. See **POLITICAL PARTIES**, in these Revisions and Additions.

ANTIMONIAL WINE: in medicine, a solution of tartar emetic in sherry or other wine.

ANTIOCH, a village of California, on the Sacramento River, a center of trade in copper, coal, and pottery ware, and the trading-point of an extensive wheat and barley district.

ANTIOCH COLLEGE, an institution of learning at Yellow Springs, Greene county, Ohio, founded by the Christian denomination in 1852. See **COLLEGS**, in these Revisions and Additions.

ANTIPATHY, a term applied to a class of cases in which individuals are unpleasantly affected by,

or violently dislike, things indifferent or agreeable to the majority of mankind. These peculiarities are sometimes innate, but in many cases antipathy arises from mental association, often unconscious, of an object with some other admittedly unpleasant, or with some painful experience in the past life of the person affected. The most remarkable antipathies are those affecting the special senses. Nearly all persons loathe reptiles, but some few faint on seeing them. Hearing a wet finger drawn on glass, the grinding of knives, or a creaking wheel will produce the same effect with some. The odor of musk throws some into convulsions, while the touch of anything unusually smooth will produce the most unpleasant sensations in others. Antipathies for certain kinds of food are, perhaps, most common. In many cases it cannot be ascribed to caprice, as it is found that contact with the object is resented by the bodily economy, producing symptoms of poisoning.

ANTIPERIODICS, drugs which relieve or cure certain diseases whose attacks occur at regular intervals. The most important of these are cinchona bark and its alkaloids, quinine and arsenic.

ANTIPHLOGISTIC, a term applied to remedies and to regimen opposed to inflammation.

ANTIPHON, a short piece of plain song introduced in church service before a psalm or canticle, to the tone of which it corresponds, while the words are selected so as specially to illustrate and enforce the meaning of the text.

ANTIPHONAL singing is the alternate chanting of a hymn or psalm verse by verse, or by half verses.

ANTIPOPE, a pontiff elected in opposition to one canonically chosen. The first antipopes were Felix, during the pontificate of Liberius (352-366); Ursinus against Damasus (366-384); and Laurentius against Symmachus (498-514). During the middle ages several emperors of Germany set up popes against those whom the Romans had elected, without consulting them. The last attempt to advance a rival pontiff was made by the council of Basel (1431-47) in its struggle with Pope Eugenius IV.

ANTIPYRIN, a white crystalline powder obtained from coal-tar products. It is of great value as a febrifuge, being one of the most serious rivals to quinine yet artificially produced. It is not an antiperiodic, however, and therefore cannot replace quinine in cases of ague or intermittent fever.

ANTIGUA. See **WEST INDIES**.

ANTI-RENTISM, a term applied to the action of a political party which caused considerable disturbance in the State of New York (1843-47), in connection with the non-payment of rent. Large tracts of land had been granted in old colonial days by the Dutch West India Company to its members in New York, who had the title or privilege of a lord "patroon," or protector, and the colony was governed by feudal tenures. The latter were abolished by laws enacted in 1779 and 1785, yet the proprietors managed to form a deed by which rents and dues should be paid as formerly. Associations were formed in 1839 to get rid of these burdens. The matter was ultimately settled by legislation.

ANTISANA, a volcano of the Andes, in Ecuador, about 35 miles south-east of the town of Quito, 19,260 feet high. On its slope, at a height of 12,400 feet, is situated the famous Tambo de Antisana, one of the highest inhabited places in the world. See *Britannica*, Vol. VII, p. 644.

ANTISCII, or **ANTISCANS**, those who live north and south of each other and on opposite sides of the equator; or, more literally, those whose shadows at noon are cast in a direction contrary to those of the inhabitants of the other side of the equator living upon the same meridian.

ANTI-SEMITES, the modern opponents of the Jews in Russia, Roumania, Hungary, and Eastern Germany. In these countries the Jews are numerous and wealthy, and their constantly increasing influence excites popular jealousy. Although it may not seem advantageous for a country to allow excessive political power to pass into the hands of a race avowedly alien, and but little influenced by the sentiment of nationality, still there can be no excuse for the brutal outrages upon innocent individuals that occurred in Russia and Hungary in the years 1881-84. In 1881 an Anti-Semitic League was formed in Germany to restrict the liberty of the Jews, but the emperor interfered to stop the persecution. In Hungary violent anti-Jewish riots occurred at Pesth, Zala, and elsewhere, which were not brought to an end until martial law was proclaimed.

ANTITHERMIN, the popular name applied to a substance derived from coal-tar, and having a very complex chemical composition, introduced by M. Nicot in 1887 as a rival to quinine.

ANTLERS, bony outgrowths from the frontal bones of almost all the members of the deer family. Except in the reindeer they are restricted to the males. They appear as knobs covered with dark



ANTLERS.

skin, from which the bony tissue is developed. In the year after that of birth the antlers remain unbranched, conical "beams." In the following spring, the previous growth having been meanwhile shed, the antlers grow to a larger size, and form their first branch or "brow." Year by year the number of branches or "tines" increases, and more than sixty have been counted on some magnificent heads. The antlers are shed, in many cases at least, annually, after the breeding period. The various types of antlers are used as convenient characters in distinguishing the different genera. See DEER, Britannica, Vol. VII, p. 23.

ANTECI, or **ANTECIANS**, those Antiscii (*q. v.*) who live at the same distance from the equator; the summer of those on one side coinciding, therefore, with the winter of those on the other.

ANTOFAGASTA, a fort in the Chilean territory of the same name. Founded in 1870, it has increased rapidly in importance, owing to the salt-peter deposits in the neighborhood, and to the rich mines of Caracoles, with which it is connected by railway.

ANTOMMARCHI, **FRANCESCO**, physician, a native of Corsica, born about 1780. He was already an anatomist of some celebrity at Florence, when he was induced in 1818 to go to St. Helena as physician to Napoleon. He was received at first with mistrust, but Napoleon ultimately gave him his full confidence and at his death left him 100,000 francs. After his return to Europe he published, at Paris, his famous book, *Les Derniers Moments de Napoléon* (1823). During the Polish revolution he did duty at Warsaw as director of military hospitals. He afterwards went to the West Indies, and died in Cuba, April 3, 1838.

ANTONELLI, **GIACOMO** (1806-1876), cardinal, born April 2, 1806, at Sonnino, a village situated near the Pontine Marshes. In 1819 he went to Rome and entered the Grand Seminary, where he proved himself one of the cleverest students of his time. He gained the favor of Pope Gregory XVI, who named him a *prelato*, and gave him some excellent ecclesiastical appointments. In 1841 Antonelli became under-secretary of state to the

ministry of the interior; in 1844 second treasurer, and in the following year finance minister of the apostolic chambers. Pope Pius IX raised Antonelli to the dignity of cardinal-deacon in 1847, and in 1848 he became president and minister of foreign affairs in a liberal cabinet, which framed the famous *Statuto*, or Constitution proclaimed in 1848. He accompanied the pope in his flight to Gaeta, and returned with him to Rome. At the date of his death, Nov. 6, 1876, the various posts held by Antonelli made him virtually prime minister to the pope.

ANTONINUS, **COLUMN OF**, a pillar standing in the Piazza Colonna of Rome, erected by Marcus Aurelius, probably as a memorial of Antoninus Pius. The style is a mingling of Corinthian and Doric, and upon the pillar are numerous figures representing the victories of Marcus Aurelius.

ANTONIO DE SEDILLA, called "Père Antoine," Spanish clergyman, born in Spain about 1730, died in New Orleans in 1829. In 1779 he was sent to Louisiana as commissary of the inquisition, with power to put it in force in that colony; but the governor, fearing a revolution if the Spanish laws against heretics were applied, seized Père Antoine and his companions and sent them back to Spain. Four years later he returned to New Orleans as priest of St. Louis Cathedral, and his goodness and charity made him the idol of the French population. He gave all he had to the poor, and slept on hard boards in a rude hut that he built under a date-palm tree that stood in his garden. This tree has been the subject of many romances, and it retained life until 1886.

ANTONY OF PADUA, **St.**, born at Lisbon, Aug. 15, 1195, died at Padua, June 13, 1231. On the father's side he was related to Godfrey of Bouillon. He was at first an Augustinian monk; but in 1220 he entered the Franciscan order and became one of its most active propagators. He preached in the south of France and upper Italy. He was canonized by Gregory IX in the following year. According to legend, he preached to the fishes when men refused to hear him; hence, he is the patron of the lower animals.

ANTRAIQUES, **EMANUEL DELAUNAY, COMTE D'** (1755-1812), a great politician, born at Villeneuve de Berg, in the department Ardèche, in 1755. His talents were first displayed in his *Mémoires sur les États généraux* (1788). In 1789, when Antraigues was chosen deputy, he defended the privileges of the hereditary aristocracy. After leaving the assembly in 1790, he was employed in diplomacy at St. Petersburg and Vienna, where he defended the cause of the Bourbons. In 1803 he was employed under Alexander of Russia in an embassy to Dresden. He afterwards went to England, where he acquired great influence with Canning. On July 22, 1812, he was murdered at his residence, near London, by an Italian servant.

ANTS. See Britannica, Vol. II, pp. 94-100. See also INSECTS and INSECTICIDE, in these Revisions and Additions.

ANT-THRUSH, a general name applied to birds of tropical and sub-tropical countries, which feed to a large extent upon ants. The American ant-thrushes (*Formicariidæ*) include a large number of noisy bush-birds, with comparatively sober plumage, while Old-World forms (*Pittidæ*) are brilliant. Both families belong to the order of Passerine birds. See Britannica, Vol. XIX, p. 149.

ANTWERP, a village of Jefferson county, New York. It carries on an extensive trade in iron. Here is situated the Northern New York Conference Seminary of the Methodist Episcopal Church.

ANUPSHAH R, a town of India, in the British district of Bulandshahr, North-west Provinces, on the right bank of the Ganges, 73 miles south-east of Delhi. Population, 14,000.

AONLAGANY, or **AOUNLAH**, a town of India, in the British district of Bareilly, 21 miles southwest of Bareilly, on the route to Aligarh. It has a large bazaar. Population, 11,000.

AORIST (Gr. *aoristos*, "unlimited"), a form of the Greek verb by which an action is expressed as taking place in an indefinite time. It corresponds to the simple past tense in English. The distinction of first and second aorist is purely formal.

APACHES, a tribe of Indians of New Mexico and Arizona. See **INDIANS**.

APAFI, **MICHEL** (1632-1690), a nobleman of Transylvania. He accompanied Prince George II in an expedition against the Poles in 1657, was taken prisoner at the irruption of Tartar hordes under their khan, Mohammed Girai, and in 1661 was chosen prince of Transylvania. He remained faithful to the Ottoman power till the siege of Vienna in 1683. The imperial troops penetrated into the country, and Apafi made a treaty with the emperor by which Transylvania was placed under German protection. At Fogaras, in 1688, the Transylvanian deputies took the oath of fealty to the Hapsburgs as legitimate monarchs of Hungary. Apafi died on the eve of a fierce retributive war begun by his old allies, the Turks.

APATIN, a town of Hungary, in the county of Bacs. Population, 11,047.

APATITE, a scientific and commercial name applied to a mineral mainly consisting of phosphate of lime (bone-earth), which for some years past has been largely used in the preparation of manures. It exists in nearly all geological formations. No mineral substance possesses more influence over the growth of edible plants, such as wheat, barley, oats, turnips, etc. The Island of Sombroero, one of the West Indies, contains as much phosphatic or bony matter as is present in the bones of many millions of oxen. The proposal to employ it as a manure was first made in 1856, and since that time has been enterprisingly carried into effect with happy results, rocks once deemed most barren being thus rendered conducive to the fertility of soils. In Spain apatite is used as a building stone. See *Britannica*, Vol. X, p. 228; Vol. XVI, p. 407; and Vol. XVIII, p. 818.

APEAK, or **APĒEK**, a maritime term signifying the position of an anchor when the cable has been drawn so tight as to bring the ship directly over it. The sailors then say "the anchor is apeak."

APELDORN, a flourishing town of the Netherlands, in the province of Gelderland. There are a number of paper-mills in Apeldorn, most of the paper manufactured being sent to the East Indies. Other industries are agriculture, copper-founding, and the manufacture of blankets and coarse woolen cloth. Population, 16,283.

APELLES, Greek painter. See *Britannica*, Vol. II, p. 363; Vol. XVII, p. 41; and Vol. XVIII, p. 853.

APERIENTS, substances which are employed to cause intestinal evacuations. Many articles of food, such as oatmeal, brown bread, and bran biscuits, and fruits, such as figs, prunes, and strawberries, are used for this purpose; but the term is usually applied to denote certain medicines which act upon the intestines and cause them to expel their contents.

APETALOUS, a term in botany, applied to flowers or the flowering plants, and signifying that they are destitute of petals or corolla.

APHANIPTERA, a family of wingless haustellate insects, to which the flea and chigoe belong.

APHELION, that point in the elliptical orbit of a planet which is most remote from the sun. The opposite point, or that nearest the sun, is styled the perihelion. At the former point the swiftness of the planet's motion is least, and begins to increase, and at the latter its motion is the greatest and begins to decrease. This irregularity of the motion is most remarkable in comets, whose orbits deviate most from the circle. The motion of the comet of 1680 at its perihelion was calculated as 137,000 times more than its motion in aphelion.

APHEMIA, a form of aphasia, in which words are understood and remembered, but the power to utter them is lost.

APHIDES, commonly known as plant-lice. They feed on the juices of plants, and are remarkable for the saccharine secretion which they exude through two small tubes not far from the extremity of the abdomen, and which, known as "honey-dew," is especially sought by ants. See *Britannica*, Vol. XIII, p. 153.

APHONIA, a term used in medicine to signify a more or less complete loss of voice. It is altogether distinct from mutism, as in most cases the voice is not entirely gone, but only more or less lost or suppressed. See *Britannica*, Vol. XXIII, p. 320.

APHRIZINÆ, a sub-family of birds, containing only the *Aphriza virgata*, or surf-bird. They occur along the whole west coast of North America.

APHTHÆ, small whitish ulcers, commencing as vesicles on the surface of a mucous membrane—usually that of the mouth and lips; but they occasionally appear wherever mucous membrane approaches the skin. Infants are liable to an aphthous eruption termed thrush.

APHTHARTO-DOCETÆ, a religious sect who held the belief that the body of Christ was divine and beyond the power of destruction, and that the sufferings of his death were not a reality, but merely so in appearance. The founder of this order was Julian of Halicarnassus. They existed between the sixth and ninth centuries. See *Britannica*, Vol. XIII, p. 796.

APIAN, **PETER** (1495-1552), a German astronomer and mathematician, who originated the mode of finding longitude by lunar observation.

APIOS TUBEROSA, a plant belonging to the natural order *Leguminosæ*. This plant, which is a native of Virginia, has for a century been cultivated in botanical gardens in Europe, and has been recently brought into particular notice through the French traveler Lamare-Picquot, who convinced himself of the value of the tubers as an article of food. They contain more nitrogen than potatoes (4.5 per cent.), and also more starchy farina. The flowers are dark red.

APLANATIC LENS. A lens which causes all the rays of light to converge to a point. See *Britannica*, Vol. XVI, p. 260; and XXIII, p. 144.

APODONTIA: in Mammalogy, the original term applied to the sewellel, or Rocky mountain beaver. *Apodontia* was changed to *Haplodon* by Wagler in 1830. It is the only genus of rodents included in the family of *Haplodontidæ*.

APLYSIA, the sea-hare, a genus of mollusca, of the order of *Tectibranchiata*. Some of the species have the power of throwing out a deep purple liquor, with which the animal colors the water around to a considerable distance, when it perceives any danger.

APNŒA, an abnormal state of the animal organism, during which there is a complete cessation of



SEA-HARE (*Aplysia depilans*).

breathing. It is brought about by too vigorous artificial respiration, as the result of which the blood contains more than the normal quantity of oxygen, and the respiratory nervous center which controls the breathing is unstimulated and in a state of complete rest.

APOCALYPTIC KNIGHTS, a secret society founded at Rome in 1692.

APOCALYPTIC NUMBER, "the mystical number" 666, spoken of in the book of Revelation. As early as the second century, the Church had found that the name Antichrist was indicated by the Greek characters expressive of this number, while others believed it to express a date. The most probable interpretation is that which was current in the days of Irenæus, and which found the number in the word *Lateinos*. The Roman nation, the mightiest pagan power on earth, was the most terrible symbol of Antichrist, and the number 666 appears in the Greek characters which spell the name. Protestant controversialists generally support their views by this interpretation, but apply the prophecy to Papal Rome.

APOCARPOUS FRUITS: in botany, those fruits which are the product of a single flower, and are formed of only one carpel, or of a number of carpels remaining free and separate from one another. The term is derived from the Greek *apo*, implying separation, and *carpos*, fruit.

APOCATASTASIS: in theology, the final restitution of all things, when at the appearance of the Messiah the kingdom of God shall be extended over the whole earth. In a dogmatic sense the name is applied to the future conversion of all men to the faith of Christ, and their consequent admission to everlasting blessedness. This idea was extended by Origen to imply the final conversion and salvation of all individuals, even the devil and his followers not excepted. Origen's belief was held also by Didymus of Alexandria, Gregory Nazianzen, Diodorus of Tarsus, and Theodorus of Mopsuestia, but was emphatically condemned as heretical by the orthodox. It has often appeared since, as in *Scotus Erigena* in the 9th century, and in the 19th century in the so-called "meditation theology."

APOCOPE is derived from a Greek word which means "I cut off." In grammar it is a figure by which the last syllable or the last letter of a word is cut off.

APOCRENIC ACID, one of the products of the natural decay of wood and other plant textures, found wherever lignine or woody fiber is decomposing in soils, etc. As apocrenic acid is soluble in water it follows that rain-water falling on and percolating through soils containing this substance becomes impregnated with it, and hence in many natural waters apocrenic acid is a recognized constituent. Apocrenic acid performs an important function in the growth of plants, as there is every reason to believe that it forms one of the stages through which matter travels from dead plants again into the living tissue.

APOCYNACEÆ, a natural order of dicotyledonous plants, consisting of trees and shrubs, generally with milky juice, having entire leaves and no stipules. The calyx is usually five-partite, persistent, the corolla hypogynous, monopetalous, often with scales in its throat, regular five-lobed, twisted in bud. There are five stamens, which are inserted on the corolla; the anthers adhere firmly to the stigma, to which the pollen is immediately applied. The anthers are two-celled, and open longitudinally; the pollen is granular. The ovaries are two, each one-celled, or one which is two-celled, ovules usually numerous, styles one or two; the stigma is contracted in the middle, and peculiarly

characteristic of the order. The fruit is a follicle, capsule, drupe, or berry, double or single.

APODAL FISHES, fishes destitute of ventral fins. The common eel and the sword-fish are examples of apodal fishes.

APODICTIC, a logical term signifying a judgment or conclusion which is necessarily true; or, in other words, a judgment of which the opposite is impossible. No apodictic judgment can be founded on experience, because experience does not supply the idea of absolute necessity.

APOGEE, properly speaking, the greatest distance of the earth from any of the heavenly bodies. Its application, however, is restricted to the sun and moon, the sun's apogee corresponding to the earth's aphelion, and the moon's apogee being the point of its orbit most remote from the earth. Apogee is opposed to perigee.

APOLLONIUS OF TYRE, the hero of a Greek romance which was very popular in the middle ages, and was translated into all the languages of Western Europe. As early as the eleventh century there was an Anglo-Saxon adaptation of the work, and various English ones appeared. Shakespeare has treated the subject in his drama, *Pericles*.

APOLLYON (Gr., "the Destroyer"), or *Abaddon*, the angel of the bottomless pit. It is to its use in Bunyan's *Pilgrim's Progress* that the name now mainly owes its currency.

APOLOGETICS (from the Greek *apo*, "from," and *logos*, "speech," and hence, "something spoken to ward off attack.") In theological language, that branch of theology which concerns itself with the defense of Christianity. It differs essentially from *polemics*, which has for its object the defense of the special tenets and beliefs of the various sects or denominations composing the Christian Church. The term apologetics originated with the church fathers, though as a distinct branch of theological science it cannot be traced further back than the eighteenth century. But isolated "apologies" appeared from the time of Justin Martyr, who died A. D. 168, downward. Apologetics is treated under two main heads, namely, Natural Theology and Revealed Theology. The name Apologetic Fathers was bestowed on those early Christian writers who addressed "apologies" for the Christian religion to the Jews and the heathen. Some of these writings were mere remonstrances or memorials presented to the Roman emperors against persecution of the Christians. Others were clever refutations of false charges by the enemies of Christianity. Besides Justin Martyr, the most eminent of the apostolic fathers, were Melito, Bishop of Sardis, Tertullian, Origen, and Clement of Alexandria. Among modern theologians who have given special attention to apologetics as a science may be mentioned Descartes, Clarke, Cousin, Ferrier, Gillespie, Paley, Kidd, Chalmers, Bell, Buckland, Flint, Conder, and many of the Bampton lecturers. The Bampton Lectures themselves were established "to confirm and establish the Christian faith, and to confute all heretics and schismatics upon the divine authority of the holy Scriptures, upon the authority of the writings of the primitive fathers as to the faith and practice of the primitive Church," etc., and hence gave a great impetus to the study and spread of apologetics as a branch of theological science. The works of Luthardt, Christlieb, and Godet are held in great esteem. See *Britannica*, Vol. II, pp. 189-193.

APOMORPHIA, an alkaloid prepared from morphia by heating with hydrochloric acid. See *Britannica*, Vol. XVII, p. 793.

APONEUROSIS, an anatomical term for an expansion of strong fibrous tissue, of which there are many examples in the human body.

APOPHYLLITE, hydrated silicate of potash and lime, found in square prisms, white or grayish, tinged with green, yellow, blue or red. See *Britannica*, Vol. XVI, p. 421.

APOPKA, a flourishing town of Florida, near the northeast shore of Lake Apopke, in the middle of the peninsula. It is the center of a fine lumber and pasture region, contains many excellent orange groves, and is the seat of a good academy.

A POSTERIORI, reasoning from experience, or backwards from effect to cause.

APOSTLES, TEACHINGS OF THE TWELVE, the title of a treatise discovered in 1883 by Bryennius, the metropolitan of Nicomedia, and published by him with a Greek commentary. The work is moral rather than dogmatic in tone, and is of great interest for the history of the early Christian Church; but it throws no fresh light on the New Testament canon, and does nothing to settle the Johannine origin of the fourth gospel. The date of the treatise is uncertain; some scholars fix it at 80-100 A. D.; Harnack contends for 120-165; and one hostile critic places it after the *Constitutions*, which are supposed to have been based upon it. English translations include those by Farrar, Spence and Schaff. In 1887 the Johns Hopkins University of Baltimore produced a fac-simile of the original.

APOSTLES' ISLAND, a group of 27 small islands in Lake Superior, first settled by the French in 1680.

APOSTLE SPOONS, silver spoons whose handles end in figures of the Apostles, a common baptismal present in the sixteenth and seventeenth centuries.

APOSTOLIC PARTY, a name given to a party who acted a conspicuous part in the modern history of Spain. The party was composed of fanatical Catholics, who were also absolutists so far as the king consented to be their instrument. They formed themselves (soon after the revolution of 1819) into an Apostolic party, whose leaders were fugitive priests and whose troops were smugglers and robbers. After taking an active part in all the subsequent agitations, they finally merged (1830) into the Carlist party.

APOSTOLIC SUCCESSION, a phrase used in religious matters to denote either one or both of two distinct things, i. e., (1) "the derivation of holy orders by an unbroken chain of transmission from the apostles, and (2) the succession of a priesthood so ordained to the powers and privileges of the apostles." The first is a question of fact to be determined by history and chronology. The second is a matter of opinion or belief, the Roman Catholic Church and the various Protestant Churches differing widely from each other in their views. The Roman Catholic Church styles itself "the Apostolic Church," because the pope is claimed to be the lineal successor of Peter in the papal chair; the Church of England also claims apostolic succession, in view of the ordination of her bishops at Rome before the Reformation, and so also do the Protestant Episcopal Churches of Scotland and the United States. The Scriptural argument is based on such passages as Matt. xviii, 18. The arguments against the theory of Apostolic Succession are many and varied, for which the reader is referred to *The Organization of the Early Christian Churches*, in the Bampton Lectures for 1880.

APOSTROPHE (Gr., a turning away or breaking off), a rhetorical figure by which a speaker changes the course of his speech and addresses, with greater or less emotional emphasis, persons present or absent, the dead, or inanimate objects, either to invoke them as witnesses, or to pity, praise, or blame them. When the figure is well managed it has a thrilling effect, both in oratory and poetry, but

when extravagantly introduced it becomes ludicrous.

APOSTROPHE, in grammar, the omission of a letter or letters in a word, the omission being marked by a comma, as 'tis for it is. The raised comma so employed is also an apostrophe.

APOTHEGM, any truth or maxim expressed in a sententious or pithy manner.

APPALACHEES, a tribe of Florida Indians, from whom Appalachee Bay was named. They were subjugated by the Spaniards and reduced by the English from 7,000 to 400 in 1705, and were soon after absorbed by the Choctaws, to whom they were allied.

APPALACHIAN CLUB, an association of savants whose object is the complete exploration of the Appalachian ranges.

APPALACHIAN INDIANS, a name sometimes applied to a linguistic family of North American Indians, embracing the greater part of the tribes of the southern United States. The term was restricted to a tribe of the Choctaw family, who resided in West Florida, on Appalachee Bay. See *INDIANS, AMERICAN*, *Britannica*, Vol. XII, pp. 822-33. See also *INDIANS, AMERICAN*, in these Revisions and Additions.

APPALACHIAN MOUNTAINS, a comprehensive term for the numerous ranges of high hills—called also the Alleghenies—which traverse the eastern part of the United States, from Maine to the northern borders of Alabama, mostly at a uniform distance from and nearly parallel to the Atlantic coast. The system is about 1,300 miles in length, and with the intervening valleys covers a belt about 100 miles in width. In this chain rise most of the Atlantic rivers of the United States on the easterly side, and of the southern tributaries of the St. Lawrence and the eastern feeders of the Mississippi on the western slope. But it is pierced by the Connecticut, the Hudson, and the Delaware rivers. The following are the chief ridges or separate groups of the Appalachian Mountains, beginning at the north: The White Mountains (or Hills) of New Hampshire present some of the loftiest elevations, Moose Hillock and Washington being respectively 4,636 and 6,285 ft. above the level of the sea. Next the Green Mountains, which, true to the name, almost cover Vermont, attain, in Killington Peak, a height of 3,924 ft.; then come the Adirondacks and the Highlands, on the east of the Hudson, the latter so striking an object to the voyagers on its waters. Immediately beyond that river we find the Catskill Mountains, which, though of inconsiderable length, contain two eminences—Round Top and High Peak—respectively of 3,804 and 3,718 ft.; the Kittatinnies extend from the north of New Jersey as far as Virginia; while nearer the sea the Blue Ridge, stretching from about the same parallel down to North Carolina, is crowned, within the limits of Virginia, by the Peaks of Otter, 4,000 ft high. In North Carolina are the Black Mountains, with the highest summit of the system Black Dome, 6,760 ft.; Mt. Mitchell, 6,701 ft.; Guyot's Peak, 6,661; Sandoz Knob, 6,612; in all about a dozen peaks now known to be higher than Mt. Washington. Lastly, there lie, more to the west, the Alleghenies proper in Pennsylvania and Virginia, and the Cumberland Mountains on the east border of Kentucky and Tennessee. None of these elevations approach the limits of perpetual snow, even in the extreme north. The geology of the Appalachian Mountains presents a great variety, the strata including all formations from the metamorphic rocks to the coal measures. The chain was probably formed at the close of the carboniferous epoch, though the Blue Ridge of Virginia is thought

to be much older. See Britannica, Vol. II, pp. 200, 201.

APPALACHICOLA, a river of Florida, which is formed by the confluence of the Chattahoochee and Flint Rivers, and flows nearly south into a bay of the same name in the Gulf of Mexico. It is about 90 miles in length, and is navigable for steamboats through its entire extent.

APPALACHICOLA, a seaport of Florida situated at the mouth of the Appalachian River, about 80 miles southwest of Tallahassee. Large quantities of cotton are shipped from this port.

APPANAGE, a technical word in French law, in which system it signifies the assignment or conveyance by the crown of lands and feudal rights to the princes of the royal family, that they may be enabled to maintain themselves according to their rank.

APPANOOSE, a southern county of Iowa intersected by Chariton River. Its area is about 510 square miles.

APPARATUS: in physiology, a group or collection of different organs associated in the performance of some function.

APPARATUS SCULPTORIS, or the sculptor's workshop, a constellation appearing very near the horizon in the northern hemisphere, and situated just east of the star Fomihault.

APPARENT, a term used to express a number of important distinctions, especially in astronomy. The apparent magnitude of a heavenly body is the angle formed by two lines drawn from the ends of its diameter to the spectator's eye; this obviously depends upon the distance of the body as well as upon its real magnitude. A planet seen from the surface of the earth seems lower than if seen from the center of the earth; the former is its apparent altitude, the latter its real. Apparent noon is when the sun is on the meridian. The daily and annual motions of the sun in the heavens are both apparent motions, caused by two real motions of the earth.

APPARITIONS (Lat., *apparitio*; lit., "an appearance;" or an appearing;" from *appareo*, "to appear"). In common language an apparition signifies a spectre, a ghost, or a visible spirit. A belief that disembodied spirits could at will revisit the earth has prevailed among all peoples, though the belief generally fails to survive any considerable advance in civilization with its corresponding better acquaintance with physical conditions and natural laws. It is true that even then apparitions continue to be vouched for, but the more intelligent account for these reports by causes other than the supernatural. "Nothing is more certain," says a recent writer, "than that there are conditions of the body when spectral appearances, such as occur to us in uneasy dreams, become sensible to the waking vision. One of these conditions is that of the patient under the disease of *delirium tremens*, who not only hears ideal enemies plotting against his life in adjacent rooms or behind hedges, but thinks he sees them preparing to do him mischief, and has been known to jump overboard of a vessel into the sea, in order to escape the apprehended danger. In such excitements it is, though arising from different causes, that an intending murderer thinks he hears the prince of fallen angels tempting him on to crime, or sees before him a 'dagger of the mind' wherewith to end the life of his victim. There are also instances of spectral illusions traceable to a simply disordered state of the digestive organs. M. Nicolai, an eminent bookseller in Berlin, fell, in the early part of the year 1719, into a depression of spirits, and in that condition neglected a course of periodical bleeding which he

had been accustomed to observe. The consequence was his becoming liable for some months to seeing trains of phantasmata or spectral figures, which moved and acted before him—nay, even spoke to, and addressed him. He was fortunately able, not merely to coolly observe the phenomena, but to describe them in an ample paper which he presented to the Philosophical Society of Berlin. This case may be said to have formed the basis of a theory of apparitions, advanced by Dr. Ferrier, Dr. Hibbert, and others, amounting merely to this, that they are all to be accounted for by peculiar conditions of the organism of the individual sensible of them." But it is equally certain that many well-authenticated cases cannot be explained on any such theory as the foregoing. The Society for Pyschical Research has accumulated a long list of instances of spectral appearances which are absolutely unexplicable except on the theory of supernatural origin. In astronomy the term apparition signifies the first emergence of a heavenly body after it has been in eclipse by a larger body. See Britannica, Vol. II, pp. 202-208.

APPARITORS, officers or public servitors among the Romans. In England they are leaders and messengers of spiritual courts.

APPEAL is the right or process of bringing under the notice of a higher court the judgment of a lower court which the appellant represents as erroneous in fact or law. Formerly this right was a valuable guarantee against political oppression and private extortion—*e. g.* the appeal to royal judges from the courts of feudal barons. Now, the object of appeal is to secure uniformity in the administration of justice. This is effected not merely by the reversal of erroneous judgments which are appealed, but by the knowledge which every judge has of precedents in the supreme court, and that his own judgments are subject to appeal. The term is sometimes used in a general way so as to include writs of error, certiorari, etc. In the United States the distinction between an appeal, which originated in the civil law, and a writ of error, which is of common law origin, is that the former carries the whole case for review by the higher court, including both the facts and the law; while the latter removes only questions of law. An act of Congress of 1875 provides that the judgments and decrees of the circuit courts of the United States shall not be re-examined in the supreme court unless the matter in dispute shall exceed the sum or value of \$5,000, exclusive of costs. No judgment, decree, or order of a circuit or district court, in any civil action at law or in equity, shall be reviewed in the supreme court on writ of error or appeal, unless the writ of error is brought, or the appeal is taken within two years after the entry of such judgment, decree, or order; save in the case of infants, insane persons and imprisoned persons, when the period is two years, exclusive of this term of disability. An appeal from a district court to the circuit court of the United States must be taken within one year. An appeal may be taken from the State courts to the Supreme Court of the United States, in cases involving the validity of a treaty or statute of, or authorized under, the United States; on the ground of repugnance to the constitution, and in certain other specified cases. The law of appeal in Ireland is practically the same as in England; the law of Scotland differs somewhat. See Britannica, Vol. II, pp. 208-210.

APPEARANCE, the presence of a defendant in court, whether voluntary or involuntary. It may be special, when made for particular purposes, or general, when absolute and unconditional. The performance of some act from which an appearance

may be inferred will often suffice, and in civil cases it may be made by an attorney; in criminal cases, especially those of felony, the personal appearance of the accused is requisite.

APPEL, THEODORE, an American clergyman, born in Easton, Pa., April 30, 1823. He graduated at Marshall College in 1842, and was ordained in the Reformed Church. In 1851 he became professor of mathematics, physics and astronomy in Marshall College, and from 1877 to 1886 he was general superintendent of home missions for the eastern part of the Reformed Church. From 1881 to 1886 he edited the "Reformed Missionary Herald," and he has published *Recollections of College Life*.

APPENDAGES, parts of plants regularly arranged around other parts. Bones of vertebrated animals and limbs of articulates are all appendages to their respective centers.

APPENDICULARIA, a genus of Ascidians, and type of a small but important order, the members of which retain the larval vertebrate characters which are lost in the more or less degenerate adult sea-squirts. Appendicularia is a minute free-swimming form with a tail, and closely resembles an Ascidian larva; but, unlike it, retains its vertebrate structure throughout life.

APPERT, FRANÇOIS, a French technologist, the inventor of a method of preserving meat, vegetables and other articles of food without the use of salt or other chemical application.

APPIN, a beautiful coast district of Argyllshire, Scotland, extending along the east shore of Loch Linnhe. It is the country of a branch of the Stewarts, whom Hogg celebrated in verse, and of whom a history was published at Edinburgh in 1880.

APPLAUSE, a striking on the floor or clapping of the hands to express approbation; also a confused hum, a shout, the word *encore*; or, among the English, "hear, hear."

APPLE (*Pyrus malus*), one of the most widely diffused of fruit trees, and for the general fruit supply of the temperate zone the most valuable of all. There are several thousand varieties cultivated, and new ones are being continually produced. See *Britannica*, Vol. II, p. 211.

APPLE, THOMAS GILMORE, an American educator, born in Easton, Pa., Nov. 14, 1829. He graduated at Marshall College in 1850, and was ordained in the German Reformed Church in 1853. In 1865 he became president of Mercersburg College, in 1871 professor in the Lancaster Theological Seminary, and in 1878 president of Franklin and Marshall College.

APPLES OF SODOM, a fruit which is supposed to grow on the borders of the Dead Sea, and which was once popularly believed to dissolve into dust and ashes when plucked. The "apples of Sodom" are identified by Robinson as the fruit of the *Asclepias gigantea*, which the Arabs call *osher*. Tacitus and Josephus make mention of the tree, and it has been described by several modern travelers.

APPLETON, a city of Wisconsin, county-seat of Outagamie county, situated on the Lower Fox River, about thirty miles above Green Bay. It is the headquarters of an extensive trade by rail and river, and the center of numerous important manufacturing interests. Appleton is the seat of Lawrence University and of Appleton Collegiate Institute. Population in 1890, 11,825.

APPLETON, CHARLES EDWARD, D. C. L., born at Reading, England, March 16, 1841, died at Luxor, in Upper Egypt, in 1879. He was educated at Oxford and in Germany. His reading was wide and varied, but he wrote little. He took a lively

interest in the movement for the "endowment of research," and founded in 1869 the "Academy," whose special feature is its signed articles.

APPLETON, DANIEL, an American publisher and founder of the publishing house of D. Appleton & Co., New York, born in Haverhill, Mass., Dec. 10, 1785, died in New York city, March 27, 1849. His first publishing venture was a collection of religious extracts entitled *Daily Crumbs from the Master's Table*, and later *A Refuge in Time of Plague and Pestilence*. In 1838 his eldest son, W. H. Appleton, was taken into partnership, and in 1848 Daniel Appleton retired, and his second son, John Adams Appleton, became a member of the firm. Subsequently three other sons, Daniel Sidney, George Swett, and Samuel Francis, became partners. The publications of the house now extend over the entire field of literature, and it is one of the best known firms in the world. The present members of the firm are the son, William H., and the grandsons, William Worthen, Daniel, and Edward Dale Appleton.

APPLETON, DANIEL SIDNEY, an American publisher, born in Boston, Mass., April 9, 1824, died Nov. 13, 1890. He graduated at Yale College in 1843, and after studying law for a year went to London as the agent of the publishing house of D. Appleton & Co., which had been founded by his father, Daniel Appleton. He returned home in 1849, and became a member of the firm, having for his special department the manufacturing details of book-making. His particular gifts were the making of estimates, and dealing readily with other important matters that required an active mind and sureness of judgment, and up to the time of his death he was an important factor in the affairs of the house.



D. S. APPLETON.

APPLETON, JESSE, an American educator, born in New Ipswich, N. H., Nov. 17, 1772, died in Brunswick, Me., Nov. 12, 1819. He graduated at Dartmouth, studied theology, and was ordained a congregational minister in 1797. He became president of Bowdoin College in 1807. His writings were collected and published in a two volume edition, entitled *The Works of Jesse Appleton, D. D.* (Andover, 1836).

APPLETON, JOHN HOWARD, an American chemist, born in Portland, Me., Feb. 3, 1844. He graduated at Brown University in 1863, and the following year became instructor, in chemistry, and in 1872 professor of chemistry. He has published *The Young Chemist* (1878); *Qualitative Analysis* (1878); *Quantitative Analysis* (1881); and *Chemistry of Non-Metals* (1884).

APPLETON, JOHN JAMES, diplomatist, born in France about 1789, died in Rennes, France, March 4, 1864. He graduated at Harvard in 1813. During Monroe's administration he was secretary of legation at Brazil, and later chargé d'affaires for the United States at Madrid and at Stockholm.

APPLETON, SAMUEL, an American merchant and philanthropist, born at New Ipswich, N. H., June 22, 1766, died July 12, 1853. He engaged in cotton manufacture in Boston in 1794, and became very wealthy. He gave a large donation to Dartmouth College, and annually contributed liberally to char-

itable societies. At his death he left \$200,000 to be applied to religious, educational and charitable purposes.

APPLETON, THOMAS GOULD, an American author, born in Boston, Mass., March 31, 1812, died in New York city, April 17, 1884. He graduated at Harvard in 1831. Besides being an author he was an amateur painter of superior merit, and his water-color sketches of scenes on the Nile are unusually good. Among his best works are *Nile Journal* (1876); *Syrian Sunshine* (1877); and *Windfalls*.

APPLETON, WILLIAM, an American merchant, born in Brookfield, Mass., Nov. 16, 1786, died in Longwood, Mass., Feb. 20, 1862. For fifty years he was a successful merchant in Boston, was president of the U. S. branch bank, and of the Massachusetts general hospital. From 1851 to 1855 he was a member of Congress, and again in 1861 in the special session.

APPOGGIATURA, a melodic ornament much used in both vocal and instrumental music.

APPOINTMENT: in law, the exercise of certain powers reserved in common law conveyance, such as powers jointuring, selling, charging land with payment of money, etc. An appointment may be made either by deed or will, but is merely ancillary to the instrument in which the power of appointment is reserved, and from which the party in whose favor the appointment is made for most purposes derives his title.

APPOINTMENTS: collectively, all the various articles of equipment and furniture for a ship. In like manner the appointments of a soldier, especially a trooper, comprise many miscellaneous accoutrements which can come under no other name.

APOLLINARIUS, the Younger, Bishop of Laodicea in Syria (362), and one of the warmest opponents of Arianism. It was chiefly as a controversial theologian, and as the founder of a sect, that Apollinarius is celebrated. He maintained the doctrine that the *logos*, or divine nature in Christ, took the place of the rational human soul or mind, and that the body of Christ was a spiritualized and glorified form of humanity.

APOMATTOX, a river of Virginia, about 150 miles in length, and navigable for large vessels for twenty miles from its mouth. It is a branch of the James river and rises in Appomattox county.

APOMATTOX COURT-HOUSE, a village in Virginia. Gen. Lee here surrendered the Army of Northern Virginia, together with a large amount of public property, arms and artillery to Gen. Grant, April 9, 1865. This surrender closed the war.

APPONYI is one of the oldest of the noble families of Hungary.

APPORTIONMENT (Lat. *ad*, "to," and *portio*, "share"): in law, dividing into portions or shares; the equitable distribution or division of property among the persons entitled to share in such division, in proportion to their respective rights or claims. The question of apportionment arises in cases where a lien attaches to several pieces of land, the rule being that the several owners must bear the burden of the encumbrance in proportion to their respective interests. It also arises in cases where there is a failure or lapse of title in portions of property leased under one contract, the rent being apportioned between the new owners; unless the lessee is deprived of the use of that portion of the property as to which the title changes, in which case an apportionment would be made of the amount of rent which the lessee is required to pay for that portion of the property of which he retains the use. Where mortgaged land is sold in parcels, the sales being contemporaneous, the mortgage

debt is apportioned among the several purchasers. Where a life-tenant of mortgaged property is obligated to pay the interest of such mortgagee during his life, and it becomes necessary or desirable to pay the mortgage, such life-tenant would be required to pay so much of the mortgage debt as would be equivalent to his obligations to pay interest during life. This would be apportioned according to his probabilities of life, based on the Northampton table. Apportionment also arises in contracts of employment, where a servant contracts to work for a year for a specified salary, and dies before the expiration of the year. His representatives would be entitled to an apportionment of his wages or salary according to the period of actual service. The term apportionment also applies in the United States to the distribution of representation in the House of Representatives, and in the different State legislatures. In the former case Congress makes a fresh apportionment after each census, the proportion under the census of 1880 being one representative to each 154,325 of population, or 325 in all. This principle of apportionment of representation according to population has recently been adopted by most of the American Republics, and by some of the European governments.

APPORTIONMENT BILL, a bill which determines the number of members that each State shall send to the House of Representatives. A new one is made after each general census.

APPOSITION, a term in grammar signifying the annexing of one substantive to another, in the same case or relation, in order to explain or limit the first.

APPRAISEMENT: generally, a valuation of property made by an appraiser, but, in legal application in England, the term is used to signify a valuation of goods taken under a distress for rent. The corresponding proceeding in Scotland is known under the term *appreciation*, which has been defined as the valuing of *poinded* or *distrained* goods.

APPREHEND: in criminal law, to arrest or seize, in virtue of a warrant or other legal authority, an offender taken in the act, or one who is suspected.

APPRENTICESHIP. The essential features of the system of apprenticeship are that the apprentice is bound to serve the master for a term of years, and that on his part the master is bound to board and clothe him, and to teach him a trade or handicraft agreed upon. The laws on the subject vary somewhat in the several States, but in most of them the master is also bound to allow the apprentice a certain amount of attendance at school. The apprenticeship system was transplanted to America with the early laws and customs of the colonies, but was never as strong an institution here as in England. This was probably due to the fact that there were no corporations in this country precisely similar to the guilds of Europe, it being through the guilds that the apprenticeship law there was strictly enforced. The division and sub-division of trades consequent upon the introduction of the factory system of doing work, and the introduction of steam-power and machine tools, rendering half-skilled labor available, gradually undermined the system. Not that the need of skilled hand-labor is diminished—on the contrary, greater perfection of products is demanded now than formerly—but in the great manufacturing the work is so divided up that usually skill in one simple process is all that is required of one man, while the whole is placed in charge of the few who have executive ability to direct mechanical skill. The introduction of the public school system, affording as it does increased facilities for education, and thus opening the way to the profes-

sions and mercantile life, did much to render apprenticeship distasteful to young men. A recent examination of workshops, mills, and manufactories of various kinds in the larger cities of the United States showed that the old system has almost died out. In the smaller cities and in the towns and villages the old system has been retained, though greatly modified. Attention has been turned to a new system of educating mechanics by the establishment of trade-schools. The most prominent of these is the School of Mechanic Arts of the Institute of Technology, Boston, Mass., established Aug. 17, 1876. It has been followed by the Mechanical Handiwork Schools of the Spring Garden Institute, Philadelphia, and the Manual Training-School of Washington University, St. Louis, Mo., the Mechanic Art Instruction of the State College of Maine, and the Department of Mechanic Arts, Purdue University, Lafayette, Ind. Trade-schools have also been established in New York and other cities. The statutes of the several States governing the contract of apprenticeship are substantially like those of England. See *Britannica*, Vol. II, p. 212.

APPROACHES, the sunken trenches or excavated roads constructed by besiegers. In some cases the approaches are not actual trenches, but merely paths shielded by a wall of sand-bags, fascines, gabions, wool-packs, or cotton bales.

APPROBATE and **REPROBATE**, a technical expression in the law of Scotland, which signifies one of those rules of justice which commend themselves by their reasonable logic, and which are to be found in all enlightened systems of jurisprudence. It simply means that no one can be permitted to approbate and reprobate—that is, to accept and reject the same deed or instrument. The analogous doctrine in the law of England and the United States is called election. It is chiefly in the case of wills and other testamentary dispositions that this legal doctrine most frequently arises in practice, although it extends to all other writings, deeds and instruments.

APPROPRIATION is making something the property of a particular person, or setting aside for a special use. The word has various important applications in law. (1.) Where so much iron or oil, for instance, has been sold, but the quantity is not separated by weight or measurement from a larger mass, or where a certain proportion is sold, but the exact quantity or price is not known until measurement, etc.; in such cases the risk of the goods perishing and the substantial ownership do not pass to the buyer. Before delivery, however, the goods may be appropriated so as to produce this effect. (2.) When a bill is drawn against goods, and the bill of lading is sent as a security to the acceptor, the goods are said to be appropriated to the payment of the bill. (3.) Where several debts are due to the same creditor, the debtor, in making a payment, may appropriate it to a particular debt. If he does not do so the creditor may apply it as he pleases. Where the parties say nothing the law appropriates the payments in order of date. In church law, an appropriator is the owner of a benefice. In constitutional law, appropriation means the principal that "supplies granted by the government are only to be expended for particular objects specified by itself."

APPROPRIATION CLAUSES were an important feature in measures repeatedly proposed and as often rejected, in connection with the agitation and legislation for the commutation of tithes in Ireland between 1833 and 1838. After the passing of the imperfect Commutation Bill of 1833, and the Irish Church Temporalities Bill, the House of Commons passed in 1835 a resolution that the sur-

plus revenues of the Irish Church, thus set free, should be "appropriated" to the "moral and religious education of the whole people, without distinction of religious persuasion." A bill for commutation of tithes recognizing this principle was passed by the Commons in 1836, but rejected by the Lords. A last attempt was made in 1838 to include appropriation clauses, but was defeated; and a government measure, commuting tithes into a rent-charge of three-fourths of their amount, was passed without the debated clauses.

APPROPRIATION OF PAYMENTS, the payment by a debtor of one debt among many, the choice being allowed the debtor if the payment is voluntary.

APPROVER, or **PROVER**: in the law of England, a person who has been an accomplice in the perpetration of a crime, but who is admitted to give evidence against the prisoner. The modern practice is to admit accomplices to give evidence for the prosecution, or, as it is said, to give state's evidence, upon an implied promise of pardon, on condition of their making a full confession of the whole truth.

APPROXIMATE, that arrangement of teeth in jaws, as in the human species, which allows of no intervening space.

APPROXIMATION, a term commonly used in mathematical science to designate such calculations as are not rigorously correct, but approach the truth near enough for a given purpose. The solution of equations beyond the fourth degree can be got only by approximation.

APPUI, a French word meaning "support," and is generally used as a military term denoting a definite point where troops are formed.

APPURTENANCES: in law, a word signifying something that forms part of a principal thing. This word is often met with in real estate transactions, as the "appurtenances" of property that has been sold, which mean all the conveniences accompanying the land. Land itself is not considered as an appurtenance.

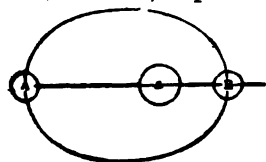
APRAXIN, **STEVEN F.** (1702-1758), a Russian general, who served during the Seven Years' War, and obtained a victory over Frederick the Great.

APRAXIN, **FEDOR**, a distinguished Russian admiral, born in 1671, died in 1728. When hardly twelve years of age he entered the service of Peter the Great. In 1699 he took part in the first maneuvers of the Russian fleet on the Sea of Azof. He became powerful and influential at the court of the Czar. In 1713, with a fleet of 200 vessels, he sailed along the coast of Finland, took Helsingfors and Bargo, and defeated the Swedish fleet.

APRICOT (*Prunus armeniaca*), a species of the same genus as the plum. The apricot was introduced from Asia into Europe in the time of Alexander the Great, and since the days of the Romans has been diffused over all its western countries. It has been cultivated in England since the middle of the sixteenth century. See *Britannica*, Vol. II, p. 214; XII, p. 269.

APRON, a word employed both in military and shipping affairs. The apron of a cannon is a piece of sheet lead, which covers the vent. In ship-building the apron is a piece of curved timber fixed just above the foremost end of the keel; its chief use is to fortify the stem and connect it more firmly with the keel. Apron is also the name given to the plank-flooring raised at the entrance of a dock a little higher than the bottom, to form an abutment against which the gates may shut. It is also a term commonly applied to a half-girdle or garment which covers the front of the person, and is used by workmen and others for purposes of cleanliness.

APSIDES, the two extreme points in the orbit of a planet—one at the greatest, the other at the least, distance from the sun. The term is also applied in the same manner to the two points in the orbit of a satellite, one nearest to, the other farthest from, its primary. A right line connecting



APSIDES.

these extreme points is called the *line of apsides*. In all the planetary orbits this line has no fixed position in space, but makes a forward motion in the plane of the orbit, except in the case of the planet Venus, where the motion is retrograding. This fact in the orbit of the earth gives rise to the anomalistic year. In the annexed figure, A and B are *apsides*, or points of greatest and least distance of a planet from the sun, the orbit of such planet being an ellipse with the sun in one of the foci, as at S.

APSLEY, a river of Australia in New South Wales; also a strait between Melville and Bathurst Islands, on the north coast of Australia. Its length is 48 miles, with a width varying from half a mile to four miles; the depth of its channel is from eight to twenty-four fathoms.

APTERA, or **APTEROUS INSECTS**, insects without wings. In the Linnæan system the *Aptera* form an order of insects, but more important distinctive characters being found to belong to the insects included in it, it is no longer retained as an order or principal division in the most improved entomological systems.

APTERAL, without lateral columns; the Greek temples were usually *apteral*.

APTERYX. See *Kiwi*, *Britannica*, Vol. XIV, p. 104.

APTHÆ, small vesicles formed of the superficial layer of a mucous membrane elevated by fluid secreted by the latter. They are usually whitish in color, and the fluid may be serous or puriform. At the end of a few hours or days the apthous vesicle bursts at its summit and shrivels up, exposing an inflamed and painful patch of the mucous membrane. The most common site of apthæ is the mucous membrane of the lips and mouth, but they occasionally appear wherever the mucous membrane approaches the skin. In ordinary cases of apthæ a preparation of borax or some astringent wash generally effects rapid cure.

AQUA (*Lat.*, water): in its purest state a compound of oxygen and hydrogen. Sea, river, spring rain and distilled water are its chief varieties.

AQUA FORTIS: literally, strong water. It was the term used by alchemists to denote nitric acid, and is still the commercial name of that acid.

AQUAMARINE, a name sometimes popularly given to beryl. Some green and blue varieties of topaz have also been styled aquamarine. See *BERYL*, *Britannica*, Vol. III, p. 613.

AQUA REGINÆ: literally, queen's water. It is a mixture of concentrated sulphuric acid (oil of vitriol) and nitric acid, or of sulphuric acid and niter. Either mixture evolves much fumes, and may be used as a disinfectant. Similar mixtures are sold under the name of everlasting disinfectants.

AQUA REGIS, or **REGIA**, the common name applied to a mixture of one part of nitric acid and two, three or four parts of hydrochloric acid. The general proportion is one to two. The term *aqua regia* was given to the mixture from the power it possesses of dissolving gold, which is the *king of the metals*.

AQUARIUS, the water-bearer, the eleventh sign

of the zodiac, through which the sun moves in part of the months of January and February. It is also the name of a zodiacal constellation whose position in the heavens may be found by producing a line in a southerly direction through the stars in the head of Andromeda and the wing of Pegasus.

AQUATIC plants and animals are those that live either wholly or partly in water.

AQUATINT, a mode of etching on copper, by which imitations of drawings in Indian ink, bistre and sepia are produced. On a plate of copper a ground is prepared of black resin, on which the design is traced. The process of aquatint has fallen into comparative disuse. See *Britannica*, Vol. VIII, p. 444.

AQUA TOFANA, a poisonous liquid, which was much talked of in the south of Italy about the end of the seventeenth century. Its invention is ascribed to a Sicilian woman named Tofana. She sold the preparation in small vials, inscribed "Manna of St. Nicholas of Bari." The poison was especially sought after by young wives who wished to get rid of their husbands. The number of husbands dying suddenly in Rome in 1659 raised suspicion, and a society of young married women was discovered presided over by an old woman named Spara, who had learned the art of poisoning from Tofana. Spara and four other members were publicly executed. Tofana had taken refuge in a cloister, but at last (1709) was dragged from it and put to torture, when she confessed having been instrumental in causing 600 deaths.

AQUA VITÆ (*water of life*), a common term applied to ardent spirits. During the alchemical epoch brandy and distilled spirits were much used as a medicine. It was considered a cure for all disorders, and even got the credit of prolonging life. It was naturally christened *Aqua Vitæ*.

AQUAVIVA, general of the Jesuits, descendant of an old Neapolitan family, born in 1543, died at Rome, Jan. 31, 1615. He entered the order at the age of twenty-five, and became its head thirteen years later. His principal work was the organization of the body, and his ordinance regulating the studies of the Jesuits became famous under the title "Ratio Studiorum" (Rome, 1586). His opinions are still regarded as authoritative by the order.

AQUEDUCT, a term perhaps most commonly understood to mean a bridge of stone, iron or wood, for conveying water across a valley. But a pipe, an open channel, or a tunnel through a mountain is equally an aqueduct, if its function is to convey water from one place to another. All great aqueducts have been constructed for the purpose of conducting water from some more or less distant source to large towns or cities. The principal American aqueducts are the Iron Pipe Aqueduct across the valley of the Wissahickon, in Philadelphia, Penn.; the submarine aqueduct or tunnel for supplying Chicago; the Cleveland Lake Tunnel; the aqueduct to supply the city of Baltimore with water from the great falls of the Gunpowder River; the New Croton Aqueduct of New York; and the Suspension Canal Aqueduct at Pittsburgh, Penn. Aqueducts were extensively used in the Roman empire, and many of these ancient structures still remain. See *Britannica*, Vol. II, pp. 219-30.

AQUEOUS HUMOR, the fluid which occupies the space in the eye between the back of the cornea and the front of the lens. It consists of water, with about the fiftieth of its weight made up of chloride of sodium and extractive matters held in solution. Anatomists are not agreed as to the spring of this watery secretion, and are inclined to doubt the existence of a special secreting membrane, which used

to be taken for granted. However, a layer of delicate epithelial cells, which exists at the back of the cornea, is probably concerned in its formation. It is rapidly re-secreted if allowed to escape by any wound in the cornea, and in some cases is formed in such quantity as to cause dropsy of the eye (hydrophthalmia).

AQUEOUS ROCKS: in geology, every layer which forms a portion of the solid crust of the earth is called a rock; it matters not whether its particles are incoherent, like soil or sand, or compacted together like limestone and sandstone. To all alike, irrespective of popular usage, the geologist applies the term rock. In this wide sense the rocks of the earth's crust are either igneous or sedimentary. These sedimentary rocks have an aqueous origin, with the exception of a very limited number, like drift-sand, which are brought into their present position by the action of the wind. Unlike the igneous rocks, the material of the aqueous rocks has evidently been brought from a distance. They owe their origin to some older rock, whose decomposition or destruction has afforded the materials.

AQUIFOLIACEÆ, a natural order of dicotyledonous plants, of which the common holly is best known, and the only species which is a native of Europe. The order, however, contains more than 100 species, the greater part of which are natives of America, and many of them belong to the tropical and sub-tropical parts of it.

AQUILARIACEÆ, a natural order of dicotyledonous or exogenous plants, all of which are trees with smooth branches and tough bark, natives of the tropical part of Asia. The leaves are entire, the perianth leathery, turbinate, or tubular, its limb divided into four or five segments, the stamens usually ten, the filaments inserted into the orifice of the perianth, the ovary two-celled with two ovules, the stigma large, the fruit a two-valved capsule, or a drupe. The order is chiefly interesting as producing the fragrant wood called aloes wood.

ARABIA. Area, 1,219,000 square miles. Population (roughly estimated in 1891), about 5,000,000. For history and descriptive characteristics, see *Britannica*, Vol. II, pp. 235-265. This great peninsula has never been under any single direct government. One part is occupied by the Turkish vilayets of Hedjaz and Yemen, and on the Persian side is the vilayet of Bagdad, with the Gulf littoral of El Hasa. The Sinai Peninsula, and the Midian coast of the Red Sea down to a point opposite to Kosseir, are under the dominion of Egypt. The Oman, under the Sultan of Muscat, is independent; and so also are several unimportant communities on the south coast, and Jebel Shammar and Nejd in the center. There are sundry peoples virtually independent on the borders of China and Siam, and in the southern Malay Peninsula, though for the most part they acknowledge the suzerainty of the monarchs of China and Siam. The population continued to be Semitic, but while the north is occupied by Arabs and Ishmaelites, the south is still held by Joctanides (the Himyarites of the ancients), who speak a language of their own. The inhabitants are either Bedouins (Bedawi) or "wanderers," or "Hadesi," settled in towns and villages. With the exception of a few Jews, they are Mohammedans. At the present day it is divided among several powers. Turkey claims possession of the maritime district El Hasa on the Gulf of Persia, and of the vilayets of Hedjaz and Yemen on the Red Sea. Mecca and Medina, the sacred cities of the Mohammedans, and the seaport of Jedda, are in Hedjaz; whilst Sana and the ports of Hodeida and Mokha are the principal places in Yemen. Egypt holds the Sinai Peninsula and the old Land of Mid-

ian, stretching southward from the Gulf of Akaba. England, besides occupying the stronghold of Aden and the island of Perim, at the mouth of the Red Sea, owns the Kuria Muria Islands on the south coast. The only independent native states of importance are Oman, with Muscat for its capital, in the southeast; and Jebel Shammar (capital Hail) and Nejd, the country of the Wahabis, in the interior. Hadhramaut, on the south coast, is split up into numerous little states or principalities.

ARABIAN NIGHTS' ENTERTAINMENTS. See *THOUSAND AND ONE NIGHTS*, *Britannica*, Vol. XXIII, p. 316.

ARABIAN NUMERALS, or **CIPHERS**, the characters 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. Properly they should be styled Hindu or Indian numerals; for the Arabs borrowed them, with the decimal system of notation, from the Hindus. They were not in general use before the invention of printing. Accounts continued to be kept in Roman numerals up to the sixteenth century.

ARABINE is the essential principle of gum-arabic, and is obtained pure by adding alcohol to a solution of gum-arabic.

ARABI PASHA, AHMED EL, Egyptian soldier and revolutionist, born in the province of Charkich, in Lower Egypt, about 1837. He entered the army at an early age. Subsequently having been dismissed from the service, he became a student at the Mohammedan College of Azhar in Cairo, where his talents won him a high reputation. He was restored to the army by Ismail Pasha in 1863, was employed in the war against the Abyssinians, and on his return to Cairo was made lieutenant-colonel. At this time there was great discontent among the soldiery and people generally, with the foreign control of Egyptian finances, and Arabi took a prominent part in a movement for resistance. Through the influence of foreign bondholders, the Sultan deposed Ismail Pasha in favor of Tewfik Pasha, who placed the finances in the hands of French and English commissioners. Under this control taxation was reduced, five-sixths of the army dismissed, and the profitable offices given to European officials. The discontent of the people and of the army increased. Arabi, as leader of the army, demanded increase of numbers and pay, and he and his regiment were ordered to leave Alexandria. This he refused to do, and was protected from court-martial by an uprising of the army, which forced the dismissal of the ministry and the appointment of a commission to investigate grievances. As a result Arabi's policy was triumphant, causing the deposition of Riaz Pasha and the appointment of a favorable ministry. His title was changed from Arabi Bey to Arabi Pasha, and many of his partisans were promoted. Arabi Pasha now demanded a constitutional government in Egypt, doubtless with a view to the ultimate abolition of the English-French control. Disputes of various kinds arose, and English and French iron-clads were ordered to Alexandria to demand his removal. Matters were brought to a crisis by a massacre, resulting from a street quarrel, and Arabi left Cairo for Alexandria, where he entrenched himself against attack. The city was bombarded by the English fleet and he retreated, leaving the city in flames. The war ended at Tel-el-Kebir, and Arabi was arrested by Sir Garnet Wolseley in Cairo. Being charged with treason, he employed British counsel and prepared for defense on the grounds that he had acted under the direction of the Sultan. He pleaded guilty, however, under an arrangement with the British ambassador, by which his sentence was commuted to exile on full pay. He was taken to Ceylon in December, 1882.

ARACARI, a genus of birds closely allied to the toucans, differing from them chiefly in a smaller bill. The prevailing color of their plumage is green, often varied with brilliant red and yellow. Like the toucans, they are natives of the warm parts of South America.

ARACAN, a city of British Burmah, and until lately the capital of the province of the same name. It is now interesting only for old associations. The most striking memorial of antiquity is its dilapidated fort, consisting of three concentric walls, such as only a powerful state could have constructed. Beyond the limits, too, of this citadel the town, as a whole, seems to have been surrounded by a circumvallation of nine miles in length, composed partly of steep and rugged eminences and partly of artificial works. Population, 10,000.

ARADUS, a city of ancient Phœnicia, which was destroyed in the seventh century by the Moslems.

ARAF, the purgatory of Islam—the place between paradise and hell. Its position has not been defined with the usual exactness of Mohammed, but it is undoubtedly a place of purification by fire.

ARAGO, EMMANUEL, an eminent French Republican, born in 1812. He was minister to Berlin in 1848, a member of the Provincial Government in 1870, and of the national assembly of 1871.

ARAGO, JACQUES E. V. (1790–1855). In 1817 he accompanied the expedition under Freycinet on a voyage around the world, to which and to the blindness with which he was subsequently afflicted we owe two very pleasant books of travel: *Promenade Autour du Monde* (Paris, 1838) and *Souvenirs d'un Aveugle; Voyage Autour du Monde*. In 1849 he visited California in an unsuccessful quest for gold, and on his return to France published his *Voyage d'un Aveugle en Californie*.

ARAGONITE, carbonate of lime crystallizing in hexagonal prisms and resembling calcareous spar in its composition. Satin-spar is one variety. See BRITANNICA, Vol. XVI, p. 398.

ARAGUA, a former province of Venezuela, so named from its principal river. It is noted for the remarkable fertility of its soil. At an elevation of 3,000 feet fields of wheat and plantations of coffee and sugar may often be seen growing side by side.

ARALIA, a genus of plants of the order *Araliaceæ*, to which the English ivy belongs.

ARALIACEÆ: in botany, a natural order of exogenous plants, found in almost all parts of the world, in many respects resembling umbellifers, from which they differ in their ovary having more than two cells and by their tendency to form a woody stem. There are 21 genera and 160 species, and though the herbage of some is used for food and the root of some is said to be useful medicinally—as sarsaparilla and spikenard—their chief value is decorative.

ARAMÆA (from the Hebrew word *Aram*, signifying the highland, in opposition to the lowland of Canaan), includes the whole of the country situated to the northeast of Palestine. Its boundaries, though not rigorously defined, were as follows: North, by Mount Taurus; east, by the Tigris; south, by Arabia; and west, by Arabia, Phœnicia and Lebanon. It embraced the countries known to the Greeks by the various names of Syria, Babylonia and Mesopotamia.

ARAMIDÆ, a family of birds forming a link between the cranes and the rails. The family, consisting of the single genus *Aramus* is confined to the warmer parts of America. In habits and general appearance they closely resemble the rail.

ARANGOES, a kind of beads formerly imported into Africa from Bombay as an article of trade.

They were generally cylindrical and made of rough carnelian.

ARANSAS, a small river in Baxar county, Texas, rising on its southeast border, and emptying into Aransas bay.

ARANSAS BAY, ARANSASO, or ARANZAZUA, a bay on the coast of Texas, north of Corpus Christi bay.

ARANY, JÁNÓS, next to Petöfi, the most distinguished of modern Hungarian poets, born at Nagy-Szalonta in 1819, died in 1882. When the Kisfaludy Society of Pesth offered a prize for the best humorous poem, Arany sent in anonymously his *Az elveszett Alkotmány* (The Lost Constitution of the Past). He was successful and soon became a popular favorite. In 1848 appeared his *Murany Ostroma* (Conquest of Murany).

ARAPAHOE, or ARRAPAHOE: a tribe of North American Indians. See INDIANS.

ARAPAIMA, the largest known fresh-water fish in the world. It is found in the rivers of South America, and in the Rio Negro it sometimes attains a length of 15 feet and a weight of 400 pounds. It is taken with the harpoon and is highly esteemed for food. In the salted state it has begun to form an article of commerce, and is conveyed in large quantities to Para. The genus *Arapaima* belongs to the family *Clupeoidæ*. About six species are known.

ARAPILES, a village of Spain, the scene of the "battle of Salamanca," July 22, 1812, in which the French, under Marmont, were defeated by Wellington.

ARAUJO D' AZEVEDO, ANTONIO, afterward Count da Barca, born at Sa, in Portugal, in 1754, died in 1817. In 1787 he was appointed Portuguese ambassador to the Hague. After the peace of Amiens he was sent as ambassador to St. Petersburg. In 1803 he was recalled to Lisbon to assume the office of Secretary of State, and in 1806 he obtained the highest political dignity in the kingdom. The royal family, which Bonaparte had formally dethroned in his victorious proclamation, emigrated to Brazil. Araujo embarked also, taking with him a complete printing apparatus, his mineralogical collection, arranged by Werner, and all necessary chemical instruments. During the first years of his residence in the New World he devoted himself assiduously to scientific and literary pursuits, founded a school of medicine and chemistry, introduced the cultivation of tea, an improved machine for sawing wood, and established a porcelain manufactory.

ARAURE, a town of Venezuela, South America, situated in lat. 9° 17' N., long. 69° 28' W., 60 miles E. N. E. of Trujillo, in a region noted for its fertility in the production of cotton, coffee, cattle, etc. Population 10,000.

ARBALEST, or Cross-Bow, a weapon whose recognized position among military arms may be dated from about the period of Richard I. The smaller varieties of arbalest were bent by pressing the hand on a small lever called the "goat's foot." Sometimes ordinary arrows were used with the arbalest, but more usually arrows of a shorter and stouter kind called "carrials," or "quarrels" were employed. Occasionally stones and leaden balls were shot from the larger arbalests. The cross-bowmen carried a quiver with fifty arrows as an armament in some battles of the 13th century.

ARBALESTINA: in the military system of the middle ages, a small window or wicket through which the cross-bowmen shot their arrows at a besieging enemy.

ARBITRATION is the act of determining, by persons appointed to decide a matter in controversy, on a reference made to them for that pur-

pose either by agreement of the parties in dispute or by the order of a court of law. An arbitrator ought to be a person who stands indifferent to both parties, but there are no particular qualifications for the office. The choice of the person to decide between them is perfectly free. See *Britannica*, Vol. II, p. 311.

ARBOR DAY. See **ARBORICULTURE.**

ARBOR DIANÆ: in chemistry, metallic silver deposited by the influence of mercury in the form of a tree. The experiment is made by dissolving 15 grains of nitrate of silver in half a wine glassful of water, adding a few globules of mercury, and allowing the glass to stand at rest for some hours.

ARBORESCENT, a term applied to plants, to signify that they possess either altogether, or in some measure, the character of trees. The dwarf willows and birches, on the confines of polar or alpine perpetual snow, are described as the arboresecent vegetation of the region.

ARBORICULTURE (Lat. *arbor*, "a tree," and *cultura*, "cultivation"), the art of cultivating trees for beauty or utility, and also the measures taken to conserve and protect the forests of a country from too rapid destruction. It also includes the raising of plantations of forest trees for lumber or fuel; the culture of fruit trees being usually called horticulture, or pomology. Arboriculture has of late years become of paramount necessity in the United States as our native forests were, under the former wasteful systems of consumption in vogue, rapidly disappearing before the woodsman's axe and the equally destructive forest fires. The lumber crop is the most important product of the soil of the U. S., and at the present time there are State forestry commissions in nearly every lumber producing State. The powers of these bodies over State or public lands are absolute, and in many localities the waste of this great source of national wealth has been nearly arrested. In addition to the loss of the product of the forests, which only too surely follows a wasteful system of consumption, is the undoubted fact that a too rapid denudation of the soil of its timber growth produces not only a certain diminution of the rainfall about the sources of great rivers, but also causes freshets in the rainy season and drought in the dry season. The soil, stripped of its leafy canopy, becomes hard and stony, and instead of holding the rains for gradual transmission to the springs and rivulets, permits the surface water to run away, with the result that the rivers cannot carry off the sudden rush of water, and floods and inundations follow. From the same cause, in the dry season, the parched soil has no store of moisture in its bosom to feed the rills or nourish its own verdure, and soon what was once a leafy paradise becomes an arid and sterile wilderness, the whole region for hundreds of square miles around being affected by the changed conditions. Happily the evil was checked in time, and now throughout the land private interests cooperate with government to preserve the forests or set out new plantations. In some of the western States, where vast treeless plains and prairies abound, the tree-planting movement is very actively carried on, millions of saplings being set out annually. What is known as "Arbor Day" in the U. S. is a day especially set apart for the planting of trees and shrubs, by school children and others. In many cases whole districts have been completely transformed by these efforts, and the interest is yearly increasing. In Canada the first Friday in May has been constituted "Arbor Day" for the whole Dominion; but in the U. S., owing to the wide range of climate and the consequent difference in the seasons, various days are named in the

different States and Territories. See *Britannica*, Vol. II, pp. 314, 324.

ARBOR VITÆ: in anatomy, a thick white mass found in either hemisphere of the cerebellum, and so named—literally, the "tree of life"—from its tree-like appearance when cut parallel to the meridian line.

ARBROATH FLAGS, the name given to a series of thin-bedded gray sandstones and flag-stones which occur in the Lower Old Red Sandstone of Forfarshire, Scotland. The remains of a number of ganoid fishes have been obtained from the Arbroath flags. The strata has been extensively quarried in Forfarshire for flagstones. They are of rather soft quality.

ARBUTUS, a genus of plants of the natural order *Ericæ*. It contains a number of species—small trees and shrubs—the greater part of which are American.

ARC (Lat. *arcus*, a bow), any part of a curved line. The straight line joining the ends of an arc is its *chord*, which is always less than the arc itself. Arcs of circles are *similar* when they subtend equal angles at the centers of their respective circles; and if similar arcs belong to equal circles the arcs themselves are equal.

ARCA, an ancient Roman treasure chest. Also a coffin, or the bier on which the corpse was laid previous to burial, and a strong cell in which criminals or slaves were confined.

ARCA, or **ARK-SHELL,** a genus of bivalve shells and *lamellibranch* mollusks, the type of the family called *Arcidæ*. In the true arca the hinge is straight, and occupies what at first seems the whole length of the shell, but is in reality its whole breadth, the breadth being greater than the length.

ARCACHON, a bathing-place which has grown into importance since 1854, situated on the south side of the Bassin d'Arcachon, 84 miles southwest of Bordeaux. It has fine broad sands; and the place is sheltered by sand-hills, covered with extensive pine-woods, in which game abounds. Arcachon is much frequented in winter by persons with weak lungs. Scientific oyster-culture is practiced here on a large scale. Population, 7,087.

ARCADIUS, first Emperor of the East (395-403, A. D.), born in Spain A. D. 373, died A. D. 403. His dominion extended from the Adriatic Sea to the river Tigris, and from Scythia to Ethiopia. Afterward Eudoxia, the wife of the Emperor, assumed the supremacy. One really great man adorned this period—Chrysostom, who was persecuted by Eudoxia.

ARCANI DISCIPLINA, the secrecy observed by the early Church as to certain doctrines and rites.

ARCANUM, THE GREAT. In the middle ages, the Latin word *arcanum* ("secret") was used of any of the most valued preparations of alchemy; but the title was especially applied, as above, to the highest problems of the science—the discovery of such supposed great secrets of Nature as the grand elixir.

ARCBOUTANT: in architecture, commonly called a *flying buttress*. Its object is to counteract the thrust of the main vault of the edifice. It is also called *arched buttress* and *arched abutment*.

ARCH, JOSEPH, born at Barford, Warwickshire, England, in 1826. While still a farm-laborer he became a Primitive Methodist preacher. In 1872 he founded the National Agricultural Laborers' Union, and thereby, according to Mr. Justin McCarthy, "began the emancipation of the rural laborers" of England. He visited Canada in their interests, and for half a year (1885-86) he represented the northwest division of Norfolk in the English parliament.

ARCHÆOLOGY (Gr., *archaion*, "ancient," and *logos*, "discourse"), in its most comprehensive use, deals with our knowledge of the origin, language, laws, customs, manners, etc., of the past from a study of existing ancient remains. The methods of the science are both deductive and inductive, and its materials consist of the relics of human life of all former ages. The term archaeology differs from antiquities in that the latter has to do with the objects themselves, while the former term refers to the study thereof. Archaeology, while it may be an important aid to history, is not in itself history. Thus, the products of human ingenuity or workmanship which it recovers and examines are merely evidences of the ability and purpose of the races who made them. In nearly every civilized country there is now a collection or a museum of relics of its own earlier annals, illustrating the progress of the nation from barbarism to refinement. In addition to this the archaeologists of the more advanced nations, as the United States, England, France, and Germany, have made laborious researches into the remains of the nations of antiquity. The Society of antiquaries of London was incorporated in 1751, and soon the whole of Europe was dotted with provincial and local societies. In the United States much attention has been paid to the remains of pre-historic races during the last half century, and especially in the past decade. The structures of the Mound-builders, the strange dwellings of the Pueblo Indians in Arizona and New Mexico, and the customs and relics of the Zuffi Indians have engrossed the attention of specialists. So also special attention has been given to the archaeology of Mexico and the Pacific coast. See AZTECS. For obvious reasons the Red men of the United States furnish very little food for the investigator in this branch of knowledge, as their manners and customs are the same in our time as they were when Columbus landed.

Among the recent items of archaeological interest in other countries, we note with gratification the action of the British Society of Antiquaries of London in bringing about a union of the archaeological Societies of the kingdom, has been the first step in a long-needed advance in the direction of systematizing archaeology. The movement commenced in November, 1888, and since then a conference has been held, a scheme formulated, and for the first time a consultative central body, composed of representatives of all the county societies, was formed in 1890. The union is likely to be of great value to archaeology; and the map, the preparation of which is part of its first work, and which is to denote the site of all discoveries and of every archaeological monument, will be a work of the highest importance. This class of literature is of great value to archaeology, as by its means many facts are made permanent, discoveries registered that otherwise were in danger of being entirely forgotten, and the odd items of archaeology are preserved for reference. The excavation of the ancient Roman city of Silchester is a great event of the year from an archaeological standpoint. There has been much complaint as to the want of protection accorded to the ancient monuments of Egypt, and an effort originated to obtain English government inspectors to properly watch over these invaluable remains. In Russia distinct advance in archaeology must be chronicled. In January the museum of the Moscow Archaeological Society was formally opened. It contains a collection of vast importance. In February an archaeological congress was held in the same city, and many documents closely connected with English history and signed by English sovereigns were exhibited. A large quantity of rare gold

coins, of the period ranging from 1350 to 1620, was dug up in Mainz in January, 1890. Much interest is attached to excavations at the Roman fortress of Saalburg, in the Taunus mountains, some four miles from Homburg, and the discoveries have been of unusual interest and importance. Many of the finest objects found have been deposited in the museum at Magdeburg. The restoration of that portion of Seville Cathedral destroyed by the fall of a pillar in August, 1888, is receiving more careful archaeological attention, thanks to the efforts of English antiquaries, than it was thought would be the case. In England similar work to the Eleanor crosses still needs cautious supervision and constant attention.

Mention should be made here also of Dr. Heinrich Schliemann (the most eminent of archaeologists), whose death occurred at Berlin, Dec. 27, 1890. See his biography, in these Revisions and Additions.

For detailed information on the general subject of Archaeology, the reader is referred to the article ARCHITECTURE, in this Supplement, and also to the following works: Baldwin's *Ancient America*, Jones's *Antiquities of the Southern Indians*, Foster's *Pre-historic Races of the United States*, Brinton's *Myths*, and the *Iconographic Encyclopædia*. See BRITANNICA, Vol. II, pp. 333-368.

ARCHÆOLOGICAL INSTITUTE OF AMERICA, THE, was organized in Boston in 1879, with Charles Eliot Norton as president, and has made much progress in archaeological research in classic lands as well as in America; notably in Asia Minor, at Assos, where its first explorations were made; at Babylonia—the expenses of the expedition under Dr. Ward being defrayed by Miss Catherine Lorillard Wolfe, of New York—and in Mexico.

ARCHÆOPTERY, a fossil bird, considered a connecting link between birds and reptiles; found in the limestones of Bavaria.

ARCHANGEL, a term which occurs in the New Testament, and which according to some is there a title of our Saviour, but according to others designates an angel superior in power to other angels. We nowhere read in the Scriptures of archangels, although the plural is popularly as much used as the singular.

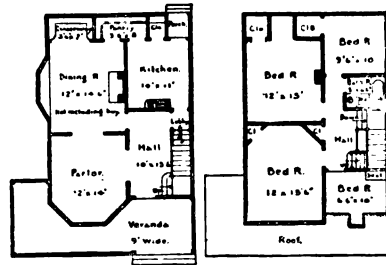
ARCHBALD, Penn., a post-village on the Lackawanna river. The Delaware & Hudson Railroad passes through this place. The prosperity of the village is due to rich mines of anthracite coal, which are worked in the vicinity. The iron trade is also extensively carried on.

ARCHDALE, JOHN, came to New England in 1664, and in 1695 was made governor of North Carolina. He was a sagacious and prudent chieftain, and under his administration the province made great progress. He published *A New Description of the Fertile and Pleasant Province of Carolina, with a Brief Account of its Discovery, Settling, and Government up to this Time, with Several Remarkable Passages During My Time* (1707).

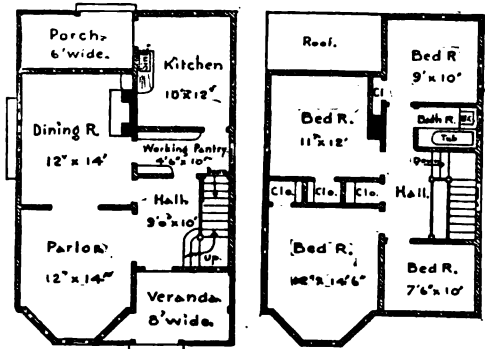
ARCHEGOSAURUS, a remarkable fossil saurian reptile, found in the coal measures of Munster-Appel in Rhenish Bavaria, and supposed by Meyer to be related to the salamanders, although he says "its head might be that of a fish as well as that of a lizard."

ARCHENCEPHALA, as applied to the highest division of mammalia, is a name proposed in 1857 by Owen. This sub-class is conterminous with the order *Bimana*; it includes only man, and is characterized by the highest development of the brain.

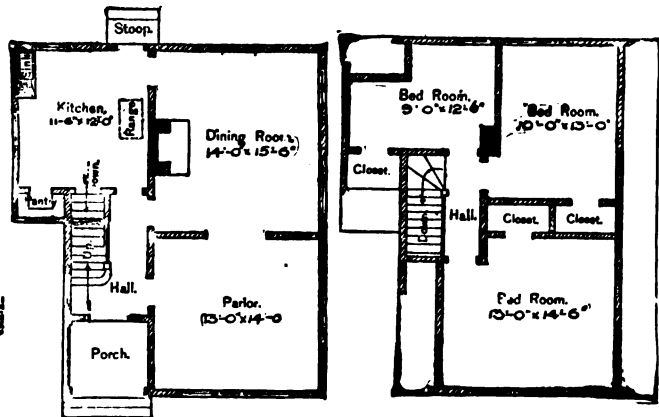
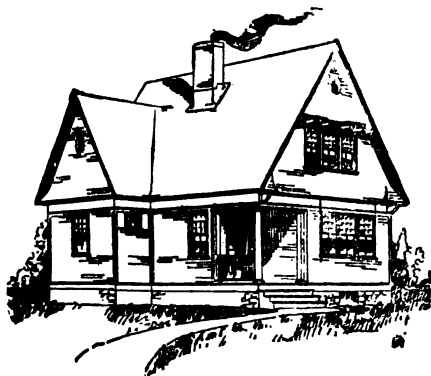
ARCHER, BRANCH T., Texan revolutionist, born in Virginia in 1790, died in Brazoria county, Tex., Sept. 22, 1856. For many years he was a practicing



PERSPECTIVE AND FIRST AND SECOND FLOOR PLANS OF A SEVEN ROOM COTTAGE.

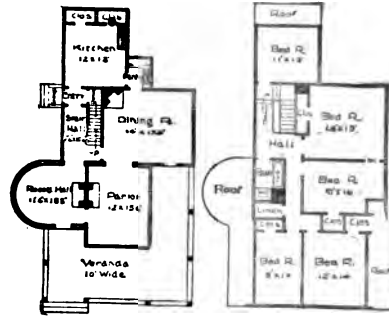


PERSPECTIVE AND FIRST AND SECOND FLOOR PLANS OF A SEVEN ROOM COTTAGE.

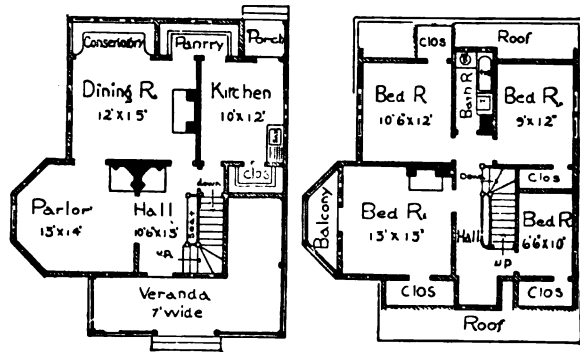


PERSPECTIVE AND FIRST AND SECOND FLOOR PLANS OF A SIX ROOM COTTAGE.

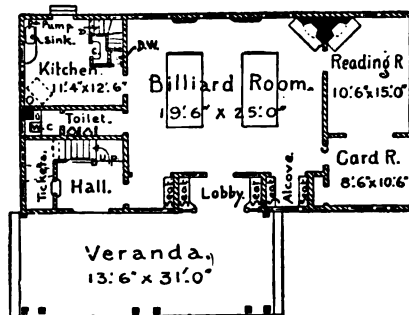
PLATE II.



PERSPECTIVE AND FIRST AND SECOND FLOOR PLANS OF A NINE ROOM COTTAGE.

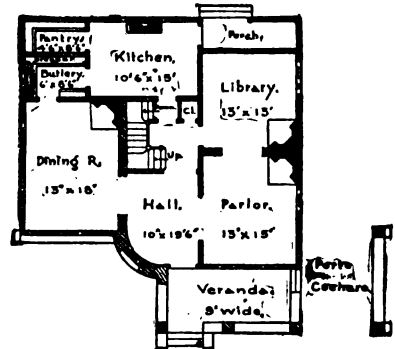


PERSPECTIVE AND FIRST AND SECOND FLOOR PLANS OF A TEN ROOM COTTAGE.
TWO ROOMS ON THIRD FLOOR.

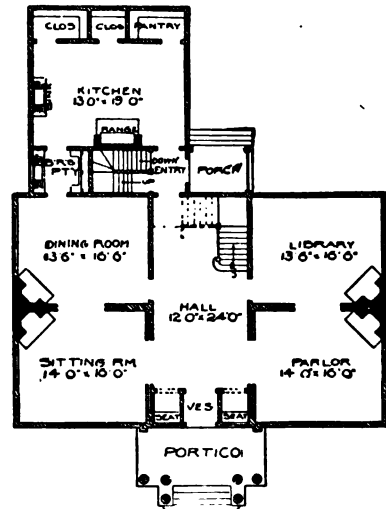


Porte Cochere.

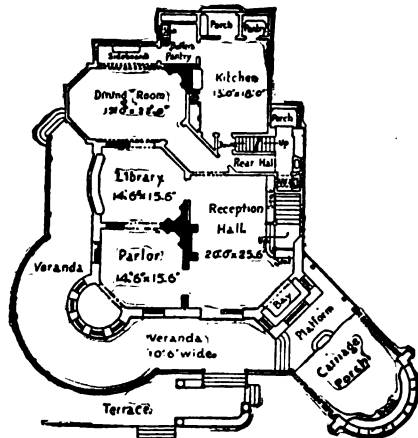
PERSPECTIVE AND FIRST FLOOR PLAN OF A CLUB COTTAGE.



PERSPECTIVE AND FIRST FLOOR PLAN OF A TWELVE ROOM COTTAGE.



FRONT ELEVATION AND FIRST FLOOR OF A HOUSE OF FIFTEEN ROOMS. (COLONIAL STYLE.)



PERSPECTIVE AND FIRST FLOOR PLAN OF A HOUSE OF FIFTEEN ROOMS.

PLATE IV.

CORNICE - 24 1/2 FT

STEEL BEAM CARRYING CURTAIN WINDOWS, AND FLOOR

WALL, MULLIONS, ARCH.

STEEL COLUMN

TOP OF MULLIONS

OF ANGLES

TERRA COTTA

TERRA COTTA

TC

FROM SIDEWALK TO SECTION

ORNAMENTAL BRONZE SHELL OVER FIREPROOFING

TOTAL HEIGHT

LINE OF FIRST FLOOR

SIDEWALK STONE

STEEL COLUMN

BASEMENT

1ST STOOL

STEEL RAILS

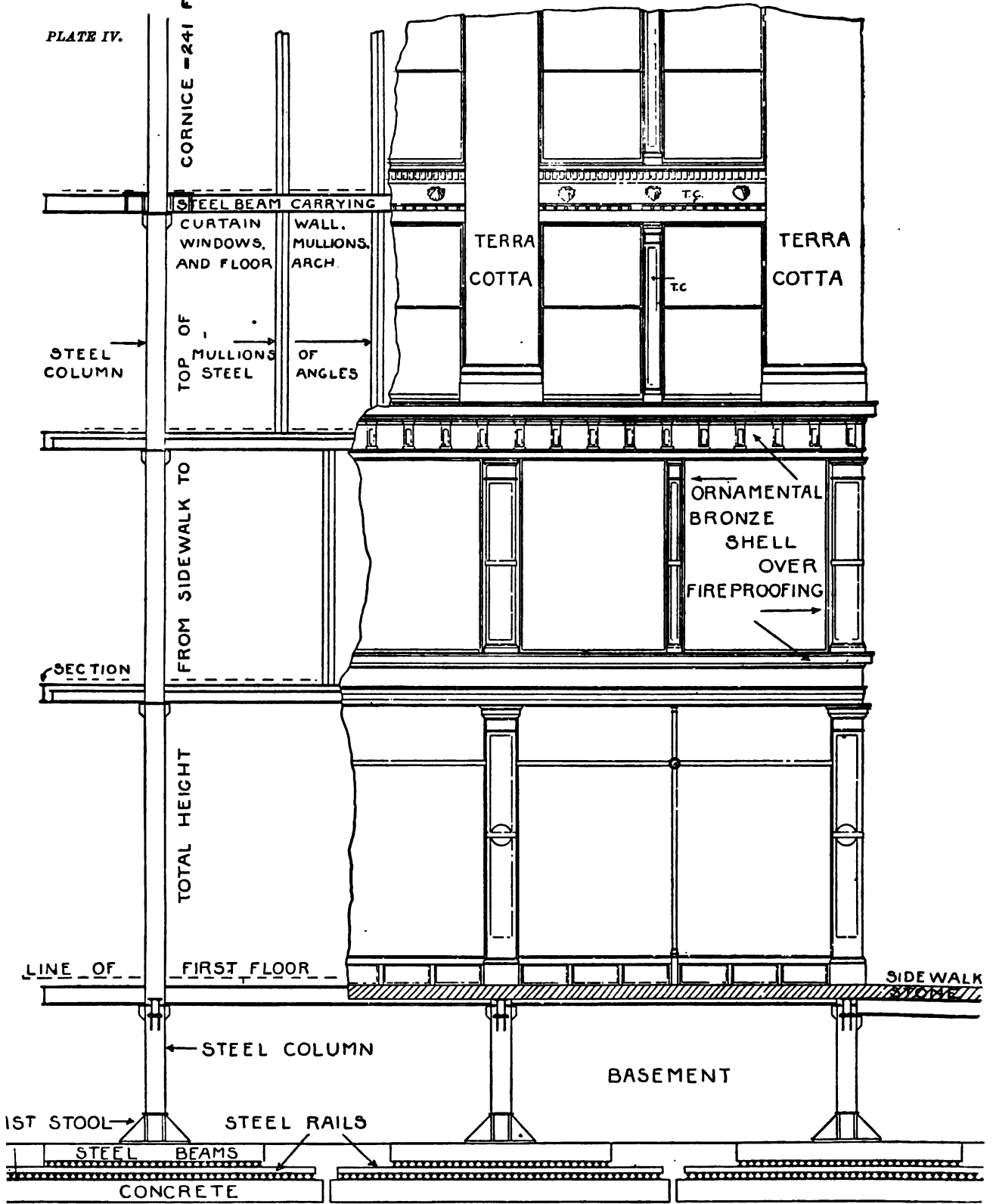
STEEL BEAMS

CONCRETE

W.L.B. JENNEY. ARCHITECT

0 1 2 3 4 5 6 7 8 9 10
SCALE OF FEET.

FIG. 1.



physician in his native State, and several times a member of the legislature. He removed to Texas in 1831, became active in the movements preliminary to the revolution, was a member of the first Texan Congress, and later went to Washington, where he became speaker of the house of representatives, and secretary of war from 1839 to 1842.

ARCHER, JOHN, American physician, born in Harford county, Md., June 6, 1741, died there in 1810. He graduated at Princeton in 1760, and eight years later received the first medical diploma issued on this continent from the Philadelphia medical college. He commanded a military company during the Revolution, was for several years a member of the legislature, presidential elector in 1801, and from 1801 to 1807 a member of Congress.

ARCHER, STEVENSON, American jurist, born in Harford county, Md. He graduated at Princeton in 1805, and was admitted to the bar three years later. He was twice a member of Congress, was a judge of the court of appeals, and from 1845 until his death was chief justice. He died June 5, 1848.

ARCHER, WILLIAM, a South American statesman, born in Amelia county, Va., March 5, 1789, died there, March 28, 1855. He graduated at Williams and Mary College in 1806, and studied law. For six years he was a member of the legislature, for fifteen years a representative in Congress, and for six years a member of the U. S. senate.

ARCHER FISH, a name given to certain small East Indian fishes, of the acanthopterygious family of Squamipennes, which have the faculty of projecting drops of water with sure aim at insects, and thereby causing them to fall in the water, where they are instantly seized as prey.



TOXOTES, ARCHER-FISH.

ARCHITECTURE, AMERICAN. Under the elaborate and greatly extended article in Britannica, Vol. II, pp. 382-475, will be found some account of the architecture of the pre-Columbian races who inhabited this continent, and whose only remains at the present day consist of more or less curious and often almost cyclopean structures. The cliff-dwellings and pueblos of Arizona and New Mexico form another class of habitations no less remarkable for their ingenuity than for their happy adaptation to the habits and mode of life of their inhabitants. The nomadic American Indians, or Red Men, build no permanent structures, and it is thought that the tumuli or mounds found throughout the Ohio and Mississippi Valleys were the work of an extinct race—styled, for want of a better name, the Mound-builders. With the advent of European colonists there arose, of course, a style of domestic architecture founded on the styles common in the various mother countries, modified by the conditions and necessities of life in an often rigorous climate. Thus arose the style of domestic architecture in the eastern States known as the Colonial—a style marked by considerations of comfort rather than by attempts at magnificence, though in a few instances of the latter the architect or designer indulged in massive porticos guarded by Ionic or Doric or Corinthian columns of wood. For the first seventy-five or a hundred years of the existence of the United States as a nation, but little originality was shown by native architects—if such a school could be said to exist. Designers were content to copy Euro-

pean models, whether for religious, municipal or domestic purposes. When the model was followed faithfully the result was generally successful, as in the case of the City Hall in New York, and St. Paul's Church and the Academy of Design in the same city. With the advent of the so-called Renaissance school, with its Mansard roof, came an era of eccentricity run wild, and our large cities are to-day often disfigured with structures in which all the various "styles," ancient and modern, are commingled without regard to object or utility. Within the past quarter of a century, however, there has been a remarkable architectural awakening throughout the land. Owing to the peculiar social and political conditions under which we live there is no call for structures other than those designed for religious, civic or domestic uses. The late H. H. Richardson, of Boston, may be said to have first popularized the principles of a pure architectural taste in the United States, and it has been justly said that to him we owe the fact that we have to-day an American architecture, though scores of lesser lights were working along the same lines whose labors have since borne abundant fruit. Richardson's monument is Trinity Church, Boston, and from its erection, a few years ago, dates a new era in the religious architecture of the country. Scarcely a city of prominence but can point to one or more churches conceived in the highest spirit of the builder's art. In our civic and governmental buildings, too, we have cast off the shackles of ignorance and provincialism, and in most instances the results are eminently satisfactory. Meantime

ARCHIAS (Aulus Licinius), Grecian poet, born at Antioch, became a Roman citizen; was a friend of Cicero. He died about 40 B. C.

ARCHIBALD, SIR ADAMS GEORGE, Canadian jurist, born in Truro, N. S., May 3, 1814. He was educated at Pictou academy, and admitted to the bar in 1838. He was a member of the executive council of Nova Scotia from 1856 to 1863, was sworn of the privy council in 1867, was secretary of state for the provinces 1867-68, and lieutenant-governor of Manitoba and the northern territories 1870-73. He was a judge in equity in 1873, and the same year was appointed lieutenant-governor of Nova Scotia. He was knighted in 1885.

ARCHIDAMUS, the name of five kings of Sparta of the Proclid or Eurypontid line, one of whom defeated the Arcadians and Argives in the "tearless battle," in which no Spartan fell.

ARCHIMAGUS, a title designating the chief of the Magi, assumed by Darius I after the massacre of that body.

ARCHIMEDES, PRINCIPLE OF: one of the most important in the science of hydrostatics. When bodies lighter than water are wholly immersed in it they displace an amount of water of greater weight than their own, so that, if free to adjust themselves, they swim on the surface, only as much of their bulk being submerged as will displace a quantity of water weighing as much as themselves. Accordingly, while bodies heavier than water displace, when put in it, their own bulk, bodies lighter than water displace, when allowed to float on the surface, their own weight of the fluid. Bodies of the same weight as water have no tendency to rise or sink in it, for the water displaced by them weighs precisely the same as they do.

ARCHIMEDES, fossil bryozoans found in great abundance in the lower carboniferous limestone of the Mississippi valley.

the æsthetic leaven, spreading downward, has tended to beautify the domestic architecture, at least, of our larger cities and towns. In the West, no less than in the East, is this made manifest, and the suburbs of the great centers of population are dotted with examples of a trained taste and an attention to the demands of the new environment. The amazing growth in recent years of building and loan associations has made it possible for the artisan and the man of moderate means to own a modest home. Even in this direction the new school of architecture has made itself felt, and has given rise to what may be known as Cottage Architecture. As samples of the endless variety of structures in this class we insert a number of new and suggestive designs prepared and engraved expressly for the present volume.

Since the introduction of passenger elevators there has been a notable departure in the architecture of office and business buildings in our large cities. The following description of the new style of structure, first introduced at Chicago and known as "The Chicago Construction," has been prepared for this volume by W. L. B. Jenney, architect.

CHICAGO CONSTRUCTION.—In Chicago the concentration of business within contracted limits scarcely more than a single square mile has made desirable a material increase in the height of the buildings, twelve to sixteen stories being the rule.

The soil on which these tall, fire-proof buildings rest is a soft, compressible clay of great depth, some sixty to ninety feet, on which it is undesirable to place greater weight than 3,000 pounds per square foot, hence the necessity of reducing the weight of the building to the minimum, consistent with stability. It is also essential that the interior of the building should receive the maximum of light. To satisfy these conditions the following construction was adopted:

A complete steel skeleton, fire-proofed. All weights to be carried on the columns. The outside walls at each story to be carried on lintels between columns. No weights carried on the walls, therefore they are made no thicker than necessary to give the desired reveals and cover the window boxes.

This construction was first introduced in the Home Insurance Building, Chicago's first tall, highly-finished and thoroughly complete office building, ten stories high, erected 1884 to 1886. Since then the method, improved and enlarged upon, has passed into general use in Chicago for this class of structures.

The annexed figure, No. 1, represents the lower stories and foundations of three columns of the Fair Building, Dearborn, Adams and State streets, Chicago, commenced in 1891, sixteen stories high, the lower six stories being for the store and the upper ten for offices.

The necessity for a deep basement or cellar for the large amount of machinery for the heating, electric lighting and elevators, and for the storage of heavy goods and for packing and receiving, makes the use of heavy steel beams in the foundations a necessity, that broad offsets may be secured. It is objectionable to excavate to a great depth into the soft clay, for to some extent it undermines the neighboring foundation, and besides this the top of the clay is dryer and harder than that found below. The foundations consist of a strong bed of Portland cement concrete on which rest three layers of steel rails, on which is one layer of fifteen-inch steel beams. On these beams repose the stools of the columns in the center of gravity of

the plane of the footing and of the weights above. The columns are of rolled steel, shown in more detail in annexed figure, No. 2.

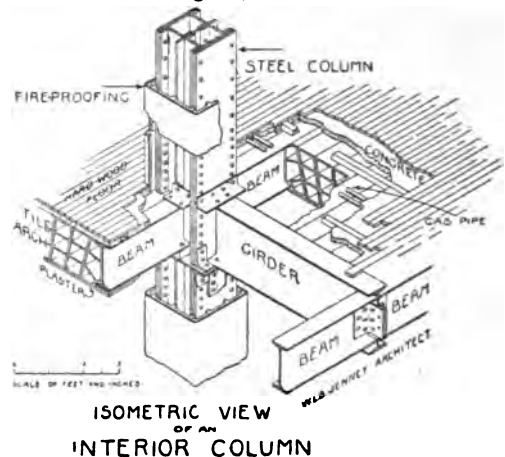


FIG. 2.

They are of Z bars united by plates. The columns are riveted together, and to the beams and girders by hot rivets at the building as the work is set in place. All interior partitions are of hollow, fire-proof tile, held together by clamps.

As these buildings, owing to the compressible nature of the soil, must settle some two or three inches even with the light load of 3,000 pounds per square foot, it is very essential that the settlement should be uniform. To secure this the actual dead loads and the probable live loads on each footing must be carefully calculated, and as the walls are very light, quite as heavy at the top as at the bottom story, every opportunity must be improved to insure rigidity. For economy and to secure a more accurate distribution of loads, a study is made of the most probable live loads that will occur in the building. For example: In the office buildings we may assume a live load of seventy pounds per square foot on the floor beams, as this weight may occur over the entire length of any beam, but as it is not probable that it will occur over every beam at the same time, only 90 per cent. of the live load is used in calculating the girders which carry the beams. For the same reason we assume that the upper columns may be loaded with 90 per cent. of the live load, this percentage diminishing as the number of stories above the column increases, for the probabilities of all the floors being loaded at the same time diminishes with the number of the stories. The same is true for store floors and for the columns supporting the same. In each instance all the full dead load is taken, and such live load as, in the best judgment of the architect, after learning from his client the use to which the building is to be put, will in all probability obtain.

It will be easily seen that by these careful computations of the live loads, ascertaining as nearly as practicable what will actually occur, a uniform settlement will be assured as well as the avoiding of any unnecessary weight of metal, the aim being to obtain a uniform strength throughout the entire construction. To counteract the wind pressure where there are no partitions, knees are riveted to the columns and to the under side of the floor beams or girders where they intersect the columns, much as in ship-building, care being taken that all bending movements thus produced on columns and on the floor beams and girders are provided for.

When the use of the building permits the introduction of diagonal bracing to be tightened by turn-buckles, as in bridge-work, between columns from floor to floor, a system of these cross-rods can be advantageously substituted for the knees.

In these buildings the same engineering ability and the same careful and intelligent inspection and superintendence are required as in a railroad bridge of the first order.

ARCHITRAVE: in architecture, the lowest part of the entablature, or that which rests immediately upon the columns.

ARCHIVOLT, the ornamental band or molding which runs round the lower part of the voussoirs of an arch.

ARCHPRIEST, the title given to the superiors who were appointed by the pope to govern the secular priests sent into England from the foreign seminaries during the period 1598-1621. This government gave the control of affairs into the hands of the Jesuits, and was opposed by a part of the church who wished for the ordinary government of bishops. The first archpriest appointed was George Blackwell (1598). He was deprived of his office in 1608 for taking, and persuading others to take, the oath of allegiance which had been condemned by Urban V. The second archpriest, George Birket, was appointed in 1608, and died in 1614. The third and last to hold the office was Dr. William Harrison, who ruled the clergy in this capacity till his death, in 1621.

ARCH, TRIUMPHAL, a structure erected in a conspicuous and suitable position in honor of a victorious general. The original triumphal arch was the Porta Triumphalis at Rome. Under the emperors these structures became numerous and magnificent, and were decorated with bass-reliefs and inscriptions. Three of what were properly triumphal arches still remain in Rome—those of Titus, Septimius, Severus and Constantine. The Arch of Titus was erected after his death by "the Senate and people of Rome," to commemorate his conquest of Judea. It is of especial interest, because of its historic bass-reliefs. These represent the golden candlestick, and other sacred utensils of the Jewish temple, as they were carried by the captors in triumph into Rome.

ARCIMBOLDI, GIANNANGELO, an Italian archbishop who was admitted to the college of noble jurisconsults in Milan about 1508. He was employed by Pope Leo X on a mission to Germany. Afterward, on going to Denmark, he was employed by King Christian II to assist in his political schemes. He endeavored to undermine the power of Sten Sture and to secure the reinstatement of Archbishop Gustav Trolle, who had been imprisoned by Sture; but being won by the latter to take sides against the king, he was obliged to flee into Germany, whence he returned to Italy. In 1523 he was made bishop of Novara, and in 1550 archbishop of Milan. He died at Milan, April 6, 1555. He belonged to a distinguished family, other members of which held prominent positions in Church and State.

ARCOLA, a village of Italy, near the confluence of the Alpene and Adige, noted as the scene of Napoleon's great victory over the Austrians under Alvinzy, Nov. 17, 1796.

ARCTIC means, properly, lying near the constellation of the Bear, and hence N. The Arctic Circle is a circle drawn round the north pole, at a distance from it equal to the obliquity of the ecliptic, or $23\frac{1}{2}^{\circ}$. The corresponding circle round the south pole is the Antarctic Circle. Within each of these circles there is a period of the year when the sun does not set, and another when he is never seen, these periods being longer near the pole.

ARCTIC EXPLORATIONS. Under **POLAR REGIONS**, Britannica, Vol. XIX, pp 315-30, and in the articles there referred to, the history of Arctic research is brought down to the rescue of the seven survivors of the Greely expedition. This occurred at 9 P. M., June 22, 1884, five miles from Cape Sabine. Lieutenant Greely, Sergeants Ellison, Brainard, Fredericks and Long, Hospital-Steward Beiberbeck, and Private Connell, were found in a deplorable condition. All of their companions, except one, who was drowned in an attempt to procure food, had died of starvation; and had the relief party been a few hours later, not one of the twenty-five composing the expedition would have been found alive. Twelve bodies of the dead were brought home. Sergeant Ellison, who had lost both hands and feet by frost bite, died July 6. The relief squadron reached Portsmouth, N. H., August 1st, where the Secretary of the Navy and several men-of-war were in waiting to greet the survivors. A grand land demonstration took place in honor of the rescue; the bodies of the dead were taken to Governor's Island, New York harbor, where, after affecting ceremonies, the relatives and friends took possession of them for burial. The *Alert* was returned to Great Britain, with the thanks of the United States, in 1885. In the same year Commander Schley published his *Rescue of Greely*. In 1886 Captain Greely published his *Three Years of Arctic Service*. In 1887 he was promoted to brigadier-general and appointed chief of the signal-service corps.

In the autumn of 1886 an overland expedition to the Arctic regions was undertaken by Col. William H. Gilder, of New York. Col. Gilder, as second in command of the Schwatka expedition, had already made the longest sledge journey ever accomplished (8,251 miles), and had told the story of the ride in *Schwatka's Search*. He had been with the *Rodgers* when she was burned in her winter-quarters, and had performed a mid-winter journey across Siberia to telegraph intelligence of the disaster to the Secretary of the Navy, continuing then the search on the Lena delta. His *Ice-pack and Tundra* was republished in French under the title *L'expédition du Rodgers à la Recherche de la Jeannette*. Sanguine of the success of his new enterprise, he left Winnipeg Oct. 2, 1886, intending to go northward from York Factory, and hoping, by traveling with sledges, dogs, and Esquimau attendants from Wager River, to reach Fury-and-Hecla Straight in the spring and Lancaster Sound by the following autumn, and to accomplish the whole journey in three or four years. The trip, however, as mapped out, proved impracticable, and Col. Gilder returned in March, 1887.

In 1889 Captain Johannesen reported having found an island in lat. $80^{\circ} 10' N.$, lon. $32^{\circ} 8' E.$ He named it New Island, and described it as a tableland 2,100 feet high. It is supposed to be the same as White or Hvida Island, previously seen by Captains Kjeldsen and Sørensen. This discovery shows the existence of an archipelago extending between Spitzbergen and Franz-Josef Land—which, by preventing the drift of the polar ice into Barents Sea, must be considered as materially affecting the climate of the north of Europe.

Other important scientific results of the most recent explorations may be thus summed up: The highest latitude attained by man is $83^{\circ} 24'$. The northernmost land yet seen, Cape Robert Lincoln, is a bold promontory fifteen miles farther north. The loftiest peak in North America, 20,000 feet above sea level, is Mount Wrangel. The tides at Lady Franklin Bay come from the north; at Melville Bay and Cape Sabine, from the south. The flood-

tide-water at Discovery Harbor is warmer than that of the ebb. The needle, in the highest latitude, is constantly in a tremor; but becomes quiet during severe storms.

In the beginning of 1891, a plan for reaching the north pole by balloon was rejected by the French Society of Aerial Navigation. The president, M. Mage, editor of "Cosmos," said that, as all our information about the prevailing winds in the polar regions indicates that each extremity of the earth's axis is a region of circular wind currents, there is little prospect that the wind would carry balloon travelers to their destination; that, as, even in summer, a very low temperature prevails, heavy falls of snow are frequent, and it is difficult to believe a balloon could remain in mid-air while heavily weighted with snow; that frost upon the ropes and other parts of the rigging would make the management of the balloon extremely difficult, if not impossible; that the land or water surface would for days at a time be obscured by heavy mists, the compass would be useless, and the voyagers would have to try to direct their movements by the stars, an art in which balloon travelers are not proficient. Messrs. Hermite and Besançon, however, the projectors of the voyage, intend to launch pilot balloons from Spitzbergen for the purpose of learning all they can at that point of the direction of the prevailing winds. If the result of these experiments is favorable, they will return to France and prepare to make their polar voyage in 1892.

PROPOSED EXPEDITIONS. On the first of June, 1891, an expedition will leave Copenhagen to make an exploration of the unknown east coast of Greenland between the 66th and 73rd parallels of north latitude. The party will be under the command of Lieutenant Ryder, of the Danish navy, who will have with him two naval officers, four sailors, a scientific observer and probably two Greenlanders from the west coast. Lieutenant Ryder has been engaged for many years in surveying and mapping the serrated west coast of Greenland, and is thoroughly fitted for the task he has undertaken. When completed, the entire outline of Greenland will be charted with the exception of the small portion bounding Melville Bay, on the west coast of Greenland, and the portion comprised between Lockwood farthest north, on the west, and Cape Bismarck, Koldewey's highest point, on the east coast. In the spring of 1892 Dr. Frithjof Nansen, who in 1888 was the first to accomplish the transit of Greenland, will attempt to reach the northern axis of the earth by drifting there in a ship especially constructed for that purpose. He expects to pass Bering Strait in June, and, keeping in the open water between the northern coast of Asia and the ice cape, reach the vicinity of the New Siberian Islands about the latter part of August. He will then enter the ice and allow his vessel to drift with the ice. It is his belief, and the Meteorological Society of Christiania concur therein, that the current will carry him to the northwest and north of Franz-Josef Land, and that the drift will conduct him southward, after crossing the pole, delivering him into the open water somewhere between Spitzbergen and Greenland about the 80th parallel of latitude. The plan is similar to that adopted by the *Jeannette*, except that while the latter vessel entered the ice nearly north of Bering Strait and in two years drifted to a point east of the New Siberian Islands, Nansen will commence his drift about where that of the *Jeannette* ended. The plan is a good one and well worth trying. The expenses of the expedition will be borne by the Swedish government and Mr. Gamel. It was the

latter, a wealthy merchant, who fitted out Dr. Nansen's trans-Greenland expedition.

Baron Nordenskjöld proposes an exploration of the South Polar regions upon a more formidable scale than any that has yet been made. His final start will be from Australia not prior to the year 1892 or 1893. Baron Oscar Dickson, the most generous patron of Arctic exploration of the day, has contributed \$25,000 toward this expedition. Australia will contribute a like amount, and the total sum will be increased by subscriptions of Baron Nordenskjöld's personal friends in Germany and America. Baron Nordenskjöld will have a steamer of about the strength and capacity of the *Vega*, and thinks that with the aid of steam he will be able to reach a point far beyond that attained by any of the previous expeditions, which were all made in sailing vessels except the cruiser *Challenger*, whose commander had been instructed not to push his unsheathed ship into dangerous ice. After penetrating as far as possible with his vessel it is Baron Nordenskjöld's intention to land a party on the ice cape and push his explorations as far as possible toward the southern axis of the earth. So little is now known regarding the territory contained in the South Polar basin that great interest is felt in the result of Baron Nordenskjöld's labors.

It is proposed to send a corps of trained observers, in the summer of 1891 or 1892, to make magnetic and other observations in the vicinity of the north magnetic pole. This expedition will also be charged with the duty of relocating the pole of dip 90°, and ascertaining beyond doubt whether that point is a fixed or movable one, and if in motion the direction and rate of change. The observers will be selected from the naval officers detailed for duty in the U. S. coast and geodetic survey, and the scheme of work will be prepared by a committee appointed by the president of the National Academy of Sciences. There is probably no work of exploration to be done to-day that equals in interest that proposed by this expedition. In 1831 the magnetic pole was located by Sir James Ross at Cape Adelaide, on the west coast of Boothia Felix, and a little north of the 70th parallel of latitude. Since then this point has been most unaccountably neglected notwithstanding the admitted necessity of a more accurate determination with the perfected instruments of to-day, and in the light of our increased knowledge of terrestrial magnetism. The expedition will be in charge of W. H. Gilder, whose previous journey to the same point has given him experience that should enable him to secure the safety and comfort of the party in the field.

ARCTIC HIGHLANDS, a name sometimes applied, though not very appropriately, to that portion of the American continent which lies between Hudson Bay and the mouth of the Mackenzie. It has been the scene of all, or nearly all, the overland efforts in connection with the exploration of the northward passage, from Hearne's discovery of the copper mine down to the recent voyage of Anderson—the most prominent among the intermediate laborers having been Franklin, Richardson, Back, Dease, Simpson and Rae.

ARCTURUS, a star of the first magnitude in the constellation Bootes.

ARCUATION, a method of propagating plants by bending the lower shoots and covering them with earth.

ARCY, **GROTTO OF**, a quarry of Sonne in France full of remarkably beautiful stalagmites and stalactites.

ARCUS SENILIS, a not very well-chosen term for a change occurring in the cornea of the eye in consequence of fatty degeneration of its marginal

part. It is thought by late observers to indicate the co-existence of fatty degeneration of the heart. The *Arcus senilis* usually commences at, or even before, the age of forty years, as an opaque whitish crescent, skirting either the upper or lower margin of the cornea, and from this commencement it extends along the edge till it finally becomes a complete circle, which sometimes assumes a chalky whiteness and gives to the eye a very peculiar appearance. See *Britannica*, Vol. XVII, p. 781.

ARD, or ARD, a Celtic root, meaning height, which appears in many geographical names, especially in Ireland and Scotland.

ARDAHAN, a village of Turkish Armenia, 35 miles northwest of Kars. It is in the territory ceded in 1878 to Russia. On account of the severity of the climate, the houses of Ardahan are mainly constructed under ground. Its position gives it strategic importance.

ARDEE, a town in the west of Louth county, Ireland, on the River Dee, twelve miles inland. The chief trade is in corn and other agricultural products. Population, about 2,500.

ARDEIDÆ, a family of birds of the order *Herodiones* and sub-order *Herodii*. They are divided



COMMON HERON (*Ardea cinerea*).

into two sub-families—*Ardeinæ*, the true heron, and *Botaurinæ*, the bitterns. *Cancerminæ*, the boatbills, are sometimes included, though usually considered a separate family. The *Ardeidæ* have a comparatively small, thin body, very long legs and neck, ample wings and short tail, naked lores and inessential feet. In this family

the peculiar feathers known as powder down, or pulvi-plumes, are highly developed. There are about seventy-five species, presenting a wide range of difference in stature and coloration, but comparatively little in structure. They are distributed over the globe, inhabiting seas, lakes, marshes and rivers, and nesting usually in communities in trees and bushes.

ARDENNES, an extensive hill country and forest, occupying the southeast corner of Belgium, between the Moselle and the Meuse, but extending also into France and Rhenish Prussia. It consists of a broken mass of hills, and of large tracts of gently undulating plateaus, in some districts densely covered with forests, but for the most part heathy, marshy and barren. The principal rocks of the Ardennes are clay-slate, graywacke, quartz and various metamorphic rocks; beside which occur in various places extensive outcrops of crystalline limestone. The wealth of the region is its wood and its minerals. Enormous supplies of coal are found in the north; iron, lead, antimony, copper and manganese are also found. Multitudes of cattle and sheep are reared here.

The *Arduenna Silva* of the Romans extended over a still wider area. Shakespeare's Forest of Arden is a district in Warwickshire, extending from the Avon to near Birmingham. See *Britannica*, Vol. II, p. 479.

ARDITI, LUIGI, musician and composer, born in Piedmont, July 22 1822, studied music at the conservatory of Milan. Famous first as a violinist, then as a conductor, he went to London in 1857, and from that year till 1878 was musical director at Her Majesty's Theater. He has conducted Italian operas and concerts in places as remote from one another as New York and Constantinople, has published the

operas *I Briganti* (1841) and *La Spia* (1856); and is known as the author of much popular music—songs, violin duets, and waltzes, such as *Il Bacio*.

ARDNAMURCHAN POINT, the northwest promontory of Argyleshire and the extreme west point of the mainland of Britain. A light-house was erected there in 1849, which is visible at a distance of twenty miles.

ARDOYE, a town of Belgium, in the province of West Flanders, seventeen miles south of Bruges. It has extensive cloth-weaving works. Population, 6,082.

ARDSHIR, BABEGAN, died 260 B. C., called by the Greeks Artaxerxes, founder of the Sasanian dynasty of Persia.

ARE, the unit of the French land-measure, is a square, the side of which is 10 meters (or 32,809 feet) long, and which therefore contains 100 square meters=1,076 English square feet.

AREA is a term in mathematics meaning quantity of surface. The calculation of areas, or mensuration of surfaces, is one of the ultimate objects of geometry. The measuring unit is a square inch, a square foot, etc., according to the unit of length; as a figure is thus measured by finding an equivalent for its surface in squares, the process is sometimes called the quadrature of the figure.

ARECIBO, a town on the north coast of the Spanish West Indian island of Porto Rico, forty-five miles west of San Juan. Population, 10,000.

ARENA, a part of an amphitheater where the combats of gladiators and wild beasts took place. It had four main entrances, and was surrounded by a wall fifteen feet high, so that the spectators were perfectly safe. The name was afterwards applied by the Romans to any building for exhibitions of baiting animals, horsemanship, etc. On the continent the name has been given to large summer theaters for dramatic performances in the open air. It is applied also to any scene of contest or display of power. See *Britannica*, Vol. I, p. 775.

ARENACEOUS ROCKS are rocks composed entirely, or to a large extent, of grains of siliceous matter.

ARENARIA, the sandwort; a genus of plants of the natural order *Caryophyllææ*. The species are numerous. Some of them are arctic and alpine plants, some are chiefly found in sandy soil. If the flowers are closely examined, they are seen to possess great beauty.

ARENDS, LEOPOLD, born near Wilna in Russia, Dec. 1, 1817. He was educated at Dorpat, and in 1844 settled in Berlin, where he died Dec. 22, 1882. He wrote dramas, as well as books on popular natural history and ancient Hebrew music; but his name is best known through his "rational stenography," first published fully in 1860 in his *Vollständige Leitfaden*. It is the latest of the three great rival systems in Germany—the others being Gabelsberger and Stolzeheit. It is perhaps the most widely used, and it has been introduced into the Spanish, French, Hungarian and Swedish languages.

ARENTZEN, CHRISTIAN AUGUST EMIL, a Danish poet, born Nov. 10, 1823. His earlier works consist of two volumes of poems (1862, 1867), and two dramas (1852-53). *Baggesen og Ehlerschlæger* (8 volumes, 1870-78), a presentation of the Danish literature of this century, is his chief work. His *Nordisk Mythologi* has passed through three editions. He was decorated with the order of Dannebrog for *Ehlerschlæger*. *Literaturhistorisk Livsbillede* written for a centennial festival in 1879. As a poet he belongs to Ehlerschlæger's school.

AREOMETER, an instrument used to determine the specific gravity of fluids.

ARESCHONG, JOHAN ERHARD, a Swedish botanist, born in Gothenburg in 1811. He traveled extensively through Sweden and Norway, making a specialty of the study of the vegetation of the sea. He became professor in Upsala in 1858. Among his most important botanical works are: *Symbola Algarum Scand* (1838); *Phyceæ Marinæ* (1850); and *Coralinæ*, in Agardh's *Species, Genera et Ordines Algarum* (1863).

ARETINIAN SYLLABLES, the syllables *ul, re, mi, fa, sol, la* used by Guido d'Arezzo for his system of hexachords.

ARGÆUS, MOUNT, a mountain in the pashalic of Karamania, Asia Minor, about twelve miles south of Kaisariyeh. It is the highest peak in Asia Minor, having an elevation of 13,100 feet.

ARGALI, the great wild sheep of Siberia and Central Asia. It is found from Kamtchatka to the



ROCKY MOUNTAIN SHEEP (*Ovis montana*).

Rocky Mountain sheep, or big-horn, is sometimes called the American argali.

ARGAN, a tree of Morocco. See *Britannica*, Vol. VI, p. 833.

ARGAUM, a village in Berar, India, between Ellichpur and Aurungabad. Near it, on November 28, 1803, about two months after the battle of Assaye, Wellesley gained another victory over the Mah-rattas.

ARGEL, or **ARGHEL**, a plant of the natural order *Asclepiadaceæ*, is a native of Arabia and of the north of Africa, deserving a notice because of the frequent use of its leaves for the adulteration of senna.

ARGEMONE, a genus of plants of the natural order *Papaveraceæ*. It is a native of Mexico and the southern part of the United States. The juice of the plant is employed both in Europe and the United States as a remedy for ophthalmia.

ARGENS, JEAN BAPTISTE DE BOYER, marquis d', born at Aix in 1704, died in Toulon in 1771. Being disabled by accidents in military service and disinherited by his father, he tried his fortune in authorship, and attracted the notice of Frederic II, then Crown-Prince of Prussia, and became a favorite at the court when Frederic came to the throne.

ARGENSON, MARE PIERRE, COUNT D' (1696-1764), a celebrated French statesman, who succeeded M. de Breteuil as secretary of state to the war minister in 1742. Argenson established the *École Militaire* in 1751, and by various measures kept alive the military spirit of the nation. He was a patron of literature. In 1756 he was exiled to his estate, it is supposed, by the machinations of Madame Pompadour.

ARGENT: silver, or something resembling it. It was formerly used in a more general sense for money. In English heraldry it signifies silver, and in engraving shields it is left white.

ARGENTINE, a variety of calcite, found in metallic veins and primitive rocks. It is characterized

by a silvery-white luster, and a curved or slaty lamellar structure.

ARGENTINE (*Argentina*), a genus of small fishes of the family *Salmonidæ*. They are chiefly remarkable for the resplendent silvery luster of their sides and the abundance of nacre, the substance used in making artificial pearls.

ARGENTINE REPUBLIC. Area, 1,124,086 square miles. Population (1889), 4,200,000. Government, a Republic. Capital of the Republic, Buenos Ayres, with a population (census of July, 1890) of 561,160. Capital of the Province of Buenos Ayres, La Plata. For general history and descriptive characteristics, see *Britannica*, Vol. II, p. 487.

By a treaty concluded between the Argentine Republic and Chili in 1881, the latter recognizes the right of the former to all the country east of the crest of the eastern ridge of the Andes, including all Patagonia and the eastern part of Tierra del Fuego.

In 1889 there were about 5,000 miles of railways in working order, connecting the principal cities with the capital. A line is projected from Mendoza to Bahia Blanca to open up a direct route for the products of the upper provinces to the Atlantic.

The Army in 1889 consisted of about 7,400 men, in addition to the National Guard of about 350,000. The military school has 150 cadets, and the school for non-commissioned officers, 120. Navy, 28 vessels, including 3 iron-clads and 4 torpedo launches. The naval school has 60 cadets, and the school of gunners 80. Public instruction is much developed; there are two universities, 2 schools of engineering, two colleges of agriculture, 27 training colleges, and 3,227 public schools, with 254,608 pupils in 1888. The climate of the Argentine Republic is temperate and healthy.

Public revenue in 1889-90—Budget.....	\$ 74,870,000
Public expenditure, 1889-90, do.....	69,576,784
Federal external debt, March, 1889 (official statement).....	122,288,176
Imports, 1889.....	164,569,884
Exports, 1889.....	122,815,067

The area of land under cultivation in 1888, in the 14 provinces and five national territories, was 2,359,958 hectares (5,899,895 acres*)—say 9,218 square miles. In other words, the figures barely represent one per cent. of the total area of the country, which is set down at 289,420,341 hectares. The total area under wheat in 1889 was 1,095,000 hectares; maize, 850,000 hectares; flax, 140,000 hectares. The value of the agricultural products exported in 1888 was \$16,300,000. According to recent statistics, the value of the harvest of 1889 in the Republic amounted to \$100,255,000 in gold. Cattle and sheep breeding is an important industry in the Argentine Republic.

By the Government Budget estimates, the total revenue for 1891 was fixed at \$74,876,706 currency, and the total expenditure at \$50,687,544. The National debt (external, March 31, 1890) was \$122,283,176; 5 per cent. (internal) was \$1,153,197. Army, 5,585; national guard, about 350,000. Navy, 3 iron-clads and 15 other ships. Principal productions in 1889 were 312,555,919 pounds of wool; 8,514,012 cwt. of maize; 448,911 cwt. of wheat, as against 3,254,160 in 1888. The imports during the last twelve months were to the total amount of \$164,569,884, while the exports were \$122,815,067. The rich mineral resources are beginning to be developed. Length of railways, 6,600 miles, connecting the capital with the principal cities of the Republic. Telegraphs, 13,645 miles, connecting all the Republic. During 1889 there were 76,724,431 letters and printed matter carried by the Post Office.

*A hectare equals about $2\frac{1}{2}$ acres.

Chambers passed bill authorizing the issue of \$100,000,000 in notes for the payment of the *Cedulas* (July 12th), the situation being extremely strained, though general satisfaction was expressed at the defeat of the party advocating unlimited currency emissions. Rumors gained circulation (20th) of an impending revolution, causing general panic and alarm, which were followed by the arrest of several important military officers for alleged complicity in the plot. On July 26th the revolution broke out at Buenos Ayres, the artillery, joined by civilians, taking the first step, and firing upon the police, great loss of life being caused on both sides. Fighting continued during the day and throughout the two following days, in spite of rumors constantly issued of agreements arrived at. The troops, almost to a man, took the side of the insurgents, as did most of the vessels belonging to the naval squadron, the Government House and other public buildings being shelled from the sea by some of the latter. President Juarez Celman, against whom the anger of the populace was chiefly directed, was called upon to resign, but declined to do so, declaring that what had occurred had no political significance, but was merely a military mutiny. On the 29th firing ceased, and peace was restored, a general amnesty being proclaimed. During the fighting about 1,000 were killed and over 5,000 wounded. Meanwhile, financial chaos and anarchy reigned throughout the country. A bill postponing the payment of bills for one month was passed by both chambers, but awaited the President's signature to become a law; while the notaries refused to protect bills, giving as an excuse the state of siege existing. Great pressure continued to be applied to induce Dr. Celman to resign, but for a time with no effect. Major Palma, an officer whom President Celman had denounced as a member of the military conspiracy, dying suddenly, it was confidently affirmed that he had been poisoned. On August 3rd it became known that General Roca and Dr. Pellegrini, having been unable to compel President Celman to resign by any other means, had themselves handed in their resignations. This, together with the resignation of two ministers, Señores Suenz Peña and Garcia, and the refusal of the leaders of the Opposition to take office unless he resigned, had the desired effect, and on the 5th Dr. Celman resigned the presidency, declaring, however, that he did so only upon the understanding that Dr. Pellegrini and General Roca resigned also. This the latter, refusing to identify themselves with the President, Celman, declined to do; and the Chambers having decided, if his resignation was not received within two hours, to dismiss him, President Celman finally yielded to the force of circumstances and resigned his office, his resignation being accepted by the Chambers by 61 votes to 22. As Vice-President Dr. Pellegrini thereupon became President (Aug. 6th), in accordance with the constitution, until the completion of the term for which Dr. Celman had been elected. This date will be Oct. 12, 1892. A new ministry was formed, with Señor Lopez as minister of finance and General Roca as minister of the interior, extraordinary enthusiasm being manifested in all parts of the country, but above all in Buenos Ayres, at the final downfall of the apparently incapable government of Dr. Celman. A financial statement issued by the new government showed that during the year which had expired some \$500,000,000 currency had passed through the hands of the late president, leaving little benefit for the country. The new government announced (Oct. 19th, 1890) that its first care would be to remedy the disordered state of the country's finances and to maintain the national credit, whatever sacri-

fices might be needful. To this end a number of bills were presented to Congress and promptly passed, one authorizing the issue of \$60,000,000 in Treasury notes to be lent, \$25,000,000 to the National Bank, \$10,000,000 to the municipality of the city of Buenos Ayres, and \$25,000,000 to the National Mortgage Bank; and another providing for the sale, when it is prudent, of 4½ per cent. bonds held as guarantee of the note issue of the National Bank. Up to this writing (Jan. 12, 1891), little of note has occurred, and the country seems now to be settling down into peace and quietude once more.

ARGENTEUIL, a county of Canada, in the western part of Quebec, and in the district of Terrebonne. It possesses great water-power, and a soil for the most part fertile. Burr limestone is found here. Population, 28,860.

ARGENTEUS CODEX, an old uncial manuscript of the Four Gospels in Mæso-Gothic dialect, written on vellum; all the letters except the initials are of silver, whence its name.

ARGES, a genus of small fishes, of the family *Siluridæ*, of extreme interest on account of their being frequently thrown out in vast numbers by some of the South American volcanoes, with torrents of muddy water. Humboldt was the first to describe these fishes, which he referred to the genus *Pimelodes*. Their ability to endure the high temperature of the water with which they are ejected has excited much interest.

ARGILE PLASTIQUE, a series of beds at the base of the tertiary system in France, resting on a conglomerate or breccia of rolled and angular chalk-flints. They consist of extensive deposits of sand with occasional beds of plastic clays used for pottery. Marl occurs inclosing, in some places, fluviatile shells that are not met with in the same position in the London basin, and in others large numbers of a species of oyster.

ARGILLACEOUS ROCKS, all rocks composed to any extent of clay.

ARGISCH, a village of the lower Wallachia, famed for its church, one of the noblest ecclesiastical structures in the orient. It is of white marble, graceful in design, and covered with arabesques. It was built in 1516.

ARGIVES, the most powerful of the Greek tribes during the Trojan war. Sometimes used as a generic name for all Greeks.

ARGO, a southern constellation to which Canopus, a star of the first magnitude, belongs.

ARGOLIS, the northeast peninsula of Morea, Greece, lying between the bays of Nauplia and Ægina. It forms a department in the modern kingdom of Greece. The plain of Argolis, famous in ancient times for breeding horses, is now made pestilential by morasses. It was from the importance of the ancient kingdom of Argolis that the Greeks were collectively often styled Argives by ancient writers. Argolis was colonized in very early times. Inachus settled here in 1800 and Danaus in 1500 B. C. Here Pelops ruled and Hercules was born. Modern Argolis is built on the site of the ancient city. Population, 12,000.

ARGONAUT, a genus of cephalopodous mollusks generally known by the name of paper nautilus, and in consequence of similarity in form of the shell very often confounded with the genus *Nautilus*, but in fact much more nearly allied to the *Poulpe* (*Octopus*).

ARGOT, a peculiar gibberish, called variously in different languages. It is used for purposes of concealment by those whose pursuits make them dread the law.

ARGUELLES, AUGUSTIN (1776-1844), Spanish politician of the modern liberal school. One of the committee of the cortes who drew up the new constitution, but, on the return of Ferdinand VII, fell a victim to the reactionary spirit which ensued in 1814, was arrested and imprisoned. He displayed such dexterity at his trial that it was found impossible to convict him. At last Arguelles was sentenced to ten years' confinement in prison at Ceuta. Fourteen persons were condemned with him and they experienced such barbarous treatment that in four years' three died, two became mad, and the rest received grievous injuries. But the revolution of 1820 restored Arguelles to freedom, and he became minister of the interior. During the regency he was appointed guardian of the young Queen Isabella.

ARGUMENT: in logic, properly the ground or premise on which a conclusion is rested. Popularly it is applied to a controversy.

ARGUS, a genus of gallinaceous birds, to which the pheasant belongs, remarkable for magnificence of plumage. The argus is a native of Sumatra and other eastern islands, of the peninsula of Malacca, Siam, etc. The sides of the head and neck are destitute of feathers; the tail consists of twelve feathers, of which the two middle ones of the male are very much elongated; the tail feathers of the male are nearly four feet long.



SILVER PHEASANT.

ARGYLL, or ARGYLE, GEORGE JOHN DOUGLAS CAMPBELL, eighth duke of Argyll, born at Ardencaple Castle, in Dumbartonshire, in 1823. When nineteen years of age he published a *Letter to the Peers, from a Peer's Son*, written in the interests of Scottish Presbyterianism. He succeeded his father in 1847, and became at once an active member of the House of Lords. He was made lord privy seal in 1853, and had charge of postal affairs from 1855 to 1858. He was hereditary sheriff of Argyleshire, and was appointed lord-lieutenant in 1864. From 1868 to 1874 he was secretary of state for India. He traveled in the United States in 1878. Among his published works are: *The Eastern Question from the Treaty of Paris to the Treaty of Berlin and to the Second Afghan War* (two volumes, 1879); *The Reign of Law* (1866); *Primeval Man* (1869); and *The History and Antiquities of Iona* (1870). Throughout his career the duke has been an enthusiastic student of art and literature, and has been a frequent lecturer on such topics. On the return of Mr. Gladstone to power in 1880, the duke took office as privy seal, but retired in 1881, since which time he has proved a severe critic of his former associates. In 1844 he married the Lady Elizabeth Georgianna Gower, eldest daughter of the Duke of Sutherland. His eldest son, George Edward Henry Douglas Sutherland, Marquis of Lorne, married the Princess Louise, daughter of Queen Victoria.

ARIA (Air): in music, rhythmical song as distinct from recitative. The term was formerly applied to a measured lyrical piece either for one or several voices, but is now commonly applied to a song introduced in a cantata, oratorio, or opera, and intended for one voice supported by instruments.

ARIALDUS, a deacon of the church of Milan, who flourished in the 11th century. He took a prominent part in the ecclesiastical contentions of his times, and advocated strict celibacy of the clergy.

Arialdus was murdered and his remains thrown into Lake Maggiore, June 28, 1066. He was afterwards canonized.

ARICHAREES, a tribe of American Indians of the Pawnee family; originally located in the valley of the Platte River, but now on the Upper Missouri. They were formerly a warlike race, but have become active agriculturalists and firm friends and allies of the whites. See **INDIANS, AMERICAN**, Britannica, Vol. XII, pp. 822-833. See also these Revisions and Additions.

ARICHAT, a seaport of Cape Breton Island in the province of Nova Scotia, with a harbor for the largest vessels. The town has 1,000 inhabitants, largely engaged in fishing, and at the head of its harbor a lead mine is now opened.

ARICIA, an ancient city of Latium, near the site of modern La Riccia and the lovely Lago di Nemi. It contained a celebrated temple of Diana.

ARIEL, a spirit of the air in Shakespeare's *Tempest*; a water spirit among modern Jews; a name applied to Jerusalem.

ARIEL GAZELLE, the *Gazela dama*, or "Arabian gazelle" of Western Asia. It is a beautiful, small antelope of a dark-fawn color, much prized for the quality of its skin and for the delicacy of its flesh; also as a domestic pet, remarkable for the beauty of its eyes.

ARIES, the ram; one of the signs of the zodiac, including the first 30° of the ecliptic measured from the vernal equinox. The vernal equinox is constantly changing its position among the fixed stars in consequence of the precession of the equinoxes, moving west at the rate of 50' 2" annually. It is from this circumstance that the sign Aries no longer corresponds with the constellation Aries, which was the case about 2,000 years ago, when the ecliptic was divided into twelve parts, called signs, each named after a group of stars through which it passed. The present sign Aries is in the constellation Pisces, about 30° west of the original sign; and although the sun at the vernal equinox will always be at the first point of Aries, yet nearly 24,000 years will elapse before that point will again coincide with the beginning of the constellation Aries.

ARIL: a peculiar covering of the seed in some plants formed by an expansion of the funiculus, or of the placenta itself. This expansion takes place after fertilization, and sometimes invests the seeds entirely, sometimes only partially. In the nutmeg the aril forms what is called mace.

ARIMASPI, a fabulous people supposed by the ancient Greeks to inhabit the most northern region of the world, near the Rhipæi Montes, which Ptolemy places on the site of the modern Ural Mountains. They are described by Herodotus, in the fourth book of his history, as one-eyed and fierce, engaged in perpetual conflict with the neighboring griffins for the gold hoarded by them.

ARINOS, a river of Brazil which, after a north-west course of 700 miles, enters the Tapajos, itself an affluent of the Amazon.

ARISTA, MARIANO (1802-1855), a Mexican general, born in the State of San Luis Potosi, July 26, 1802. He distinguished himself in the successive wars that established first the independence of Mexico and later the republican form of government. In the war with the United States he commanded at Palo Alto and Resaca de la Palma, and at the close became minister of war. In 1850 he was elected president of Mexico, but resigned his position three years later, and was banished soon afterward. He died on board the English steamer *Tagus*, going from Lisbon to France, Aug. 7, 1855.

ARISTOCRACY: etymologically, the power of the best, noblest, or most worthy; and in the sense

which it originally bore aristocracy had reference to a form of government in which the sovereignty was placed in the hands of the minority of the citizens of the state, exclusive altogether of the slave population, which generally existed in antiquity. It is in this sense also that we use it when we speak of the Italian States of the Middle Ages as aristocracies.

ARISTOLOCHIA, a genus of plants of the natural order *Aristolochiaceæ*. It contains upward of 130 known species, chiefly natives of warm climates, being particularly abundant in the tropical regions of South America.

ARISTOTLE'S LANTERN, the five-toothed masticating apparatus found round the beginning of the alimentary canal of some sea-urchins. The structure owes its name to its discoverer and its general shape.

ARITHMETICAL MEAN, the number that lies equally distant between two others. Thus the arithmetical mean between 11 and 17 is 14, which is found by taking half their sum.

ARITHMETICAL PROGRESSION, a progression in which the terms increase or decrease by equal differences, as 7, 10, 13, 16, 19, 22; or 12, 10½, 9, 7½, 6.

ARITHMETICAL SIGNS, arbitrary marks or symbols used to denote the operations to be performed on numbers, or the relation existing between them.

ARIZONA TERRITORY. Area, 113,020 square miles. Population (1890), 59,620. Capital, Phoenix. Arizona, so called from the arid "sand hills" which characterize the face of its plains, was anciently inhabited by the Aztecs or Toltecs, relics of whose remarkable civilization exist in the ruins of walled towns and enormous communal houses built of stone or sun-dried brick. These aborigines had been partly dispossessed by invading tribes from the north, when the Spaniards, about 1580, established a military post at Tucson. Other settlements soon followed, and before the middle of the seventeenth century the valleys of the Santa Cruz and its affluents were teeming with a busy mining and agricultural population, and the Colorado valley was the seat of successful Jesuit missionary enterprise and Spanish industry. Against the cruelty of the whites, however, the Indians revolted, and the settlers fell beneath the tomahawk of the Apaches and their allies. The remains of this second civilization are seen in the ruined cathedrals and cities of the Colorado and its tributaries. The later history of Arizona, to 1863, is connected with that of New Mexico. The greater part of the present territory belonged to the first Mexican cession, 1848, to the United States. The remainder, lying south of the Gila river, was a part of the Gadsden purchase of 1853. Arizona became a territory in 1863. Its growth and prosperity have, until recently been much hindered by the warlike attitude of the Indians; but a joint military movement on the part of the United States and Mexico has resulted in a peace which will probably be permanent.

The surface of Arizona is composed of broad plateaus averaging in elevation from about one hundred feet in the south to nearly eight thousand feet in the north. These are crossed by lofty ranges, whose peaks tower to a height of 14,000 feet, and are rent by rivers whose beds are in some cases 6,000 feet below the surface. The principal ranges are the Zuffi, Mogollon, Santa Catarina, Pinaleno, Dragon, Santa Ana, Black, Gerbat, Gila, Black Mesa, Northside, and San Francisco. From the latter, in the center of the territory, immense lava-beds trend northward to the Colorado Chi-

quito. Above the plateaus rise extensive tablelands whose perpendicular sides are often more than a thousand feet high. The Colorado river, entering Arizona across the middle of its northern boundary, runs for more than 300 miles, with an average fall of nearly ten feet to a mile, through the Grand Cañon, a profound chasm whose verticle walls, 3,000 to 6,000 feet high, are sections of almost horizontal strata representing, with those of the smaller cañons of the tributary Little Colorado, San Juan, Salt, Zuffi and Upper Gila, all the geological formations in regular order to a depth of 25,000 feet. From the Grand Cañon the Colorado, which drains the whole of Arizona, runs southward along its western boundary, and on to the Gulf of California—being navigable for about 500 miles.

Gold, silver, copper, quicksilver, platinum, iron, coal, nickel, lead, tin, sulphur, salt, load-stone, gypsum, chalcedony, opals, sapphires, garnets, lead, borax, and other valuable minerals are found in abundance. The gold and silver mines, some of which have been profitably worked for centuries, constitute as yet the principal wealth of the territory; but the construction of railroads is now effecting a more rapid development of its other vast mineral resources.

The rainfall of Arizona is very scanty; the air, hot and dry, though healthy and invigorating, is not conducive to the fertility of the soil. Irrigation, however, has been extensively introduced, especially along the Gila bottom lands; and largo crops of barley and other cereals are the result. Root-crops, semi-tropical fruits and beautiful flowers and shrubs are produced in abundance under the same artificial influence. Spruce and pine forests are found in the mountains, but the trees are often killed by drought, and wood is very scarce. Pasturage is good, and a great many sheep are kept upon the grazing-lands in the central and northeastern parts of the territory.

The public schools are under the control of a territorial board of education composed of the governor, secretary and treasurer, assisted by county superintendents of schools. Mission schools have been established among the Indians. The Apaches and other savage tribes have been broken up and placed upon reservations. The village Indians, mostly Roman Catholics, are nominally citizens of the United States. The principal cities and towns are Tucson, the metropolis; Phoenix, the capital; Prescott, the former capital; Yuma, a river-post on the Colorado; Tombstone, Globe, Florence, Mineral Park and St. John.

The population, exclusive of tribal Indians, was, in 1870, 9,658; in 1880, 40,440; in 1890, 59,620.

GOVERNORS OF ARIZONA: John A. Gurley, appointed 1863; John A. Goodwin, 1863-65; Richard C. McCormack, 1865-69; A. P. K. Safford, 1869-77; John R. Hoyt, 1877-78, John C. Fremont, 1878-82; Frederick Tritle, 1882-85; C. Meyer Gulick, 1885-88.

ARKADELPHIA, a thriving town of Arkansas, the seat of a State Normal School. It was the scene of an engagement in which the Confederates were defeated by the Union troops under Captain Brown, Feb. 15, 1863.

ARKANSAS, STATE OF. Area, 53,850 square miles. Population (1890), 1,128,179. Capital, Little Rock. Arkansas is so called from the important navigable river which bisects it diagonally from northwest to southeast. The name is often pronounced as spelled, but the legislature and people of the State sanction only the pronunciation *Ar'kansaw*.

The first settlement was made by the French, near St. Francis River, in 1670. The territory within the present limits of the State was a part of the Louisiana purchase of 1803. It was included in

Missouri Territory when Louisiana became a State in 1812. In 1819 it became a part of Arkansas Territory, Missouri being set off as a State by the Missouri Compromise. Indian Territory was allotted to the Indians, and Arkansas was admitted as a State in 1836. The decade preceding the war witnessed a large influx of settlers from the southern States. In 1861, a convention met at Little Rock and declared for secession. Arkansas suffered much from the presence of both armies. It was the scene of many important military movements, including the battles of Pea Ridge, Prairie Grove, Arkansas Post and Helena; and after the war, it remained under military control until 1868. In this year it was readmitted to representation in Congress, upon the adoption of a new constitution, which was revised in 1874.

The surface of Arkansas slopes in the general southeasterly direction of the Arkansas River, from the rich, mineral yielding mountains in the northwest to the Mississippi on the eastern border, where the land is low, marshy, and subject to frequent inundations except where protected by artificial embankments. The interior is hilly, rising gradually from the great river levels to the central rolling prairies and the foot-hills which lead up to the Ozark, Boston and Ouachita mountain regions of the west, with the Mississippi and the Arkansas, other rivers and their affluents, notably the St. Francis, White, Red, Black and Ouachita, afford an extensive system of internal navigation.

Heavy forests of oak, hickory, maple, black walnut, red elm, sweet and black gum, tupelo, blue and white ash, elm, yellow poplar, iron-wood, horn-beam, beech, cedar, sycamore, pecan, persimmon, sassafras, button-wood, pine, locust, wild cherry, cotton-wood and cypress, cover large tracts of the fertile mountain slopes and river valleys.

Rich deposits of minerals, including gold, zinc, copper, argentiferous galena, lignite, iron, manganese, kaolin, salt and mineral paints, are found in the mountains. Various iron ores and many varieties of coal occur. The Ouachita valley produces the best oil stone in the world, and is also famous for its medical hot mineral springs.

The forests abound in wild game of all kinds, and the rivers, lakes and bayous furnish fish in great variety and abundance. Fruits, both wild and cultivated, are plenty; and a soil of boundless fertility gives to Arkansas a high rank as an agricultural State. The annual production of corn is more than 40,000,000 bushels; of cotton, over 600,000 bales; of wheat, about 2,500,000 bushels; of oats, more than 5,000,000 bushels; tobacco, about 1,000,000 pounds. Other principal crops are hay and potatoes. The manufactures are principally of lumber, leather, cotton-seed oil, wool, machinery, mill products, tobacco and novaculite hones.

Little Rock, the capital and largest city, is an important center of railroad and river transportation, and is the seat of St. John's College. Eureka Springs is noted for its mineral waters. Helena, the largest town of Arkansas on the Mississippi, is an important cotton market. Hot Springs, characterized by its name, is a popular health and pleasure resort. Texarkana, situated partly in Texas, is a railroad center of growing importance. Pine Bluff is an educational and shipping town. Fort Smith is of importance for its commercial and legislative connection with the Indian Territory. Fayetteville is the seat of the Arkansas State Industrial University. Arkadelphia is noted for its excellent salt. Camden is a manufacturing town and cotton market. Batesville is the seat of Arkansas College and Batesville Academy. Prescott, Van Buren, and Conway are trading centers.

Other principal towns are Hamburg, Dardanelle, Augusta, Searcy, Jacksonport, Arkansas City and Judsonia, the seat of Judson University. The educational system of the State is in a flourishing condition.

The population in 1870 was 484,471; in 1880, 802,525; in 1890, 1,128,179.

ARKANSAS CITY, a town of Arkansas, joint capital with Watson of Desha county, is situated on the west bank of the Mississippi, by which cotton, corn, and other staple products of the county are here shipped.

ARKANSAS POST, a village of Arkansas, on the Arkansas River. It was held by the Confederates during the civil war until Jan. 11, 1863, when it was attacked by the combined Union forces under General McClelland and Admiral Porter, and carried by storm.

ARKANSAS RIVER, next to the Missouri, the largest affluent of the Mississippi. It is 2,000 miles long, rising in the Rocky Mountains on the borders of Utah, and joining the "Father of Waters" in latitude 33° 54' N., and longitude 91° 10' W. Flowing generally through a level country, it presents but few obstacles to navigation. The principal difficulty is connected with its periodical rise and fall—the difference between season and season being not less than 25 feet. Notwithstanding this, however, the Arkansas is navigable for steamboats, during nine months of the year, to a distance of 800 miles from its mouth.

ARKANSAS STONE, a beautiful novaculite found in Arkansas and Indiana, and used for hones and oil-stones.

ARKANSITE, thick black crystals of titanite acid or brookite, found in Arkansas. See Britannica, Vol. XVI, p. 387.

ARKONA, or ARCONA, the N. E. promontory of the island of Rügen, in the Baltic, almost the northern extremity of Germany. On the site of an ancient heathen temple a lighthouse 75 feet high was erected in 1827.

ARKOSE, a kind of feldspathic sandstone, occurring in the Lower Silurian, Carboniferous and Triassic formations. It consists essentially of consolidated quartzose sand and particles or grains of orthoclase, with sometimes a small proportion of kaolin and mica.

ARLBERG, the name of a crystalline mountain mass amongst the Western Alps, which forms the boundary between the Austrian provinces of Tyrol and Vorarlberg. The pass over this ridge, which, on the route from Bludenz to Landeck and Innsbruck, is 5,300 feet high, is one of the most difficult in the Tyrolean Alps, though it is practically the only one between the two Austrian provinces. The scheme for a railway with a tunnel through the Arlberg Alp took definite shape in 1880, and the railway from Innsbruck to Bludenz was opened Nov. 15, 1884. The railway is through a singularly beautiful mountain country. The main tunnel is 6,720 yards in length.

ARM, the upper extremity of the human body, consists of two portions—the arm, strictly so called, and the forearm; the former having one bone, the humerus, which moves freely by a globular head upon the scapula, forming the shoulder joint, and the latter having two bones, the radius and ulna, which move on the lower end of the humerus, forming the elbow-joint, and below, with the carpus, forming the wrist. See Britannica, Vol. I, pp. 827, 839.

ARMADILLO, a genus of *Crustacea* of the order *Isopoda* of Cuvier. This is one that is generally included under the popular name of wood-louse, and one of which, *Porcellio*, is very generally known by

that of slater. The armadillos derive their name from the scaly armor of their bodies, in which an analogy is found to the mailed quadrupeds of South America. They have the power of rolling themselves into a ball when alarmed, so as to expose nothing but the plates of the back, and have thence received the name of pill beetle. They were not only used in a dried and pulverized state, but they are said to have been actually swallowed entire as pills.

ARMAGEDDON, the name properly bestowed upon the whole table land of Esdraelon in Galilee and Samaria.

ARMANSPERG, JOS. LUDW, COUNT OF (1787-1853), formerly president of the government of Greece. On the accession of King Louis to the throne, Armansterg, who had already occupied several important posts, was summoned to Munich, where, rapidly rising from one dignity to another, he at length became minister of finance and of foreign affairs. Accompanying young King Otho, Armansterg landed at Nauplia in January, 1833. For four years he was at the head of public affairs, and Greece derived many benefits from his administration, but the heat of party strife and court intrigues led to his dismissal, and he left Greece in March, 1837.

ARMATOLES, a body of Greek militia, which was first formed during the reign of Sultan Selim I, about the beginning of the 16th century.

ARMATURE. This term is applied to the pieces of soft iron that are placed at the extremities or poles of magnets to preserve their magnetic power.

ARMENIA. For the general history and extended descriptive record, see *Britannica*, Vol. II, pp. 546-48; also Vol. XXIII, p. 652. That record closed with an account of the Berlin Treaty in 1878. During the negotiation of that treaty, Great Britain entered into a secret compact with Turkey, guaranteeing to the latter the integrity of her Asiatic possessions on condition that Turkey should effect reforms in their administration, and protect the Armenians from the Kurds and the Circassians. Turkey has failed on her part. The invasion of the Kurds in 1882, under their chief Obeidullah, a vassal of Turkey, was especially destructive of life and property of the Armenians. Here is the text of the 61st article of the Berlin Treaty: "The Sublime Porte undertakes to carry out without delay the reforms and ameliorations which local requirements necessitate in the provinces inhabited by the Armenians, and to guarantee the security of the latter against the inroads and persecutions of the Circassians and the Kurds. She will, at regular intervals, acquaint the Powers with the measures employed to this end, who will see that they are properly effectual." Up to this date (1891) the urgent appeals of the Armenians for relief have been in vain. In August, 1890, a special commission was appointed by the Porte to inquire into the grievances of the Armenians; but, from the nature of its constitution, it was felt that no good could possibly come from its recommendations, and on Sept. 21st the Armenian patriarch resigned. This step was followed on Oct. 15th by the issue of an order by the Ecumenical Synod closing all the Orthodox Greek churches under the jurisdiction of the Archbishops of Constantinople, Macedonia and Dircon—an action which occasioned great excitement among the Orthodox population. On the 21st, the difficulty was settled by the Porte deciding to maintain the privileges granted to the patriarch by former sultans, and to further define them.

On Nov. 28th, it was announced that the arrangement come to had been annulled upon further consideration by the Porte, and that the churches consequently remained closed. It was announced

Nov. 21, 1890, that concessions had been made on both sides, though the question of the authority of the Ottoman government over the Church was yet in dispute. See also *Armenian Church*, Vol. II, pp. 548-49.

ARMIDA, one of the most prominent female characters in Tasso's *Jerusalem Delivered*.

ARMILLARY SPHERE, an instrument intended to give a just conception of the constitution of the heavens and of the motions of the heavenly bodies, as seen by an observer on the earth. It consists of a number of rings fixed together so as to represent the principal circles of the celestial sphere, and these are movable round the polar axis, within a meridian and horizon, as is the ordinary celestial globe. It was by means of such rings furnished with sights that Hipparchus, Ptolmey, and other ancient astronomers made many of their observations. It is, however, now only used as an aid to instruction in astronomy, and in this respect is generally supplanted by the celestial globe.



ARMILLARY SPHERE.

ARMILUSTRUM, a festival at Rome on Oct. 19th, during which the people sacrificed, completely armed, and to the sound of trumpets. It was intended for expiation of the armies, and for the prosperity of the arms of the Roman people. The name is also applied to the place where the sacrifice was performed.

ARMISTICIO, a territory of Venezuela bounded by the Venezuelan States of Los Andes, Zamora and Bolivar, and on the south and west by the United States of Columbia. Armisticio has an area of 7,040 square miles, is fertile and abundantly watered.

ARMITAGE, EDWARD, an English historical painter, born in London, in 1817, and studied in Paris under Paul Delaroché. His first essay in historical composition was *Prometheus Bound*. In 1847, his *Battle of Meanece* won him a high prize and was purchased by the queen. He was commissioned to paint two of the frescoes in the new parliament house. Armitage visited the Crimea during the progress of the war with Russia, making studies for pictures of the battles of *Inkerman* and *Balaklava*. His *Julian the Apostate* was in the English collection at the Philadelphia Exhibition of 1876, and *Serf Emancipation* at the Paris Exhibition of 1878.

ARMITAGE, THOMAS, an American divine and author, born in Pontefract, England, Aug. 2, 1819. He came to the United States in 1838, and in his youth became a Methodist minister; but in 1848 he united with the Baptists, settling as a pastor in New York. He is the author of *A History of the Baptists*, and has been an efficient worker in the organization and conduct of the American Bible Union.

ARMORED SHIPS. As early as 1812, John Stevens of Hoboken, New Jersey, presented to the United States government plans for an armored vessel, the special feature of which was a battery protected by inclined armor. The project was never given up, and in the spring of 1854 the keel of the famous Stevens battery was laid. Two months later the French commenced the construction of four naval batteries, viz.: *Dévastation*, *Lave*, *Congreve*, and *Tonnant*. Later the same

the British iron-clads *Erebus*, *Terrible*, and *Thunderer* were begun. The French iron-clads were the first completed, and on June 17, 1855, they engaged the Russian forts at Kinburn, and passed through the battle without injury. The armor of the French and English vessels was solid of wrought iron four and a half and four inches thick respectively, backed by 28 and 24 inches of oak. From that date down no military observer has doubted the superior value of armored ships of war.

On May 9, 1862, the "Ericsson" *Monitor*, suddenly appeared in the famous naval battle with the *Merrimac*. Her special feature was that of a single revolving turret mounted on a low, flat hull and protecting two heavy guns. The deck was also moderately protected, and the sides of the vessel were thoroughly protected with armor. Change and improvements rapidly followed, resulting in this process of evolution during the period of thirty-five years, in furnishing for naval warfare an iron-clad craft, in which the displacement has increased from 1,300 tons to 14,000, with a speed increased from four knots to eighteen knots, the weight of the guns from four tons to one hundred tons, and the thickness of armor from four inches to twenty-two inches.

The changes in the distribution and thickness of the armor are equally great. One of the rules in naval construction is that the weight must not exceed about twenty per cent. of the displacement. In vessels of a given tonnage the smaller the surface to be protected the thicker might be the armor plates. In 1858, when protection was sought against the shot of the sixty-eight pounders which were types of the heavy guns of that day, the entire water-line and the ship's side above was sufficiently protected by solid wrought-iron plates 4x7 in. thickness; but later, when the rifled gun came into use, a greater thickness was required along the exposed water-line, and the remainder of the available weight was distributed in protecting the guns and men. The builder of an armored sea-going war ship finds himself limited to certain approximate proportions of weight for the various component parts of the vessel. These proportions are as follows:

Hull.....	37
Engines and boilers.....	20
Armor.....	30
Coal.....	10
Guns and ammunition.....	6
Provisions and stores.....	4
Spars, sails, rigging, boats and other gear.....	2
Officers and crew.....	1

In 1873, the Italian iron-clad *Duilio* was built, in which there was a wide departure from the previous method of protection. The water-line armor belt was abandoned, and in its place there was introduced a curved protective deck below the water-line, so that a large share of the armor might be used in covering a citadel, rising from the deck in the middle of the ship, in which the engine and boilers were inclosed. On the top of the citadel were two turrets, each containing two 100-ton guns. It was believed that if shot should pierce the vessel below the water-line little harm would result, as the water could not go below the curved protective deck. This arrangement permitted the use of twenty-two inch armor over the whole citadel. In this way the curved deck came into general use in the war ships of various nations. All projectiles are expected to glance from the surface of the curved deck, the sides of which are gradually being covered with thicker plate as the explosives are gradually increasing in power. Various devices have also been introduced for lessening the danger of sinking, such as filling the sides at the water-

line with cocoa cellulose, a substance weighing only one-eighth as much as sea-water.

Repeated experiments show that a defensive armor of a given thickness is much more effective when solid than it is when made up of several plates. Thus in a careful test a sixty-eight pound round shot failed to penetrate a four-inch solid plate, but readily went through a six-inch plate made up of as many inch plates of best wrought iron. Tests have also been made with compound armor, and with solid steel armor, resulting in favor of the latter. The latest tests up to Jan. 1, 1891, have shown that of all armor material thus far used the most effective is solid steel with nickel alloy.

ARMORER. The old meaning of this word has nearly passed away with the system of hand-to-hand warfare. In feudal times armor-smiths were the most skillful workers in metals.

ARMS, ARMORIAL BEARINGS, or ENSIGNS, are terms for the accompaniments of a shield; the crest, helmet, supporters, etc.

ARMS, BELLS OF, are tents for containing the small-arms of each company in a regiment of infantry.



— KNIGHT IN ARMOR.

ARMSTRONG, DAVID HARTLEY, U. S. senator, born in Nova Scotia, Oct. 21, 1812. In 1838 he opened and taught the first school in Missouri. He was comptroller of St. Louis, twice a police commissioner, and served as U. S. senator from Missouri from 1877 to 1879.

ARMSTRONG, GEORGE DODD, S. T. D., an American author, born in Mendham, N. J., Sept. 15, 1813. He graduated at Princeton in 1832 and studied at the Union Theological Seminary, Prince Edward county, Va. He became professor of chemistry and mechanics at Washington and Lee College, Lexington, and in 1851 pastor of a church in Norfolk. He has published *The Christian Doctrine of Slavery* (1857); *Scriptural Examination of the Doctrine of Baptism* (1857); *The Theology of Christian Experience* (1857); *The Summer of the Pestilence—a History of the Ravages of the Yellow Fever in Norfolk, Va., in 1855* (1857); and *The Books of Nature and Revelation collated* (1886).

ARMSTRONG, JAMES, Canadian jurist, born in Berthier, Province of Quebec, April 27, 1821, admitted to the bar in 1844, and became queen's counsel in 1867; in 1871 he was appointed chief justice of St. Lucia, West Indies, and later of Tobago, West Indies. He has published a treatise on the law of marriage in the province of Quebec, and a treatise on the laws of intestacy in the different provinces and northwest territories of the Dominion. He is president of the Montreal and Sorel Railway.

ARMSTRONG, JOHN, a distinguished English writer on medicine, born near Bishop-Wearmouth, May 8, 1784, died Dec. 12, 1829. He was educated in Edinburgh. He began his medical practice in the north of England; but, after the publication of a valuable work on *Typhus Fever*, he removed to London, where he established medical schools, delivered lectures and wrote numerous important books and magazine articles.

ARMSTRONG, JOHN, an American soldier, born in the north of Ireland in 1725, died at Carlisle, Pa., March 9, 1795. He emigrated to America in 1745, and served with distinction in the war with

France in 1755-56. He commanded an expedition against the Indians at Kittanning, which resulted in the destruction of their settlement, the liberation of a number of white prisoners, and the confiscation of the stores sent to the Indians by the French. For this service the corporation gave him a medal, a piece of plate and a vote of thanks. He was commissioned as a brigadier-general in the continental army March 1, 1776, was present at Fort Mifflin and commanded the Pennsylvania militia at the battles of Brandywine and Germantown. In 1778-80 and again in 1787-88 he was a member of Congress from Pennsylvania.

ARMSTRONG, JOHN, an American soldier, born in Carlisle, Pa., Nov. 25, 1758, died in New Haven, Conn., April 19, 1843. In 1775, while a student at Princeton, he enlisted in the Revolutionary Army, in the Potter Pennsylvania regiment, from which he was appointed aide-de-camp to his father's friend, Gen. Hugh Mercer, whom, when fatally wounded, he carried in his arms from the Princeton battle-field. Armstrong then became aide to Gen. Gates, with the rank of major, and served both in the campaign against Burgoyne and in the south. At the close of the war, while the army lay at Newburg, N. Y., impatiently waiting for the conclusion of the negotiations for peace, the families of the officers and soldiers in many cases were suffering through the tardy receipt of the pay promised, caused by the inability of Congress to raise revenues. Armstrong wrote the first of the celebrated "Newburg Letters," March 10, 1783, setting forth the destitution of the soldiers and calling for a meeting of the officers of the army for the consideration of measures to redress their grievances. Washington immediately issued general orders rebuking "these disorderly proceedings," but called a meeting for the 15th. In the second "Newburg Letter" the anonymous writer attempted to show that the action of the commander-in-chief was really an indorsement of the ideas of the first letter; but in the meeting of the 15th Washington solemnly protested against the treasonable course advocated in the letters, and urged the officers to await the action of Congress. He then retired and Major-General Gates presided while resolutions were adopted pointing out the necessities and just

claims of the officers, but avowing confidence in the judgment of Congress. In later years Armstrong acknowledged that he had written the letters. When the army was disbanded he returned to Carlisle, was made secretary of state, and later adjutant-general of Pennsylvania. In 1787 he was sent to the old Congress; he was made U. S. senator in 1800-2, and again in 1803-4, and in 1804-10 he was appointed minister to France, acting as minister to Spain after 1806. In 1812 he was commissioned brigadier-general and assigned to the district including the city and harbor of New York, and in 1813-14 he was secretary of war; but his lack of success in the operations against Canada, and the devastation of Washington city by the British in 1814, made him unpopular, and he was obliged to resign the same year. He published *Notices of the War of 1812* (1836); *Memoirs of Gen. Montgomery and Wayne*; *Treatise on Agriculture*; *Treatise on Gardening*; *Review of Gen. Wilkinson's Memoirs*; and *Notices of the American Revolution*.

ARMSTRONG, ROBERT, an American soldier, born in East Tennessee in 1790, died in Washington, D. C., Feb. 23, 1854. In the Creek war of 1813-14 he commanded a company of Tennessee artillery under Jackson, with distinguished bravery. He served in the battle of Talladega, Ala., Jan. 24, 1814, in the battle of New Orleans, and again in the battle of Wahoo Swamp in 1836. In 1829 he became postmaster at Nashville, and in 1845 consul to Liverpool, remaining there until 1852. Subsequently he became the proprietor and editor of the "Washington Union," and the confidential adviser of President Polk.

ARMSTRONG, SAMUEL T., governor of Massachusetts, born in 1784, died March 26, 1850. He was mayor of Boston and subsequently lieutenant-governor of Massachusetts. He became governor in 1836 on the election to the U. S. senate of Governor Davis. Mr. Armstrong was a member of the prudential committee of the American board of commissioners for foreign missions.

ARMSTRONG, SIR WILLIAM GEORGE, an eminent English engineer, and inventor of the Armstrong gun, born at Newcastle-upon-Tyne, in 1810. His first important invention was an improved hydraulic engine, which was followed by a hydraulic crane.

ARMY OF THE UNITED STATES. The theory of the government is that all able-bodied males of proper age in the entire country shall constitute its army, with the president of the United States as their commander-in-chief. All such male citizens are liable, in possible emergencies, to be called upon to do military duty; and all the officers and soldiers are at all times citizens of the country, with all the rights and privileges of the most favored civilian. The standing army properly began with the organization of the war department, Dec. 7, 1789. In 1790 it numbered 1,200 men; in 1791 it was increased to 2,100 men. In 1798 a provisional standing force of 10,000 men was authorized, in view of a war with France; and a year further a provisional increase to the number of 40,000 regulars and as many volunteers was authorized. A fraction of this increase was made, but the danger of war happily passed away, and in 1802 the number was fixed to about the old number, viz., 10,000 men.

During the war of 1812 the army was increased, and a force of 25,000 regulars and 50,000 volunteers was authorized. At the close of the war with England, 1815, the army was reorganized on a peace footing, the force then consisting of 10,000, exclusive of its engineer department. In 1821 the force was

again reduced. During the Florida war, lasting from 1835 to 1842, there was another increase, both of regulars and militia.

At the beginning of the war with Mexico (May, 1846), the army was 7,244 strong, Gen. Taylor having with him in Texas 3,554 men. During the progress of this war, 29,000 regulars were enlisted and 50,000 volunteers were employed. At the close of hostilities, the volunteers disbanded and the regular force was reduced to its previous strength.

At the breaking out of the late civil war, the legal strength of the regular army was 12,000 men. The first levy for the Union army (dated April 15, 1861) was made for 75,000 men, and as far as possible was incorporated with the regular army. That year the army was increased to 186,000; in 1862, to 637,000; in 1863, to 918,000; and 1865, to more than 1,000,000. The actual arrivals on the field amounted to 1,135,416 men, of which there were in the regular army 43,014. After the close of the war, the act of July 23, 1866, fixed the rank and file at 75,382; but by successive and speedy reductions its strength was brought down to 2,153 commissioned officers and 25,000 men.

At present (1891) the army consists of 25 regiments of infantry, 10 of cavalry, and 5 of artiller-

—a total force of 25,000 men. Each regiment includes 10 companies, each officered by a captain, one first and one second lieutenant, and two extra lieutenants, who are the adjutant and quartermaster of the regiment. These, with the colonel, lieutenant-colonel and major, complete the officers of an infantry regiment.

The cavalry regiment consists of 12 troops, or mounted companies, with 3 officers to the troop, one captain, one first and one second lieutenant, and has 3 majors instead of one. In the artillery, the regiment contains 12 companies, or batteries, each being officered by one captain, 2 first lieuten-

ants, and one second lieutenant. Consequently, in the artillery regiment there are 26 first lieutenants, allowing two for each company and one each as adjutant and quartermaster. The field officers consist of a colonel, lieutenant-colonel, and 3 majors.

In each regiment of artillery there are 2 horse batteries, the officers of which are changed from time to time with the officers of foot batteries, so that all may be instructed in this important part of the artillery officer's duties. The other batteries, or companies, are foot troops, instructed both as infantry soldiers and in the handling of heavy guns in the permanent forts.

U. S. ARMY PAY TABLE.—OFFICIAL REPORT.

GRADE.	PAY OF OFFICERS IN ACTIVE SERVICE.*						PAY OF RETIRED OFFICERS.*					
	Pay of Grade.		Monthly Pay.				Pay of Grade.		Monthly Pay.			
	Yearly.	Monthly.	After 5 years' service.	After 10 years' service.	After 15 years' service.	After 20 years' service.	Yearly.	Monthly.	After 5 years' service.	After 10 years' service.	After 15 years' service.	After 20 years' service.
General (retired).....			10 %	20 %	30 %	40 %	\$13,500 00	\$1,125 00				
Major-general.....	\$7,500 00	\$625 00					5,625 00	468 75				
Brigadier-general.....	5,500 00	458 33					4,125 00	343 75				
Colonel.....	3,500 00	291 67	\$320 83	\$350 00	\$375 00	\$375 00	2,625 00	218 75	\$240 62	\$262 50	\$281 25	\$281 25
Lieutenant-colonel.....	3,000 00	250 00	275 00	300 00	325 00	\$333 33	2,250 00	187 50	206 25	225 00	243 75	250 00
Major.....	2,500 00	208 33	229 17	250 00	270 83	291 67	1,875 00	156 25	171 87	187 50	203 13	218 75
Captain, mounted.....	2,000 00	166 67	183 33	200 00	216 67	233 33	1,500 00	125 00	137 50	150 00	162 50	175 00
Captain, not mounted.....	1,800 00	150 00	165 00	180 00	195 00	210 00	1,350 00	112 50	123 75	135 00	146 25	157 50
Regimental adjutant.....	1,800 00	150 00	165 00	180 00	195 00	210 00						
Regimental quartermaster.....	1,800 00	150 00	165 00	180 00	195 00	210 00						
First lieutenant, m'ted.....	1,600 00	133 33	146 67	160 00	173 33	186 67	1,200 00	100 00	110 00	120 00	130 00	140 00
First lieutenant, not m'ted.....	1,500 00	125 00	137 50	150 00	162 50	175 00	1,125 00	93 75	103 12	112 50	121 87	131 25
Second lieutenant, mounted.....	1,500 00	125 00	137 50	150 00	162 50	175 00	1,125 00	93 75	103 12	112 50	121 87	131 25
Second lieutenant, not m'ted.....	1,400 00	116 67	128 33	140 00	151 67	163 33	1,050 00	87 50	96 25	105 00	113 75	123 50
Chaplain.....	1,500 00	125 00	137 50	150 00	162 50	175 00	1,350 00	112 50	123 75	135 00	146 25	157 50

* For law establishing the present rates of pay, see sections 1261, 1262, 1263, and 1274, Revised Statutes.

† The General of the Army, when retired, shall be retired without reduction in his current pay and allowances.—[Act June 30, 1882.]

‡ The maximum pay of a colonel is by law \$4,500 per annum. [Section 1267, Revised Statutes.]

§ The maximum pay of a lieutenant-colonel is by law \$4,000 per annum. [Section 1267, Revised Statutes.]

Note 1. An aide-de-camp to a major-general is allowed \$200 per year in addition to the pay of his rank, not to be included in computing the service increase.—[Act July 15, 1870, Sec. 24.] Section 1261, Revised Statutes.

Note 2. An aide-de-camp to a brigadier-general is allowed \$150 per year in addition to the pay of his rank, not to be included in computing the service increase.—[Act July 15, 1870, Sec. 24.] Section 1261, Revised Statutes.

Note 3. An acting commissary of subsistence is allowed \$100 per year in addition to the pay of his rank, not to be included in computing the service increase.—[Act July 15, 1870, Sec. 24.] Section 1261, Revised Statutes.

Note 4. Assistant surgeons are entitled to pay of captain after five years' service [Act June 23, 1874, Sec. 4], service to be reckoned from date of acceptance of appointment or commission.—[Decision of Second Comptroller, Sept. 26, 1884.]

Note 5. Retired officers receive 75 per cent. of pay (salary and increase) of their rank.—[Act July 15, 1870, Sec. 24.] Section 1274, Revised Statutes.

Note 6. A retired chaplain receives 75 per cent. of the pay (salary and increase) of his rank (captain not mounted). Section 1122, Revised Statutes.

Note 7. The officer in charge of the public buildings and grounds (Washington) has, while so serving, the rank, pay, and emoluments of a colonel.—[Act March 5, 1873, Sec. 1.]

Note 8. For additional pay as mounted officers, see paragraphs 2835 and 2886, Regulations of the Army, 1881.

Note 9. The principal assistant in the ordnance bureau of the War Department shall receive a compensation, including pay and emoluments, not exceeding that of a major of ordnance.—[Act Feb. 27, 1877.]

Note 10. An acting judge-advocate, detailed by the Secretary

of war, is entitled to the pay and allowances of captain of cavalry.—Act July 5, 1884.]

GENERALS OF THE ARMY.—The following is a list of generals who have commanded the army since 1775, with the dates of command as far as can be ascertained from the official records:

Major-General George Washington, June 15, 1775, to Dec. 23, 1783. Died 1799.

Major-General Henry Knox, Dec. 23, 1783, to June 20, 1784. Died 1806.

Lieut.-Col. Josiah Harmer, general-in-chief by brevet, September, 1788, to March, 1791. Died 1813.

Major-General Arthur St. Clair, March 4, 1791, to March, 1792. Died 1818.

Major-General Anthony Wayne, April 11, 1792, to Dec. 15, 1796. Died 1796.

Major-General James Wilkinson, Dec. 15, 1796, to July, 1798. Died 1825.

Lieutenant-General George Washington, July 3, 1798, to his death. Died 1799.

Major-General James Wilkinson, June, 1800, to January, 1812. Died 1825.

Major-General Henry Dearborn, Jan. 27, 1812, to June, 1815. Died 1839.

Major-General Jacob Brown, June, 1815, to Feb. 21, 1838. Died 1823.

Major-General Alexander Macomb, May 24, 1823, to June, 1841. Died 1841.

Major-General Winfield Scott (brevet lieutenant-gen.), June, 1841, to Nov. 1, 1861. Died 1866.

Major-General George B. McClellan, Nov. 1, 1861, to March 11, 1862. Died 1885.

Major-General Henry W. Halleck, July 11, 1862, to March 12, 1864. Died 1873.

Lieutenant-General Ulysses S. Grant, March 12, 1864, to July 26, 1866, and as General to March 4, 1869. Died 1885.

General William T. Sherman, March 4, 1869, to Nov. 1, 1883. Died 1891.

Lieutenant-General Philip H. Sheridan, Nov. 1, 1883, to Aug. 5, 1888. Died 1888.

Major-General John M. Schofield, from Aug. 14, 1888.

PAY OF ENLISTED MEN OF THE ARMY, ETC.

Year in each enlistment.....	First Enlistment.					First Re-enlistment.*—\$2 extra.				
	First year.	Second year.	Third year.	Fourth year.	Fifth year.	First year.	Second year.	Third year.	Fourth year.	Fifth year.
	First year.	Second year.	Third year.	Fourth year.	Fifth year.	Sixth year.	Seventh year.	Eighth year.	Ninth year.	Tenth year.
Year of total continuous service....	Retain nothing.	Retain nothing.	Retain \$1.	Retain \$2.	Retain \$3.	Retain \$1.	Retain \$1.	Retain \$1.	Retain \$1.	Retain \$1.
BANK AND SERVICE.										
<i>Company.</i>										
Private—artillery, cavalry and infantry.....	\$18 00	\$18 00	\$14 00	\$15 00	\$16 00 +	\$18 00	\$18 00	\$18 00	\$18 00	\$18 00
Private (second class)—engineers, ordnance and signal corps.....										
Musician—engineers, artillery and infantry.....										
Trumpeter—cavalry.....										
Wagoner—artillery, cavalry, and infantry.....	14 00									
Artificer—artillery and infantry.....	15 00									
Corporal—artillery, cavalry, and infantry.....	15 00	15 00	16 00	17 00	18 00	20 00	20 00	20 00	20 00	20 00
Blacksmith and farrier—cavalry.....										
Saddler—cavalry.....										
Sergeant—artillery, cavalry, and infantry.....	17 00	17 00	18 00	19 00	20 00	22 00	22 00	22 00	22 00	22 00
Private (first class)—engineers, ordnance, and signal corps.....										
Corporal—engineers, ordnance, and signal corps.....	20 00	20 00	21 00	22 00	23 00	25 00	25 00	25 00	25 00	25 00
First Sergeant—artillery, cavalry, and infantry.....	22 00	22 00	23 00	24 00	25 00	27 00	27 00	27 00	27 00	27 00
Sergeant—engineers, ordnance, and signal corps.....	24 00	24 00	25 00	26 00	27 00	29 00	29 00	29 00	29 00	29 00
<i>Regiment.</i>										
Chief trumpeter—cavalry.....										
Principal musician—artillery and infantry.....	22 00	22 00	23 00	24 00	25 00	27 00	27 00	27 00	27 00	27 00
Saddler-sergeant—cavalry.....										
Chief musician—artillery, cavalry, and infantry.....	60 00									
Sergeant-major—artillery, cavalry, and infantry.....	23 00	23 00	24 00	25 00	26 00	28 00	28 00	28 00	28 00	28 00
Quartermaster-sergeant—artillery, cavalry, and infantry.....										
Sergeant-major and quartermaster-sergeant—engineers.....	36 00	36 00	37 00	38 00	39 00	41 00	41 00	41 00	41 00	41 00
<i>Post.</i>										
Ordnance sergeant.....										
Commissary sergeant.....	34 00	34 00	35 00	36 00	37 00	39 00	39 00	39 00	39 00	39 00
Post-quartermaster sergeant.....										
<i>Hospital Corps. ||</i>										
Hospital steward.....	45 00	45 00	46 00	47 00	48 00	50 00	50 00	50 00	50 00	50 00
Acting hospital steward.....	25 00	25 00	26 00	27 00	28 00	30 00	30 00	30 00	30 00	30 00
Private.....	13 00	13 00	14 00	15 00	16 00	18 00	18 00	18 00	18 00	18 00
Veterinary surgeon (senior).....	100 00									
Veterinary surgeon (junior).....	75 00									
Hospital matron.....	10 00									

Pay of General-service Clerks and Messengers. ¶

General-service clerk, class 1.....	\$1,000 per annum	General-service clerk, class 3.....	\$1,200 per annum
General-service clerk, class 2.....	1,100 per annum	General-service messenger.....	\$60 per month

* Subsequent re-enlistments, \$1 more.

+ The pay of a man who has ever re-enlisted under the act of August 4, 1854, and who comes into the service again, commences with amount stated in this column—\$1 per month to be retained.

† Not affected by act of May 15, 1872. No pay retained in these cases; but they are entitled to benefits of act of August 4, 1854, for re-enlistment.

|| Enlisted men of this corps are entitled to increased pay for length of service, the same as other enlisted men. Hospital stewards rank with ordnance sergeants, and are entitled to all the allowances of that grade; acting hospital stewards to be detailed from privates of the hospital corps; privates of the hospital corps are entitled to the allowances of a corporal of the arm of service with which they are on duty.—[Act March 1, 1887; G. O. 23, A. G. O., 1887.]

§ Only one veterinary surgeon, at \$75 per month, allowed each of the cavalry regiments, from the First to the Sixth regiment, inclusive; two, one at \$100 and one at \$75 per month, allowed each of the Seventh, Eighth, Ninth, and Tenth regiments; the senior in date of appointment entitled to the higher grade.—[Decision of Adjutant-General, of Dec. 3, 1874.]

¶ General-service clerks and messengers are not entitled to any additional pay on account of continuous service nor for a certificate of merit. For the purposes of retirement, they rank as follows: Class 3, with first sergeants of the line; class 2, with sergeants of the line; class 1, with corporals of the line; messengers, with privates of the line.—[Act July 29, 1886; G. O. 54, A. G. O., 1886.]

⊞ CLOTHING.—Settled June 30 and December 31 of each year. Balances found due the United States to be charged soldier on muster-rolls of those dates. Balances due soldier to be carried forward on company books, credited to his current clothing account; any balance remaining due him at discharge to be credited on final statements.—[Section 1502, Revised Statutes.]

For causes of withholding retained pay on discharge of the soldier, see paragraph 10, General Orders No. 51, series of 1873. Enlisted men of signal corps to have pay of engineer soldiers of similar grades. Act approved June 20, 1878.—[G. O. 41, A. G. O., 1878.]

Enlisted men (retired) are entitled to three-fourths of the monthly pay allowed by law to them in the grade they held.

when retired, with commutation of clothing and rations.—*Act Feb. 14, 1885; G. O. 55, A. G. O., 1885.* Not entitled to traveling allowances on retirement, but to transportation in kind by the Quartermaster's department.]

REMARKS.—Mileage, at the rate of four cents per mile, over shortest usually traveled routes, and, in addition thereto, the cost of transportation actually paid by the officer over the route or routes, exclusive of sleeping or parlor car fare and transfer.—[*Act Sept. 22, 1888.*] Regulations governing the subject of mileage are contained in General Orders No. 97, Adjutant-General's office, series of 1876; No. 58, series of 1879; No. 86, series of 1883; and No. 13, series of 1888. No mileage

over free or bond-aided roads. [General Orders No. 82, Adjutant-General's office, series of 1888.]

Commutation of quarters to be paid by pay department, as follows: General, \$125 per month.—[*Act June 30, 1882.*] For all other grades at the rate of \$12 per month per room.—[*Act June 23, 1879;* General Orders No. 64, Adjutant-General's office, series of 1879.]

The sums hereinbefore allowed shall be paid in monthly payments by the paymaster.—[*Section 1268, Revised Statutes.*]

Vouchers in payment of an officer's salary must cover his whole compensation (full or half pay, according to status) for a period of one or more calendar months.

PAY OF OFFICERS AND CADETS AT THE MILITARY ACADEMY.

GRADE.	Grade, or Assimilated Pay.	Yearly pay.	Acts of Congress Establishing Present Rates of Pay.
Superintendent	Pay of colonel	See table on page 14.	{ June 12, 1858, Sec. 1; July 15, 1870, Sec. 24. (Section 1334, Revised Statutes.) March 3, 1851, Sec. 1; July 15, 1870, Sec. 24. (Section 1335, Revised Statutes.) August 7, 1876; March 31, 1884. July 15, 1870, Sec. 24. July 15, 1870, Secs. 13 and 24; February 23, 1873. (Section 1336, Revised Statutes.) June 23, 1879, Sec. 4. April 29, 1812, Sec. 2; July 15, 1870, Sec. 24. (Section 1337, Revised Statutes.) February 23, 1873. (Section 1336, Revised Statutes.) February 16, 1857, Sec. 2. (Section 1338, Revised Statutes.) April 1, 1864, Sec. 3; July 23, 1866, Sec. 8; February 23, 1867, Sec. 2. (Section 1339, Revised Statutes.) August 7, 1876; January 30, 1879; June 1, 1880; June 30, 1882. March 3, 1877.
Commandant of cadets	Pay of lieutenant-colonel		
Adjutant	Pay of regimental adjutant		
Treasurer, quartermaster and commissary of cadets	\$700 in addition to pay as captain of infantry		
Surgeon	Pay of his grade in the army		
Assistant surgeon	.....do.....	
Professor, of more than ten years' service at the Academy	Pay of colonel		
Professor, of less than ten years' service	Pay of lieutenant-colonel		
Assistant professor	Pay of captain mounted		
Senior assistant instructor of tactics	.....do.....	
Assistant instructor of tactics, commanding a company of cadets	.....do.....	
Acting assistant professor	Pay of his grade in the army		
Acting assistant instructor of tactics	.....do.....	
Instructors of ordnance and science of gunnery and of practical engineering	Pay of major		
Sword-masterdo.....	\$1,500 00	
Cadet	\$500 per annum and one ration per diem	609 50	
	\$540 per annum	540 00	
Teacher of musicdo.....	1,080	

UNITED STATES MILITARY ACADEMY.

The U. S. Military Academy at West Point was founded in 1802. Each Congressional district and Territory—also the District of Columbia—is entitled to have one cadet at the academy, the cadet to be named by the representative in Congress. There are also ten appointments at large, specially conferred by the President of the United States. The number of students is thus limited to 844. Appointments are usually made one year in advance of date of admission, and may be made either after competitive examination or given direct, at the option of the representative. The congressman, should he desire, may nominate a legally qualified *alternate*, who will be examined with the *regular nominee*, and admitted in the event of his success and the latter's failure to pass the prescribed preliminary examinations.

Appointees to the Military Academy must be between 17 and 22 years of age, free from any infirmity, and able to pass a careful examination in reading, writing, orthography, arithmetic, grammar, geography, and history of the United States. The course of instruction, which is quite thorough, requires four years, and is largely mathematical and professional. The principal subjects taught are mathematics, French, drawing, tactics of all arms of the service, natural and experimental philosophy, chemistry, mineralogy, geology, and electricity, history, international, constitutional, and military law, Spanish, and civil and military engineering and science of war. About one-fourth of those appointed usually fail to pass the preliminary examination, and but little over one-half the remainder finally graduate.

The discipline is very strict, even more so than in the army, and the enforcement of penalties for offenses is inflexible rather than severe. Academic duties commence September 1 and continue until June 1. Examinations are held in January and June, and cadets found proficient in studies and correct in conduct are given the standing in their class to which their merits entitle them, while those deficient in either conduct or studies are discharged.

From about the middle of June to the end of August cadets live in camp, engaged only in military duties and receiving practical military instruction.

The number of students at the academy is usually about 300.

Upon graduating, cadets are commissioned as second lieutenants in the U. S. army. The whole number of graduates from 1802 to 1887 has been 3,237.

MILITARY DIVISIONS.—The country is divided, for convenience and responsibility of administration, into three military divisions, each with several departments, as follows:

1. Military division of the Missouri, headquarters Chicago, comprehends the departments of the Missouri, Texas, Dakota, and the Platte. There are 7 regiments of cavalry and 19 of infantry in this division.

2. Military division of the Atlantic, headquarters New York, includes Department of the East. This division comprises 4 regiments of artillery and 2 of infantry.

3. Military division of the Pacific, headquarters San Francisco, includes departments of California, the Columbia and Arizona, and comprises 1 regiment of artillery, 3 of cavalry, and 4 of infantry.

The maximum military force allowed under existing laws is 2,155 commissioned officers and 25,000 enlisted men. The report of the lieutenant-general of the army exhibits the actual number in service as 2,189 officers and 23,208 enlisted men. The following exhibits the number in each rank of the army:

1. Commissioned officers: Colonels, 70; Lieutenant-colonels, 91; majors, 226; captains, 616; adjutants, 40; regimental quartermasters, 40; first lieutenants, 563; second lieutenants, 459; chaplains, 34.

2. The enlisted men embrace 40 sergeant majors, 40 quartermaster sergeants, 728 musicians, 234 trumpeters, 9 saddler-sergeants, 89 ordnance sergeants, 139 hospital stewards, 124 commissary sergeants, 426 first sergeants, 2,172 sergeants, 1,774 corporals, 218 farriers, 141 artificers, 117 saddlers, 102 wagoners, and 16,487 privates. Besides these, there are employed in the signal corps 438 non-commissioned officers and privates; Military Academy, 61 officers and 293 cadets.

The number of retired army officers is 483; number of privates discharged during the fiscal year 1888, 5,446; number died during same period, 211; number deserted, 2,444; number enlisted and re-enlisted, 8,077.

DEPARTMENTS OF WORK IN THE WAR OFFICE.—The work of the War Department in Washington is divided into several sub-departments, each of them being under the headship

of a brigadier-general. The names and functions of these sub-departments are as follows:

The Adjutant-General's Department has charge of the correspondence of the army, the issuance of orders, the keeping of the records, and the general management of recruiting the army. Here are kept the monthly and other reports of the army, so filed and tabulated that on any day in any year of his service the exact status and occupation of any enlisted man or officer can be determined.

The Inspector-General's Department supervises the inspection of the army through every department and branch of service, and of all matters relating to its operations and involving its efficiency. This department is responsible that no order goes long neglected; no continued fraud or mismanagement of fiscal concerns exists; that want of discipline is discovered; and, generally, that the state of efficiency of the army in all its parts is known to the authorities in command.

The Judge-Advocate-General's Department, as indicated by the name, attends to the jurisprudence of the army.

The Quartermaster's Department looks after and supplies the army with clothing, forage, transportation, and everything required by the soldier in barracks or in the field connected with these. The quarters of the soldier, whether houses or tents, the storehouses, the stables for animals, the wagons, or cars, or steamboats, or other means of transporting the army or the supplies of the army, all depend on this department. Beds and blankets for the men, forage, straw, and shelter for the animals, must be looked for from the quartermaster.

The Subsistence Department furnishes the adequate supply of food to the army—always a work of immense importance.

The Medical Department is in charge of all matters relating to the health of officers and soldiers, whether in camp or in motion. With this department is connected the entire hospital work of the service. The hospital corps is recruited by the voluntary transfer from other branches of the service of men who have served at least one year, and have thus become trained to military discipline, or by direct enlistment of soldiers whose terms of service in other organizations have expired. In time of peace, not more than ten civilians may be enlisted in the hospital corps. The acting hospital stewards are detailed by the Secretary of War from the privates, after at least one year's service in the corps, and passing an examination.

The Pay Department is charged with the work which its name indicates.

The Ordnance Department procures, by purchase or manufacture, the armament for sea-coast defenses and the arms and equipments, and all other ordnance stores, for the army, militia, and the marine corps.

SECRETARIES OF WAR.—The following is a complete list of the Secretaries of War from the date of the organization of this department of the government, with dates severally of their appointment:

Henry Knox	Sept. 12, 1789
Henry Knox	March 4, 1793
Timothy Pickens	Jan. 2, 1795
James McHenry	Jan. 27, 1796
James McHenry	March 4, 1797
Samuel Dexter	May 13, 1800
Roger Griswold	Feb. 3, 1801
Henry Dearborn	March 5, 1801
Henry Dearborn	March 4, 1805
William Eustis	March 7, 1809
John Armstrong	Jan. 13, 1813
John Armstrong	March 4, 1813
James Monroe	Sept. 27, 1814
William H. Crawford	Aug. 1, 1815
George Graham	ad interim.
John C. Calhoun	Oct. 8, 1817
John C. Calhoun	March 5, 1821
James Barbour	March 7, 1825
Peter B. Porter	May 26, 1828
Joh H. Eaton	March 9, 1829
Lewis Cass	Aug. 1, 1831
Lewis Cass	March 4, 1833
Joel E. Poinsett	March 7, 1837
John Bell	March 5, 1841
John Bell	April 6, 1841
John C. Spencer	Oct. 12, 1841
James M. Porter	March 8, 1843
William Wilkins	Feb. 15, 1844
William L. Marcy	March 6, 1845
George W. Crawford	March 8, 1849
Charles M. Conrad	Aug. 15, 1850
Jefferson Davis	March 5, 1853
John B. Floyd	March 6, 1857
Joseph Holt	Jan. 18, 1861
Simon Cameron	March 5, 1861
Edwin M. Stanton	Jan. 15, 1862
Edwin M. Stanton	March 4, 1865
Edwin M. Stanton	April 15, 1865
U. S. Grant, ad interim.	Aug. 12, 1867
Lorenzo Thomas, ad interim.	Feb. 21, 1868
John M. Schofield	May 28, 1868
John A. Rawlins	March 11, 1869
William T. Sherman	Sept. 9, 1869
William W. Belknap	Oct. 25, 1869
William W. Belknap	March 4, 1873
Alphonso Taft	March 8, 1876
James D. Cameron	May 22, 1876

George W. McCrary	March 12, 1877
Alexander Ramsey	Dec. 10, 1879
Robert T. Lincoln	March 5, 1881
William C. Endicott	March 6, 1885
Redfield Proctor	March 5, 1889

PRESENT ACTIVE OFFICERS OF THE SERVICE.—Major-General commanding the army: [Entered the army.

John M. Schofield	1858
Major-Generals (limited by law to three)—	
John M. Schofield	1858
Oliver O. Howard	1854
George Crook	1852
Brigadier-Generals (limited by law to six)—	
John Gibbon	1847
Wesley Merritt	1860
Nelson A. Miles	1866
David S. Stanley	1852
Thomas H. Ruger	1854
John R. Brooke	1866

ARMY LIST, the title of an official publication issued periodically by the British war office. It contains the names of the commissioned officers of the army, and an enumeration of the regiments and of the officers attached to each.

ARMY REGISTER, THE, is published annually by the Secretary of War. It contains lists of casualties, promotions, deaths, etc., of the United States Army.

ARMY REGULATIONS, the title of a volume issued by the United States war department, containing the rules as prescribed by the Articles of War and other acts of Congress for the management of the army in field and camp.

ARMY WORM, a very destructive larva of the *Leucania unipuncta*, marching in countless numbers over grain and other fields, destroying the crop.

ARNASON JON, an Icelandic writer, born at Hof, Aug. 17, 1819. Educated at the college of Bessstad, at that time the only school of Iceland. Arnason has been a thorough student of the history and literature of his country, and in 1849 was made custodian of the national library in Reykjavik. He has published a number of sketches, and a volume of folk-tales, but is best known through his collection of Icelandic nursery-tales, *Islenzhar Thjódso-gur og Afintyri* (2 vols., 1862-64).

ARNAULD, ANTOINE, the greatest advocate of his time in France, born at Paris in 1560, died there Dec. 29, 1619. He was descended from an ancient family of Auvergne, which had distinguished itself both in civil and military affairs. He published a work against the Society of Jesus and several tracts of an earnest political character. He had several children, who formed the nucleus of the Jansenists and Port Royalists.

ARNAULD, ROBERT D'ANDILLY, the eldest son of Antoine Arnauld, the advocate, and the brother of the great Arnauld, was born at Paris in 1588, and died in 1674. He was a person of considerable consequence at the French court, where his influence was ever exerted beneficially. His chief works are translations, such as the confessions of St. Augustine and the history of the Jews by Josephus.

ARNAULT, VINCENT-ANTOINE (1766-1834), dramatic poet, secretary-general of the Parisian University and perpetual secretary of the French Academy.

ARNEE, or **ARNA**, the wild buffalo of India. See **BUFFALO**, Britannica, Vol IV, p. 442.

ARNHEM LAND, a name formerly applied to a region in North Australia, so called from the ship of the Dutch navigators who discovered it in 1618.

ARNIM, HARRY, GRAF VON (1824-1881), born in Pomerania in 1824. He was Prussian ambassador at Rome from 1864 to 1870, and strongly advocated the cause of the anti-infallibilists during the Vatican Council. He was rewarded with the title of Graf; but, as German ambassador to France (1872-74), he incurred Prince Bismarck's disfavor, and on a charge

of purloining state documents, was sentenced to five years' imprisonment. He had, however, retired into exile, and died at Nice, May 19, 1881.

ARNOLD, ARTHUR, English author and editor, born May 28, 1833. In 1863 he was appointed assistant commissioner under the Public Works Act, and resided in Lancashire till the end of the cotton famine in 1866. He subsequently spent two years in traveling in Southeastern Europe and Africa, and on his return to England in 1868 published a description of his tour under the title *From the Levant*. For this work the king of Greece bestowed upon him the Cross of the Order of the Redeemer. He has been very successful as editor of "The Echo," a Liberal journal. In 1880 he was elected member of Parliament from Salford. His earlier works were two novels—*Ralph, or St. Sepulchre's and St. Stephen's*, and *Hever Court*. He published *Social Politics* in 1878, and *Free Land* in 1880.

ARNOLD, BENEDICT, governor of Rhode Island, born in England, Dec. 21, 1615, died June 20, 1678. He emigrated to Providence, and in 1645 became messenger to negotiate with the Indians. He held various other local offices until 1663, when he became the first governor of the colony, to which office he was re-elected in 1664, in 1669, in 1677, and in 1678.

ARNOLD, BENEDICT (1741–1801), a General in the American Revolution, rendered infamous by his attempt to betray his country, born at Norwich, Conn., Jan. 14, 1741. At the age of fifteen he ran away from home and enlisted in the Connecticut army, marching to Albany and Lake George to resist the invasion of the French, but deserted and wandered home alone through the wilderness. In 1762 he went to New Haven and established himself in business as a druggist and book-seller, and later engaged in the West India trade, commanding his own ships. On one occasion he fought a duel with a British sea-captain, who called him a "d—d Yankee;" the captain was wounded and apologized. Just after the news of the battle of Lexington reached New Haven he was commissioned colonel; was with Ethan Allen at the capture of Ticonderoga, and with General Montgomery at the battle of Quebec, where he was wounded. He received the rank of brigadier-general. Being appointed to the command of Philadelphia in 1778, his official conduct there gained him—by order of a court-martial—a reprimand from General Washington. Cherishing a vindictive feeling for fancied wrongs, he made treasonable overtures to the enemy, and having obtained command of West Point, he proposed to betray it into the hands of Sir Henry Clinton, the consideration being £6,315 and a commission in the British army; but the plot was defeated by the capture of Major André (Sept. 23, 1780), who conducted the negotiations. Arnold escaped and entered the British army as colonel, and in September, 1781, commanded an expedition which captured Fort Griswold, Conn., and burned New London. He subsequently retired to England, where, "shunned and despised," he spent the remainder of his life, and died in London June 14, 1801.

ARNOLD, EDWIN, an English author, born in 1831, graduated at King's College with honors in 1854. The same year he was appointed second master of King Edward VI's school at Birmingham. In 1861 he became connected with the "London Telegraph." He is noted as the author of several books, among them, *The Poets of Greece*, *The Light of Asia*, and *The Light of the World* (1891).

ARNOLD, GOTTFRIED (1666–1714), a Saxon theologian, whose *History of the Church from the Christian Era* gave offense to orthodox.

ARNOLD, ISAAC NEWTON, an American lawyer, born in Hartwick, Otsego county, N. Y., Nov. 30,

1815, died in Chicago, April 24, 1884. At the age of fifteen he began to teach, studying law at the same time, and at twenty years of age was admitted to the bar. In 1836 he removed to Chicago, was elected city clerk in 1837, and, from 1843, for several years was a member of the legislature. In 1844 he was a presidential elector, and in 1860 was elected to Congress, serving two terms. In 1862 he introduced the bill prohibiting slavery in the territories, and two years later he offered the first resolution declaring that the United States constitution should be amended so as entirely to abolish slavery. In 1865 he was appointed one of the auditors of the treasury. Mr. Arnold published: *The Life of Abraham Lincoln and the Overthrow of Slavery* (1867), and *The Life of Benedict Arnold* (1880); besides several pamphlets and addresses on subjects connected with the early history of Illinois.

ARNOLD, JOHN, inventor of the expansion balance detached escapement of the chronometer, born in England, in 1744, died in 1799.

ARNOLD, MATTHEW, LL. D., English poet, critic, and scholar, born at Laleham, near Staines, England, Dec. 24, 1822, died April 15, 1888. He was graduated at Oxford in 1844, and became private secretary to Lord Lansdowne. In 1851 he was appointed lay inspector of schools, which position he held for more than thirty years. From 1857 to 1867 he was professor of poetry at Oxford. He was a prolific writer of both prose and poetry, but it was as a critic that he was best known and appreciated. The poetic refinement of his nature and his cosmopolitan accomplishments made him susceptible to the clumsy narrowness and complacent materialism of the typical Englishman, whom he exposed and described and chafed and judged with a relentless and resistless gayety and acuteness which have undoubtedly made John Bull a little more conscious and ashamed of his purely bovine element. Arnold's influence has thus been refining, elevating, and clarifying. He was constant and persuasive in asserting the superiority of the intellectual life. He lived opportunely, because his genius was fitted to moderate and even to offset the purely scientific tendency of the age, determined by the great contemporary masters, Darwin, Huxley, Tyndall, and their associates. His incisive grasp, comprehensive intelligence, mellow literary scholarship, and limpid, lucid style were ever devoted to reminding his countrymen of "the awful shadow of some unseen power." He consoled surviving faith, disturbed by the aggression of scientific research, with the affirmation of supreme spiritual forces.

Arnold was an exemplar of spiritual independence, but with the conservative temperament, and was recognized as a distinct power. His evident intellectual sincerity was his credential, and in writing he had a delightful tact, which did not always characterize his personal intercourse. He knew the value of expressive phrases and of artful iteration, which sometimes he pushed too far. As a public censor he was the most signal illustration of the finer and less familiar qualities of English genius, and his masterly touch within his proper range was unquestionable. His permanent contributions to literature are among his poems, but his influence upon English character and development is due mainly to his essays. He was a delightful companion, observant, blithe, outspoken, critical even of the landscape and of the weather. His last article, that upon our American civilization, is perfectly good-tempered, and attests the temerity of an old critical hand in generalizing upon a continental question from a too limited observation.

ARNOLD, SAMUEL GREENE. American historian, born in Providence R. I., April 12, 1821, died Feb. 12, 1880. He graduated at Brown University in 1841, studied at Harvard Law School, and was admitted to the bar in 1845. In 1852, in 1861, and again in 1862, he was elected lieutenant-governor of Rhode Island, and from Dec. 1, 1862, to March 3, 1863, he was a member of the U. S. senate in the place of J. F. Simmons, who had resigned. Mr. Arnold published a valuable *History of the State of Rhode Island and Providence Plantations* (1860).

ARNOLD, THOMAS DICKENS, an American lawyer, born in Spottsylvania county, Va., May 3, 1798, died in Jonesboro, Tenn., May 26, 1870. He served in the war of 1812 when but fourteen years of age, was admitted to the bar in 1822, and in 1831 was elected to Congress. In 1836 he was made brigadier-general of Tennessee militia, and from 1841 to 1843 he again served in Congress.

ARNOLD, THOMAS KERCHEVER (1800-1853), a writer of educational works, born at Stamford, England, in 1800. He was educated at Trinity College, Cambridge, where he graduated in 1821. In 1830 he became rector of the small parish of Lyndon, in Rutlandshire, where he died March 9, 1853. In 1838 he published *Practical Introduction to Greek Prose Composition*, and the next year his *Latin Prose Composition*. These works are still largely used. He also published, with the Rev. J. E. Riddle, an *English Latin Lexicon* (1847); edited twenty-five volumes of classics, and produced English, French, Italian, German, and Hebrew grammars. As a theologian he published several volumes of sermons, and some controversial treatises.

ARNOLD, WARREN O., U. S. Congressman, born at Coventry, R. I., June 3, 1839. He received his education in the public schools of his native State, and engaged in mercantile pursuits. He was made alternate delegate to the national Republican convention of 1884, and was elected to the Fiftieth and Fifty-first Congresses.

ARNOLD, WILLIAM DELAFIELD, born April 7, 1828, died at Gibraltar, April, 1859. He was a son of Dr. Thomas Arnold, of Rugby, and received his early education in his father's school, entering Christ Church, Oxford, in 1846. He joined the Indian army in 1848, but was obliged to leave it in 1855 on account of ill-health. He then became director of public education in the Punjab. He published a novel entitled *Oakfield, or Fellowships in the East*, and a translation of the first series of Dr. L. Weise's *German Letters on English Education* (1854).

ARNOT, PA., a post-village of Tioga county, on a branch of the Tioga Railroad. Productive mines of semi-bituminous coal are here found. There are extensive manufactories of lumber.

ARNOT, WILLIAM (1806-1875), a popular Scottish preacher and author, born at Scone, in 1806, studied at Glasgow, and became minister of a parish there in 1839. He left the established Church at the Disruption in 1843, becoming a minister of a Free Church in Glasgow; in 1863 he went to Edinburgh, where he died in 1875. He published *Laus from Heaven for Life on Earth*, *Illustrations of the Book of Proverbs*, *The Parables of Our Lord*, and *The Church in the House*.

ARNSWALDE, a Prussian town, situated 41 miles south-east of Stettin, between three lakes. Population, 7,378, largely engaged in iron-work.

ARNULPH, a great-grandson of Charlemagne, crowned emperor of Germany 896, having first invaded Italy and captured Rome. He died in 899.

AROLSEN, a town of Germany. A library of 30,000 volumes is here, belonging to the Prince of Waldeck. Population, 2,148.

AROMA, a term sometimes employed to designate those substances whose extremely minute particles are supposed to affect the organs of smell so as to produce particular odors. It is frequently used as a synonym.

AROMATICS, a class of medicines which owe their properties to the essential oils, to benzoic and cinnamic acids, to volatile products of distillation, or to odorous glandular secretions. The plants that contribute to this class of medicines are those which yield essences, camphor, or odorous resins. In some cases the aromatic matter is diffused throughout all parts of the plant, but it is usually condensed in particular organs. As a general rule these substances act as diffusible stimulants of more or less power, and as anti-spasmodics, while those in which a bitter principle is present act as vermifuges and tonics. In the United States aromatics are usually associated with other medicines; but in France aromatic infusions, lotions, etc., are prescribed.

AROMATIC VINEGAR, a vinegar of an agreeable fragrance, which is generally prepared by adding oil of cloves, lavender, rosemary, and *Acorus calamus* (and sometimes camphor) to crystallizable acetic acid; or by distilling the acetate of copper in an earthen retort and receiver, and treating the liquid which passes over with the fragrant oils mentioned above.

AROOSTOOK, a river which rises in the North of Maine, and falls into the St. John, in New Brunswick, after a course of about 120 miles.

ARPAD, a national hero of Hungary. He was chosen duke on his father's death in 889, and by a course of incessant and successful warfare with the Bulgarians, Wallachians, etc., extended the first conquests of the Magyars on all sides. He died in 907, leaving his son in possession of the supreme command.

ARPEGGIO: in music, the employment of the notes of a chord in succession instead of simultaneously; also, in pianoforte music, the breaking or spreading of a chord.

ARPENT is the old French land measure corresponding to our acre.

ARQUEBUSE, the first form of hand-gun which could fairly be compared with our modern musket. Those of earlier date were fired by applying a match by hand to the vent. The arquebuse was common in the English army about the time of Richard III.

ARRACACHA, a plant of the natural order *Umbelliferae*, a native of the elevated table-lands in the neighborhood of Santa Fé de Bogota and Caraccas, and of regions of similar climate in other parts of tropical America.

ARRAGONITE, a mineral essentially consisting of carbonate of lime, and so agreeing in chemical composition with calcareous spar, but differing from it in the form of its crystals.

ARRAH, a town in the district of Shahabad and the presidency of Bengal. During the mutiny of 1857, Arrah in variety and intensity of interest was second only to Cawnpore, Delhi, and Lucknow, connected as it was with a heroic defense, a heavy disaster, and a brilliant victory.

ARRAN, SOUTH ISLES OF, three small islands at the entrance of Galway Bay, four miles off the west coast of Ireland. On these islands are the remains of forts and other structures of unhewn stone, supposed to have been built by the Belgæ in the 1st century, besides those of oratories, etc., of the 6th and 7th centuries. Total area, 11,287 acres; population, 3,500.

ARRANGING, a term in music which means the adapting of a piece of music so as to be performed

on an instrument different from that for which it was originally composed, as when orchestral or vocal compositions are set for the piano, or the reverse.

ARRASTRE, a rude mill for grinding and amalgamating gold and silver ores, used in Spain and Mexico, and less extensively in the United States. It consists of a basin hollowed into hard rock, having a vertical axis with horizontal arms, to which large stones are attached by chains and dragged over the ore by the revolution of the shaft.

ARRAWAK INDIANS, tribes of Guiana much improved by the Moravian missionaries. They are noted for their friendliness and euphonious language.

ARRAYER, a title given to certain military officers in England, in the early part of the 15th century.

ARREBO, **ANDERS CHRISTENSEN**, a Danish poet, born in 1587, died in 1637. He was the first poet who used the Danish language successfully in metrical compositions, and on this account has been styled the "father of Danish poetry." Among his earlier works may be mentioned his metrical translation of the Psalms of David. His most important work is his *Hexæmeron* (1661).

ARRERY, or **ARREOI**, a class of people in the Society Islands described by Captain Cook.

ARREST, **HEINRICH LUDWIG D'**, a German astronomer, born in Berlin, Aug. 13, 1822, died June 14, 1875. He discovered a comet in 1844, one in 1845, one in 1851, and one in 1857. He also discovered a planet, and was the first to find a variable nebular spot. D'Arrest published *Ueber das System der Kleinen Planeten Zwischen Mars und Jupiter* (1857); and *Siderum Nebulosorum Observationes Hafnenses* (1867).

ARREST OF JUDGMENT. See *Britannica*, Vol. II, p. 630.

ARRHENATHERUM, a genus of grasses, allied to *Holcus* and *Avena*, cultivated for fodder in France.

ARRHIDÆUS, **PHILIP**, a half brother of Alexander the Great, proclaimed king at Babylon, after his brother's death. His wife, Eurydice, having intrigued for the destruction of rival claimants, both were confined in a narrow dungeon, where they committed suicide, 317 B. C.

ARRINGTON, **ALFRED W.**, American lawyer, born in Iredell county, N. C., in September, 1810, died in Chicago, Dec. 31, 1867. After traveling for some time as a Methodist preacher he studied law and was admitted to the bar in 1836. He went to Arkansas and was elected to the legislature. In about 1846 he removed to Texas, and was elected judge of the 12th district in 1850. In 1857 he settled in Chicago, where he attained distinction as a constitutional lawyer. He published *Apostrophe to Water*—a volume of poems; *Sketches of the Southwest*; and *The Rangers and Regulators of the Tanaha*.

ARSON. See *Britannica*, Vol. II, p. 635.

ARROBA, a weight used in Spain, Portugal, Brazil, and in the principal Spanish and Portuguese colonies.

ARRONDISSEMENT (from *arrondir*, to make round), the sub-division of a French department.

ARROO, or **ARRU ISLANDS**, in Australasia. The largest is 70 miles long and 20 miles wide. Some of the natives have adopted Christianity. The exports are pearls, trepang, and birds of Paradise. Population, 13,100.

ARROW-GRASS, the popular name of *Tirgloch*, a genus of the natural order *Alismaceæ*, of which two species occur in North America, and also in Britain.

ARROWHEAD, a genus of aquatic plants of the

natural order *Alismaceæ*. They are natives of very different climates, from the tropics to the cold regions of the world.

ARROYO MOLINOS, a village in Estremadura, Spain, noted as the scene of Gen. Girard's complete discomfiture by Lord Hill, Oct. 28, 1811.

ARSENICAL MINERALS occur chiefly in primitive rocks, and are frequently associated with other metalliferous minerals. Native arsenic, although nowhere very abundant, is not infrequently found in mines in Europe, Asia and America, generally with sulphur and metallic sulphurets. It has usually a fine granular character. It is seldom quite pure, usually containing a little antimony and iron, and sometimes silver or gold.

ARSENIC OXIDE is found combined with cobalt, iron, etc. It is very poisonous, and is extensively used in calico printing and in the manufacture of aniline red.

ARSINOË, the daughter of Ptolemy I, King of Egypt, and of Berenice, born about 316 B. C. In her 16th year she married the aged Lysimachus, king of Thrace, whose eldest son, Agathocles, had already wedded Lysandra, the half-sister of Arsinoë. Later she married her own brother.

ARSINOË, Cleopatra's sister, who was carried by Cæsar to Rome after his conquest of Egypt, 48 B. C., and was put to death by order of Mark Antony, 41 B. C.

ARSINOË, an ancient Egyptian city west of the Nile, named by Ptolemy Philadelphus in honor of his queen. It was originally called Crocodilopolis, and the Egyptians had a temple there devoted to the worship of the crocodile. Another city of the same name, near Suez, was connected with the Nile by a canal.

ARSIS AND THESIS, terms in music, the former being applied to the raising and the latter to the falling of the hand in beating time. The terms are also applied to the elevation and depression of the voice.

ARS-SUR-MOSELLE, a town of Germany. Population, 5,340.

ARTA, formerly a town of Turkey, transferred to Greece in 1881. It is situated on the left bank of the River Arta, about 39° 8' north latitude, 21° east longitude from Greenwich. It is one of the chief outlets for the products of Southern Albania, and has considerable trade through its seaport, Salagori, ten miles distant. Population, 4,990.

ARTABANUS, the last of the Arsacids. He was defeated and killed by the Persians, A. D. 226.

ARTABAZUS, a name of several distinguished Persians in the times of the Achæmenids. When Xerxes advanced against Greece, Artabazus led the Parthians and Chorasmis. Alexander rewarded him by appointing him satrap of Bactria, 330 B. C.

ARTAPHERNES, a Persian general defeated by the Greeks at Marathon, 490 B. C.

ARTAUD DE MONTOR, **ALEXIS FRANÇOIS**, Chevalier, French author and diplomatist, born at Paris, in 1772. He was employed by the members of the royal family as ambassador to the Holy See, and served for a time as regular secretary of the French legation at Rome. He subsequently held similar positions at Vienna and at Florence. He became a member of the Academy of inscriptions in 1830, and from that time devoted himself to literature. He died Nov. 12, 1849. Among his works are *Histoire de l'Italie*; *Considerations sur l'État de la Peinture en Italie*; *Voyage dans les Catacombes de Rome*; and *Histoire des Souverains Pontifs*.

ARTAXATA, ancient capital of Armenia, destroyed by the Persians, A. D. 370.

ARTEMISIA, a genus of plants of the natural order *Compositæ*. There are many species, natives

of the more temperate regions of the eastern hemisphere. To this genus belongs wormwood.

ARTERIES, DISEASES OF. Most of the important morbid conditions of arteries are those which are occasioned by the deposition of *atheroma* on the free surface of the inner coat of the vessel, a new inner lining of the artery being thus furnished.

ARTERIOTOMY, or the opening of an artery, an operation that has been strongly advocated in those cases in which it is desirable to produce a more decided and immediate effect upon the cerebral circulation than could be produced by ordinary venesection. It is supposed by some surgeons to relieve pressure on the brain more efficiently than opening the jugular vein could do.

ARTESIAN WELLS. See article in *Britannica*, Vol. II, pp. 644-646. In the United States, the sinking of artesian wells is a common occurrence, not only in the East, but also throughout the semi-arid regions of the great West. This country boasts of some of the deepest wells ever driven. They are common in the great manufacturing centers of the Eastern States, especially in New York, Pennsylvania, Virginia, South Carolina, Alabama, Ohio and Kentucky. In the city of New York, though the geological conditions are very unfavorable, some excellent artesian wells exist, furnishing a copious supply of good water, which rises to within 20 feet of the surface. These wells average a depth of 500 feet. At St. Louis, Mo., there are two wells of great depth; the first is 2,199 feet deep, and discharges 75 gallons of water per minute; the second consumed three years and six months in sinking, the total depth being 3,848 feet with a bore of $4\frac{1}{2}$ inches. At Terre Haute, Ind., are several wells of a depth of 1,600 to 1,900 feet. The State House at Columbus, O., has a well 2,775 $\frac{1}{2}$ feet deep, but the water is salt with a temperature of 91° Fahr. In the vicinity of Chicago, Ill., artesian water of great purity is obtained at moderate depth and in unlimited quantity, rising with sufficient force to require little if any pumping for domestic and manufacturing purposes. At Charleston, S. C., there is a well of 1,250 feet, and at New Orleans one of 630. Both of these are remarkable in the annals of well-driving, because of the enormous difficulties encountered in penetrating the various strata. In California use was first made of artesian wells for the purposes of irrigation, and with such marked success that the question was raised whether the same might not be applied to the arid regions of New Mexico, Arizona, Utah, Colorado, etc. Experiments made under government supervision proved that throughout these districts (where both spring and surface water is often undrinkable) excellent water could be obtained from depths of 800 to 1000 feet in practically unlimited quantities. As a result, the sinking of artesian wells now forms an important feature of the vast irrigation works lately undertaken in these Western regions under the Federal or the several State governments, by means of which formerly desert tracts hundreds of square miles in extent have been turned into excellent crop-bearing or grazing regions.

ARTHRITIS, inflammation of the joints, of which there are three kinds: traumatic, rheumatic, and gouty. When superficial it is easily cured, when deeply seated it becomes dangerous.

ARTHUR, CHESTER ALAN (1830-1886), twenty-first president of the United States, born in Fairfield, Franklin county, Vt., Oct. 5, 1830. He graduated at Union College in 1848, was a member of the Psi Upsilon fraternity, and one of the six in a class of over a hundred who were elected members of the Phi Beta Kappa society. He was admitted to the bar in 1858, and at once became a member

of the firm of Culver, Parker & Arthur. In 1861 he was appointed on the staff of Gov. Edwin D. Morgan as engineer-in-chief, with the rank of brigadier-general, and at the beginning of the civil war became acting quartermaster-general. In February, 1862, he was made inspector-general with the rank of brigadier-general, and in July resigned the inspectorship-general to become quartermaster-general. From 1862 to 1871 he was engaged in active law practice; in 1871 was collector of the port of New York, and sat in the Senate until 1878. He was elected vice-president in 1880, and took the oath of office March 4, 1881, and on Sept. 20th of the same year, one day after the death of President Garfield, he took the oath of office as president. At the close of his administration, the consideration of the American people was expressed by the Republican national convention, in its resolutions, declaring that "in the administration of President Arthur we recognize a wise, conservative and patriotic policy, under which the country has been blessed with remarkable prosperity, and we believe his eminent services are entitled to and will receive the hearty approval of every citizen." He died suddenly of apoplexy, in New York city, Nov. 18, 1886.

ARTHUR, SIR GEORGE, BART., A British statesman, born in Plymouth, England, June 21, 1784, died Sept. 19, 1854. He entered the army in 1804, was in active service until 1837, when he was knighted and appointed lieutenant-governor of Upper Canada, with the rank of major-general on the staff. In 1841 he returned to England, was created a baronet in recognition of his services in Canada, and from 1842 to 1846 was governor of the Indian presidency of Bombay. Ill-health compelled him to leave India, and upon his arrival in England he was made privy counselor, and in 1853 received the colonelcy of the 50th (Queen's Own) regiment.

ARTHUR, TIMOTHY SHAY, an American author, born near Newburg, N. Y., in 1809, died in Philadelphia, March 6, 1886. About 1836 he became editor of the Baltimore "Athenæum," and in 1852 he founded in Philadelphia, "Arthur's Home Magazine," of which he was editor until his death. He published over one hundred volumes, of which more than one-half were reprinted in England. Among his books are: *Lights and Shadows of Real Life; Tales for Rich and Poor; Library for the Household; Ten Nights in a Bar Room; and Steps to Heaven.*

ARTHUR'S SEAT, a hill in the immediate vicinity of Edinburgh, 822 feet above the level of the sea. It is supposed to derive its name from the British King Arthur.

ARTICLE. The use of the article as a grammatical term arose as follows: In such a sentence as, "He found that (or, the) man that he was looking for," the Greeks considered the defining particles as connecting two parts of a sentence, and called them joints. In English there are two articles—the definite, *the*, and the indefinite, *a* or *an*, and other languages have corresponding words. The Latin had no article, and the Greek as well as the Germanic languages—*e. g.* the Mæso-Gothic and Old Norse—had only the definite article.

ARTICLES OF WAR, a term applied to an act of Congress approved April 10, 1806, to establish rules for the government of the United States army.

In 1864, by act of Congress, other rules were incorporated with these for the government of the navy. The same name is applied to the code of military law embodied in the Mutiny Act, which is annually passed by Parliament.

ARTICLES OF ASSOCIATION are the printed regulations for the conduct of the business of a joint stock company registered under the Cor-

panies' Acts. They are stamped as a deed, and signed by the subscribers to the memorandum of association. The most important articles deal with calls on shares, transfer of shares, forfeiture of shares, meetings, powers of directors, dividends, etc.

ARTIFICIAL HORIZON, a mirror placed horizontally, and used when the sensible horizon is ill-defined, or to determine the altitude of a star.

ARTIFICIAL LIMBS. Artificial hands were invented by the German knight Götz von Berlichingen in 1513. Artificial legs were invented later and began to be used in 1605. The manufacture of artificial limbs has been brought to such perfection that a hand or arm is now made, weighing less than a pound, with which all the ordinary motions, such as holding a hat, or pen, etc., can be produced, while the gait of a person walking on artificial feet is not conspicuous.

ARTILLERY. See *Britannica*, Vol. II, pp. 655 to 669; also see *Cannon*, in this Volume.

ARTILLERY, PARK OF, the guns, carriages, ammunition and other appurtenances essential to the working of siege or field artillery. Sometimes the name is applied to the place selected as well as to the military stores collected there.

ARTILLERY, ROYAL REGIMENT OF, is the artillery belonging to the British army. There was no regular regiment or corps of artillery soldiers in the English army till the time of Queen Anne, when the present Royal Regiment was formed. The regiment is now almost an army in itself, and comprises horse as well as foot.

ARTIODACTYLA, the name given by Owen to the domesticated ruminating mammalia, hoofed, with even number of toes. It also includes the hog.

ARTOCARPUS, the bread-fruit, a genus of plants of the natural order *Urticaceæ*, sub-order *Artocarpeæ*. There are many known species, from some of which is obtained valuable timber, as those found in the forests of Malabar and Bengal.



JACK-FRUIT (*Artocarpus intergrifolia*).



BREAD-FRUIT.

The most important species are the *A. incisa*, or true bread-fruit, and the *A. integrifolia*, or jack-fruit.

ARTS. The term "Arts," or "Liberal Arts," as technically applied to certain studies, came into use during the Middle Ages, and on the establishment of universities the term "Faculty of Arts" denoted those who devoted themselves to Science and Philosophy, as distinguished from the faculty of Theology, and afterwards of Medicine and Law. The number of "Arts" embraced in the full mediæval course of learning was seven: Grammar, Logic, Rhetoric (constituting the *Trivium*), Music, Arithmetic, Geometry, Rhetoric (the *Quadrivium*). The terms Master and Doctor were originally applied synonymously to any person engaged in teaching. In process of time the one was restricted to the liberal arts, and the other to Divinity, Law, and Medicine.

ART UNIONS, institutions which have for their object the promotion of a livelier interest in, and a more liberal patronage of, the fine arts on the part of the general public. They have gone far to supply the place of the encouragement formerly received from princes and prelates. The first Art Union established in America was founded in New York city in 1839.

ARUM FAMILY (ARACEÆ) a natural order of plants of which the genus *Arum* is the type. The species are herbaceous perennials having tuberous or creeping roots, but the tropical species are often tall rooting climbers. The inconspicuous flowers are without calyx or corolla, except as represented by scales, and are crowded upon a spadix surrounded by a spathe. The sexes are represented by separate flowers, the females at the base. The order includes 98 genera and about 1,000 species. They are abundant within the tropics, but only ten species are found in temperate North America, of which the most common are *Arisema triphyllum*, the Jack-in-the-pulpit, or Indian turnip; *Symplocarpus foetidus* the skunk-cabbage; and *Acorus calamus*, sweet-flag. The latter grows in almost all parts of the earth. Of *Arum* proper there are only fifteen species. Some of these grow to immense size for herbaceous plants. One, *Godwinia gigas*, discovered in the mountains of Nicaragua by Dr. Berthold Seemann, is especially remarkable. The only British species is *A. maculatum* (the wake-robin), the roots of which yield a starch known as Portland sago, or arrow-root. Many species of *Araceæ* are cultivated in green-houses, chiefly as foliage plants, and the calla, *Richardia Ethiopica*, is a very common house plant.

ARUSPICES, soothsayers of Rome, inspecting the entrails of victims and from them foretelling future events.

ARUWIMI, the name of an important tributary of the Congo, entering the latter from the north. It was explored for 100 miles by Stanley in 1883, and by it Stanley advanced to the relief of Emin Pasha in 1887. For a time it was maintained by some that the Aruwimi was the lower course of Schweinfurth's Welle, now believed to enter the Congo by the Mobangi, far to the west.

ARVA, a river, district and village of North Hungary. The district is mountainous, wooded, but sterile, and the scenery is grand.

ARVAD, an ancient city of Phœnicia, occupying a small island, two miles from the coast, near the mouth of the river Eleutherus. It is said to have been founded by the Sidonians, and was famed for the sea-faring skill of its inhabitants.

ARVEYRON, a small tributary of the Arve, in Savoy, the outlet of the famous *Mer de Glace*, in the valley of Chamouni, from which it issues in a torrent through a beautiful grotto of ice, from 40 to 150 feet in height, known as the "Ice Gates of the Arveyron." Its course is short and it joins the Arve on its right bank, some distance above Chamouni.

ARVICOLINÆ, one of several sub-families into which the rodent family, *Muridæ*, is divided, and embracing all kinds of roles or field-mice properly so called, the water-rat of Europe, the meadow-mice of America, the lemmings, the muskrat, etc. In general appearance the *Arvicolinæ* differ considerably from the *Muridæ*. They are squat and hairy, with short limbs and tail, the eyes and ears small, and muzzle blunt. The dental formulæ is the same as that of the *Muridæ*, but there is great



LEMMING (*Mus Lemmus*).

difference in the character of the teeth themselves. The *Arvicolinæ* (except *Erotomys*) have perennially growing, rootless molars, with flat crowns and serrate periphery; incisors often broader transversely than in the opposite direction; the root of the under incisor sometimes causing a protuberance on the inner side of the mandible between the condyloid process and the strong haumlate angle of the mandible, which latter attains the level of the molars; anterior root of zygoma not obviously nicked, high and wide, not dipping to the level of the arched palate, and the nasals not produced beyond the pre-maxillaries. The *Arvicolinæ* are especially characteristic of the northern hemisphere, abounding in high latitudes, where they form one of the principal sources of food-supply to the beasts and birds of prey. In North America none are known to occur farther south than Mexico. In cultivated districts they are great pests to the agriculturist.

ARWIDSSON, ADOLF IVAR (1791-1858), professor of history and editor of a periodical at Abo in Finland. Exiled by the Russian government in 1822, he became royal librarian in Stockholm.

AS was the name of the Roman pound, and also of an English coin; the latter probably being so called because it weighed a pound, according to the Roman measure. At its most ancient date, this coin had usually carved upon it some domestic animal, generally an ox or a sheep, and it is supposed that the Latin word for money, *pecunia*, was derived from this custom. After this coin had been in use for some time its value decreased. About 270 B. C., ten ases were required for one denarius ($=8\frac{1}{2}d.$), and subsequently an as became one-sixteenth of this coin. The exact value of the as is now very uncertain.

ASA, the third king of Judah, was the son of Abijah, whose father was Rehoboam. He ascended the throne at an early age, and it was not until some years later that his true character appeared. While the young king was but a youth his grandmother assumed a great deal of authority and did much harm by encouraging idolatry, but he afterwards deprived her of all authority and worked with success to overthrow her evil influence; he destroyed the idols and the altars of the strange gods and exiled the idolaters. He had his kingdom strongly fortified, and raised a large, well-drilled army for its security, and when Zerah, an eastern monarch, led his forces into Judah, Asa, who had previously given his army into the care of Jehovah, met him and put him to flight. Sometime after this battle the king and his people made a united vow to God to walk according to the straight path of their forefathers. After a period of twenty years' peace war was again introduced into the kingdom by Baasha, the Israelite ruler, and Asa, with the aid of Benhadad of Syria, gained a complete victory. But he had not scrupled to sacrifice the treasures of the temple to help him through the difficulty, and the prophet Hanani earnestly protested against his course of action. The king, in a fit of rage, threw the prophet into prison and oppressed his followers. His reign lasted from 955 to 914 B. C., and at the time of his death he was loved and honored by his people. The Bible declares that "Asa's heart was perfect with the Lord all his days."

ASA DULCIS, a drug highly esteemed by the ancients as an antispasmodic. They also believed it to possess supernatural healing powers—as to restore youth to the aged or sight to the blind—and it was supposed to be an antidote for poison. During the reign of the Cyrenian princes this drug was valued at its weight in gold, and the plant from which it was obtained (probably some species of

the genus *Thapsia*, of the natural order *Umbelliferae*) was represented on their medals or coins.

ASAR, the Swedish name given to long, winding banks and ridges of gravel and sand, which occur abundantly in the low grounds of Sweden. They often run continuously for more than 100 miles—sometimes one dominant ridge being joined by many tributary ridges, just as a river by its affluents. They are believed to have been formed underneath the great *Mer de Glace*, which covered Sweden during the glacial period, and to mark the site of sub-glacial streams and rivers. Similarly gravelly ridges occur in Ireland, where they are called *esker*, and in Scotland, where they are called *kames*—a name which has been applied to similar accumulations in the northern part of the United States.

ASARABACCA (*Asarum europæum*), a plant of the natural order *Aristolochiaceæ*, a native of Europe, growing in woods, but rare in Britain. The whole plant has acrid properties; the roots and leaves are aromatic, purgative and emetic, and were formerly considerably used in medicine. A nearly allied species, *A. canadense*, a native of Canada, is stimulant and diaphoretic, and is used under the name of Canada snake-root. It is also called wild ginger.

ASBESTOS. See Britannica, Vol. II, pp. 675-76. The finest quality of abestos yet known is that which has been recently discovered in Canada.

ASBJÖRNSEN, PETER CHRISTEN, one of the most popular among Norwegian authors, born at Christiania, Jan. 15, 1812, died there, Jan. 6, 1886. On leaving the University in his native city he became a tutor in the country, and during the four years thus occupied he devoted his leisure time to a thorough study of the life of the common people. In long journeys on foot he collected a rich store of materials for his future writings. On his return to the capital he devoted himself to the study of medicine and the natural sciences. From 1846 to 1853 he was employed by the government in exploring and dredging various parts of the Norwegian coast. In the years 1849-50 he accompanied a Norwegian ship of war to the Mediterranean, and from 1856 to 1858 he studied forestry at Tharandt in Saxony. He was inspector of forests for the Trondhjem district, 1860-76. Asbjørnsen lived a busy and useful life and wrote many scientific and practical books, but it is through his inimitable collection of folk-tales that he is best known. He was fortunate in finding for his first collection a coadjutor with almost as fine poetic sympathy as himself—Jorgen Moe, afterwards Bishop of Christiansand, and one of the most considerable poets of his time. The two published in 1842 the first series of *Norske Folkeeventyr* ("Norwegian Folk and Fairy Tales"), in the vernacular of the country. Asbjørnsen alone published in 1845 the first series of his *Norske Huldreeventyr og Folkesagn*, consisting of stories about the *Huldre*, or fairy of the Norwegian woods. Three years later (1848) appeared a second collection; and in 1871 he published also a second volume of the *Folkeeventyr*. These books are now classics in their native literature, and have a place on the shelves of folk-lore in all countries. They have been translated into most European languages;—into English by Sir George M. Dasent in *Popular Tales from the Norse* (1869), and *Tales from the Fjeld* (1874); and by H. L. Brackstad in *Round the Yule Log* (1881). See NORWAY, Britannica, Vol. XVII, p. 592.

ASBOTH, ALEXANDER SANDOR (1811-1868), an American soldier, born in Keszthely, Hungary, December 18, 1811. He joined the Austrian army, and served with Kossuth in the Hungarian war. He em'

grated in 1851 to the United States, and in 1861 offered his services to the government. He fought in numerous important battles, always acquitting himself with marked gallantry. He was twice severely wounded, the last time his left cheek-bone being broken and his left arm fractured in two places. He rose through the successive grades to brevet major-general, March 13, 1865, resigning five months later. In 1866 he was appointed U. S. minister to the Argentine Republic and Uruguay, where he died from the wound in his face, Jan. 21, 1868.

ASBURY, FRANCIS, first bishop of the M. E. church ordained in America, born in Handsworth, Staffordshire, England, Aug. 20, 1745, died in Spottsylvania, Va., March 31, 1816. He was converted at the age of thirteen, at sixteen became a local preacher, and at twenty-two an itinerant. Three years later Wesley sent him, with the Rev. Richard Wright, as his companion to America. The following year Asbury was appointed "general assistant in America," but in 1773 Mr. Thomas Rankin, an older minister, superseded him. Mr. Rankin returned to England at the outbreak of the Revolution, but Asbury remained at his post. He was in sympathy with the colonists, but like all other Methodists was looked upon with suspicion, and in 1776 was arrested and fined five pounds, after which he took refuge in the house of Judge Thomas White, where he remained for over two years, until the authorities became convinced that the "non-jurors," as the Methodists called themselves, were acting from religious, not political, motives, and the itinerants were permitted to resume their circuits. When an independent Methodist Episcopal church was established in America, Asbury was unanimously elected bishop, and on Dec. 20, 1784, he was consecrated by Dr. Coke, who was ordained by John Wesley, as superintendent of the Methodist societies in America. From this time till his death he traveled every year from Canada to the Mississippi, averaging 6,000 miles, often through pathless forests and swamps, ministering to all who would listen. His salary was \$64 a year, and the horse and carriage he was compelled to use in his late years were the gifts of his friends. The Methodist church grew under his personal leadership from a scattered band of 316 members and four preachers to a powerful denomination 214,000 strong, controlled by bishops, 700 itinerants and 2,000 local preachers.

ASBURY PARK, a small sea-coast town of New Jersey, famous as a summer resort. It is situated about five miles south of Long Branch and separated from Ocean Grove by Wesley Lake. The New York and Long Branch Railroad has a depot here.

ASCARIS, a genus of parasitic worms in the nematode or thread-worm order. *Ascaris lumbricoides* is one of the four thread-worms not infrequently infesting man, and especially children. It is a troublesome, though rarely dangerous, parasite.

ASCLEPIADACEÆ, a chiefly tropical order of corollifloral dicotyledons, closely allied to *Apocynaceæ*. They are mostly shrubs and almost always possess milky juice, which is usually poisonous. Some varieties are prized by florists, notably the fragrant *Stepanotis*, as well as species of the curious genus *Cereopegia*. A number are medicinal; and the down of the seeds is sometimes employed as a substitute for silk or cotton. The stems of not a few species afford useful fibers. There are many species native in North America.

ASCLEPIAS, or SWALLOW-WORT, a genus of plants of the natural order *Asclepiadaceæ*. The corolla is wheel-shaped and reflexed, the coronet fleshy, and

each of its hooded types has a horn. The species are generally upright, seldom climbing and twining, herbaceous plants with opposite, whorled, or alternate leaves. They are mostly American. The flowers are disposed in simple umbels between the leaf-stalks. The roots of several North American species are used as diaphoretics and expectorants, as *A. incarnata*, *A. tuberosa*, etc.

ASCOLI, GRAZADIO ISAIA, Italian philologist, born of Jewish parentage at Görz in 1829. He was destined for a mercantile career, but early devoted himself to the study of comparative philology. His *Studii Orientali e Linguistici* procured him in 1861 a chair of philology at the Milan Academy, and besides founding the *Archivio Glottologico* (1873), he has published *Fonologia Comparata des Sanscrito del Greco, e del Latino* (1870); *Studii Critici* (1861-77), etc.

ASCOT HEATH, a race-course in Berkshire, 29 miles southwest of London. The races, which take place early in June, are generally attended by the royal family in semi-state. From the accounts of the Master of Horse for the year 1712 it appears that they were instituted, not in 1727, as is commonly supposed, but by Queen Anne on Aug. 6, 1711.

ASELLUS, a generic name now disused, formerly applied to the cod and other *Gadidæ*. It is retained in the pharmacopœias, in the name of Cod-liver Oil, *Oleum jecoris asselli*. The same generic name is also employed to denote a genus of small isopod crustaceans.

ASES, a race of gods in Northern or Scandinavian mythology. They are usually considered as numbering twelve gods, and as many goddesses. The gods are: Odin, Thor, Baldur, Niord, Freyr, Tyr, Bragi, Heimdal, Widar, Wali, Uller, and Forseti. The best known of the goddesses, Frigga, Freyja, Idunna, Eira, and Saga.

ASH, the popular name of trees belonging to the genus *Fraxinus*. There are a few species of ash in Europe and Asia, but they are chiefly natives of North America. *Fraxinus excelsior*, the common ash of Europe, is a handsome tree, very valuable for its timber. In early times it was the chief material used in the construction of bows and spears. In North America there are twelve species known, of which only six are of sufficient size for timber purposes. The wood is close-grained, remarkably tough and elastic, and comparatively light. It is therefore largely used for furniture, the interior parts of dwellings, floorings, farm implements, household utensils, and wherever these qualities are needed. The timber of the white ash, *Fraxinus Americana*, is most in demand. Others of about equal value are the black ash, *F. sambucifolia*; the blue ash, *F. quadrangulata*; the green ash, *F. viridis*; the red ash, *F. pubescens*; and the water ash, *F. platycarpa*. The name ash (with some adjunct) is applied to various trees and shrubs of other genera, and in England is given to some herbaceous plants. See Britannica, Vol. II, p. 680.

ASHANGO, a tribe of Western Equatorial Africa, inhabiting a thickly wooded plateau south of the Ogowe, 280 miles from the Atlantic coast. The tribe is broken up into several sub-tribes, all being great slave-holders, and very superstitious.

ASHBORNE, a market-town of Derbyshire, England, 13 miles northwest of Derby. Its church (1241) has a fine spire, the "Pride of the Peak," 212 feet high, and an exquisite monument by Banks. It was here that Moore wrote the greater part of *Lalla Rookh*. Population, 3,485.

ASHBURTON, LORD, ALEXANDER BARING, D. C. L. (1774-1848), an English statesman, born in England, Oct. 27, 1774. He was sent to America by his

father, Sir Francis Baring, in the interests of the mercantile house of Baring Brothers & Co., and in 1798 he married the eldest daughter of Senator William Bingham, a wealthy merchant of Philadelphia. Shortly after his marriage Alexander returned to England, and on the death of his father in 1810 became head of the firm; two years later he was elected to parliament. In 1835 he was made a peer by the title of Lord Ashburton, and in 1841, on account of his familiarity with the institutions and people, he was sent as special minister to the United States to negotiate a treaty adjusting the northeastern boundary—which resulted in the famous *Ashburton Treaty*, concluded at Washington, Aug. 9, 1842. On his return to England he was tendered a vote of thanks by the British Parliament for this service, and was offered an earldom, but he declined the honor. He died at Longleat, the seat of the Marquis of Bath, May 13, 1848.

ASHBURTON RIVER, an unnavigable stream of Western Australia, rising in the mountains west of the Great Desert, and flowing 400 miles northward into Exmouth Gulf. Its lower course was explored by Sholl in 1866, its upper by Giles in 1876.

ASHERA, the name of a Phœnician goddess, or rather of the idol itself, by which the goddess was symbolized. The name is frequently mentioned in the Old Testament in connection with Ashtoreth and her worship, and it appears certain that the latter is the proper name of the goddess, while Ashera is her image or symbol.

ASHES, the remains of animal and vegetable bodies after burning. The ashes of organic substances destroyed by fire consist of the fixed salts contained in these substances. In land-plants the most important are salts of potash, along with silica and lime; in sea-plants, soda takes the place of potash.

ASHEVILLE, a flourishing town of North Carolina, capital of Buncombe county. It is an important educational center, and the headquarters of an extensive trade in tobacco and miscellaneous manufactures.

ASHKENAZ, the name of a northern people mentioned in the table of races given in Gen. x, located in Armenia or its neighborhood. The later Jews identified it with Germany. At the present day, the Polish and German Jews are termed *Ashkenazim*, as opposed to the *Sephardim*, the Spanish and Portuguese Jews. They have different synagogues, in which a somewhat different ritual and a different pronunciation of Hebrew are used, though there is no doctrinal distinction. See **Jews**, Britannica, Vol. XIII, p. 683.

ASHLAND, a town of Kentucky, situated on the left bank of the Ohio river, near the Big Sandy. Coal is here mined, and there are extensive blast-furnaces and rolling-mills, and large shipments of the metal and mineral by rail and river.

ASHLAND, a town of Nebraska, situated on Salt Creek, near the Platte River. It has an immense water-power for the manufacture of machinery and mill-products, and is extensively engaged in the quarrying of magnesian lime-stone and in shipping.

ASHLAND, a manufacturing town of Ohio, capital of the county of the same name. It is the seat of Ashland College.

ASHLAND, a village of Virginia, about fifteen miles north of Richmond. It is the seat of Randolph-Macon College.

ASHLAND, the largest town in southern Oregon. It is beautifully situated in the midst of a fertile fruit region, is the seat of a State normal school, and is noted for its mineral springs.

ASHLAND, a city of Wisconsin, on the shore of Lake Superior, about two hundred and fifty miles

north of Milwaukee. It carries on a large trade in lumber and iron. Its ore docks have a capacity of one hundred thousand tons, and about one and a half million tons of ore are shipped annually.

ASHLAND, a town of Schuylkill county, Penn., 119 miles northwest of Philadelphia by rail. It depends principally upon its rich mines of anthracite coal; but it has also foundries, machine-shops, and mills.

ASHLAR, or **ASHLER**, building-stone squared and hewn, as distinguished from rubble or rough stones, which are used as they come from the quarry without being dressed. Ashlar is laid in regular courses in building, and is of various kinds, according to the style of working that side of the stone which is to form the facing of the wall. Quarriers apply the term ashlar to squared stones before being hewn. See *Britannica*, Vol. II, p. 460.

ASHLEY, PENN., a town where coal mining is carried on, and where coal-cars and engines are manufactured. The Central Railroad of New Jersey here forms a junction with the Nanticoke Railroad.

ASHLEY, JAMES MONROE, an American Congressman, born near Pittsburg, Penn., Nov. 14, 1824. He edited the Portsmouth, O., "Dispatch," and later the "Democrat." In 1849 he was admitted to the bar, but never practiced, and subsequently became interested in the drug business in Toledo. In 1859 he was elected to Congress, and served through five successive terms. In 1869-70 he was governor of Montana.

ASHLEY, WILLIAM H., U. S. Congressman, born in Powhatan county, Va., about 1778, died near Booneville, Mo., March 26, 1838. In 1808 he migrated to Missouri, where he became a brigadier-general of militia and an enterprising fur trader. In 1820 he was lieutenant-governor of Illinois, and in 1831-37 a member of Congress.

ASHMOLE, ELIAS, a celebrated antiquary, born at Litchfield, May 23, 1617, died in 1692. In 1633 he commenced the study of law, and five years afterwards was admitted to practice as a solicitor in chancery. During the civil wars, he embraced the side of the Royalists, and was appointed captain in Lord Ashley's regiment, and comptroller of the ordinance, but at the same time exhibited his love for study by joining Brazenose College, Oxford, where he sedulously applied himself to mathematics, natural philosophy, astronomy, and astrology. In 1650 he published a work of Dr. Dee's, to which he subjoined a treatise of his own. In 1658 appeared his *Way to Bliss*, a work on the philosopher's stone. At the restoration of King Charles, various honors and emoluments were conferred upon him. In 1682 he presented to the University of Oxford a very fine collection of rarities, calling it the Ashmolean Museum.

ASHMUN, ELI PORTER, A. M., U. S. senator, born in Blandford, Mass., June 24, 1770, died in Northampton, Mass., May 10, 1819. He was admitted to the bar, was a member of the Massachusetts State legislature for several years, and in 1816 U. S. senator, resigning in 1818.

ASHMUN, GEORGE, an American statesman, born in Blandford, Mass., Dec. 25, 1804, died in Springfield, Mass., July 17, 1870. He graduated at Yale in 1823, and was admitted to the bar five years later. In 1833, 1835, 1836 and 1841 he was a member of the Massachusetts legislature, and in 1838-39 of the State senate. He was in Congress continuously from 1845 to 1851, and he served on numerous important committees. In 1860 he presided at the Chicago convention that nominated Lincoln for president, and in 1866 he was a delegate to the national Union convention in Philadelphia.

ASHMUN, JEHUDI (1794-1828) agent of the American Colonization Society, born in Champlain, N. Y., in April, 1794. He graduated at the University of Vermont in 1816, and became a congregational minister. He removed to Washington, D. C., where he joined the American Colonization Society, and was made editor of the "Theological Repertory." He took charge of a reinforcement for the colony at Liberia, on the western coast of Africa, and sailed on June 19, 1822, finding the colony in wretched state of disorder and demoralization, and threatened by formidable enemies. He at once set about the task of reorganization, and in November repulsed the attack of 800 savages with only thirty-five men and boys, and defeated a much greater number a few days later with the same force. He continued his labors for six years, when he was compelled to return home on account of ill-health, leaving a prosperous colony of 1,200 strong. He died a few weeks after his arrival in New Haven, Conn., Aug. 25, 1828.

ASHTABULA, an important railroad center of Ashtabula county, Ohio. It is fifty-five miles east of Cleveland, and three miles from Lake Erie. It has a fine lake harbor, and, with the exception of Cleveland, receives the largest amount of iron ore, and ships the most coal of any port on the lakes.

ASHTON-IN-MACKERFIELD, a small town in a carboniferous district in the middle of South Lancashire, England. Population, about 8,000, chiefly engaged in collieries, and in the cotton manufacture.

ASIA. Area, estimated at about 17,210,000 square miles. Population, 834,707,000. For the general history and descriptive characteristics, see *Britannica*, Vol. II, pp. 683-702. Between *Cape Romania*, the terminal point of the Malay peninsula, which runs south into the warm Indian Ocean, and *Cape Chelyuskin*, which juts into the ice-covered Arctic Sea in the far north, there lies an overland journey of 5,300 miles; and from the narrow water-line of the *Suez Canal*, joining the Red Sea to the Mediterranean, and separating Asia from Africa, to where *East Cape*, only thirty-six miles distant from the American shores, runs out to form Bering Strait, and to divide the great Pacific Ocean from the Arctic Sea, one might travel by land for 6,700 miles, or for more than a quarter of the distance around the globe.

In this great continent explorations continue to be made, much hindered by the Chinese who hold the keys of Tibet. Prince Henri of Orleans and M. Bonvalot, who left the vicinity of Lobnor in November, 1889, failed in their attempt to reach Lhasa, but made their way by a more easterly route to Targking. Col. Pyevtzof, who wintered 1889-90 at Nia, started in April for the South, while Capt. Grombehevski, who spent the winter at Kirila, is actually known to have entered Tibet in July last, notwithstanding the opposition offered by the Chinese authorities. What has become of these Russian explorers since is not known.

Further north, in the eastern Tianshan, the brothers Grum-Grshimailo have done useful work. They reached Hami in January, 1890, and report the existence of peaks rising to an altitude of 20,000 feet.

From the British side of the Himalaya several interesting journeys to the Pamir have been carried out by M. Dauvergne, a French merchant settled in Kashmir. Exploratory work is indeed going on all along the British frontier, from Baluchistan to China and Siam. The Zhoib valley has thus been explored by railway engineers. Burma is being surveyed under the supervision of Captain H. M. Jackson and others, while the boundary

between Siam and the Shan states has been determined by a commission presided over by Mr. Ney Elias. The upper Irawadi has been navigated in a steamer by Captain Barwick, Major Fenton and Mr. Shaw, but its sources still remain unknown.

M. Pavie has for the second time crossed from the coast to the upper Mekong, and now directs the labors of a commission charged with fixing the boundary between Anam and Siam.

In western Asia Minor interesting explorations have been carried on by Dr. G. Bukowski, while Professor W. M. Ramsay and Mr. D. G. Hogarth, have directed their attention more especially to the archæological remains of the Pisidian Taurus. In the Caucasus Dr. Radde has carried on his explorations, as is his practice during the fine season.

ASINALUNGA, or **SINA LONGA** (ancient Ad Mensulas), a town of Tuscany, in the province of Siena, northern Italy, twenty-two miles southeast of Siena. It is beautifully situated on hills bordering the Val di Chiana, and is a well-built town with wide and well-paved streets; and a handsome collegiate church, in which are many fine paintings. Population, 8,500.

ASIRGARTH, a strong fortress in the Central Provinces 300 miles northeast of Bombay. It stands on an isolated mountain of the Satpura range, 850 feet above the base. It has been twice captured by the British—in 1803 and 1819.

ASKABAD, a town of Russian Turkestan, the political center of Trans-Caspia, situated on the Trans-Caspian Railway, 290 miles southeast of Mikhailoyk, the seaward terminus. It was occupied by the Russians in 1881.

ASKJA, the largest volcano in Iceland, rising out of the vast Odathahraun lava-desert near the center of the island. Its vast crater is over twenty-three square miles in area, and about seventeen miles in circumference. Almost circular in shape, it lies at a depth of over 700 feet within a mountain built up by a distinctly marked series of lava-flows, round a volcanic rent, to a height of 4,633 feet above the sea. Great volumes of steam are belched forth from numerous rifts and rents, and the whole surface is a chaos of rugged lava-floids, except in the southeast, where there is a hot-water lake five miles in circumference, and a tract covered with pumice ejected in 1875. This great eruption first called general attention to Askja, and it has been stated that the volcano was only then formed; but the traces of innumerable earlier eruptions are found in the walls of the crater, already referred to, where the divisions are marked by the layers of red, slag-like lava, which time after time has formed the surface of the under-lying lava strata. Most of the lava in this eruption found an outlet, not from the crater, but some miles to the northeast, where a bed, twenty miles long and seven broad, now lies.

ASOCA, an Indian tree of the natural order *Leguminosæ*, sub-order *Cassalpinæ*, remarkable for the beauty of its red orange and flowers. The *Asoca* is often mentioned in Indian poetry, and is connected also in various ways with the Hindu mythology.

ASPARAGIN is a crystalline substance which exists ready formed in common asparagus, marsh-mallow, potatoes, chestnuts, liquorice-roots, and the young shoots of peas, beans, etc.

From a chemical point of view, asparagin is regarded as the amide of aspartic acid, and forms compounds with acids and alkalies.

ASPE, a romantic valley in the western Pyrenees, close to the Spanish frontier. It has a popu-

lation of 12,000, and was formerly a republic under the protection of the princes of Bearn. Aspe is also a town of Valencia, Spain, in the province of Alicante, with a trade in ore and wine. Population, 7,476.

ASPECTS: in astronomy, certain positions of planets with respect to one another, as seen from the earth. In the days of astrology, there were five aspects: Conjunction, Sextile, Quartile, Trine, and Opposition. Two planets are in conjunction when they have the same longitude; the aspect is sextile when they are 60° apart, quartile when the distance is 90°, trine when it is 120°, and at 180° they are opposite one another, or in opposition. The only two of the terms now in use are *conjunction* and *opposition*.

ASPEN, a city of Colorado, situated in a valley surrounded by mountains, and at an elevation of nearly eight thousand feet above the sea-level. It is the capital of Pitkin county, and the center of a very rich lead and silver-mining industry.

ASPERGILLUM, a remarkable genus of lamellibranchiate conchiferous mollusca, in which the shell has the form of an elongated cone, terminating at the larger end in a disc, which is pierced with numerous small tubular holes, the little tubes of the outer range being largest, and forming a sort of ray around it. The animals of this genus are borers, some of them living in sand, and others burrowing in stone, wood, or thick shells. See *MOLLUSCA*, Vol. XVI, p. 687. There is also a genus *Aspergillus* in botany, containing many of the small fungi commonly known by the name of Mould, which occur on decaying substances of various kinds.

ASPERN, or **GROSS ASPERN,** a village of Austria, on the left bank of the Danube, five miles E. N. E. of Vienna. This village and the neighboring one of Essling are celebrated as the scene of a sanguinary battle, in the summer of 1809, between the Austrian and French armies, the latter commanded by Napoleon I. Population, 700.

ASPHALTUM, or **ASPHALT,** is the name given to a solid bituminous substance, often called mineral pitch. It probably owes its origin to vegetable matter which has been subjected to a slow process of decomposition, resulting in a bituminous coal, from which, by volcanic action, the asphaltum has been distilled and diffused over the neighboring district. The largest natural deposit of asphaltum is the plain known as Pitch Lake, on the island of Trinidad. The asphaltum from Trinidad is very much used for ship bottoms, as it is reputed to kill the borer or teredo, which is so destructive to the wood of ships in tropical regions. Asphaltum is found in large quantities on the shores of the Dead Sea, and is called by the Arabs *Hajar Mousa*, or Moses' Stone. It is also found at Coxitambo, near Cuenca, in South America, in Alsace and other parts of the European continent, in East Lothian and Fifeshire, Scotland, in Shropshire, England, etc. Asphaltum is used in connection with other substances, such as sand, cement, gravel, etc., for foot-pavements, floors of cellars and out-houses. See *Britannica*, Vol. II, p. 715.

ASPHODEL, a general name for a plant of the genus *Asphodelus*, of which the species, which are not very numerous, are mostly natives of the countries around the Mediterranean. They are either fibrous-rooted or bulbous-rooted. Among the latter are onions, hyacinths, squills, Star of Bethlehem, etc. Among the former, asparagus, asphodel, etc.

ASPHYXIANTS, chemical substances which produce suffocation. Compositions of this kind are used for extinguishing fires, being inclosed in shells and thrown into the flames, and attempts

have been made to introduce them into naval warfare.

ASPIRATE, the name given to the letter *h* in grammar as marking, not an articulate sound, but a *breathing*. It is accordingly used for the *spiritus asper* or "rough breathing" in Greek, which, written over an initial vowel, had the force of an *h* prefixed. The name aspirate is also applied to two classes of consonants.

ASPIRATOR is the name of an apparatus employed to draw air or other gases through bottles or other vessels. It is of great use in the examination of gases by the analytical chemist. A common form is that of a simple vessel filled with water and connected with the receptacle to be drained of air. On permitting the water to escape below, a partial vacuum is formed above it.

ASPLENIUM, a genus of ferns of the order *Polypodiææ*. The species are numerous and widely diffused, both in the northern and southern hemispheres. Many of them are of great beauty.

ASPROMONTE, a rugged, finely-wooded mountain in the southwestern part of Italy, near Reggio, forming the extremity of the Southern Apennines, and overlooking the Strait of Messina. The summit, Montalto (6,907 feet) commands a wide and beautiful view, but the ascent is very laborious. It was here that Garibaldi was defeated and captured, Sept. 29, 1862, by Pallavicini. See *Britannica*, Vol. XIII, p. 491.

ASSA BAY, an Italian trading station on the west coast of the Red Sea, 40 miles northwest of the Strait of Bab-el-Mandeb. The district around it, with an area of 243 square miles and 1,300 inhabitants, was sold in 1870 by some Danakil chieftains to an Italian steamship company for a coaling station on the road to India. In 1880 it was taken by the Italian government, who, since 1884, have improved the harbor and erected a lighthouse.

ASSAL, an important salt lake in the east of Africa, 25 miles southwest of Tajurrah, the chief sea-port of Adel, latitude 11° 40' N., longitude 42° 40' E., 8 miles in length, 4 miles in breadth. Abyssinian caravans resort to it for the purpose of carrying off the salt which incrusts its shores like ice, sometimes to the depth of half a foot.

ASSAPAW, the name given by the North American Indians to the *Sciuropterus volucella* or flying squirrel, or pteromys.

ASSASSINATION, the act of taking the life of any one by surprise of treacherous violence, either by a hired emissary, by one devoted to the deed, or by one who has taken the task upon himself. Generally the term is applied to the murder of a public personage by one who aims solely at the death of his victim. In ancient times assassination was not unknown, and was often even applauded, as in the Scriptural instances of Ehud and Jael, and in the murder of Hipparchus by Harmodius and Aristogeiton; but assassination by enthusiasts and men devoted to an idea first becomes really prominent in the religious struggles of the 16th and 17th centuries. To this class belong the plots against the life of Queen Elizabeth, while the horrible succession of assassinations of Roman Emperors is simply a series of murders prompted by self-interest or revenge. Omitting these last, which are noted elsewhere, the following list includes the most important assassinations arranged in chronological order. With one or two excep-



PTEROMYS (Flying Squirrel).

tions, fuller accounts of the persons mentioned will be found under their particular headings.

Julius Cæsar	March 15, B. C. 44
Thomas à Becket	Dec. 29, A. D. 1170
Albert I, Emperor of Germany	May 1, 1308
James I, of Scotland	Feb. 21, 1487
Alessandro de Medici	Jan. 5, 1587
Cardinal Beaton	May 29, 1546
David Riccio	March 9, 1566
Lord Darnley	Feb. 10, 1567
James, Earl of Murray, Regent	Jan. 23, 1570
William of Orange	July 10, 1584
Henry III, of France, by Jacques Clement	Aug. 1-2, 1589
Henry IV, of France, by Ravallac	May 14, 1610
Villiers, Duke of Buckingham, by Felton	Aug. 23, 1628
Wallenstein	Feb. 25, 1648
Archbishop Sharp	May 3, 1679
Gustavus III, of Sweden	March 16; d. March 29, 1792
Marat, by Charlotte Corday	July 13, 1793
General Kleber, at Cairo	June 14, 1800
Paul, Czar of Russia	March 24, 1801
Spencer Perceval, premier	March 11, 1812
Kotzebue, the dramatist	March 23, 1819
Duc de Berri	Feb. 13, 1820
Charles III, Duke of Parma	March 26; d. March 27, 1854
Abraham Lincoln, by Booth	April 14; d. April 15, 1865
Michael, Prince of Servia	June 10, 1903
Marshal Prim	Dec. 28; d. Dec. 30, 1870
Earl of Mayo, Governor-General of India	Feb. 8, 1872
Sultan Abdul-Aziz	June 4, 1876
Alexander II, Czar of Russia	March 13, 1881
James A. Garfield, at Washington, by Guiteau	July 2; died Sept. 19, 1881
Lord Frederick Cavendish and T. H. Burke, in Phoenix Park, Dublin	May 6, 1882

In the foregoing list no mention is made of plots or attacks ending in failure. Several of those who fell had previously escaped more than once.

ASSESSMENT, a valuation of property, income, or profits, for the purpose of taxation, made by authorized persons according to their discretion, as opposed to a sum determined by law; or the fixing of the amount of damages, as by a jury. A person authorized to make an assessment is called an assessor.

ASSETS, is a word derived from the French *assez*, or, more exactly, in Norman French *assetz*, "enough," or "sufficient," and meaning the property of a deceased person which is sufficient in the hand of his executor and heir for the payment of all his debts and legacies. Strictly speaking the term is not applicable to the property of a person who dies intestate, and with no debts to be paid. It is, however, generally understood to mean the property left for distribution by a deceased person, whether testate or intestate; and in commerce, in bankruptcy and insolvency, the term is used to designate the stock in trade and entire property of all sorts belonging to a merchant or to a trading association. Assets are either real or personal, the personal comprehending such goods, chattels and debts as devolve on the executor, and the real including all real estate, whether devised or descending to the heir at law. See *Britannica*, Vol. II, p. 729.

ASSIENTO: *i. e.*, treaty, a word specially applied to a compact between Spain and some foreign nation, according to which the Spanish government conferred upon the latter, under certain conditions, the monopoly of the supply of negroes for its American colonies.

ASSIGN is a legal term used to indicate generally the transfer of property, but more particularly the transfer of movable property and personal rights. The word is also applied to the persons to whom the transfer is made.

ASSIGNEE IN BANKRUPTCY, one of the persons officially appointed to manage a bankrupt estate for the benefit of the creditors, now called *trustee*.

ASSIGNMENT: in law, the act, instrument or deed by which one person transfers his rights, privileges or property to another. It is most often

used in the case of bankruptcy when a debtor, according to the provisions of law, is allowed to transfer his property to another individual for the benefit of his creditors. The one making assignment is called assignor; the one to whom the property is transferred is called assignee. Assignment is also used to indicate an allotting, apportioning or appointing out of some special task.

ASSIGNMENT OF ERRORS, the technical statement of certain grounds on which the judgment of a court of law is sought to be reviewed by a higher tribunal.

ASSIGNATION, a legal term in Scotch conveying analogous to the English word assignment. The party making assignment is called the cedent, and the party in whose favor it is made is called the assignee or cessionary, and the act of assignment thus made is irrevocable.

ASSIGNS, the legal name given to parties in whose favor an assignment or assignation is made.

ASSIMILATION, the process by which living organisms absorb nutriment and convert it into part of their own substance, solid or liquid.

ASSINIBOINE, a river of British North America, rising in 51° 40' north latitude, and 105° east longitude. At Winnipeg it joins the Red River, which discharges its waters into Lake Winnipeg. Its course measures about 400 miles.

ASSMANNSHAUSEN, a village on the Rhine, three miles below Rudesheim, famous for the red and white wine which is produced in the vicinity. The red wine resembles Burgundy, and possesses a rare aromatic flavor. The choicest sort, which is preferred by connoisseurs to all the other red wines of the Rhine, is cultivated in the ducal vineyards at Wiesbaden.

ASSOCIATE PRESBYTERIAN CHURCH. See **RELIGIOUS DENOMINATIONS**, in these Revisions and Additions.

ASSOCIATE REFORMED PRESBYTERIAN CHURCH. See **RELIGIOUS DENOMINATIONS**, in these Revisions and Additions.

ASSOLANT, ALFRED, French author, born at Aubusson, Creuse, in 1827, died May, 1886. He became a teacher in Paris. In 1852 he visited the United States, and on his return published some brilliant sketches, as *Scenes de la Vie des États-Unis* (1859). These were followed by a long series of tales and novels, including *Branças* (1859); *Marcomir, Gabrielle de Chenevert, François Buchamor, Pendragon* (1881). He was equally notable as a sarcastic and powerful journalist and political writer, bitterly assailing the empire and the opportunist republican government.

ASSONANCE, in prosody, is the correspondence of sound pronounced by a reiteration of the same accented vowel with different consonants. It is a kind of imperfect rhyme, or rather a substitute for rhyme, and is especially common in Spanish poetry. All the old French poetry also was marked by assonance, not rhyme, and it frequently occurs in modern English poetry.

ASSOSS, or **Assus**, a ruined town of Asia Minor, on the Gulf of Edremid (Adramyti), from the still imposing remains of which the successful excavations, in 1881-83, of the American Institute of Archæology have brought to light the agora, with senate-house and colonnade, a bath, theater, gymnasium, statues of heroes, and seven Christian churches. See *Britannica*, Vol. XXIII, p. 579.

ASSOUAN, **ESSUAN**, or **ESWAN**, the ancient Syene, a town of Upper Egypt, on the east bank of the Nile, near the borders of Nubia, 110 miles south of Thebes, in lat. 24° 5' 30" north, and long. 32° 55' east. Some traffic is carried on in senna, henna, charcoal, wicker baskets and slaves. The ancient

name Syene is the Coptic word *souan* or *suan*, signifying "opening," and the modern one is formed by adding the Arabic *el*, "the," softened into *es*, namely, *Es-suan*, "the opening." Assouan and its vicinity are highly interesting to geologists and mineralogists. That kind of granite called syenite receives its name from this town.

ASSUMPTION, or L'Assomption, a village and river of Quebec. About eight miles below the village the river flows into the Ottawa, twenty-four miles north of Montreal.

ASSURANCE, Common, is described by Blackstone as the legal evidence of the translation of property, whereby every man's estate is assured to him, and all controversies, doubts, and difficulties are either prevented or removed.

ASSYNT, a mountainous, moorish, and very rugged district or parish, 25 miles long and 15 broad in southwest Sutherlandshire, Scotland. It mostly consists of a net-work of rocky heights, interspersed with a multitude of dark, motionless tarns or pools of various sizes, with some larger lochs, the largest, Loch Assynt, being 10 miles long and one mile broad. See Britannica, Vol. XXII, p. 726.

ASTARTE, a genus of mollusca, with bivalve shells, the type of a family, *Astartidae*, very closely allied to the *Veneridae*, or *Venus* family.

ASTATIC, "without polarity," used most frequently of a magnetic needle so arranged as to be unaffected by the earth's magnetism. This is managed by taking two magnetic needles, as nearly of the same intensity as possible, and placing them parallel to one another, with their poles in opposite directions. They thus neutralize one another, so as to be unaffected by the earth's magnetism, though they remain subject to galvanic action. This compound astatic needle forms the principal part of the astatic galvanometer.

ASTER, a coarse plant with showy flower, of the natural order *Compositæ*. There are about 160 species. The China Aster was imported into France in 1728; the New England Aster and Michaelmas daisy are common native flowers in the United States. The plant is herbaceous, blooms from July to November, and the blossoms are purple, blue, violet, white, pink, red, etc. New varieties are constantly being introduced. See Britannica, Vol. II, p. 735.

ASTERISK (Gr., a little star), a sign or symbol (*) used in writing or printing as a reference to a note at the bottom or on the margin of the page. The Greek grammarians, or critics, used the asterisk to mark a passage that had been unjustly suspected, but was to be held as genuine, or a passage in any way remarkable.

ASTEROIDS. For an account of the recent employment of the minor planets in the geometrical method of determining the solar parallax, see Britannica, Vol. XVIII, pp. 249-51. In Vol. II, pp. 807-8, the list of known asteroids was brought down to 143. As, however, some of these had not been named, the following continuation begins with 139:

No.	NAME.	Date of Discovery.	Discoverer.	Place of Discovery.
139	Juæwa	1874, Oct. 10	Watson	Ann Arbor
140	Siwa	Oct. 13	Palisa	Pola
141	Lumen	1875, Jan. 13	Paul Henry	Paris
142	Polana	Jan. 26	Palisa	Pola
143	Adria	Feb. 23	Palisa	Pola
144	Vibilla	June 3	Peters	Clinton
145	Adeona	June 3	Peters	Clinton
146	Lucina	June 8	Borelly	Marseilles
147	Protogeneia	July 10	Schulhof	Vienna
148	Gallia	Aug. 7	Prosper Henry	Paris
149	Medusa.	Sept. 21	Perrotin	Toulouse

No.	NAME.	Date of Discovery.	Discoverer.	Place of Discovery.
150	Nuwa	1875, Oct. 18	Watson	Ann Arbor
151	Abundantia	Nov. 1	Palisa	Pola
152	Atala	Nov. 2	Paul Henry	Paris
153	Hilda	Nov. 2	Palisa	Pola
154	Bertha	Nov. 4	Prosper Henry	Paris
155	Scylla	Nov. 8	Palisa	Pola
156	Xanthippe	Nov. 23	Palisa	Pola
157	Dejanira	Dec. 1	Borelly	Marseilles
158	Koronis	1876, Jan. 4	Knorre	Berlin
159	Æmilïa	Jan. 26	Paul Henry	Paris
160	Una	Feb. 20	Peters	Clinton
161	Athor	April 18	Watson	Ann Arbor
162	Laurentia	April 21	Prosper Henry	Paris
163	Erigone	April 26	Perrotin	Toulouse
164	Eva	July 12	Paul Henry	Paris
165	Loreley	Aug. 10	Peters	Clinton
166	Rhodope	Aug. 17	Peters	Clinton
167	Urda	Aug. 29	Peters	Clinton
168	Sibylla	Sept. 27	Watson	Ann Arbor
169	Zella	Sept. 28	Prosper Henry	Paris
170	Maria, or Myr-	1877, Jan. 10	Perrotin	Toulouse
171	Ophelia	Jan. 13	Borelly	Marseilles
172	Baucis	Feb. 5	Borelly	Marseilles
173	Ino	Aug. 2	Borelly	Marseilles
174	Phœdra	Sept. 3	Watson	Ann Arbor
175	Andromache	Oct. 1	Watson	Ann Arbor
176	Idunna	Oct. 14	Peters	Clinton
177	Irma	Nov. 5	Paul Henry	Paris
178	Belisana	Nov. 6	Palisa	Pola
179	Clytæmnestra	Nov. 12	Watson	Ann Arbor
180	Garumna	1878, Jan. 29	Perrotin	Toulouse
181	Eucharis	Feb. 2	Cottenot	Marseilles
182	Ela	Feb. 7	Palisa	Pola
183	Istria	Feb. 8	Palisa	Pola
184	Delopeia	Feb. 28	Palisa	Pola
185	Eunike	March 1	Peters	Clinton
186	Celuta	April 6	Prosper Henry	Paris
187	Lamberta	April 11	Coggia	Marseilles
188	Menippe	June 18	Peters	Clinton
189	Phthia	Sept. 9	Peters	Clinton
190	Ismene	Sept. 22	Peters	Clinton
191	Kolga	Sept. 30	Peters	Clinton
192	Nausikaa	1879, Feb. 17	Palisa	Pola
193	Ambrosia	Feb. 28	Coggia	Marseilles
194	Proena	March 21	Peters	Clinton
195	Eurykleia	April 22	Palisa	Pola
196	Phlomisela	May 14	Palisa	Clinton
197	Arete	May 21	Palisa	Pola
198	Ampella	June 13	Borelly	Marseilles
199	Byblis	July 9	Peters	Clinton
200	Dynamene	July 27	Peters	Clinton
201	Penelope	Aug. 7	Palisa	Pola
202	Chryseis	Sept. 11	Peters	Clinton
203	Pompæia	Sept. 25	Peters	Clinton
204	Callisto	Oct. 8	Palisa	Pola
205	Martha	Oct. 13	Palisa	Pola
206	Hersilio	Oct. 17	Peters	Clinton
207	Hedda	Oct. 17	Palisa	Pola
208	Lacrimosa	Oct. 21	Palisa	Pola
209	Dido	Oct. 22	Peters	Clinton
210	Isabella	Nov. 12	Palisa	Pola
211	Isolda	Dec. 10	Palisa	Pola
212	Medea	1880, Feb. 6	Palisa	Pola
213	Lilora	Feb. 16	Peters	Clinton
214	Aschera	March 1	Palisa	Pola
215	Genone	April 7	Knorre	Berlin
216	Cleopatra	April 10	Palisa	Pola
217	Eudora	Aug. 30	Coggia	Marseilles
218	Bianca	Sept. 4	Palisa	Pola
219	Thusneida	Sept. 30	Palisa	Pola
220	Stephanïa	1881, May 19	Palisa	Pola
221	Eos	1882, Jan. 18	Palisa	Pola
222	Lucia	Feb. 9	Palisa	Pola
223	Rosa	March 9	Palisa	Pola
224	Oceana	March 30	Palisa	Pola
225	Henrietta	April 19	Palisa	Pola
226	Weringia	July 19	Palisa	Pola
227	Philosophia	Aug. 12	Paul Henry	Paris
228	Agathe	Aug. 19	Palisa	Pola
229	Adelinda	Aug. 22	Palisa	Pola
230	Adhamantis	Sept. 3	De Ball	Bothkamp
231	Vindobona	Sept. 10	Palisa	Pola
232	Russia	1883, Jan. 31	Palisa	Pola
233	Asterope	May 11	Borelly	Marseilles
234	Barbara	Aug. 12	Peters	Clinton
235	Carolina	Nov. 28	Palisa	Pola
236	Honorïa	1884, April 26	Palisa	Pola
237	Cœlestina	June 27	Palisa	Pola
238	Hypatia	July 1	Knorre	Berlin
239	Adrastea	Aug. 18	Palisa	Pola
240	Vanadis	Aug. 27	Borelly	Marseilles
241	Germania	Sept. 12	Luther	Bilk
242	Kriemhild	Sept. 22	Palisa	Pola
243	Ida	Sept. 29	Palisa	Pola
244	Sita	Oct. 14	Palisa	Pola
245	Vera	1885, Feb. 6	Palisa	Pola

No.	NAME.	Date of Discovery.	Discoverer.	Place of Discovery.
246	Asporina	1885, March 6	Borelly	Marselles
247	Eukrate	March 14	Luther	Bilk
248	Lameia	June 5	Palisa	Pola
249	Ilse	Aug. 16	Peters	Clinton
250	Bettina	Sept. 3	Palisa	Pola
251	Sophia	Oct. 4	Palisa	Pola
252	Clementina	Oct. 27	Ferrotin	Toulouse
253	Mathilde	Nov. 12	Palisa	Pola
254	Augusta	1886, March 31	Palisa	Pola
255	Oppavia	March 31	Palisa	Pola
256	Walpurga	April 8	Palisa	Pola
257	Silesia	April 5	Palisa	Pola
258	Tyche	May 4	Luther	Bilk
259	Aletheia	June 28	Peters	Clinton
260	Huberta	Oct. 3	Palisa	Pola
261	Prymno	Oct. 31	Peters	Clinton
262	Valda	Nov. 3	Palisa	Pola
263	Dresda	Nov. 3	Palisa	Pola
264	Libussa	Dec. 22	Peters	Clinton
265	Anna	1887, Feb. 27	Palisa	Pola
266	Aline	May 17	Palisa	Pola
267	Tirza	May 27	Charlois	Nice
268	Adorea	June 9	Borelly	Marselles
269	Justitia	Sept. 21	Palisa	Pola
270	Anahita	Oct. 8	Peters	Clinton
271	Penthesilea	Oct. 16	Knorre	Berlin
272	Antonia	1888, Feb. 4	Charlois	Nice
273	Acropos	March 8	Palisa	Pola
274	Phylagoria	April 3	Palisa	Pola
275	Sapientia	April 15	Palisa	Pola
276	Adelheid	April 17	Palisa	Pola
277	Elvira	May 8	Charlois	Nice
278	Paulina	May 16	Palisa	Pola
279	Thule	Oct. 25	Palisa	Pola
280	Phyllia	Oct. 29	Palisa	Pola
281	Lucretia	Oct. 31	Palisa	Pola
282	Clorinde	1889, Jan. 29	Charlois	Nice
283	.....	Feb. 8	Charlois	Nice
284	.....	May 29	Charlois	Nice
285	.....	Aug. 3	Charlois	Nice
286	Iclea	Aug. 3	Palisa	Pola
287	Nephtys	Aug. 25	Peters	Clinton
288	Glalké	1890, Feb. 24	Luther	Bilk
289	.....	March 10	Charlois	Nice
290	.....	March 20	Palisa	Pola
291	.....	April 25	Palisa	Pola
292	.....	April 25	Palisa	Pola
293	.....	May 20	Charlois	Nice
294	.....	July 15	Charlois	Nice
295	.....	Aug. 17	Palisa	Pola
296	.....	Aug. 19	Charlois	Nice
297	.....	Sept. 9	Charlois	Nice
298	.....	Sept. 9	Charlois	Nice
299	.....	Oct. 7	Palisa	Pola

ASTEROLEPIS, a name given to what appears to have been the largest fish that lived in the old red sandstone times in the European area. Its remains have been met with in Scotland and Russia. It was covered with a strong, bony armor, embossed with star-like tubercles. Its cuirass-like cephalic shield reached a length of 20 and a breadth of 16 inches. *Asterolepis* is supposed to have been from 20 to 30 feet long.

ASTEROPHYLLITES (Gr. *aster*, a star, and *phylon*, a leaf), a generic name under which are included many of the most abundant fossil plants of the coal measure; the leaves are arranged in a stellated manner around the stems or branches.

ASTIÉ, JEAN FREDERIC, born in 1822 at Nerac, France. At one time he was pastor in New York and later became professor of philosophy at Lausanne; wrote several theological works; was the author of *Le Réveil religieux des États-Unis* (1857), and *Histoire de la République des États-Unis* (1865).

ASTOR, JOHN JACOB (1823-1890), American millionaire, born in New York city, 1823. He received an academic education at Columbia College, and subsequently passed some years in Europe, where he became proficient in the French and German languages. His father, William B. Astor, died in 1875, leaving him a vast fortune, and following his father's and grandfather's example, John Jacob Astor invested large sums in urban property. He seldom or never sold real estate, and his leases

were made for not more than twenty-one years, with ample safe-guards as to renewals. This had been the policy of his predecessors, so that now the Astors are by far the greatest land-owners in New York. Although known to the public almost exclusively as a man of vast wealth, he was not a mere money-getter. His charities, though unostentatious, were large. He gave to the Astor Library, founded by his grandfather, not only over \$250,000 in money and land, but much personal supervision, and contributed year by year unknown thousands to a great variety of objects. His wife, who died in 1888, was the dispenser of many thousands—perhaps millions—in charity; and after her death John Jacob Astor is said to have applied the entire income of her very large private fortune to charity. He died in New York, Feb. 22, 1890, leaving the bulk of his immense wealth to his son, William Waldorf Astor.

ASTOR, WILLIAM BACKHOUSE, American capitalist, born in New York city, Sept. 19, 1792, died there Nov. 24, 1875. He studied at the public schools until he was sixteen, when he was sent to Germany and studied under a tutor. He returned to the United States at the age of twenty-three and went into partnership with his father, John Jacob Astor, who was engaged in the China trade. In 1827 the Astors retired from the China trade, and the American Fur Company was formed with William B. Astor at the head. The business prospered, but finally the Astors grew tired of commerce, and they both withdrew. At his father's death William was left sole heir to the Astor fortune, although the other relatives were well provided for. He invested in real estate, which rapidly increased in value, and for about thirteen years prior to 1873 was engaged in building until much of his hitherto unoccupied land was covered with houses. In 1867 he owned 720 houses, was heavily interested in railroad, coal and insurance companies; and at the time of his death he was worth about \$45,000,000, which was divided between his two sons, John Jacob and William Astor. William B. Astor gave about \$550,000 to the Astor Library.

ASTOR, WILLIAM WALDORF, the present male representative of the Astor family, is a native of New York city. He graduated at Columbia College in 1875, and has been twice a member of the New York legislature, once a candidate for Congress, and from 1882 to 1885 was U. S. minister to Italy. Since his return to the United States he has published *Valentino*, an Italian romance of the 16th century. Though a young man, Mr. Astor is perhaps the wealthiest man in the civilized world. His father, John Jacob Astor, left a fortune variously estimated at from \$75,000,000 to \$400,000,000. Owing to the policy of secrecy long adhered to by the Astors respecting their possessions, any estimate of their wealth is purely guess-work. A well-informed New York real estate expert figures their holdings of real estate to be worth \$150,000,000. These figures are probably not far from correct, and two-thirds or more of this princely heritage has come to William Waldorf Astor in the early vigor of his manhood. In the centralization of immense real estate interests, that of the Astor estate is probably the most wonderful in the world, excepting perhaps that of the duke of Westminster, in the city of London. Which of the two estates is the more valuable is a problem that can be settled only by the principals themselves; but it is very doubtful if the duke could climb up into a high tower and through an ordinary field-glass gaze upon one hundred millions of dollars' worth of his own property all lying within a radius of ten miles from his point of observation. Yet that is what

William Waldorf Astor can do, if he should choose to climb up into the observation tower on the old aqueduct at High Bridge.

ASTORIA, originally a fur trading station in Oregon, on the left bank of the Columbia, founded by the Pacific Fur Company in 1811, and named from its chief proprietor, John Jacob Astor. It was a main point in the American claim to the territory of Oregon. There are a large number of salmon-packing establishments in the neighborhood, in which thousands of men are employed during the fishing and packing season. The lumbering industry is also very important. See *Britannica*, Vol. II, p. 737; Vol. II, p. 825.

ASTRÆA, the goddess of justice, the last of all the goddesses who left the earth when the golden age had passed away, and men began to forge weapons and perpetrate acts of violence. Astræa is also the name of one of the planetoids.

ASTRAGALUS, a bone of the foot, which, by a convex upper surface and smooth sides, forms, with the leg-bones, the hinge of the ankle-joint. Its lower surface is concave and rests on the *os calcis*, or heel-bone, to which it is attached by a strong ligament. In front it has a round head, which rests in the concavity of the scaphoid, another bone of the tarsus, and upon an elastic ligament, its pressure upon which gives, in a great measure, the necessary elasticity to the foot; it is at this joint that inversion and eversion of the foot take place.

ASTRAGALUS, a genus of plants of the natural order *Leguminosæ*, sub-order *Papilionaceæ*. The pod is more or less perfectly 2-celled. The leaves are pinnate, with a terminal leaflet. The species are numerous, natives chiefly of the temperate and colder parts of the Old World, shrubby and often spiny, or unarmed and herbaceous.

ASTRAL SPIRITS. The star and fire worship of

the Eastern religions rested on the doctrine that every heavenly body is animated by a pervading spirit, forming, as it were, its soul; and this doctrine passed into the religio-physical theories of the Greeks and Jews, and even into the Christian world. As the belief in spirits and witchcraft reached its height in the 15th century, the demonologists, or special students of this subject, systematized the strange fancies of that wild period. Astral spirits were made to occupy the first rank among evil or demoniacal spirits.

ASTRINGENTS, medicines employed for the purpose of contracting the animal fibers and canals so as to check fluxes, hæmorrhage, and diarrhœa. Many of the vegetable astringents owe that property, in whole or in great part, to tannin.

ASTROCARYUM, a genus of palms, of which about 16 species are known, natives of tropical America, remarkable for the abundance of acute and formidable spines, in some cases a foot long, with which almost every part, stem, leaves, spathe, and fruit-stalk, is armed. They have beautiful pinnate leaves.

ASTROLABE (derived from two Greek words which mean to take a star), an instrument anciently used by the Greeks for taking the altitude of the stars. A similar instrument, which was used to ascertain altitudes at sea, bore the same name. The astronomer Hipparchus is thought to have been the inventor of the astrolabe. See *Britannica*, Vol. X, p. 181; Vol. XVII, p. 251.

ASTROLABE BAY, a large inlet of the sea on the northern coast of the eastern portion of New Guinea. The vegetation of the shores is luxuriant; a range of mountains, 14,000 feet high, bounds the view some 15 miles inland; the anchorage is exposed and insecure, and there are no practicable harbors.

ASTRONOMY. For a thorough and exhaustive treatment of this subject, see *Britannica* Vol. II, pp. 744-823. See also *ASTEROIDS* and other related articles in these Revisions and Additions.

At the Astronomical Congress held in Paris, April 16-26, 1887, arrangements were made for photographing charts of the heavens at different observatories throughout the world. Since that date the work has been going forward with unremitting energy. Great improvements have been made in photography specially helpful to astronomers in this particular department. The new telescopes have been so constructed as to accomplish more certainly and conveniently the desired results.

The fruit of these efforts is now beginning to appear. American astronomers are ever in the first ranks, both in respect of intelligent methods and practical results. The annual report of Prof. Pickering, of the Harvard College Observatory, contains an interesting *résumé* of the valuable work done at that astronomical station during the year. The large equatorial telescope has been used to advantage during the year, and occasional observations have been made with the six-inch equatorial mounted in the west dome. The work of the Henry Draper memorial has continued both at Cambridge and in Peru, where 1,309 photographs have been taken by Mr. Bailey at Corsica, representing nearly the entire heavens from 20 degrees south of the equator to the south pole, in the form of charts, and also exhibiting the spectra of the stars. Nearly half the region is also represented by photographs with longer exposures, showing the

positions of stars of the fourteenth magnitude and the spectra of stars of the eighth magnitude.

A new photographic telescope for Cambridge, eight inches in aperture, like that used in Peru, has been provided by the liberality of Mrs. Draper, and 215 photographs of the sky, from the north pole to 20 degrees south of the equator, have already been taken. Spectra of stars as faint as the tenth magnitude have been obtained. The number of spectra of the fourth type thus found is 29, of which 6 were previously unknown. Spectra of 15 planetary nebulae have been obtained. In 8 stars the hydrogen line F has been found to be bright, and 28 peculiar stars, having a spectrum composed chiefly of bright lines, have been photographed, 13 of them being discovered in this investigation. In 30 variable stars the hydrogen lines are known to be bright; and this peculiarity has furnished a means of detecting new variable stars, 7 of which have thus been found.

A careful examination is made by Mrs. M. Fleming of the photographs taken at Cambridge and in Peru, which has resulted, besides the discoveries already mentioned, in finding about 110 new spectra of the third type. Spectra of the stars on a larger scale are taken with the 11-inch telescope. Photographs have now been obtained of nearly all the stars visible at Cambridge and sufficiently bright.

The most interesting result has been the discovery by Miss Mauay of a second star in Beta Aurigæ, which is shown by the doubling of the lines in its spectrum at regular intervals to be a close binary,

revolving once in about four days. Photographs taken at Wilson's Peak represent the moon and planets, also the great nebulous region of Orion, and many interesting double stars and clusters.

Professor Langley, of the Alleghany Observatory, has, for some years past, been engaged in investigating with his bolometer the temperature of the lunar surface. He arrives at the conclusion that the mean temperature of the portion illuminated by the sun is much lower than has been supposed, and it does not probably exceed 82° Fahrenheit. There is a certain amount of uncertainty connected with this result, arising from the difficulty in determining the exact place of maximum heat in the spectrum of the illuminated portion, owing to the absorption bands produced in the spectrum by the earth's atmosphere.

A paper by Professor Holden, of the Lick Observatory, on the subject of the distribution and arrangement of the stars in space, was read before the Royal Astronomical Society, in December, 1889. After remarking on the difficulty of obtaining an idea of the larger aspect of the heavens from the telescope, owing to the small range given by the field of view, and the immense labor required to make a careful chart, Professor Holden showed how the object may be attained by photography. By using a large portrait lens of six or eight inches aperture and thirty one inches focus, stars to the 13th magnitude can be registered without resorting to excessively long exposures. With a power giving a field of $8'$ or $10'$, and the telescope pointed on the Milky Way, the whole field will be filled with stars apparently scattered at random, no order being suggested by their relative positions. If the eye-piece is changed for one giving two or three times as large a field, and the observer has trained himself to see nearly as much as with the higher, the sense of order which the mind instinctively seeks can often be found in the arrangement of the stars themselves. Some fields and regions will appear to consist of streams of stars; others are rich in small definite ellipses of stars, often all of the same size. In other cases stars can be made out, surrounded by circles of fainter stars interlacing in a most intricate manner. By paying attention to stars of one magnitude only, new and interesting features can be discovered. For example, regarding only stars of the 11th magnitude, we may find rings and ovals of these stars forming a regular pattern in the sky. The arrangement of stars near a nebula has a tendency to imitate that of the nebula itself. Professor Holden does not lay any very great stress on the interpretation of the star patterns, but yet thought the subject interesting enough to draw attention to it. It is possible that the plates to be taken for the photographic chart of the heavens may throw further light on the subject.

Prof. Barnard, in an interesting paper on "A Very Remarkable Comet," furnishes a history of the behavior of the comet discovered by Brook, on July 6, 1889, after it had developed its four companion comets. Two of these soon became too faint for further observation. The remaining two were measured with the micrometer of the great Lick refractor, and were found to be separating rapidly from the principal comet, the more distant moving the faster. At the end of August the nearer ceased to recede, and became enlarged, and diffused without any trace of central condensation. It afterwards showed traces of orbital motion, and finally disappeared early in September. The farther continued to recede, increasing in size and brightness, till at the end of August it was brighter than the principal comet. In September the recession grad-

ually ceased and after some days it began to approach the principal comet, and behaved exactly as the nearer had done. It is hoped that the measures made will enable proof to be obtained of the orbital motion of the two smaller round the principal comet; and, should this prove to be the case, a means will be found of determining the mass of these comets—a determination which has never hitherto been possible.

In addition to the Chamberlin Observatory at Denver, another is in course of erection for the use of students, and is to be furnished with a 6-inch equatorial and 3-inch transit.

The syndicate appointed to consider the offer made to the University of Cambridge by the late Mr. Newall, of his big telescope, have recommended that it be accepted. It is to be devoted to researches in stellar physics, under the direction of the superintendent of the Cambridge Observatory. The son of the donor, Mr. H. F. Newall, has offered to work the telescope for five years, without stipend, or, in the event of his being unable to complete that term, will give \$1,000 a year for another observer to take his place.

Mr. H. F. Newall has also given \$2,500 towards the cost of installing the telescope.

A new observatory is in course of construction near Tananarivo in Madagascar, which will be placed under the charge of the Jesuit Fathers.

Prof. Charles A. Young, Princeton's well-known astronomer, received the valuable Janssen prize for 1890 from the French Academy of Sciences, in recognition of his brilliant discoveries in spectrology.

A paper on the spectrum of ζ Ursæ Majoris, by Professor Pickering, was read at a meeting of the National Academy of Sciences at Philadelphia. It was known that the K-line in this star occasionally appeared double, and the discussion of the photographs taken at the Harvard College Observatory points to an explanation of the phenomenon. The line was seen to be double on the 'photographs taken on certain nights; on many other dates the line appeared hazy, as if the components were slightly separated, while at other times the line appeared single and well defined. An examination of all the plates leads to the belief that the line is double at intervals of fifty-two days, beginning with March 27, 1887. It was predicted that the line would be double on Oct. 18, 1889, but the prediction was only partially verified. According to these data the line should have appeared double Dec. 9, 1889, and Jan. 30, 1890. The photographs taken on Dec. 8 showed the line distinctly double.

The explanation of this phenomenon is that the brighter component is itself a double star, having components nearly equal in brightness and too close to be separated visually. The time of revolution of the system would appear to be one hundred and four days. When one component is approaching the earth, all the lines in its spectrum will be moved towards the blue end, while the lines in the spectrum of the other component will be moved, by an equal amount, in the opposite direction if their masses are equal. Each line will thus be separated into two. When the motion becomes perpendicular to the line of sight, the lines recover their true wave-length and appear single. As the wave-lengths of the different spectral lines are known, we are enabled to form some idea of the dimensions of the system. From a calculation in this case we may assume the velocity to be about 100 miles per second. Supposing the orbit to be circular and its plane passing through the sun, the distance traveled by one component, supposing the other to be at rest, would be 100,000,000

miles, and the distance between the components, 143,000,000 miles, nearly the same as that between the sun and Mars. A similar peculiarity of spectrum has been observed in some other stars. The spectroscopic observations on the stars ζ Ursæ Majoris and β Aurigæ, at Greenwich, confirm the observations of Professor Pickering.

Dr. Duner, of the Upsala Observatory, has devoted the past three years to determining the rotation period of the sun by relative displacements of spectral lines of the E. and W. limbs, paying particular attention to variation of the rotation period with heliographic latitude. His results agree fairly well with those derived from observations of sunspots. The times vary for different zones from 25.5 days at equator to 33.6 days for lat. 75°.

Some drawings of the Milky Way of exceptional excellence have been executed by Dr. Bæddicker, assistant to Lord Rosse. Photography and spectro-photography are advancing with rapid strides, and the results of both methods, when applied to the nebulae, point in the same direction, tending to show that these bodies are not distant galaxies beyond the stars. They are really gaseous clouds, and are the material from which the stars are formed.

Miss Bruce, an American lady, known already from her generous support of astronomy, has offered \$6,000 for astronomical research (unrestricted), but not more than \$150 for a single object. The fund is intrusted to Prof. Pickering.

There is some talk of a redetermination of longitudes of Greenwich, Valentia, Montreal and Washington, in the summer of 1891.

COMETS. A considerable number of new comets have been discovered since the close of the astronomical record in Vol. II, of the Britannica. During the last year and a half six have been announced, among which one (the Brooks comet, 1889) promises to become a prominent member of the comet family. The following is the accredited official catalogue:

A bright comet appeared in the southern hemisphere, large nucleus and fan-shaped tail; visible in southern hemisphere in May; in London, June 23, *et seq.*, 1881.

Scheberle's comet visible to naked eye, N. W. Aug. 26, 1881, and January, 1885.

Denning's comet appears Oct. 4, 1881.

New comet discovered at Dudley, Boston, U. S., March 18, 1882.

Another at Madeira, at Ealing, near London, etc. (probably that of 1843 and 1880), Sept. 17, 1882; at Paris, Sept. 27; seen at Vienna, Sept. 29, 1882.

Another at Athens, Oct. 8, 1882.

Another in North America, Feb. 23, 24, 1883.

Another in North America, Sept. 2, 1883.

Comet seen in S. W., Jan. 14, 1884.

New comet discovered at Strasburg, Sept. 20, 1884.

New comet seen in Tennessee about July 7, 1885.

Another discovered by M. Fabry, of Paris, Dec. 8, 1885; by Prof. Brooks, of New York, January, 1886.

Three comets visible, Brooks', Fabry's, and Barnard's, January; increasing in brightness, May, 1886.

A comet visible in Britain and one in New York, April, 1886.

New comet discovered by Dr. Hartwig, of Strasburg, Oct. 4, 1886.

New comet discovered by Mr. Finlay, of the Cape Observatory, Sept. 26, 1886.

New comet discovered by Prof. Barnard, of Nashville, Tenn., May 13, 1887.

New comet observed at the Cape of Good Hope, Feb. 18, 1888.

New comet observed by Prof. Brooks, New York, Aug. 7, 1888.

New comet observed by Prof. Barnard, sixth in 1888, Oct. 31.

New comet discovered by Prof. Brooks, Jan. 15, 1889.

Another by Prof. Barnard, at Lick Observatory (late of Vanderbilt University, Nashville), California, April 1, 1889.

Comet discovered by Prof. Lewis Swift, on Nov. 14th, in Aquarius. The elements computed from observations made at the Lick Observatory point this out as probably a periodical comet, 1889.

Comet discovered by M. Borelly, at Marseilles, on the evening of Dec. 12, 1889.

Comet discovered by Prof. Brooks on March 19, in R. A. 21h. m., and declination 5° 35' N. This was a rather bright telescopic comet with stellar nucleus and short, wide tail, 1890.

Comet discovered by M. Coggia, at Marseilles, on July 18, 1890.

Comet, 1890, discovered by Prof. Denning, of Bristol, on July 23, 1890, approximately in R. A. 15h. 12m., and declination 78° N. It was observed by M. Charlots, at Nice, on July 25, 1890.

Prof. Barnard rediscovered D'Arrest's periodical comet Oct. 6, 1890, and four days afterwards M. Bigourdan observed it at Paris. The corrections required to the ephemeris were small, being in R. A. 0' 30", and in declination 1'.

ASTROPHYSICS, a name applicable to that part of astronomy which includes all researches relating to the physical constitution of the stars. For recent astrophysical progress, see under Astronomy above.

ASYMPTOTE, a line that continually approaches nearer and nearer to some curve, at a distance less than any assignable quantity, but which does not meet the curve at any finite distance from its commencement. The asymptote is often defined as the tangent to the curve at an infinite distance.

ATACAMITE, an ore of copper, found as a crust on the lavas of Vesuvius and Ætna, especially on those of Vesuvius erupted in the years 97, 1804, 1820 and 1822. It occurs abundantly at Atacama, in Peru, from which place it derives its name. At Remolinos, Santa Rosa and other districts in Chile, and at Sarapaca in Bolivia, where it is associated in veins with ores of silver.

ATAMASCO LILY, a bulbous plant, native in the southern part of the United States. The plant bears a single white flower. This lily belongs to the order *Amaryllidaceæ*.

ATAVISM, or REVERSION: is a term applied to the frequent appearance of ancestral, but not parental characteristics in an animal or plant. An occasional horse exhibits the long-lost stripes of the wild form; a blue pigeon, like the primitive *Columba livia*, sometimes appears unexpectedly in a pure breed; or a cultivated flower reverts to the simpler and more normal type of the original wild plant. Even in detailed anatomical structure, a comparatively trivial character, lost for many generations, may suddenly reappear. The possibilities of the variation are at once insured and limited by the summing up of the past history in the constitution of the germ, but the direct conditions which determine the particular modification are in many cases very obscure.

ATCHEEN, or ACHEEN, a kingdom forming the northwest part of Sumatra. Area, 2,260 square miles, in 95° 20'—97° 40' E. long., and 2° 50'—5° 40' N. lat. Population, 500,000. Atcheen, the capital, lies on both sides of the river, in 5° 35' N. lat., and 95° 28' E. long., in a large valley formed by ranges of hills, of which the Golden Mountain is the highest. They barter for opium with Penang and Singapore, pepper, edible nuts, gold-dust, camphor, benzoin, satin-wood, betel-nuts, etc. Population, 36,000.

ATCHISON, a city of Kansas, situated on the left bank of the Missouri River, 333 miles above St. Louis. It has extensive manufactories of furniture, carriages and wagons; also flour-mills, machine shops, an iron foundry and an extensive general trade. It is an important railway center, nine distinct lines converging here. Population in 1890, 14,222.

ATCHISON, DAVID R., U. S. senator, born in Frogtown, Ky., Aug. 11, 1807. He was admitted to the bar, and in 1834, and again in 1838, was a member of the Missouri legislature. In 1841 he was made judge of Platte county circuit court, and from 1843 to 1855 was a member of the U. S. senate.

ATELES (Gr., "incomplete"), a genus of American monkeys of the division with long, prehensile tails, to which the name *sapajous* is sometimes collectively applied. In the genus *Ateles*, the head is round and the facial angle about 60°, the limbs at

remarkably long and slender and the fore-limbs are either entirely destitute of a thumb, or have a mere rudimentary one—a peculiarity in allusion to which the name *ateles* was given.

ATELIERS NATIONAUX, or **NATIONAL WORKSHOPS**, a term under which such institutions became renowned in connection with the French Revolution of 1848. Immediately on the formation of the provisional government in February, 1848, a permanent department was established, called "The Committee of the Government for the Workmen." This establishment acted on the principle that all workmen were entitled to have a living provided for them on a certain uniform scale. They did not forcibly abolish private employment, but they held out inducements which made workmen leave and employers break up the existing establishments. Consequently, nearly all the Parisian workmen threw themselves on the government, and others flocked in from other quarters in alarming numbers, who had very little idea of the duty of working even were there distinct employment for them; but when these had grown to considerably above one hundred thousand, and the government found that they had this ever-increasing mass to feed and nothing to feed them with, since trade thus meddled with was in reality ruined, it was necessary to put an end to the system, and the result was the bloody battle of Paris, which brought about the restoration of despotism.

ATELLANÆ (FABULÆ ATELLANÆ), a kind of popular drama in Rome, first introduced from Atella, a town in Campania, between Capua and Naples. After the Greek drama had been brought to Rome by Livius Andronicus, the old *Fabulæ Atellanæ* were still retained as interludes and after pieces. They are not to be confounded with the Greek satiric drama, although the character of both was to some extent the same. In the latter satyrs figured, while the former personated real Oscan characters.

ATESHGA (THE PLACE OF FIRE), a spot on the peninsula of Apsheron, on the west coast of the Caspian Sea. It is considered sacred by the Guebres, or Persian Fire-worshippers, who visit it in large numbers, and bow before the holy flames, which issue from the bituminous soil. It is about a mile in diameter, and from its center, in clear dry weather, creeps forth a blue flame (caused by the ignition of the naphtha) which shines with great brightness by night.

ATESSA, a town of South Italy, 23 miles southeast of Chieti. It has a beautiful collegiate church. Population, 5,086.

ATHABASCAN INDIANS. See *Britannica*, Vol. XII, p. 827. See also **INDIANS, AMERICAN**, in these Revisions and Additions.

ATHANARIC, a king of the western Goths, whose settlements lay on the north bank of the lower Danube, in the 4th century. Having taken advantage of the weakness of the Roman empire when the imperial armies were engaged in suppressing the rebellion of Procopius, war was declared against him by the Emperor Valens. Athanaric acted strictly on the defensive during two campaigns, in which the Romans gained no advantage over him, but in the third year of the war, A. D. 369, he hazarded a general battle, and was defeated, whereupon he sued for peace, and with that object had a conference with Valens, in a boat on the Danube. Peace was concluded, and Athanaric had his attention occupied in settling dissensions arising out of the Arian controversy, which then agitated his people, when the first advance of the Huns on Europe alarmed the Gothic nation. Athanaric attempted to secure the eastern borders of his kingdom, but the Huns forced the passages of the Dnieper, de-

feated the Goths, and advanced in great force into the plains of Dacia. When, in 374, the Western Goths were received by the Romans as allies, and had settlements granted them on the south of the Danube, Athanaric, with a part of his people, refused to accompany them, removing to the west and fortifying himself against the new enemy. In 380, however, he was obliged to retire, when he accepted the hospitality of the Empire and removed to Constantinople, where he met with cordial and honorable reception by the Emperor Theodosius. At this time Fritigern died—the king of the Goths that had settled on the south of the Danube—and Athanaric was made king of the whole Western Gothic nation. He died at Constantinople in 381.

ATHARA, a river, last tributary of the Nile, 520 miles in length. It is dry from October to June.

ATHANASIAN CREED, the third of the three Ecumenical symbols, derived its name from its composition, being attributed to Athanasius. The first part of this creed contains a detailed exposition of the Trinity; the second, the doctrine of the incarnation. It was known as early as the 6th century, but not under its present name. In some articles it is supposed to be alluded to as "the faith of the holy prelate Athanasius," in the Council of Aulun, about 670. It was received into the public offices of the Gallic Church in the 7th century, and by the middle of the 18th century was adopted at Rome and all over the West. In Britain it was in use in 800. The Greek Church was late in receiving it, and even then not without altering the article concerning the "procession" of the Holy Ghost. The reformers adhered to the Athanasian Creed, and Luther called it "a bulwark of the Apostles' Creed." See *CREEDS, Britannica*, Vol. VI, p. 582.

ATHEISM, a word of modern formation, from Gr. *atheos*, "without God." It signifies the doctrine of those who deny the existence of a God. See *Britannica*, Vol. XIII, p. 234.

ALHELING, a title of honor among the Anglo-Saxons, which, at first applied to the descendants of the primitive nobles of the first settlement, gradually became confined to the princes of the blood royal, and in the 9th and 10th centuries exclusively to the sons and brothers of the reigning king.

ATHELNEY, ISLE OF, a marsh at the junction of the rivers Tone and Parrett, in the middle of Somersetshire. Here Alfred, when driven from his throne, hid from his enemies. Among the many relics found in this spot is a ring of Alfred's, preserved in the Oxford Museum.

ATHENAIS. See *EUDOCIA, Britannica*, Vol. VIII, p. 659.

ATHENS, the county-seat of Clarke county, Georgia, on the Oconee river. It is a healthy and pleasantly situated manufacturing town, the center of a large cotton-growing district, and the seat of the University of Georgia and the State College of Agriculture and Mechanic Arts. Population in 1870, 4,251; in 1880, 6,099; in 1890, 8,627.

ATHENS, a town in the southern part of Ohio on the Hocking river. It is the seat of the Ohio University and the State lunatic asylum. See *Britannica*, Vol. III, p. 11.

ATHENS, AMERICAN SCHOOL OF CLASSICAL STUDIES AT, a school projected by the Archæological Institute of America, organized under the auspices of American colleges, and in charge of a committee appointed by the Institute. It furnishes to American college graduates an opportunity to study classic art and antiquities under suitable direction and to aid in exploration and research in co-operation with the Archæological Institute. The director is chosen from the professors of Greek in the patronizing colleges, and serves for one or two

years, residing at Athens. Its first session began in 1882, with seven students. The first executive committee was composed as follows: John Williams White, Harvard; Henry Drisler, Columbia; Basil L. Gildersleeve, Johns Hopkins; E. W. Gurney, Harvard; Albert Harkness, Brown; Thomas W. Ludlow, New York; Lewis R. Packard, Yale; Francis W. Palfrey, Boston; Fred J. DePeyster, New York; Wm. M. Sloane, College of New Jersey; Charles Eliot Norton, President of the Archæological Institute; Wm. W. Goodwin, Director of the School at Athens. The co-operating colleges for 1890 were: Amherst, Brown, College of the City of New York, College of New Jersey, Colorado, Cornell, Dartmouth, Harvard, Johns Hopkins, Trinity University of the City of New York, University of Michigan, University of Missouri, University of Pennsylvania, Wellesley University, Wellesley College, Williams College, and Yale. Interesting work has been done determining localities and in exploration at Athens and in the neighborhood.

ATHENS, a thriving town of Tennessee, about fifty miles southwest of Knoxville. It is the seat of Grant Memorial University, formerly known as the East Tennessee Wesleyan University.

ATHERFIELD CLAY, the lowest sub-division of the Lower Greensand, varying in thickness from 20 to 60 feet. It rests directly on the Wealden. It takes its name from Atherfield, on the southwest coast of the Isle of Wight. It is of marine origin.

ATHERINE, a genus of small fishes, allied to the mullet family (*Mugilidae*), now separated into a distinct family, *Atherinidae*. They are of a rather slender form, but few of them exceed six inches in length; some are quite toothless; all the known species which are numerous, and found in the seas of different parts of the world, have a broad silvery band along each flank. Some are much esteemed for their delicacy. They all congregate in great shoals.

ATHEROMA, or fatty deposit, generally found in the tissue of aged persons, or those who have lived dissipated and ill-nourished lives. It is dangerous, inasmuch as it interferes with the elasticity of the arterial tube, rendering it more liable to injury, and less able to repair itself should any occur. Atheroma generally precedes aneurism. Cysts filled with matter resembling bread-sauce, which frequently occur in the scalp, are termed atheromatous tumors.

ANTHEROSPERMACEÆ, incomplete, aromatic, exogenous shrubs with cup-shaped involucre and the anthers of *Lauraceæ*; native of South America and New Holland.

ATHERSTONE, an old market-town of Warwickshire, England, 14 miles north of Coventry by rail. It has manufactures of hats, stockings, and ribbons. The birthplace of Dayton is near Atherstone. Population, 4,645.

ATHERTON, CHARLES GORDON, U. S. Senator, born in Amherst, N. H., July 4, 1804, died in Manchester, N. H., Nov. 15, 1853. He graduated at Harvard in 1822, and became a member of the bar three years later. He sat in the State legislature from 1832 to 1837, and was a member of Congress from 1837-43. From 1843 to 1849, and again in 1852, he was a Senator from New Hampshire.

ATHOLE (PLEASANT LAND), a district of 450 square miles, north of Perthshire in Scotland. It is chiefly composed of gneiss and quartz rock, with beds of primary limestone. A. was once one of the best hunting districts of Scotland. In the pass of Killiecrankie, in this district, Claverhouse fell in 1689, though victorious over the troops of King William III.

ATKINSON, EDWARD, an American economist, born in Brookline, Mass., Feb. 10, 1827. His education was obtained at private schools, and his reputation has been made by his numerous contributions to current literature on economic topics. Among his pamphlets and books are: *Cheap Cotton by Free Labor* (1861); *The Collection of Revenue* (1866); *Argument for the Conditional Reform of the Legal-Tender Act* (1874); *Our National Domain* (1879); *Labor and Capital—Allies, not Enemies* (1880); *The Fire Engineer, the Architect, and the Underwriter* (1880); *The Railroads of the United States* (1880); *Cotton Manufacturers of the United States* (1880); *Addresses at Atlanta, Ga., on the International Exposition* (1881); *What Is a Bank* (1881); *Right Methods of Preventing Fires in Mills* (1881); *The Railway and the Farmer* (1881); *The Influence of Boston Capital upon Manufactures* (1882); and *the Distribution of Products* (1885).

ATKINSON, GEORGE W., U. S. Congressman, born at Charleston, Kanawha county, W. Va., June 29, 1846. He graduated at the Ohio Wesleyan University, in 1870, studied law and was admitted to the bar in 1875. He was for four years U. S. marshal for the district of West Virginia, for six years postmaster of Charleston, W. Va., and for six years a revenue agent of the treasury department. He was elected as a Republican from West Virginia to the Fifty-first Congress.

ATKINSON, JOHN, M. A., D. D., M. E. clergyman, born in Deerfield, N. J., Sept. 6, 1835. He was admitted to the ministry in the New Jersey conference in 1853. He is the author of the hymn *We Shall Meet Beyond the River*, and has for more than thirty years contributed to various periodicals. He has published *The Living Way* (1856); *Memoirs of Methodism in New Jersey* (1860); *The Garden of Sorrows* (1868); *The Class Leader* (1874); and *Centennial History of American Methodism* (1884).

ATKINSON, LOUIS E., U. S. Congressman, born in Delaware township, Juniata county, Pa., April 18, 1841. He graduated at the medical department of the University of the City of New York in 1861, and entered the U. S. army the same year, serving until 1865, when he was mustered out. He then studied law and was admitted to the bar in 1870. He was elected as a Republican from Pennsylvania to the Forty-eighth, Forty-ninth, Fiftieth and Fifty-first Congresses.

ATKINSON, THOMAS, Episcopal bishop, born in Mansfield, Va., Aug. 6, 1807, died in Wilmington, N. C., Jan. 4, 1881. He graduated in 1825, studied law, was admitted to the bar, and practiced for nine years. He studied for the ministry and was ordained deacon in Norfolk, Nov. 18, 1836. He became priest the following year, and was consecrated bishop in St. John's Chapel in New York, Oct. 17, 1853.

ATLANTA, capital and largest city of the State of Georgia. It is a great railroad center, and hence is often called the "Gate City" of the south. It is the county-seat of Fulton county, and a port of delivery, is salubriously situated 1,087 feet above sea-level, on a ridge which forms the water-shed between the gulf rivers and those of the South Atlantic slope. It was early known as the prosperous village of Marthasville, planted in an unbroken wilderness, a few years before. It received in 1847 its municipal charter as "the City of Atlanta." It was totally destroyed on the eve of General Sherman's famous "march to the sea," but, having risen speedily from its ashes and become the center of a vast system of inland trade and transportation, it was made in 1868 the capital of the State. The corner-stone of the new State-house (to cost one million dollars) was laid in 1885. The cit-

limits comprise a geometrical circle three miles in diameter; in the center of which, with the principal streets as radii, is the Union passenger depot. Other chief public buildings are the custom-house, the Kimball House and the opera-house. Atlanta is the seat of numerous important educational institutions, among which are Atlanta University, Clark University, Atlanta Medical College, Atlanta Female Institute, Southern Medical Institute, Means' Boys' High School, Seney and Washington Female Seminary, Steen's School, Orphan Free School, English and German Select School, and the Grammar and High Schools of the city. The International Cotton Exposition of 1881, and the Piedmont Exposition of 1887, were held in Atlanta. The tobacco trade of Atlanta is the largest south of Virginia, and her dealings in cotton, draught animals, dry-goods and agricultural and other implements are immense and rapidly increasing. Population in 1850, 2,572; in 1860, 9,554; in 1870, 21,879; in 1880, 37,409; in 1890, 65,514. See *Britannica*, Vol. III, p. 15.

ATLANTES: in architecture, so called by the Greeks in reference to the mythical Atlas. They are male figures used instead of columns. The Romans called them Telamones. Female figures employed in this way are called Caryatids or Caryatides.

ATLANTIC, an important agricultural center of Iowa, county-seat of Cass county, situated on the east bank of East Nishnabotona River. It is the headquarters of an extensive canning industry, and deals largely in corn, wheat, oats and hay.

ATLANTIC CITY, a city of New Jersey, situated on the Atlantic coast, sixty miles southeast of Philadelphia. It is one of the most popular of the many fashionable sea-bathing resorts on the New Jersey shore. The beach is noted for its safety. Population in 1890, 13,038.

ATLANTIC TELEGRAPH. See **TELEGRAPH**, in these Revisions and Additions.

ATLANTOSAURUS, a name given by Professor Marsh to what appears to be the largest deinossaurian reptile of which any remains have been preserved. The femur of this colossal monster is more than eight feet in length. The size of the bone indicates a length for the animal of nearly 100 feet, and a height of 30 feet or thereabout. The remains were obtained in the Jurassic strata of Colorado.

ATLAS, a kind of silk-satin manufactured in the East. The word is Arabic, and means "smooth," "bare," hence it has been applied to smooth-silk cloth.

ATLAS, that piece of the human vertebral column which is nearest the skull. In other words, it is the first cervical vertebra. It may be known from the other six by its being without a body or spinous process, and by its being a mere irregular bony ring, partly divided into two unequal parts by a constriction. This division in the recent subject is completed by a ligament, the part in front being occupied by the tooth-like process of the second cervical vertebra, and that behind by the spinal marrow. On each side the ring is very thick, and it is smooth and cupped above to receive the condyles of the occipital bone. The corresponding parts below are flat, and rest on the second cervical vertebra.

ATLEE, WASHINGTON LEMUEL, an American surgeon and author, born in Lancaster, Pa., Feb. 22, 1808, died in the same place, Sept. 6, 1878. At the age of sixteen he began the study of medicine with his brother, Dr. John Light Atlee, and later he studied with Dr. George McClellan, after which he entered Jefferson Medical College, receiving his di-

ploma in 1829. Until 1834 he practiced in the village of Mount Joy, when he removed to Lancaster and practiced for the next ten years. In 1845 he became a professor in the medical department of the University of Pennsylvania, but resigned in 1853 and resumed his private practice. He was at the head of several medical societies, and is the author of valuable papers on medicine, chemistry and botany. Among them are *Ovarian Tumors* (1873); *Struggles and Triumphs of Ovariectomy* (1875); and *Fibroid Tumors of the Uterus* (1876); besides a prize essay on the same subject.

ATMOLYSIS, a method of separating a mixture of gases by taking advantage of their different rates of passage through a porous septum. This method was first made known in 1863 by its discoverer, Professor T. Graham, master of the English mint.

ATMOMETER, an instrument which can be used to determine the humidity of the atmosphere. It consists of a hollow ball of unglazed clay with a glass stem. The whole is filled with water and inverted in a dish of mercury. As the water, having passed into the pores, evaporates from the surface of the ball, the mercury rises in the stem. If much water vapor is present in the atmosphere, condensation takes place in the pores, and the mercury falls in the tube. The atmometer was invented by Sir John Leslie.

ATOLLS. See **CORALS**, *Britannica*, Vol. VI, p. 378.

ATOMIC WEIGHTS, the proportions by weight in which the various elementary substances unite. In all systems of atomic weights in modern use, the atomic weight of hydrogen is taken as unity, and the atomic weights of the other elements are then fixed so as to give on the whole the simplest and most consistent formulæ of their compounds. There are two systems of atomic weights at present in use. First, the "old" system, which, after a good deal of discussion, was generally adopted about 1845; and, second, the new system, which is in many respects, a revival of the system of Berzelius, and which may be said to have come into general use by scientific chemists about 1860.

ATOMIZATION, a process of converting liquid into diffused spray for purposes of inhalation, first introduced into France by Salas-Girons. It is effected by forcing a fine jet of liquid against either a solid body or a very strong current of air.

ATONEMENT, as simply an English word, is supposed to be derived from "at-one-ment"—that is, harmonious co-operation. The Hebrew term, *copher*, or *kapher*, which is used throughout the Old Testament, and which we translate "atonement," signifies to hide or cover, and hence the use of the word in Scripture and among Christians with regard to the expiation of offenses or the covering up or blotting out of sin. Although "atonement" and "reconciliation" are occasionally accepted as synonymous, the words differ widely in meaning.

ATONY: in pathology, a want of tone, weakness of any organ, or debility of the whole body.

ATRAULI, a town of British India, in the North-west Provinces, 16 miles northeast of Aligarh. Founded about the 12th century, it is well built, with wide streets, a good bazaar, and an abundant supply of water. Population, 16,000.

ATRIP. An anchor is said to be atrip when it is just drawn out of the ground in a perpendicular direction. A top-sail is atrip when it is just started from the cap.

ATROPIA, or **ATROPINE**, an alkaloid existing in all parts of the deadly nightshade (*A. belladonna*) and in the seeds of the thorn-apple (*Datura stramonium*); it has also been called *daturia* or *daturine*.

It is so highly poisonous that no one has ventured to use it internally in medicine.

ATRYPA, fossil brachiopod shells of the Silurian and Devonian, but all Paleozoic.

ATTACHÉ, one attached to or connected with another, as a part of his suit or attendants. The term is specifically applied to young diplomatists on the staff of an ambassador.

ATTACHMENT: in law, the act of taking a person, or his goods or estate, by virtue of an order or writ issued by a court. The word may signify either the act or the writ. An attachment may be served upon a person to compel his attendance at court, or to punish for contempt, or to compel him to pay a debt. In America it is sometimes the custom to serve an attachment on a person's property before trial of the merits of the case. This the sheriff does in order to have security for the payment of judgment should it be recovered. A "foreign" attachment is one where a creditor attaches property which has been put in the hands of an agent by the owner. Foreign attachment is known in the Eastern States as "trustee process." It has been a common proceeding in England from time immemorial. Writs of attachment are granted where there is suspicion of fraud, or of the illegal disposal or covering up of property. See *Britannica*, Vol. III, p. 51.

ATTACK: in military warfare, an advance upon the enemy with a view of driving him from his position. It may either be an attack in the open field, or an attack upon a fortress. Another mode combines an attack on one flank as well as in front by two separate corps, so as either to get in the enemy's rear or to perplex him as to his retreat.

ATTAINDER is the legal consequence of judgment of death or outlawry, in respect of treason or felony. See *Britannica*, Vol. III, p. 52.

ATTALEA, a genus of palms comprising a number of species, natives of the tropical parts of South America. The fruit is a dry, fibrous husk, inclosed in a nut with three cells and three seeds. The leaves of some species are much used for thatching, some are woven into hats, mats, etc. The nuts of some are burned, to dry India-rubber, which acquires its black color from their smoke. The fruit is as large as ostrich eggs, and supplies a kind of vegetable ivory, used for making umbrella handles, etc. The trees are stately and beautiful.

ATTALUS, **FLAVIUS PRISCUS**, Arian emperor of Rome, proclaimed such by Alaric, A. D. 409; deposed by him in 410, and banished by Honorius, 416.

ATTALUS, two kings of Pergamos, both allies of the Romans, b. 269, d. 197 B.C.; b. 220, d. 138 B.C.

ATTAMAN, or **HETMAN**, an order of Cossack chiefs of which the heir-apparent to the crown is principal.

ATTEMPT to commit a felony or criminal offense is in many instances equally cognizable by the criminal tribunals with the completed crime itself.

ATTESTATION: in conveyancing, the verification of the execution of deeds and wills by witnesses.

ATTLEBOROUGH, a market town of great antiquity in Norfolk, England, 16 miles southwest of Norwich by rail. It has a college of the Holy Cross (1387); and its cruciform parish church contains some interesting monuments. Population, 2,244.

ATTLEBROUGH, a town of Bristol county, Massachusetts, 31 miles southwest of Boston by rail. It has manufactories of jewelry, buttons, braid, etc.

ATTORNEY: in its general meaning, one appointed by another to act for him. In the United States an attorney-at-law is one who stands in the place of another in matters of law. See *Britannica*, Vol. III, p. 62.

ATTORNEY-GENERAL, the title by which, in the United States, England and Ireland, the first ministerial law officer of the government is known. Nearly all of the States of the Union have attorneys-general, whose duties under the State government correspond essentially with those of the U. S. attorney-general under the general government. See *Britannica*, Vol. III, p. 63.

ATTRIBUTE: in the fine arts, a species of symbol, consisting of a secondary figure or object accompanying the principal figure, as the trident of Neptune, the owl of Minerva, and the cap of Liberty.

ATTRIBUTE: in logic, a term used to denote the opposite of substance. The latter is considered to be self-existent, while the former can only be conceived as possessing a dependent existence. Attributes are commonly said to belong to substances. Thus wisdom, holiness, goodness, and truth are termed attributes of God, who is Himself regarded as the substance in which they inhere. In the same way whiteness is called an attribute of snow.

ATTUCKS, **CRISPUS**, a half-breed Indian, or mulatto, killed in the Boston Massacre, March 5, 1770. He was the leader of the mob which attacked the British troops on that occasion. He was a resident of Framingham, and is supposed to have been about fifty years of age at the time of the massacre. A movement has been set on foot for the erection of a monument to his memory; but, at the present writing (1891), a serious doubt, founded upon a recent discovery of old documents in Boston, is expressed as to his existence.

ATWATER, **LYMAN HOTCHKISS**, an American scholar, born in New Haven, Conn., Feb. 20, 1813, died in Princeton, N. J., Feb. 17, 1883. He graduated at Yale in 1831, at the theological seminary in 1834, and was ordained pastor of the Congregational church at Fairfield, Conn., in 1835, remaining there for nineteen years. In 1854 he became professor of mental and moral philosophy in Princeton, and in 1869 was made professor of logic and of moral and political science. He edited the "Princeton Review," and published a *Manual of Elementary Logic* (1876).

AUBERLEN, **KARL AUGUST**, a prominent German orthodox theologian, born at Fellbach in Württemberg in 1824, died in 1864. He was the author of several works, among them *The Prophet Daniel and the Revelation of John Considered in Their Reciprocal Relations*.

AUBERVILLIERS, a place in the Seine department, about five miles north of Paris, with a fort which is included within the system of fortifications of the capital. Its industries are iron-founding, manufactures of caoutchouc, paper, varnished leather, glass and chemicals. Population, 19,437.

AUBRY DE MONTDIDIER, a French knight who lived in the time of Charles V, and who, tradition says, was assassinated in the forest of Bondy by Richard de Maccuire in 1371.

AUBURN, a village of Lee county, Alabama, the seat of the Alabama Agricultural and Mechanical College.

AUBURN, a village of California, the center of a rich quartz-mining and fruit-growing district.

AUBURN, an important city of Maine, on the Androscoggin and Little Androscoggin rivers, which furnish an immense water-power. It is the seat of an extensive cotton and shoe manufacturing industry. Population in 1890, 11,228.

AUBURN, a city of New York, county-seat of Cayuga county. It is handsomely built on both sides of the outlet of Owasco Lake, which is the source of supply for the Auburn water-works, and

which furnishes a valuable water-power for the extensive manufactories of the city. These include thrashing-machines, reapers, mowers, binders, woolen and cotton fabrics, iron, and the goods made by the inmates of the State prison which is here located, and which is celebrated for its excellent system of discipline. A good quality of limestone is found in this vicinity. Auburn is the seat of Auburn theological seminary. Many of the gardens and residences of the city are remarkable for their beauty.

AUBUSSON, PIERRE D', Grand Master of the Order of St. John of Jerusalem, born in 1423, died at Rhodes in 1503. His early history is imperfectly known; but he is said to have borne arms, when very young, against the Turks in the wars in Hungary, and to have distinguished himself by the zeal and valor he displayed. See *Britannica*, Vol. XXI, p. 174.

AUCHENIA, a genus of ruminating quadrupeds, of which the llama and alpaca are the best known.



BROWN LLAMA (*Auchenia llama*).

The genus is exclusively South American. Indeed, the species occur only on the lofty ranges of the Andes. They are nearly allied to the camels, and may be regarded as their representatives in the zoology of America. Its hide makes good leather, and its hair, of woolly nature, is in great request for weaving light wiry stuffs.

The color of the animal varies in different individuals, but brown is the general tint; the hair being always longer, thicker, and more frizzly on the body than on the head, neck, and legs. See *Britannica*, Vol. I, p. 597; Vol. XIV, p. 738.

AUCHINLECK, a village of Ayrshire, Scotland, 15 miles east of Ayr. The parish contains Auchinleck House (locally called "Place Affleck"), the seat of the Boswell family. Near the mansion, Sir Alexander Boswell, son of Johnson's biographer, established in 1815 the *Auchinleck Press*, for printing rare works, such as the *Romance of Sir Tristram*, the *Disputation Between John Knox and the Abbot of Crossraguel*, etc. Population, 1,528.

AUCTION. The character of this convenient mode of offering property for sale is correctly indicated by the name. The Latin word *auctio* means "an increasing or enhancement," and an auction is an arrangement for increasing the price by exciting competition among purchasers. The auction is of Roman origin, and is said to have been first introduced for the purpose of disposing of spoils taken in war. See *Britannica*, Vol. III, p. 68.

AUCTIONEER, a person who conducts an auction. The auctioneer is in a certain sense the agent, both of seller and purchaser, and by the fall of his hammer, or by writing the purchaser's name in his book, he binds him to accept the article sold at the price indicated.

AUCUBA, a genus of plants, of the natural order *Cornaceæ*. The only known species of this genus is *A. Japonica*, an evergreen shrub, resembling a laurel; it is a native of China and Japan.

AUDE (ATAUX), a river in the south of France. It rises in the east Pyrenees, not far from Mont Louis; flows for some time parallel to the canal of Languedoc, and falls into the Mediterranean six miles northeast of Narbonne, after a course of more than 120 miles.

AUDIFFRET, CHARLES LOUIS GASTON, Marquis d', born in Paris, Oct. 10, 1787, died there April 23, 1878. On the completion of his studies, in 1806, he entered the administration of the finances and in 1812 became chief of the bureau and auditor to the council of state. On the return of the Bourbons in 1814, he was made chief of division and chevalier of the Legion of Honor. Appointed director of petitions in 1817, he became councillor of state in 1823, and was made president of the court of accounts in 1829. This last position he held during thirty years, resigning it in 1859 to become president of the administrative council of the Society of Commercial and Industrial Credit. Meantime, under Louis Philippe, he held a seat at the Luxembourg, as a peer, from 1837 to 1848, and was made a senator under the Empire. In 1847 he had been made grand officer of the Legion of Honor, and he received the grand cross in December, 1869. He published several works on finance.

AUDIFFRET-PASQUIER, EDMÉ ARMAND GASTON, Duc d', a prominent French statesman, was born at Paris, Oct. 20, 1823. He was the son of Count d'Audiffret, but being adopted by his grand-uncle, Baron Pasquier, became heir to the title of duke conferred upon the baron in 1844. He became auditor of the council of state in 1845. His liberal opinions prevented his holding any important office under the Empire, but in 1871, after the fall of the Empire, he became prominent as leader of the moderate conservatives in the assembly. He was strongly opposed to the Thiers government, and became one of the leaders of the Right Center. After the fall of that government, in 1874, he was elected vice-president of the National Assembly, and president in 1875. The republican constitution of France was adopted by the assembly during his presidency. In December, 1875, he was elected permanent senator, and in March, 1876, was chosen president of the senate by a nearly unanimous vote. This position he held until 1879.

AUDIOMETER, an instrument for measuring the power of hearing and recording it upon an arbitrary scale. It is a special application of the telephone.

AUDIPHONE, an instrument invented in 1879 by Mr. Rhodes, of Chicago, to assist the hearing of deaf persons in whom the auditory nerve is not entirely destroyed. It consists of a diaphragm, or plate, which the person using it presses against the upper front teeth with the convex side outwards; when so placed it communicates the vibrations caused by sound to the teeth and the bones of the skull, and thence to the organs of hearing.

AUDITA QUERELA, a form of action which lies for a defendant to recall or prevent an execution, who has grounds to show that such execution ought not to issue against him, or on account of some matter occurring after judgment amounting to a discharge, which could not have been and cannot be taken advantage of otherwise. It is a remedial process, equitable in its nature, based upon facts, and not upon the erroneous judgment or acts of the court, in which damages may be recovered if execution was improperly issued. In some States it has been entirely superseded by relief granted upon motion, while in others it is recognized by statute and of frequent use. The writ of *audita querela* does not lie against the government.

AUDITOR, the name given to certain officers appointed to examine accounts on behalf either of the government, of courts of law, of corporations, or of private persons. See *Britannica*, Vol. III, p. 69.

AUDLEY, SIR JAMES, one of the original knights of the Order of the Garter. He was frequently in

personal attendance on Edward the Black Prince, whom he accompanied to France in 1346, and subsequently to Spain. He died in 1369.

AUDLEY, THOMAS (1488-1544), Lord Chancellor of England in the time of Henry VIII. He presided when Sir Thomas More was tried.

AUENBRUGGER, or AVENBRUGGER, LEOPOLD. See *Britannica*, Vol. III, p. 145.

AUER, ALORS (1812-1869), native of Upper Austria, and trained in a printing establishment. During his leisure moments he employed himself in acquiring a knowledge of French, Italian, English and other languages. In 1864 he published his discovery in photography of "spontaneous impression."

AUERBACH, BERTHOLD, a popular German author, born at Nordstetten, in 1812, died in 1882. Having abandoned the study of Jewish theology, he devoted his attention to literature. Many of his works have been translated into English, Swedish and Dutch. *Das Landhaus am Rhein* is known by the English title, *The Castle on the Rhine*.

AUERBACH, HEINRICH, a friend of Luther and a medical professor in Germany. He died in 1542.

AUERSPERG, CARLOS, prince, president of the Reichstag, and of the Bohemian Diet. Born 1814.

AUERSTÄDT, a village in the Prussian province of Saxony, ten miles west of Naumburg. It is famous for the great battle which took place there Oct. 14, 1806, between the French under Davoust and the Prussian army under Duke Charles, of Brunswick, which resulted in a great victory for the former. The Prussians, who numbered fully 48,000, left nearly half their men, dead or wounded, on the ground, while the French (30,000) escaped with a loss of only 7,000. Napoleon, who had on the same day defeated the main army of Frederick-William III at Jena, made Davoust duke of Auerstädt.

AUFRECHT, THEODOB, philologist, born at Leschnitz, in Upper Silesia, Jan. 7, 1822. After studying at Berlin under Bopp, Böckh and Lachmann, he settled there in 1850, and devoted himself to Sanskrit and the old German tongues. To this time of his life also belongs his collaboration with Kirchoff in the publication of *Umbrische Sprachdenkmäler* (two vols. Berlin, 1849-51)—an epoch-making work in the comparative study of the languages of ancient Italy—as well as the founding of the well-known *Zeitschrift für Vergleichende Sprachforschung* (1852), in the editing of which he assisted A. Kuhn for some time. In 1852 he went to Oxford, where he helped Max Müller in his edition of the *Rigveda*, and was appointed to a place in the Bodleian Library, the fruit of which was his excellent *Catalogus codicum Sanscritorum bibliothecæ Bodleianæ Oxoniensis* (1864). In 1862 he became professor of Sanskrit and Comparative Philology at Edinburgh, and in 1875 resigned this chair for one at Bonn. Aufrecht has published scholarly editions of several classical Sanskrit works, most important being his *Rigveda*, in the Roman character (2d edition, 2 vols. Bonn, 1877).

AUGER, an instrument used by carpenters for boring holes, chiefly in wood.

AUGIER, GUILLAUME VICTOR EMILE, a French dramatist of considerable reputation, born at Valence in 1820. His comedy, *Gabrielle*, gained at the French Academy the Montyon prize in 1849, and in 1867 he was admitted a member of the Academy.

AUGITE, or PYROXENE, a mineral very nearly allied to hornblende. It is little affected by acids or not at all; it is usually of a greenish color, very often black. It crystallizes in six or eight-sided prisms, variously modified. It is an essential component of many igneous rocks, particularly of ba-

salt and augite-porphry, from which chiefly it derives its importance as a mineral species.

AUGMENTATION: in music, the reproduction of a melody, or principal subject of a composition; in the course of the progress of the piece, in notes of greater length than those in which the melody is first introduced.

AUGMENTATION, PROCESS OF: in Scotch law, is an action in the Court of Teinds by the minister of a parish against the titular, or beneficiary, and heritors, for the purpose of procuring an increase to his stipend. The moderator and clerk of the presbytery to which the minister belongs must also be called as parties. In the time of George III it was enacted that no augmentation should be granted till the expiration of 15 years from any augmentation previous to the act, nor till the expiration of 20 years from any augmentation subsequent to the act. A period of 20 years must thus elapse between each augmentation.

AUGUR, CHRISTOPHER COLON, American soldier, born in New York in 1821. He graduated at West Point in 1843, and served during the Mexican war as aid-de-camp to Gen. Hopping, and later to Gen. Caleb Cushing. He served as captain against the Indians in Oregon in 1856, and in 1861 was appointed major in the 13th infantry. The same year he became a brigadier-general of volunteers, and was severely wounded in July, 1862, during the battle of Cedar Mountain. Subsequently he fought with distinction in various important battles, and was retired in 1885 as major-general.

ARARAT (see *Britannica*, Vol. II, p. 309), a mountain in Armenia (about 17,112 feet above the sea-level), on which Noah's ark is supposed to have rested, B. C. 2349, now termed by the Persians, Koh-i-Nuh (Noah's mountain); by the Armenians, Masis; by the Turks, Agri-Dagh. The mountain was ascended by Dr. Parrot, Sept. 27, 1829; by Major Stuart, 1856, and by others since. Mr. James Brice, who ascended Sept. 11, 12, 1876, described the summit as a little plain of snow, silent and desolate, with a bright, green sky above;—the view stern, green and monotonous. In August, 1888, it was ascended by Professor Mackoff and M. Popoff, both native Russians.

AUGUSTA, a trading town of Arkansas, county-seat of Woodruff county, situated on the east bank of the White River. It deals chiefly in cotton, which is here shipped by steamboat, and is the seat of a good high school.

AUGUSTA, an important commercial and manufacturing city of Georgia, county-seat of Richmond county. It is beautifully situated upon the west bank of the Savannah River, at the head of steamboat navigation. It is the second oldest city in the State. It was settled by colonists under General Oglethorpe; laid out under royal charter in 1735; rechartered in 1798, and incorporated as a city in 1817. During the Revolutionary war Augusta was captured and held for two years by the British, until June 5, 1781, after a siege of thirteen days, it was surrendered to the Americans under General Henry Lee. The war of 1812 and the Indian wars left the recuperated and prosperous city unmolested; but during the civil war it was twice threatened by General Sherman, and was garrisoned by the Confederates. Augusta is well built; its streets are straight and wide, and cross each other at right angles. The Medical College of Georgia, founded in 1830, is located here. The Richmond Academy is an incorporated institution, and there are numerous flourishing graded schools. Among the notable public buildings, monuments and institutions are also a handsome and costly City-hall, the Odd Fellows' and Masonic halls, the opera house, Inde-

pendence monument, Confederate monument, Augusta Orphan Asylum, and numerous other charitable institutions. The Augusta Canal, 9 miles long and 150 feet wide, and fed by means of an immense stone dam which here crosses the river, furnishes an abundance of the purest water for domestic use and for the numerous manufactories of the city. These represent a capital of some nine million dollars, of which about five million is invested in the cotton trade. Population, in 1860, 12,493; in 1870, 15,389; in 1880, 21,891; in 1890, 33,150. See *Britannica*, Vol. III, p. 73.

AUGUSTA, a city of Maine, capital of the State and county-seat of Kennebec county, is pleasantly situated at the head of tidal navigation on both sides of the Kennebec River, which is spanned by an elegant bridge uniting the two parts of the city. Since the destructive fire of 1865, the business quarter of the city has been conveniently and handsomely rebuilt. There is an abundant supply of water, which is utilized by a fine system of water-works, and in the extensive manufacture of lumber and cotton goods. The State-house, situated on an eminence at the southern limit of the city, is a handsome structure of whitish granite. The United States Arsenal and Military Asylum, and the State and City libraries, are of special interest. Augusta is the seat of St. Catherine's school for young ladies. Population, in 1890, 10,521. See *Britannica*, Vol. III, p. 73.

AUGUSTANA COLLEGE AND THEOLOGICAL SEMINARY, incorporated at Paxton, Ill., in 1865. Its object is to educate candidates for the ministry of the Evangelical Lutheran Church, and also young men for teachers. The Faculty consists of a president, three professors and tutor.

AUGUSTULUS, ROMULUS, the last emperor of the western portion of the Roman empire. His name was Augustus, but the diminutive title under which he is universally known was given him by the Romans on account of his littleness of character. He was the son of Orestes, a Pannonian of birth and wealth, who rose to high rank under the Emperor Julius Nepos. On the flight of the emperor Orestes conferred the vacant throne on his son Augustulus, A. D., 476, retaining all substantial power in his own hands. Orestes, failing to conciliate the barbarians, who had helped him against Nepos, they besieged him in Pavia, and, capturing him, put him to death. Augustulus was dismissed to a villa near Naples, with an annual pension of 6,000 pieces of gold. His after fate is unknown.

AUK (*Alca*), a genus of web-footed birds, the type of the family *Alcidae*, which was in great part included in the Linnæan genus *Alca*, and to many of the species of which, now ranked in other genera, the name auk is still popularly extended. The *Alcidae* are among those web-footed birds collectively called *Brachypteres* (i. e., short-winged), or



AUK.

Divers, by Cuvier. They are remarkable for the shortness of their wings, which they employ as fins or paddles for swimming under water, some being even incapable of flying; and for the position of their legs, further backward than in other birds, which makes walking difficult, and when they are on land compels them to maintain an upright position. They are distinguished by the very compressed bill which in the true auk is vertically elevated, and so sharp along the ridge as to resemble the blade of a

knife, and by their entirely palmated feet, destitute of hind toes. The auks are confined to the seas of the northern hemisphere, and are most abundant in the colder regions. They all have a dense plumage, which exhibits on its surface a beautifully polished silvery luster. See *Britannica*, Vol. III, pp. 85, 734, 735; Vol. X, p. 78; Vol. XX, p. 302.

AULA REGIA, an English court established by William the Conqueror, and regulated afterward by the Magna Charta.

AULAPOLAI, or ALLEPPI, a seaport, with a lighthouse, in Travancore state, Madras, 33 miles south of Cochin. Communication is maintained with Quilon and Trivandrum on the south, and with Cochin on the north, by canals parallel with the seacoast, and connecting a series of lakes or backwaters. Between these and the sea is a wide creek, through which is floated the timber for exportation, which is brought from the forests of the Maharajah of Travancore on the western Ghauts. There is considerable trade in coffee, coir, pepper, and cardamoms. Population, 30,000.

AUMALE, CHARLES DE LORRAINE, DUC D' (1554-1631), an ardent partisan of the League in the politico-religious wars which devastated France in the 16th century.

AUMALE, CLAUDE II, DUC D', born in 1523, killed by a cannon ball before La Rochelle in 1573. He was one of the chief instigators of the St. Bartholomew massacre in 1572.

AUMALE, HENRI EUGENE PHILIPPE LOUIS D' ORLEANS, DUC D', born at Paris in 1822, the fourth son of King Louis Philippe. In 1847 he succeeded Marshal Bugeaud as governor-general of Algeria. He resigned in 1848, and, joining his father, resided in England till the law was repealed banishing the Orleans princes from France, and became known by his literary work. In 1871 he was elected a member of the National Assembly and returned to France. He was president of the court-martial which tried Marshal Bazaine. In 1885 the expulsion bill was passed, and again he was an exile till it was revoked in 1889.

AUNE, the French cloth-measure corresponding to the English *ell*. The English ell=1¼ yard=45 inches; the French *aune usuelle* (or *nouvelle*)=1½ meter=47½ inches English.

AUNOY, MARIE CATHERINE JUELLE DE BERNEVILLE COMTESSE D' (1650-1705), a celebrated French authoress of the reign of Louis XIV. She composed fairy tales, romances, and historical memoirs.

AURANTIACEÆ, a natural order of oxogenous plants, consisting of trees and shrubs, often of great beauty. The species of the genus *Citrus* are best known, among which are the orange, lemon, citron, etc.

AURELIANUS (*Aurelian*), LUCIUS DOMITIUS, one of the most powerful of the Roman Emperors. On the death of Claudius II (A. D. 270), Aurelianus was elected emperor by the army. He commenced his reign by vigorous opposition to the barbarian, Alemanni, or Marcomanni, whom he expelled. His most famous enterprise was an expedition against Zenobia, whom he defeated and captured. He fell a victim to conspiracy, and was assassinated by his secretary, A. D. 276.

AUREUS, or DENARIUS AUREUS, a Roman gold coin, first coined 207 B. C. See *Britannica*, Vol. XVII, p. 653.

AURICULA (*Primula auricula*), a plant of the same genus with the primrose, much cultivated in flower gardens, has smooth, dark green leaves, leafless stems, and calices covered with a mealy powder. A similar powder appears also on the flowers, which adds much to their beauty. This plant is a native of the Alps and of other mountains in the

south and middle of Europe, and of sub-Alpine situations in the same countries. The name Auricula is derived from the Latin word *auris*, an ear, on account of the resemblance of the leaves to the ears of an animal. See Britannica, Vol. XII, p. 253; Vol. XIX, p. 737.

AURICULA, a genus, and *Auriculidæ*, a family, of gastropod mollusca. They belong to the same order as the common snails, having organs for breathing in air, although some of them can exist for a considerable length of time under water. Some of them live in fresh-water marshes, while others prefer the vicinity of salt water. Some of them attain a large size. *Auricula Midæ* is found in the East Indies, and is known to shell collectors by the name of Midas Ear. See Britannica, Vol. XXII, p. 187.

AURICULATE: in botany, a term applied to leaves, stipules, etc., and signifying that they have at the base two small, ear-like lobes.

AURIGA, a constellation containing Capella, a star of the first magnitude.

AURIOL, a town near Marseilles, in France. Population, 5,182.

AUROCHS is properly the German name of the extinct species of wild ox, called by Cæsar *Urus*, a few herds of which are still found in Lithuania. Recently the name has been erroneously used for the American bison. See Britannica, Vol. III, p. 792.



AUROCHS.

AURORA, one of the largest cities of Illinois, beautifully situated on the Fox River, in the fertile southeastern part of Kane county. It has an extensive trade in the staple products of the surrounding country, and a variety of manufactures, including machinery, flour, woolen goods, silverware, carriages, sash and blinds. It is an important railroad center, and contains the shops of the Chicago, Burlington & Quincy R. R., which employ nearly two thousand men. Among the notable buildings are that of the Young Men's Christian Association, and a fine city-hall, which cost \$75,000. Aurora is the seat of Jennings' Seminary, and its public schools are excellent. Population in 1890, 19,634.

AURORA, a village of Dearborn county, Indiana, on the Ohio River, and on the Ohio & Mississippi R. R.

AURORA, a village in New York, seat of Wells' Ladies' College and Cayuga Lake Academy.

AUSABLE, a village of New York, on the Ausable River.

AUSSEE, a market-town in the Salzkammergut of Styria, situated at the confluence of three mountain streams, which form the Traun, 22 miles southeast of Ischl. It has mineral springs and baths, and is visited by some 6,000 strangers annually. Population, 1,369.

AUSTEN, WILLIAM, an Englishman of the 15th century, celebrated as a metal-worker and designer. He constructed the famous tomb of Richard de Beauchamp, Earl of Warwick, in St. Mary's Church, Warwickshire. See Britannica, Vol. XXI, p. 559.

AUSTIN, ALFRED, journalist and poet, born at Headingly, near Leeds, May 30, 1835. He was educated at Stonyhurst and St. Mary's College, Oscott. He graduated at the University of London in 1853, and was called to the bar in 1857. He became interested in literature, and soon devoted himself en-

tirely to that pursuit. His first important book was *The Season: a Satire* (1861), which was severely criticised. *The Human Tragedy* (1862) was soon recalled, and was not issued in altered form until 1876. Among later volumes of verse are *Savonarola*, a tragedy (1881); *Soliloquies in Song* (1882); and *At the Gates of the Convent* (1885). As a journalist Austin has long been connected with the "Standard" and "Quarterly Review," and has acted since 1883 as editor of the "National Review."

AUSTIN, MOSES, a Texan pioneer, born in Durham, Conn. He went to the West in 1798, and engaged in lead mining. In 1820 he removed to Texas, and petitioned the Mexican commandant at Monterey for permission to colonize 300 families in that section. While in search of emigrants he was robbed and the hardships he encountered caused his death, in Louisiana, June 10, 1821.

AUSTIN, STEPHEN F. (c. 1790-1836), a Texan pioneer, born about 1790. He founded the present Austin, Texas, after obtaining a confirmation of the grant to colonize 300 families, obtained by his father from the Mexican authorities in 1820. In 1833 the American settlers had become powerful and were restless under Mexican rule, Austin going so far that he was imprisoned for several months. On his liberation in 1835 he took part with the revolutionists. He became commander-in-chief, and in November was sent on a commission to the United States to secure recognition from the government at Washington. In this capacity he acted with prudence, and would have obtained recognition of Texan independence had he been properly provided with credentials. He returned to prosecute his work, but died Dec. 27, 1836.

AUSTIN, a city of Minnesota, county-seat of Mower county, pleasantly situated on Red Cedar River. It has a thriving trade in general merchandise, and is actively engaged in the manufacture of farming tools, barrels, pressed brick, flour, ploughs and machinery, and contains a number of foundries, machine shops, marble works, a creamery, a canning and preserving factory, and railroad shops. Other points of interest are a fine opera house, the court-house and the board of trade.

AUSTIN, a city of Nevada, county-seat of Lander county. It is situated in a rich mining region, surrounded by mountains and deep cañons, on the eastern slope of the Toiyabe range. The chief industry is the mining of silver, and there are also several quartz mills and a reduction works, a machine shop and a foundry.

AUSTIN, a city of Texas, capital of the State, and county-seat of Travis county, finely situated in the midst of beautiful scenery, at the head of high-water navigation on the left bank of the Colorado River, which here breaks through a range of hills upon which the city is built, and which is spanned by two fine bridges. The most prominent feature of this lovely city is the new capitol, built of Texas marble, for the cost of which three million acres of State land was appropriated, and which occupies a central position on Capitol Hill. From this the principal avenues, 120 feet wide, radiate north, south, east and west, crossed by shaded streets, most of which are 80 feet in width. Austin is an important railroad city, and the trade center of a fertile agricultural and grazing district, the staple products of which are cotton, corn, sweet potatoes, pork and cattle. It is the seat of the State University, Texas Military Institute, a Roman Catholic Academy, and asylums for the blind, the insane and the deaf. Population in 1890, 15,324.

AUSTRALASIA, a term usually including the Australian colonies, together with Tasmania, New Zealand, Fiji, Tasmania, New Guinea, New Britain.

New Ireland, Solomon's Islands, New Caledonia, and New Hebrides, which see severally in these volumes.

AUSTRALIA. Area, 3,031,169 sq. miles. Population, 2,819,367. British Colonial possessions, consisting of five provinces, viz: Queensland, capital Brisbane; New South Wales, capital Sydney; Victoria, capital Melbourne; South Australia (including Northern Territory), capital Adelaide, and Western Australia, capital Perth. For general history and descriptive features, see Britannica, Vol. II, pp. 103-15. Australia is the largest island in the world: extreme length, from east to west, 2,400 miles; from north to south, 1,971 miles. For latest events and statistics, see the several provinces in these Revisions and Additions.

AUSTRALASIAN CONFEDERATION, a subject receiving large attention in the Australian colonies for several years. In 1885 a Federal Council Act was formulated for the purpose of dealing with matters of common interest, but the federal union was only partially effected. A council was instituted, and sessions were held in 1886, 1888 and 1889, but the colonies of New South Wales and New Zealand had not thus far sent a representative. The council did not meet in 1890, but, instead, a conference of representatives of the Australasian Colonies met in Melbourne, Feb. 6, 1890, for the purpose of considering a scheme of Australasian Federation and Federal Defense. The colonies represented were Victoria, New South Wales, South Australia, Queensland, New Zealand, Tasmania, and Western Australia. A resolution was adopted declaring that the time had come for the union of the Australasian Colonies under one government. Provision was made for the admission into the Union of the more remote Australasian Colonies, at such times and under such conditions as might thereafter be agreed upon. The Conference sat till Feb. 14th, and before adjourning adopted an address to Her Majesty, the Queen of England, embodying the resolutions passed, one of which provided for holding a National Australasian Convention early in 1891 to be composed of delegates appointed by the legislatures of the various Australasian colonies. A cablegram from Melbourne, Nov. 21, 1890, announced that the Convention would be held in Sydney in March, 1891.

AUSTRASIA, or the East Kingdom, including Lorraine, Belgium, and the right bank of the Rhine, having their central point at Metz. It is the name given under the Merovingians to the eastern possessions of the Franks. Under Charlemagne's successors Austrasia became a part of Germany.

AUSTRIA-HUNGARY. Area, 261,649 sq. miles. Population (1888), 41,665,277. To this should be added military population, 162,423, making a total of 41,827,700. Capital of the Empire, Vienna. Reigning Emperor, Francis Joseph, Emperor of Austria and King of Bohemia, etc., and Apostolic King of Hungary.

Austria proper, 115,914 sq. miles; population, 23,485,000. Hungary, 124,448 sq. miles; population, (1888), 16,670,115. Bosnia and Herzegovina, 20,177 sq. miles; population, 1,336,091. Among this population there were in 1880 about 18,920,000 Slavs, 9,977,000 Germans, 6,489,000 Magyars, and 2,614,000 Roumanians. According to religion, there are nearly 29,111,000 Roman Catholics, 3,611,000 Protestants, 3,512,000 Greeks and Armenians, 1,652,000 Jews, and 493,000 Mohammedans. The Empire—the official denomination of which is now Oesterreichisch-Ungarische Monarchie (the Austro-Hungarian Monarchy)—is divided into the Austrian state and the Hungarian state, each having its own parliament, ministry and administration. Capital of Hungary, *uda-Pesth*.

The lands of the Austrian crown are Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Carniola, Coast-Districts (Görz, Gradisca—Trieste, and Istria), the Tyrol and Vorarlberg, Bohemia, Moravia, Silesia, Galicia, Bukowina, and Dalmatia. The lands of the Hungarian crown embrace Hungary, Transylvania, Fiume, Croatia, and Slavonia. The soil produces grain of all kinds, potatoes, beet-root and wine. Austria ranks next to France, Italy, and Spain as a wine-growing country (Austria, 1888: 91,404,720 gallons, and 109,144,134 in Hungary, 1887); but, from its inland position and other causes, the wines are not so well known in this country as they deserve to be: 1,050,000 tons of beet-sugar were manufactured in 1887-88. Industry is almost wholly confined to the western half of the monarchy, and more especially to Vienna, Bohemia, Moravia, and Silesia. Styria is the great center of the iron trade; Brünn is famed for its woolens, Reichenberg for woolens and cottons, Trautenau for linen, Bohemia for glass, and Vienna and Pilsen for lager beer. The mineral riches are very great, comprising gold, silver, copper, iron, quicksilver, lead, tin, zinc, coal (Austria, 1888): 42,269,432; Hungary, 1887: 5,019,695 tons; petroleum is also found in Galicia.

The Empire possesses a powerful army, amounting, on the peace footing, to 273,779 men with 19,738 officers; and the war establishment, including a Landwehr of 349,284 men, etc., consists of 1,177,644 officers and men, with 2,008 field guns. Military service is compulsory on all. The navy consists of 157 vessels, of which 12 are iron-clads, 6 torpedo vessels, and 57 torpedo boats. Pola is the great naval arsenal. The imports amounted (1888) to £44,420,000; the exports (1888), £60,450,000; they included vegetable fibers and manufactures; silk and silk goods; vegetables, fruits, etc.; fats and oils; grain and pulse; colonial wares; clothing, haberdashery; animals; machinery and carriages; wool and woolen goods; furs and skins, wooden ware, etc. The raw materials were roughly valued at £25,425,000, and the manufactured goods at £21,208,333 (1886). About one-half of the exports consisted of agricultural produce. Some of the principal articles were grain, pulse, and flour, £5,863,823; fuel, £3,756,647; sugar, £1,978,772.

Although the term Austria-Hungary is occasionally used, Hungary itself as a state is seldom thought of. Austria alone is mentioned as covering the whole monarchy. Actually Hungary is not only a distinct kingdom, but it has in almost every sense a distinct and separate existence. The Emperor of Austria is also separately crowned as King of Hungary. The following particulars will therefore be of interest to many persons to whom the subject of the distinct and separate Kingdom of Hungary will be novel.

Hungary, with its dependent states, has an area of 322,302 sq. kilometres, about 124,448 sq. miles—that is, rather larger than the United Kingdom, with a population of 16,979,813 in December, 1887. To this Fiume contributes 22,364, and Croatia and Slavonia 2,098,161. The country is divided into 72 counties, with 473 districts for those of Hungary. Hungarian is the official language, except in Croatia and Slavonia, where Croatian is spoken. Croatian and Slavonia are annexes of the crown of Hungary, but both countries have an autonomy for home affairs, law and public instruction. At the head of the Croatian government is the *Ban* Khuen Héderváry, who is responsible to both the Diet of Croatia and to the Hungarian prime minister. All other matters are in common, the Croatian Diet sending 40 members to the Hungarian parliament; while the Hungarian ministry contains a Croatian member.

The Hungarian parliament consists of 458 members, elected for five years. Of these Croatia sends 40, but they are not entitled to vote on matters connected with Hungarian laws, education, and home affairs. There is also an Upper House consisting of wealthy magnates, gentlemen who contribute more than 3,000 florins to the land tax, the prelates, the *Banus*, and three members of Croatia sent by the Diet, and fifty members nominated by the crown. Of the inhabitants there were 6,499,107 native Magyars at the census of 1880, but a large portion of the other nationalities speak the national tongue. Those who do not are generally the uneducated, chiefly Roumanians in Transylvania, who are there nearly as numerous as the Hungarians, the Székelys, "the most excellent Hungarian race," and the Saxons of Transylvania. In addition to Buda-Pest there are thirty-three other cities, each containing more than 20,000 inhabitants.

Hungary excels in its agriculture. All the great plains produce vast quantities of grain. In many parts wheat grows upon land that is seldom or never manured. The returns for 1889 (excluding Croatia and Slavonia) give 32,958,777 hectolitres of wheat, 12,965,561 of rye, 12,163,502 of barley, 15,378,523 of oats, and 36,082,982 of Indian corn. The cattle number 4,879,038, sheep 10,594,831, horses 1,748,859, and swine 4,803,639. Hungary is not a manufacturing country.

AUTEUIL, a village at the entrance of the Bois de Boulogne containing 6,000 inhabitants. It was the home of Molière (whom Andrieux introduced in his *Molière avec ses Amis, ou le Souper à Auteuil*), Boileau, and the gifted widow of Helvetius, whose parties Bonaparte often attended in 1798 and 1799.

AUTHENTIC, a term applied to writings or documents whose contents may be depended upon for truth and accuracy. It is sometimes used as synonymous with *genuine*, though a distinction has been drawn between the two words, especially by biblical critics.

AUTHORITY, that to which appeal may legally be made in science, law or theology; the right to demand obedience.

AUTOBIOGRAPHY, the history written by one's self of one's own life, or a sketch of contemporaneous events.

AUTOCRACY, a form of government in which the sovereign controls the legislative and executive powers of the state and rules alone. He is called an autocrat. Most eastern governments are of this form. The Emperor of Russia is the only European ruler who bears the title of autocrat.

AUTOGRAVURE, a peculiar process of photo-engraving, patented by J. R. Sawyer, London, Nov. 12, 1884. If an ordinary autotype carbon print be placed on silvered copper instead of on paper, the slight relief which the picture possesses is enough to admit of an electrotype being taken from it. The raised part of the print becomes the depressed part in the electrotype, and impressions can therefore be taken from the latter in the same way as from an engraved copper plate.

AUTONOMY (Gr., *self-legislation*), the management of the government by the citizens of a state; applied especially to the political conditions of ancient Greece.

AUTOPLASTY, a mode of surgical treatment which consists in replacing a diseased part by means of healthy tissue from other parts of the same body. The most familiar instance is the rhinoplastic or taliacotian operation for supplying a new nose from the skin of the forehead.

AUTOPSY, eye-witnessing, a direct observation; but generally used of a post-mortem examination, or dissection of the dead body.

AUTOTYPE. A sheet of paper coated with a film of bichromatized gelatine, in which lampblack or other permanent pigment has been held in solution or suspension is exposed to the action of light in a printing frame, beneath an ordinary photograph negative. In proportion as the light is admitted to the gelatine film or "tissue" through the negative, it becomes hardened and insoluble in water. The print is afterwards treated by washing away the unaltered portions of the film, and the result is a permanent print of the object photographed. The autotype process is admirably adapted for the reproduction of oil-paintings, and has been successfully employed for the reproduction of drawings; but where the work to be copied has a perfectly dead surface the slight gloss possessed by the autotype print is a disadvantage. This objection is still greater in the reproduction of engravings and etchings; and for these the heliogravure process of Mr. Amand Durand, of Paris, is preferable.

AUTUMN, the third season of the year, between summer and winter. Astronomically, in the northern hemisphere, it begins at the autumnal equinox, when the sun enters Libra, Sept. 22d, and ends at the winter solstice, when the sun enters Capricorn, Dec. 21st; but popularly in North America, the months of September, October and November. In Great Britain it comprises August, September and October; while, according to Littré, it extends in France from the end of August to the first fortnight of November. In the southern hemisphere it corresponds in time to the northern spring.

AVA, ARVA, YAVA, or KAVA (*Macropiper methysticum*), a plant of the natural order *Piperaceæ*, having narcotic properties. Until recently it was ranked in the genus *Piper* (pepper). It is found in many of the South Sea Islands, where the people intoxicate themselves with a liquor produced from its root. A tincture of it is used beneficially in chronic rheumatism. The intoxicating liquor is prepared by macerating it in water.

AVADUTAS, Hindu Bramins, who prove their superior sanctity by distorting their muscles and limbs and subsist on alms.

AVALANCHES, masses of snow or ice that roll down the sides of high mountains. They have different names according to their nature. Drift or powder avalanches (*Staub Lavinen*) consist of loose, dry snow, which, once set in motion by the wind, accumulates in its descent and finally comes into the valleys in overwhelming dust-clouds. Another kind of avalanche resembles a land-slide. In the spring, when the snow begins to melt, the sod underneath becomes detached and the snow and sod go down the mountain carrying all before them. The greatest danger is from avalanches passing over precipices or precipitous walls of rock. The very wind they create often prostrates forests and houses. Ice avalanches consist of masses of ice that detach themselves from the glaciers in the upper regions and are heard in summer thundering down the mountains. They are most common in July, August and September.

AVALON, the earthly paradise of Celtic mythology, a "green island" far to the westward, where the sun-god seems to sink to his rest. It was the land of the mystic fountain, the apples (*avlan*) with their strange, magical properties, and the mighty smith who forged "Duré Entaille" for Arthur. The name was applied in the chivalrous poetry of the middle ages to the region where the fairy Morgana holds her court, and afterwards by rationalizing historians to the Isle of Saints. Glastonbury, on the river Brue, in Somersetshire—famous in romantic British history as an abode of Druids and

the place to which Arthur was carried to be healed of his wounds.

AVALON, a peninsula forming the eastern part of Newfoundland, on which St. John's, the capital, is situated. See *Britannica*, Vol. XVII, p. 382.

AVARI, an eastern tribe who made their appearance 100 years later than the Bulgarians, in the countries about the Caspian Sea and rivers Don and Volga. About A. D. 555, one part of them passed on to the Danube and settled in Dacia, the others remaining at Caucasus. Those at Dacia served in Justinian's army and assisted the Lombards in overthrowing the kingdom of the Gepidæ; and, about the end of the sixth century, under the mighty Khan Baján, they conquered Pannonia, and are now confounded with the Bulgarians.

AVAST, a term used on shipboard. It is a command to stop or cease any operation going forward.

AVATAR primarily signifies, in Sanscrit, a descent, but is particularly applied to a Hindu deity who descends upon the earth in a manifest shape, either for good or for retributive ends. It is thus almost synonymous in its signification with the Christian term *incarnation*. The word is sometimes rhetorically employed in English literature. The avatars of Vishnu are the most famous in Hindu mythology.

AVELLANEDA, GERTRUDIS GOMES DE, a Spanish poetess, novelist and author of successful plays, born in Cuba in 1816, died in Seville in 1864.

AVE MARIA, also **ANGELICA SALUTATIO**, or the angelic salutation, are names given to a common form of address to the Virgin Mary by the Roman Catholics. *Ave Maria* are the first two words of the prayer, in Latin, which is taken from the angel Gabriel's salutation (Luke i, 28). An edict of Pope John XXII (1326) ordains that every Catholic, morning, noon and night, at the warning of the bells, shall repeat three aves.

AVENS, the popular name of *Geum*, a genus of *Rosaceæ*, of which two species, *Geum urbanum*, the common avens, and *Geum rivale*, or water avens, found throughout the temperate regions, were formerly used in pharmacy, called clove-root and herb bennet (*Herba benedicta*) in old herbals.

AVENTURINE, a vitreous variety of quartz, generally translucent, and of a gray, green, yellow, red or brown color. It contains numerous minute spangles, generally of mica, but sometimes, according to some authorities, they are scales of metallic copper. It is found in Silesia, Bohemia, France, Spain and India, but chiefly in the Ural Mountains, near Ekaterinburg. It is used in jewelry, but is not so much valued as the finer kinds of amethyst or cairngorm stone.

AVENTURINE GLASS, or **GOLD STONE**, is produced by fusing glass and copper filings together. It presents a rich, brown ground filled with gold specks. See *Britannica*, Vol. XVII, p. 48.

AVERELL, WILLIAM WOODS, American soldier, born in Cameron, Steuben county, N. Y., Nov. 5, 1832. He graduated at West Point in 1855, and was assigned to the mounted riflemen. He served against the Kiowa and Navajo Indians and was severely wounded during a night attack in 1859, and was on sick leave until the outbreak of the civil war. He then became lieutenant of the mounted riflemen and was on staff duty near Washington, taking part in several engagements, among them the battle of Bull Run, until Aug. 23, 1861, when he was promoted to colonel of the Third Pennsylvania cavalry. He was on duty almost continuously until he resigned on May 18, 1865, after he had been brevetted the different grades of his regular army rank until he was brevet major-general. In 1869 he became president of a large

manufacturing company, after serving three years as consul-general of the United States in the British provinces of North America. He has since made numerous important inventions.

EVERY, WAITSTILL, first attorney-general of Connecticut (1777), and an influential patriot of Revolutionary times, born at Groton in 1745, died in 1821.

EVERYSBOROUGH, a village of North Carolina, situated on Cape Fear River. It is noted as the scene of a battle, fought March 16, 1865, in which the Confederates, under General Hardee, were defeated by the Union troops under General Sherman.

AVERAGE: in maritime law, a rule was established by the Rhodian law, and has prevailed in every maritime nation, that where a loss has been sustained, or expense incurred for the general safety of the ship and cargo, a contribution should be made in proportion to their respective interests, by the owners of the ship, freight and goods on board; or, in modern times, by the insurers of these. To this contribution the name of *general average* is given. To the loss of an anchor, the starting of a plank, or any accident not involving the common safety, *particular average* applies. See *Britannica*, Vol. III, p. 145.

AVEZZANA, GIUSEPPE, a commander of the Roman army in 1849. He escaped to New York, where he had at one time been engaged in business. He was born in 1797.

AVIANUS, FLAVIUS, a Latin author who lived probably in the third or fourth century of our era, and of whose writings forty-two Æsopic fables in poor elegiac verse are extant. The editions are those by Lachmann (1845) and Robinson Ellis (1887).

AVIARY, a place for keeping birds. The arrangements of an aviary depend upon the habits of its inmates, the climates suited to them, and other circumstances.

AVICENNIA, a genus of plants of the natural order *Avicennææ* or *Myoporaceæ*, an order very nearly allied to *Verbenaceæ*, and found almost exclusively in the southern hemisphere. This genus consists of trees or large shrubs. They resemble mangroves in appearance, and like them grow in salt-swamps. Their creeping roots often curve above the mud for the space of six feet before penetrating it, and the naked asparagus-like shoots which they throw up have a very singular appearance. *Avicennia tomentosa*, the white mangrove of Brazil, has cordate ovate leaves. Its bark is used in tanning. The *Avicennia resinifera* has a green resinous substance exuding from it which is eaten by the New Zealanders. The genus is named in honor of the Arabian physician Avicenna.

AVIDIUS, CASSIUS, governor of Syria. He revolted in 175, and assumed the title of Emperor. He was a general under Marcus Aurelius, and was killed by his own officers, A. D. 175.

AVI-FAUNA, a collective term for the birds found in any country; the fauna or zoology relating to birds.

AVILES, a seaport of Spain, situated near the bay of Biscay, 19 miles north of Oviedo. There are coal and copper mines in the vicinity. It has manufacturing of earthenware, glass, linen, etc. Population, 8,979.

AVIONA, a fortified Albanian town on an inlet of the Adriatic Sea. Population, about 6,000.

AVISO, a dispatch boat, a small swift vessel belonging to the navy; also used of a kind of torpedo boat.

AVISON, CHARLES, a musical composer, born at Newcastle, England, about 1710, and after studying

in Italy became organist in his native town, where he died in 1770. He wrote an *Essay on Musical Expression* (1752), and he composed sets of concertos and sonatas which were very popular for a time.

AVITUS, St. ALCIMUS ECDICIS, an adversary of Arianism. He was bishop of Vienna, A. D. 490. He was a writer of poetry.

AVIZ, or Avis, a Portuguese order of knighthood, of which the king is grand master. It was instituted in 1143 by Alphonso I, to aid in the defeat of the Moors.

AVOCA, or OVUCA, a small river in the southeastern part of Wicklow county in Ireland. It runs through a picturesque valley only a quarter of a mile wide, with wooded bank from 300 to 500 feet high. After a course of nine miles it flows into the sea at Arklow.

AVOCADO PEAR, ALLIGATOR PEAR, or AGUA CATA, a fruit-bearing tree of the natural order *Lauraceæ*, a native of the warm climates of America. It is a slender tree with a dome-like top and grows from 30 to 70 feet in height. The leaves are similar to those of the laurel. The flowers, which are small and arid, are produced toward the extremities of the branches. The



CUSTARD APPLE.

fruit, which is like a pear in size and shape, is usually of a brown color, and has a soft yellow or greenish pulp. It is not very sweet but of a delicate flavor, which is believed to proceed from a fixed oil. It is highly esteemed in the West Indies. See CUSTARD APPLE, *Britannica*, Vol. VI, p. 729.

AVOCET, or AVOSER (*Recurvirostra*), a genus of birds which, although having webbed feet, is generally ranked among the *Grallæ*, or *Grallatores*, on account of the length of their legs, the half-naked thighs, the long, slender, elastic bill, and the general agreement in habits with the snipe. They are distinguished from other birds, except a few species of humming-bird, by the upward curvature of the bill, which resembles a thin elastic piece of whalebone, and is most likely a delicate organ of touch, adapted to seeking food in the mud, as are their webbed feet for walking on it, and their long legs for wading in the marshes which they frequent. They are birds of powerful wing.

AVOGADRO, AMADEO, professor of physics, born in 1776, died at Turin in 1856. He formulated his law as to the Atomic Theory in 1811. Avogadro's law is of the first importance, although its bearing was not recognized until many years after its promulgation, which precedes historically that of the law of Dulong and Petit. The laws of Dulong, Petit and Avogadro constitute the main grounds for fixing the atomic weights as at present used by chemists.

AVOIDANCE: in English ecclesiastical law, the term by which the vacancy of a benefice, or the fact of its being void of an incumbent, is signified. Avoidance is opposed to *plenarty*, or fullness.

AVON, a village of New York, beautifully situated on a terrace, at an elevation of one hundred feet above the Genesee River. It is noted for its sulphur springs.

AVONDALE, OHIO, an incorporated village of Hamilton county, and a suburb of Cincinnati, from whose center it is three miles distant. Avondale railroad station is two miles from the village. Many handsome houses are in this place; also the Cincinnati Zoological Garden.

AWE LOCH, a lake in the center of Argyleshire, Scotland. It is about 24 miles long, and extends in a northeast and southwest direction, with an average width of from $\frac{1}{2}$ to $2\frac{1}{2}$ miles.

AWEATHER, a term used to denote the position of the helm when pressed close to the weather-side of a ship.

AWEIGH, a term applied to an anchor when it is just loosened from the ground. It is nearly equivalent to *atrip*.

AWN ARISTA: in the flowers of grasses, a solitary pointed bristle, growing either from a glume or a palea. The flowers of some grasses are entirely awnless. In many the glumes alone are awned, or only one of them; in others the glumes are awnless, and the paleæ, or one palea, awned. The awn is often terminal, and appears as a prolongation of the midril of the glume or palea; from which, however, it sometimes separates below the point, and is then said to be on the back of it, or *dorsal*. Sometimes it is jointed at the base, and finally separates at the joint, sometimes it is knee-bent or geniculate, sometimes it is twisted, and liable to twist and untwist hygrometrically; sometimes it is rough, or even serrate, at the edges, as in barley; sometimes it is feathery, as in feather-grass (*Stipa*), which also is remarkable for the great length of its awn.

AWYAW, capital of Yoruba in Central Africa. Population, 70,000.

AX, the most ancient cutting instrument. Made in ancient times of stone, copper, bronze, etc. Axes are now made of iron edged with steel.

AX, a town in the French department of Ariège. It lies at the foot of the Pyrenees, at the junction of three picturesque valleys, 74 miles southeast of Toulouse. It is celebrated for its baths, and possesses the hottest sulphur springs in the Pyrenees.

AXE, the name of two small rivers in the southwest of England. One rises in the Mendip hills, north of Somerset; runs first southwest, and then northeast, through a carboniferous limestone, trias, and diluvial basin, past Wells and Axbridge, into the Bristol channel. The other rises in west Dorset, and flows 21 miles through east Devonshire in an oolitic and trias basin, past Axminster into the English channel.

AXEL, or ABSALON (1128-1201), Archbishop of Lund, in Denmark. He laid the foundation of Copenhagen, and was minister and general of King Waldemar I. He promoted art and learning, and encouraged Saxo Grammaticus to write a history of Denmark.

AXESTONE, a mineral, generally regarded as a variety of nephrite. It is of greenish color, is more or less translucent, hard, tough, and not easily broken. It occurs in primitive rocks, always massive, and is found in Saxony, in Greenland, and in New Zealand and other islands of the Southern Pacific. It derives its name from the use to which it is put by the natives of these islands for making their hatchets.

AXIA, a monumental town of ancient Etruria, discovered in 1808.

AXIL (*axilla*), a term applied in botany to the angle between the upper side of the leaf and the branch from which it grows. Buds generally grow in the axils of leaves, but they do not always develop. A bud may be made to appear in such a situation, and to form a new shoot, by artificial means, such as cutting over the main stem, wounding it above the place where the new branch is desired.

AXIM, an important station and port on the Gold Coast, a little to the east of the mouth of the Ancober River. Inland from Axim, in the basin of that river, and in the district between it and th

Prah, there is considerable gold-mining carried on. See *Britannica*, Vol. I, p. 421; Vol. X, p. 755.

AXINITE, silicate of alumina with boracic acid, lime etc., usually occurring in oblique rhomboidal prisms having ax-like edges. See *Britannica*, Vol. XVI, p. 411.

AXINOMANCY, an art practiced by the ancient Greeks, especially with the object of detecting the perpetrators of great crimes. An ax poised upon a stake was supposed to move so as to indicate the guilty individual; or, the names of those suspected being pronounced, the motion of the ax at a particular name, was accepted as a sign of guilt.

AXIS: in botany, a term applied to the central part, both above and below ground, around which the plant is arranged. The root is called the descending axis and the branch the ascending axis. The opposite tendencies appear as soon as a seed begins to germinate, the radicle, or root-axis descending, and the plumule or stem-axis ascending toward the light and air. That part of the stem around which the flowers are arranged is called the floral axis, and in describing some kinds of inflorescence the terms primary floral axis, secondary floral axis, etc., are sometimes employed.

AXIS, in geometry. The axis of a curved line is formed by a right line dividing the curve into two equal parts, so that the part on one side exactly corresponds with that on the other—as in the ellipse, the parabola, and the hyperbola. The axis of any geometrical solid is the right line which passes through the center of all the corresponding sections of it; in this sense we speak of the axis of a cylinder, a globe, or a spheroid. The axis of rotation is the right line around which a body revolves. In physical science the axis of a lens is the right line passing through it so that it is perpendicular to both sides of it, and the axis of a telescope is a right line which passes through the center of all the glasses in the tube.

AXIS, a genus of deer, abundant on the banks of the Ganges, but found throughout India and in many islands of the Eastern archipelago. It was known to the ancients by the name axis. One of its Indian names is chitra, and by British sportsmen in India it is often called the spotted hog-deer, though that name is also given to a rarer species. The axis has a great resemblance in size and coloring to the European fallow-deer.

AXLE, a shaft of wood or bar of iron which is inserted between the wheels of a wagon; also the center of revolving machinery.

AXOLOTL. See *SIREDON*, *Britannica*, Vol. XXII, pp. 96, 97.

AYACUCHO, a town in the department of Ayacucho, in southern Peru. On the 9th of December, 1824, the last Spanish army seen on the new continent was totally defeated at Ayacucho by the combined forces of Peru and Colombia—the latter then comprising Ecuador, New Granada, and Venezuela. Population, 25,000.

AYALA, PEDRO LOPEZ DE, called El Viejo to distinguish him from his son of the same name. He was born at Murcia in 1332, and died at Calahorra in 1407. He was held in high esteem by several of the kings of Castile. In 1367, at the battle of Najera, the English, then in league with Peter the Cruel, took him prisoner and confined him for some time in an English dungeon. He was again, in 1385, taken prisoner by the Portuguese, at the battle of Aljubarota. He was noted as a statesman and writer, especially as a historian and poet.

AYE-AYE (*Cheiromys Madagascariensis*), a quadruped found in Madagascar. It is about the size

of the hare, and was at first placed by naturalists among squirrels, and was ranked by Cuvier with them in the order of rodents, although Sonnerat, who discovered it, showed its affinity also to the makis or lemurs, to which family it is now pretty generally referred. See *Britannica*, Vol. XIV, p. 443; Vol. XV, p. 170.



AYE-AYE.

AYER, PETER, one of the founders of the Shakers, born at Canterbury, N. H., in 1760, died in 1857.

AYESHAH, AYESHA, or AISHA, Mohammed's favorite wife, born at Medina, A. D. 610 or 611, died there about 678. She was only nine years of age when she was married to the Prophet. Ayesha was so tenderly beloved by Mohammed that he was wont to say that she would be the first of his wives to whom the gates of Paradise would be opened. Mohammedan historians state that to her charms of beauty were added a knowledge of mathematics, rhetoric and music. She was accused of adultery, but Mohammed produced a revelation from heaven to the effect that she was innocent, so he punished her accusers, and made it an article of faith that whoever should not believe in her purity should suffer the pains of hell forever. By request Mohammed in his last illness was taken to the house of Ayesha, and there expired in her arms. After Mohammed's death, Ayesha was active in the plot which deprived Caliph Othman of his power and life, and was leader of a force to resist the accession of Ali.

AYLOFFE, SIR JOSEPH, a celebrated English antiquary, born in the parish of Framfield, Sussex, about 1708, died in 1781. He was elected a Fellow of the Royal Society in 1731, and in the following year a Fellow of the Society of Antiquaries. He was one of the first council of this society after receiving its charter of incorporation in 1751, and was made vice-president some years after.

AYMAR, JACQUES, a professor of the art of divination, born in France in 1662. In 1692 a murder and robbery were committed in Lyons, and Aymar was called upon to detect the perpetrators. In some manner he succeeded in discovering one of the criminals. He was then called upon to go to Paris to exhibit his powers before the Prince de Condé, but, utterly failing in his attempts, he was forced to confess himself an impostor, and was sent back in disgrace.

AYMARAS, a race of partially civilized South American Indians, closely related to the Quichuas or Inca people, whom they resemble in appearance and somewhat in language. The two races formed the chief population of the ancient Peruvian empire, the Aymaras inhabiting the fertile valleys of the Andes. They were skillful in architecture, many of their monuments still remaining. They were also expert workers in gold and silver. As Sun-worshippers they claimed Lake Titicaca as the ancient center of their religion, believing that the orb periodically disappeared, and that, after an interval of darkness, it again emerged from the Sacred Isle of that lake. At the present time the Aymaras number about 200,000, located in the provinces of La Paz and Oruro in Bolivia and in the Peruvian province of Puno. They are small of stature, have brown complexion, regular and strongly-marked features, and straight black hair. They are now zealous Roman Catholics, though still retaining certain heathen observances. They cherish the memory of their ancient empire and hope for future independence. In 1780, together with the other Peruvian Indians, they revolted and massacred thousands

of the Spaniards, and during the war of the provinces for independence they opposed both parties and gave much trouble. See *Britannica*, Vol. IV, p. 15; Vol. XVIII, p. 678; Vol. XX, p. 364.

AYMESTRY LIMESTONE, a well-marked horizon in the Ludlow group of the Silurian system. It is a somewhat dark-gray concretionary rock, consisting of thin beds which attain a united thickness in places of 150 feet. It is well developed at Aymestry, in Herefordshire, near Leominster, but thins off entirely at no great distance from that place. One of its most characteristic fossils is *Pentamerus Knightii*, a brachiopod. See *Britannica*, Vol. X, p. 336.

AYMON, the surname of four brothers, called respectively Alard, Richard, Guiscard, and Renaud. They were sons of Aymon, or Haimon, Count of Dordogne, and were conspicuous among the most illustrious heroes of the chivalric poetry of the Middle Ages.

AYORA, a town of the province of Valencia, in Spain. Population, 5,412.

AYRES, DANIEL, M. D., LL. D., an American surgeon and philanthropist. Entered Wesleyan College in 1838, and after three years of study went to Princeton to spend a year in scientific work under Prof. John Henry. Three years later he began the practice of medicine in Brooklyn, and quickly became successful. His worthy professional services brought him membership in several foreign medical societies. Wesleyan University conferred the degree of Doctor of Laws upon him in 1856. In 1857 he became Professor of Surgery in the Long Island Medical College, filling this chair until 1875, when he was made Professor Emeritus. He has taken great interest in scientific study, and in the summer of 1889 gave \$25,000 in money and land of equal value for the endowment of the chair of biology at Wesleyan. At the semi-annual meeting of the trustees of Wesleyan University, held Dec. 13, 1889, Dr. Ayres presented to the board cash and approved securities to the amount of a quarter of a million dollars, accompanying the gift with no restrictions, save that the money be devoted to the promotion of scientific study in the University. This magnificent and unsolicited donation will promote in every line the scientific work of a college which was among the first American institutions to recognize the importance of natural science in the scheme of liberal education.

AYRES, ROMEYN B. (1825-1888), American soldier, born in Montgomery county, New York, Dec. 20, 1825. Attended the U. S. Military Academy at West Point, from which he graduated in 1847, and as brevet second lieutenant of the Fourth Artillery served during the final operations of the war with Mexico. From the close of the Mexican war until the opening of the civil war he was engaged in garrison duty, first as second lieutenant and later as first lieutenant of the Third Artillery. On the breaking out of hostilities in 1861 he was promoted to a captaincy in the Fifth Artillery, and was engaged at Blackburn's Ford, July 18, and three days afterward at Bull Run. He became chief of artillery and participated in the Peninsular and Maryland campaigns. At Chancellorsville he commanded a brigade in the Fifth Corps, and at Gettysburg and afterward throughout the war a division of the same corps. He was brevetted major for his gallantry at Gettysburg, lieutenant-colonel for the Wilderness campaign, colonel for the battle on the Weldon Railroad, brigadier-general for Five Forks, and major-general for gallant and meritorious services in the field during the war. After the war he was appointed lieutenant-colonel of the Twenty-eighth Infantry, but was transferred

to the Third Artillery in 1870, and became colonel of the Second in 1879. He died at Fort Hamilton, Dec. 4, 1888, and was buried with military honors in Arlington Cemetery.

AYUNTAMIENTO, the name given in Spain to the councils or governing bodies of towns. The ayuntamiento, with the alcalde as president, is appointed by the free choice of the people, and is entitled to exercise the highest functions within the circle of its jurisdiction. The government can provisionally annul its acts, but must afterwards procure the ratification of the cortes, by which alone an ayuntamiento can be dissolved. The ayuntamientos are empowered to make up the lists of electors and jurors, to organize the national guards, to command the police within their own bounds, to direct the apportionment and raising of taxes, and to manage the funds of the commune.

AZADIRINE, occurring in the *Melia Azedarach* of the East Indies—a tree popularly known as the "Pride of China"—is a bitter principle, sometimes used as a substitute for quinine.

AZALEA, a genus of plants belonging to the natural order *Ericaceæ*, and distinguished from *Rhododendron* by the flowers having five stamens instead of ten, and some of them having thin deciduous leaves. Some botanists unite the genus *Azalea* to *Rhododendron*. The most noticeable of the species is *Azalea pontica*, a shrub native to the countries around the Black Sea. It grows from three to five feet high, has large obovate or oblong oblanceolate shining leaves, and very fragrant umbellate yellow flowers, which are covered externally with glutinous hairy glands.

AZAMGARH, or **AZIM'S FORT**, a town in the northwest of India, situated on the river Tons, 81 miles north of Benares. It was founded in 1665 by Azam Khan, a large landholder in the neighborhood. Population of town, 16,000, of whom about 10,000 are Hindus, the rest Mohammedans. The district of Azamgarh in the Benares division is low and remarkably level. The soil is fertile, with the exception of tracts, amounting to about one-fourth of the whole, which are irreclaimably barren, from being impregnated with a saline substance. Magnificent crops of sugar-cane, rice and indigo are produced. Area of district, 2,147 square miles; population, 1,604,654.

AZANI, a city in Asia Minor, where are still seen the ruins of a theater and an Ionic temple of Jupiter.

AZARIAH, a name often occurring in the Scriptures; the King of Judah, 809 B. C.; one of Daniel's three friends, 605 B. C.

AZAZEL, a name occurring in Leviticus xvi, in the account of the rites of the Day of Atonement, explained by some as the "scapegoat" which was let out into the Wilderness laden with the sins of the people; by others, as a designation of the being to whom the goat was sent—Satan, according to Hengstenberg, or a demon of the pre-Mosaic religion, according to Ewald.

AZELAIC ACID is formed by oxidizing oleic acid by nitric acid.

AZIMUTH. The azimuth of a heavenly body is the angle measured along the horizon between the north and south point and a point where a circle, passing through the zenith and the body, cuts the horizon. The azimuth compass, similar to the mariner's compass, but more accurate, is used to take the magnetic azimuth of celestial bodies in order to find the variation of the needle by a comparison with the true azimuth. It differs from the common sea compass in that the circumference of the card, or box, is divided into degrees; also to the box is fitted an index with two sights, which

are upright pieces of brass placed diametrically opposite to each other, having a slit down the middle of them, through which the sun or a star is to be viewed at the time of observation.

AZINCOURT, or **AGINCOURT** (ah-zhan-koor), a village of France, in the department of Pas-de-Calais. In 1415 a great battle was fought at Agincourt between the French and the English.

AZOBENZOLE, a crystalline substance obtained in reddish yellow scales by the action of reducing agents upon nitrobenzole.

AZOBENZOYL, a white crystalline substance produced in the form of a powder, by the action of ammonia on crude oil of bitter almonds.

AZOIC, a term applied in geology to rocks which contain no fossils. By those who deny the organic origin of Eozoön, the archæan crystalline schists (which underlie the oldest fossiliferous strata) form the azoic system.

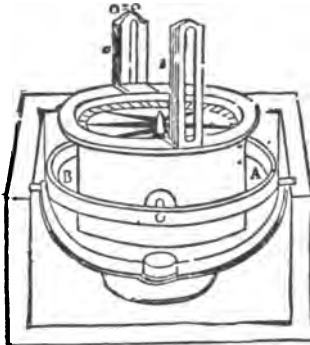
AZOTE (Gr., *a*, depriver of, and *zoe*, life), the name given to nitrogen by French chemists.

AZOTIZED BODIES, those substances which contain azote, or nitrogen, as one of their constituents, and which form part of the living structure of a plant or animal, or are produced during the natural decay. The principal members of the group are *albumen*, present in white of eggs, and the juices of plants and animals; *globuline*, or *crystalline*, a variety of albumen found in the lens of the eye; *vitelline*, another variety of albumen composing the greater bulk of the yolk of the egg; *paralbumen*, a third variety of albumen found in the animal system during certain diseases; *fibrine*, which occurs largely in the seeds of cereals and in animal muscle; *caseine* (or cheese matter), present in all milk; *legumine*, a variety of caseine found in peas, beans, and leguminous seeds in general; *gelatine*, which is present in the skin, bones, and other parts of animals; *chondrine*, a variety of gelatine obtainable from the cornea of the eye and the permanent cartilages; *isinglass*, another variety of gelatine manufactured from the inner membrane of the floating bladder of sturgeons and other fishes; *glue* and *size*, which are secondary forms of gelatine; *urea*, *uric acid* and *hippuric acid*, which are present in the urine of the higher animals; *kreatine* and *kreatinine*, occurring in the juice of flesh; several forms of *urinary calculi*, which are found as stone in the bladder and a very large and important class of *alkaloids*, including strychnine, morphine, quinine, etc.

AZOXYBENZOLE, needles of a beautiful yellow color, produced from an alcoholic solution of nitrobenzole by the action of potassic hydrate.

AZRAEL: in Moslem mythology, with Gabriel, Michael and Israfeel, the group of the four highest angelic beings who surrounded the throne of God. Called the "Angel of Death," it is he who separates the soul from the body. He is sent by Allah, and executes his commissions. No idea of degradation is attached to him in the Moslem mind. He seems rather to have been identified with Fate without any special malignity inherent in his nature.

AZTEC CHILDREN, a boy and girl of diminutive size, aged respectively 17 and 11 years, repre-



AZIMUTH COMPASS.—a. b. sights.

sented by showmen as descendants of the ancient Aztecs, but now considered as mere dwarfs. The height of each was less than three feet.

AZTECS, the name of the people who inhabited the Mexican table-land at the time of the conquest of Mexico by Cortes, and with whom his name is indissolubly associated. By their own annals they came originally from Aztlan to Mexico, driving out the Toltecs, and founding the City of Mexico about 1216-1325, the ascribed dates varying. The Aztecs soon became the most aggressive and important nation of Mexico. Though they were essentially a fighting race, subduing all the surrounding nations, they seem to have made no little progress in the peaceful arts, many of which they learned from the Toltecs. Prescott says that at the opening of the 16th century the Aztec dominion stretched across the continent from the Pacific to the Atlantic. The form of government was that of an "elective monarchy," the king being chosen by a species of suffrage, and each successive ruler was either a brother or a nephew of his predecessor, so that royalty was confined to a single line of descent and was always in the same family. The religion of the Aztecs was a gross polytheism, and frequent human sacrifices were made, as many as 20,000 annually being slain. They were ignorant of the art of writing, so their laws and public announcements, other than oral communications, were promulgated by means of picture-writing. They possessed a wonderful knowledge of astronomy, understood the theory of the seasons, predicted eclipses, set their time by the movements of the planetary bodies, measured the hours of the day precisely, and calculated the exact length of the tropical year. Agriculture was the chief industry, the staple crops being maize and the agave, or Mexican aloe, which supplied them with food, drink and raiment. Though unacquainted with the uses of iron, they discovered an admirable substitute in a metal or alloy resembling bronze, but of exquisite hardness and temper, of which they formed their tools and implements of warfare and the chase. They were also clever workers in gold and silver. The vandal Spanish priests destroyed nearly all the manuscripts of picture-writing which they found, on the plea that they were idolatrous, and no key to their hieroglyphics has ever been found. The reader is referred to Prescott's *Spanish Conquest of America* for a fuller account of this most interesting people. See *Britannica*, Vol. III, p. 172; also *Mexico*, Vol. XVI.

AZUA, a town of San Domingo. Population, 6,000.

AZUAGA, a town of Estremadura, Spain. Population, 6,400.

AZULINE, a blue dye made from coal tar.

AZULINIC ACID, a brown-colored acid, produced by the spontaneous decomposition of Prussic acid.

AZURE, a French word technically used in heraldry to signify blue. It is always represented by horizontal lines in engraving coats of arms.

AZURINE (*Lenciscus cæruleus*), a fresh-water fish of the same genus with the chub, roach, etc., and similar to the rudd or red-eye (*L. erythrophthalmus*), from which, however, it is easily distinguished by its slate-blue colored back and white abdomen and fins.

AZURITE, a name given to the mineral commonly called lazulite, and to which belong lapis-lazuli, or *azure-stone*, mineral turquoise, etc. It is sometimes called by the generic name *azure spar*. Mineralogists give the name azurite to an ore of copper, generally known as blue copper, closely allied to malachite.

B

BABA—BABINGTON

BABA, a Turkish word signifying *father*, originating, like our word *papa*, in the first efforts of children to speak. In Persia and Turkey, it is prefixed as a title of honor to the names of ecclesiastics of distinction.

BABA, a legendary being known among the ancient Slavs as the thunder-witch, and supposed to be the devil's grandmother. She was represented as a vicious little old woman, having knotted hair, a very large nose and sharp, protruding teeth, and being borne swiftly through the clouds in an iron mortar. The modern Czechs call her the Iron or the Golden Baba.

BABA CAPE, a bold, rocky headland near the western extremity of Anatolia, the (Lectum of the Greeks,) in lat. $39^{\circ} 29' N.$, long. $24^{\circ} 6' E.$, about 12 miles from the northern extremity of Mitylene, the ancient Lesbos.

BABAHOYO (sometimes called Bodegas), a small town in Ecuador, South America, situated on the Guayas River. In warehouses here are stored goods which have been sent from Guayaquil, and are to be carried into the interior. The place is famous as a depot for this carrying trade.

BABBITT, EDWIN B., soldier, born in Connecticut, about 1802, died at Fortress Monroe in 1881. He graduated from West Point in 1826, and served in the Florida and Mexican wars. Brevetted major May 30, 1848, and brigadier-general in 1865. He served in the departments of Oregon and the Pacific until his retirement in 1866, as chief quartermaster, and as chief quartermaster of the department of the Columbia, 1866-67, notwithstanding his retirement. He had charge of the clothing depot of the division of the Pacific, 1866-69.

BABBITT, ISAAC, inventor, born in Taunton, Mass., in 1799, died in 1862. Being a goldsmith, his attention was turned to alloys, and he produced the first Britannia-ware made in America. His name is best known, however, from his invention, "Babbitt metal," a soft alloy prepared from copper, tin and zinc, and used in bearings to diminish friction. The invention was patented in England and in Russia, and Congress awarded the inventor \$20,000.

BABCOCK, CHARLES A., naval officer, born in New York in 1833, died in New Orleans in 1876. He was appointed midshipman in 1850, passed-midshipman in 1856, lieutenant in 1859, lieutenant-commander in 1862 on the *Morse*, of the North Atlantic blockading squadron. In 1864 he was fleet-captain of the *Mississippi* squadron, and later commanded the *Nyack*, of the South Pacific squadron.

BABCOCK, HENRY (1736-1800), a son of Chief Justice Babcock, of Rhode Island. He graduated at Yale, entered the army, and at eighteen years of age had become a captain, and served under Colonel Williams at Lake George. In 1758 he was colonel of a Rhode Island regiment, and in the attempt to capture Ticonderoga he was wounded in the knee. In 1776 he was made commander of the troops at Newport, R. I., but, becoming insane, he was removed.

BABCOCK, JAMES F., journalist and politician, born in Connecticut in 1809, died in New Haven in 1874. For thirty-one years he edited the "Palladium." He was collector of the port of New Haven under

Presidents Lincoln and Johnson, and was elected by the Democrats in 1873 to the State legislature, and by that body was made judge of the police court in 1874.

BABCOCK, JAMES FRANCIS, born in Boston, Mass., in 1844. He was professor of chemistry in Boston University for five years, and in the Massachusetts College of Pharmacy. For ten years he was State assayer of liquors. He invented a fire-extinguisher that has come into general use.

BABCOCK, ORVILLE E., born in Vermont in 1835, and graduated at West Point in 1861. He was at the surrender of Vicksburg, at the battle of Blue Lick Springs, and at the siege of Knoxville. Promoted from captain of engineers to lieutenant-colonel, he was placed on the staff of Gen. Grant, and subsequently served with the army of the Potomac. At the close of the war he was brevetted brigadier-general of volunteers, and then colonel in the regular army, still serving on the staff of the General of the Army. When Gen. Grant became president Col. Babcock was assigned to duty with him and was his secretary. As superintending engineer of public buildings and grounds he supervised the construction of Anacosta bridge, the Washington aqueduct, the chain bridge across the Potomac, and other prominent works. Being accused of complicity in revenue frauds and indicted by the grand jury of St. Louis in 1878, he was tried and acquitted by a civil court.

BABCOCK, RUFUS, prominent Baptist clergyman and author, born in Connecticut in 1798, died in Massachusetts in 1875. He was tutor in Columbia College, president of Waterville College, three times elected corresponding secretary of the American and Foreign Bible Society, corresponding secretary of the Sunday-School Union of Philadelphia, and of the American Colonization Society, and district secretary of the Baptist Publication Society, Philadelphia. He did much pastoral and literary work.

BABINET, JACQUES, a distinguished French natural philosopher, born at Lusignan in 1794, died in 1872. After the downfall of Napoleon he was successively professor of mathematics at Fontenay; professor of physics at Poitiers, and afterwards at Paris. He invented and perfected a great number of scientific instruments, and was the author of many memoirs on various branches of physical science. His labors for the promotion of science were largely in the direction of meteorology, to which science he is said to have given its name.

BABINGTON, ANTONY (1561-1586), born in Derbyshire in 1561, of a Roman Catholic family, exposed the cause of the imprisoned Queen Mary of Scotland, and put himself at the head of a conspiracy for her release and the murder of Queen Elizabeth. The plot was discovered and the fourteen conspirators were executed. Babington's execution took place on Sept. 20, 1586. There is some ground for believing the plot to have been fostered by Walsingham, Queen Elizabeth's secretary of state, to incriminate Mary, who was executed four months later. To the last she denied all knowledge of the letters supposed to have been written by her, consenting to the scheme.

BABINGTON, CHURCHILL, an English author and divine, born in 1821. He was educated at Cambridge, and in 1865 became Disney professor of

archæology; and in the following year he published the first of a long series of valuable works in that science. He has also written a number of excellent works on philology and kindred subjects.

BABIROUSSA (*Sus babirusa*), a species of hog, a native of the Celebes and of the smaller islands of Malaysia. It is regarded by zoologists as a distinct genus. The canine teeth of the male are powerfully developed, growing from persistent pulps; the upper ones, which are of a monstrous size, curving upwards, bearing strong resemblance to horns, for which reason the animal has been styled the horned or deer-hog. It is a good swimmer, and is generally more agile than the common hog. It often ravages maize fields, but it prefers the dense, marshy retreats of the forest. There are several species of this hog, among them the wart-hog and the wild boar.

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BABISTS, a religious and political sect founded by Seyd Mohammed Ali in Persia, about the year 1843. The originator pretended to be a descendant of Mohammed, and took the name of Bab (*i. e.* "the point," or the originator of truth), his object being a reformation of the Mohammedan religion. He taught high morality, forbade polygamy and concubinage, encouraged benevolence, and recognized the equality of the sexes. The Bab and many of his followers suffered martyrdom, but the sect now numbers several million adherents.

BABLAH, or **NEB-NEB**, a name given to the pods which grow on several species of *Acacia*, in Senegal and the east, and are used for calico-printing and dyeing drab. See *Britannica*, Vol. I, p. 68.

BABUYANES ISLANDS, a group of small volcanic islands in the Pacific, which belong to Spain; they are situated between Formosa and Luzon Islands; they are very fertile and largely productive of sulphur; the chief islands of the group are Calayan and Babuyan.

BABY, FRANÇOIS, Canadian engineer, member of the executive and legislative council and adjutant for the province of Quebec. By building wharves, altering the light-house system, and introducing steam tugs on the lower St. Lawrence he did much toward improving its navigation. He died in 1864.

BABY, LOUIS FRANÇOIS GEORGE, Canadian statesman, born in Montreal in 1834. He represented Joliette in the Canadian parliament in 1872, 1874 and also in 1878, in which year he became a member of the privy council as minister of inland revenue.

BABYLAS, SAINT, the martyred bishop of Antioch, who suffered death A. D. 250.

BABYLON, name of a village and township of Suffolk county, New York. The village, which is situated on the south shore of Long Island, is the southeastern terminus of the Central Railroad of Long Island, and is connected by ferry with Fire Island. It has a healthful climate and is a pleasant summer resort.

BABYLONIA AND ASSYRIA. See *Britannica*, Vol. III, pp. 183-94. See also under **INSCRIPTIONS**, Vol. XIII, 114; **NUMISMATICS**, Vol. XVII, 650; **POTTERY**, Vol. XIX, 604. The exploration of historic sites, of which Layard was the pioneer, is still being prosecuted with undiminished ardor in the same part of the world. The recent progress of Assyriology tabulates the results of discoveries and excavations, and records purchases of antiquities in such numbers as to have formed the staple of many auction sales. One of these sales was of a collection of clay tablets found in the ruins of Sippara, most of which dated from the early period of the first Babylonian empire. Consisting largely of business contracts, they attest the business activity of the rising em-

pire. A marriage contract was of special significance, as being unique among the documents of this epoch. Among the tablets, one was the summing up and judgment in a lawsuit of the thirteenth year of Nabonidus. Many of these tablets were astronomical. Among other results of the most recent activity in this direction is the issue, by the Royal Museum of Berlin, of a classified catalogue of oriental antiquities contained in the Babylonian and Assyrian sections. The same institution has also in progress (1891) a series of communications on the oriental collection of the museum, in one of which Dr. Hugo Winckler describes a treasure of cuneiform inscriptions recently found in Egypt; and in another of which he attempts the solution of the embarrassing problem concerning the rise and development of the ancient Mesopotamian kingdoms. From a careful consideration of Babylonian-Assyrian chronology, he concludes that the names of the Babylonian dynasties, and their duration, as furnished in the cuneiform inscriptions, are not to be identified, in spite of their assumed identification by several Assyriologists, with those given by Berosus. Dr. Winckler challenges the prevalent belief that the Chaldeans are the same as the Babylonians, and offers an explanation of the confusion of the two terms in the later classical writers, from whom it passed into modern thought and literary usage.

BACA, LUIS (1826-1855), composer of music, born in Mexico, in 1826. He studied in Paris and composed two operas, which became popular. Returning to Mexico, he died there in 1855.

BACCHANALIA, the feasts observed among the Romans and Greeks in honor of Bacchus. With these feasts theatrical representations originated in Greece. In Rome so much wickedness was practiced at the bacchanalia that the feasts were suppressed by the senate.

BACCHANTES, the Latin name for those who assisted in the bacchanalian revels.

The term is usually applied to the priestesses of Bacchus, who are represented as carrying a thyrsus: a spear twined with ivy and vine branches, or with its head thrust into a pine cone.

BACCIOCHI, MARIA BONAPARTE, born at Ajaccio, Corsica, in 1777, died at her home, near Trieste, Aug. 7, 1820. In 1805 Napoleon Bonaparte, of whom she was the eldest sister, made her Princess of Massa, Lucca, Carrara and Piombino, and in 1809 she received the title of Grand-duchess of Tuscany. She was exiled with her brother. Her husband survived her twenty-one years and her son thirteen years. The Countess Camerata, her only daughter, died in 1869.

BACHARACH, a small town of Rhenish Prussia, on the left bank of the Rhine, situated in a vine-growing country. The name is said to be derived from a rock in the Rhine, called *Bacchi ara* (altar of Bacchus), whose exposure in very dry weather is regarded as prophetic of a good vintage. It was here that Blucher (Jan. 1, 1814) crossed the Rhine in pursuit of Napoleon's army.

BACHE, BENJAMIN FRANKLIN (1769-1798), son of Richard Bache and grandson of Benjamin Franklin. While a boy he went to Paris with his grandfather and learned printing and type-founding in the establishment of the brothers Didot. Returning to America he published the "General Advertiser," which was one of the most influential journals of the time, and was opposed to the administrations of Presidents Washington and Adams.



BACCHANTES.

BACHE, FRANKLIN, son of Benjamin Franklin Bache, born in Philadelphia in 1792, died there in 1864. He received his medical diploma from the University of Pennsylvania in 1814, and was appointed surgeon in the army. In 1816 he began the practice of his profession in his native city, where he occupied many important positions. He was president of the American Philosophical Society in 1854 and 1855, and of the deaf and dumb asylum corporation at the time of his death. He was the author, compiler, and editor of a number of standard works on chemistry and cognate subjects, and a large contributor to scientific journals.

BACHE, HARTMAN, born in Philadelphia in 1797, died there in 1872, son of Benjamin Franklin Bache, engineer, graduate of West Point 1818, was employed under the direction of the war department for forty-seven years. In 1867 he was placed on the retired list. In 1865 he was brevetted brigadier-general for meritorious service—the highest grade in the engineer corps. The construction of the Delaware breakwater and the successful application of iron-screw piles for the foundation of light-houses on reefs and shoals were among his conspicuous works. He was a member of the light-house board from 1862 to 1870.

BACHE, RICHARD, followed his brother Theophylact to the colonies, and in 1770 became his agent in Philadelphia and accumulated a fortune. In 1767 he married the only daughter of Benjamin Franklin, whom he succeeded as postmaster-general in 1776. He was born in Settle, Yorkshire, England in 1737, and died in 1811 in Pennsylvania.

BACHE, SARAH, only daughter of Benjamin Franklin, and wife of Richard Bache, born in 1744, died in 1808. During the war for Independence she was untiring in her efforts to mitigate the hardships of the soldiers, for whom she collected large sums of money and hospital stores. She had eight children.

BACHE, THEOPHYLACT (1734–1807), merchant, came from Yorkshire, England, in 1751 to New York, where he engaged in business, and becoming the owner of vessels engaged in privateering. He was prominently connected with the events leading to the war of the Revolution, but on account of his neutrality incurred the suspicions of the Committee of Safety when hostilities began. Remaining in New York during the British occupation, he was able to render assistance to loyal officers held as prisoners of war.

BACHELOR'S BUTTONS, a name given to several species of *Ranunculus*, and also to some other flowers which are shaped like buttons, as the corn flower (*Centaurea cyanus*).

BACHMAN, JOHN, a distinguished American naturalist, born in Dutchess county, New York, in 1790, died in 1874. He was pastor of a Lutheran congregation in Charleston from 1815 to the end of his life. He is best known for his valuable contribution to natural history, and as the associate of Audubon in the preparation of the great work of the latter on ornithology.

BACHMUT, or BAKHMOT, a town of Russia, in the province of Ekaterinoslav; is a market for trade in tallow, meat, grain, horses and cattle; there are coal mines in the vicinity; here are the remains of an ancient Tartar wall.

BACILLUS is the name commonly applied to Bacteria, although it properly belongs to a separate genus of *Schizomycetes*.

BACK, in maritime language, has many technical applications. To *back an anchor* is to support the large anchor by a smaller one in order to prevent it from loosening and coming home in bad ground. To *back and fill* is a mode of tacking when

the tide is with a vessel, but the wind against her. To *back the sails* is so to arrange them as to make the ship move astern or backwards. To *back the maintop-sail*, and analogous operations to other sails, is so to arrange a sail that the speed of the ship's progress may be checked.

BACK, SIR GEORGE, F. R. S., D. C. L., a British navigator who attained the rank of admiral, born in Stockport, Nov. 6, 1796, died June 23, 1878. In 1819 he accompanied Sir John Franklin when he made his arctic voyage, and he was sent out in 1833 to search for Captain Ross. He published an account of his arctic voyages. See *Britannica*, Vol. X, p. 193; Vol. XIX, pp. 319, 320.

BACKER, VAN, ADRIAN, a Dutch portrait and historical painter, who lived between 1643 and 1686.

BACKUS, ISAAC, an American clergyman and writer of religious history, born in Norwich, Conn., in 1724, died in 1806. His literary reputation rests principally upon his *History of New England, with Special Reference to the Baptists*.

BACON, from a root of the Teutonic languages, which seems to be allied to the Latin *vacca*, a cow, and to have signified an animal in general, is the cured sides of a pig.

BACON, LEONARD, a distinguished American clergyman, born in Detroit in 1802, died in New Haven in 1881, having been pastor of a congregation in that city 57 years. He was successively professor of didactic theology and lecturer on church polity and history in Yale College. He was an able lecturer and a voluminous writer. He assisted in founding the "Independent" and the "New Englander," and wrote numerous works on Christianity and kindred topics. He was a strong supporter of the anti-slavery cause and a staunch Unionist throughout the war.

BACON, LEONARD WOOLSEY, son of the preceding, born in 1830. He has been pastor of churches in many of the largest cities of the United States, and is a prolific writer for the periodical press and of books and musical compositions.

BACON, NATHANIEL, born in London about 1630, died in 1677. He left England and settled in Virginia, becoming in 1672 a member of the council. The people chose him to lead a force against the Indians. Governor Berkeley was indignant at this evidence of his popularity, and on his return from a successful warfare against the Indians declared Bacon a traitor. He was captured, tried and acquitted. Governor Berkeley was obliged to promise him a commission, but delayed to give it, and Bacon at the head of a force compelled him to fulfill his promise. He marched against the Indians, and during his absence was proclaimed a rebel. Bacon returned and drove the governor from Williamsburg. After this he burned Jamestown, and Governor Berkeley was obliged to flee to a ship. The Bacon rebellion ended with the death of Bacon and the execution of his principal adherents.

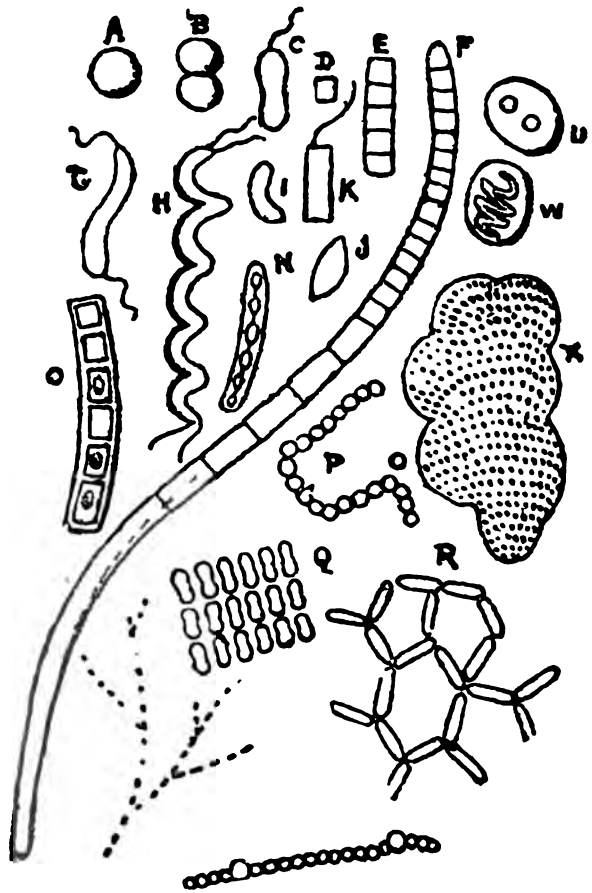
BACON, DELIA, the daughter of David Bacon, missionary to the Indians, and the sister of Dr. Leonard Bacon, the eminent Congregational divine, born at Tallmadge, Ohio, Feb. 2, 1811, died at Hartford, Conn., Sept. 2, 1859. For some time she was a teacher and lived near Boston, where she delivered a course of lectures. She wrote *Tales of the Puritans*; *The Bride of Fort Edward* (a drama); and *Philosophy of the Plays of Shakespeare Unfolded*. The latter raised much criticism, as in this work she sought to prove that the Shakespearian plays were the joint work of Shakespeare, Bacon, and other writers.

BACS, or BATSCH, a village and county of Hungary, situated on the Danube. The chief city of the county of Bacs is Zombor.

BACTERIUM, a microscopic organism belonging to the class *Alga*, usually in the form of a jointed rod-like filament, and found in putrefying infusions or tissues. The plural, bacteria, is another word for bacilli. Early in the use of the microscope the general name applied to all minute or microbic organisms was *animalcule*; later they were called infusoria, and still later microbes, or microbic organisms. For an elaborate account of the discovery of bacteria and their classification and numerous illustrations of the various species revealed by the microscope, see the article *SCHIZOMYCETES*, *Britannica*, Vol. XXI, pp. 398-407; also under *SURGERY*, Vol. XXII, pp. 679-80; also under *MURRAIN*, Vol. XVII, p. 59 (*Bacillus anthracis*); also under *BIOLOGY*, Vol. III, pp. 680-688; also under *PATHOLOGY*, Vol. XVIII, pp. 401-407; also under *FUNGUS* (Order VI), Vol. IX, p. 836; also under *FERMENTATION* (Class B), Vol. IX, p. 97; also under *DIPHTHERIA*, Vol. VII, p. 249.

It is only needful, in these Revisions and Additions, that the chief facts concerning bacteria be restated and summarized in the light of the more recent experiments. Professor Ray Lankester, of London, in the "Pall Mall Budget," of Jan. 1, 1891, in an incisive discussion of the different forms of bacteria in general and of the *Bacillus tuberculosis* in particular, states that the bacillus (a little rod), like the similar name bacterium, is commonly applied to the rod-shaped forms of a group of minute plants which botanists know by the title, "Schizomycetes," translated by German naturalists as Spaltpilze (splitting molds). The word *schizomycetes* refers to the mode of multiplication of these little rods. They attain a certain length and then divide across into two. Each half grows to the size of the parent and then similarly divides, and so on as long as food and other conditions of their life are present. One species (that common in old hay) has been observed to divide in this way every half-hour—a rate which gives in twenty-four hours more than three hundred billions (300,000,000,000) of individual rods as the offspring of one parent rod. They are extremely minute, varying from the 1-20,000th of an inch to the 1-1,000th of an inch in length. Some idea may be formed of this smallness by examining the drawings of different shapes assumed by these little plants given in Fig. 1, and reflecting that if a drawing of a well-grown man were made to the same scale of magnification the drawing would have to be a mile and a half long. Rods are by no means the only shapes under which the *Schizomycetes*, or, as it is convenient to term them, the "bacteria," present themselves. They often split up so far as to become tiny spheres, when they are called "micrococci" (a). The commonest form is biscuit-shaped (c), and very often the rods, instead of breaking as they grow, elongate so as to become long filaments called "the leptothrix form," consisting of several segments adhering to one another (f). The filament as it grows may take a spiral twist, when it is called "spirillum" (h); and should it then break into segments, as it often does, each segment is called a "comma" or "comma bacillus" (i). A less twisted form than the spirillum is the "vibrio" (g). French writers have applied the word "vibrio" to the whole group of *Schizomycetes*, just as we use the word bacteria in a wide sense; and Pasteur also uses the word "microbe" (microbiont—"minute living thing") for bacteria and other kinds of extremely minute organisms. All the forms which are drawn in Fig. 1 may be assumed according to the conditions of growth by one and the same race or species of bacteria, but some seem to be more limited than others as to changing their form of growth. A good

many are known only as micrococci; some are known which grow for a time as bacilli, or rods (e, k), and then many break up and continue to grow as micrococci.



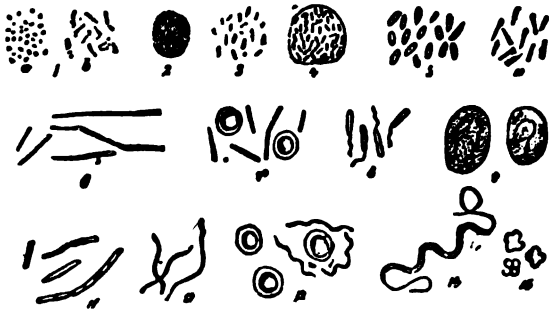
FORMS OF BACTERIA.

(a) Coccus or micrococcus; (b) diplococcus; (c) biscuit, keyhole, or ellithridium (with vibratile filaments of protoplasm); (d) microbacillus, being a single segment of (e) bacillus; (f) leptothrix or filamentous form, divided into segments; (g) vibrio (with vibratile filaments); (h) spirillum (with two vibratile filaments at each end); this breaks up into segments, shown in the next drawing; (i) the comma, or comma bacillus; (k) bacillus (with vibratile filaments); (l) diamond or double cone (this is the form of the bacterium of fowl-cholera); (n) the tubercle bacillus, showing the moniliform shape of the protoplasm as seen when stained with aniline dye; (o) a bit of the leptothrix form of the anthrax bacterium, showing the formation of spores in separate chambers; (p) a chain of micrococci, called streptococcus; (q) tessellate growth of a biscuit-shaped bacteria; (r) network-like growth of bacilli; (s) branching growth of filaments (cladotrix form); (t) chain of small and large micrococci (nostoc form); (u) two micrococci imbedded in jelly; (v) a spirillum with jelly envelope (leuconostoc); (x) and (s) are less magnified than the other figures, which are 1,200 times longer than the natural objects.

BACTERIA: "SWARMING" AND AT REST. The bacteria, like all living things, consist essentially of "protoplasm," which is covered with a delicate but firm wall, which protects it. Sometimes the case or wall swells up and forms a jelly (Fig. u, w), in which protoplasm is imbedded like a dot, and often millions of bacteria are found adhering to a mass by means of this jelly (x). Often, but by no means always, a delicate thread of protoplasm hangs from either end of the bacterium (c, g, h, k),

and keeps up a rapid vibrating movement, so that one sees under the microscope thousands of these minute bodies dashing along to and fro, driven by their vibrating threads or flagella. Some will be thus "swarming" while others are at rest. This motile phase seems to be assumed under certain conditions by most kinds of bacteria.

HOW BACTERIA DIFFER FROM PLANTS. The nearest allies of the bacteria among larger plants are the blue-green growths which one may see on the mud of some ponds and streams. Such blue-green growths are readily seen with a hand-glass to be made up of countless filaments felted together. They are known under the name of oscillatoria. They differ from the bacteria only in being larger and in being green. It is owing to the fact that the bacteria are not green like ordinary plants that they have such immense interest and importance. The green color of plants in general is due to a peculiar chemical body (chlorophyll), in virtue of which, in the presence of sunlight, the green plants are able to take the carbon necessary for their food from carbonic acid gas. Animals and colorless plants like the bacteria cannot do this. The gas in a glass of soda-water will not satisfy a hungry man, but a green plant will get along very well with this and some smelling-salts; it will flourish, grow, and reproduce itself from generation to generation. The bacteria, on the contrary, are like animals in their requirements as to food. They must have food consisting of the products or actual substance of other plants or of animals. Like animals, they have to act chemically upon this food by digestive juices. Being so small, they do not, like animals, take their food into their inside and



VARIOUS BACTERIAL FORMS.

1. *Micrococcus septicus*; a, scattered; b, in chains—torula.
2. Same in zoöglæa form.
3. *Bacterium termo*.
4. Same—zoöglæa.
5. *Bact. lineola*.
6. *Bacillus subtilis*.
7. *Bacillus anthracis* and blood corpuscles.
8. *Bacillus* (from mouth) with cillum.
9. *Bacillus lepræ*.
10. *Bacillus* with spores.
11. *Bacillus malariae*.
12. *Vibrio serpens*.
13. *Sprochæte Obermeierl*.
14. *Spirillum volutans*.
15. *Sarcina*. X 500. (Copied from Zeigler's Path. Anatomie, Jena, 1882.)

act upon it in a stomach, but they adopt an equally efficacious method and get into their food, acting upon it and digesting it and absorbing the products of digestion as they lie in their billions wallowing, as it were, in a sea of nutriment. Just as the living protoplasm of the cells of the stomach of a man secretes ferments and acids which chemically break up and change the lumps of food he has swallowed and extract from them some nourishing matter, producing at the same time a good deal of waste, foul-smelling and various, in chemical composition, so do the little bacteria act upon the dead bodies and fragments of plants and animals throughout Nature, creeping into them, swarming round them, multiplying in numbers which cannot be expressed even by the word millions, but require the highest

invention of arithmetical nomenclature—nonillions!

"BACTERIA BROTH." As a consequence of their enormous fecundity it will be readily understood that they are ubiquitous. Every surface teems with them; all natural waters are infested by them; even the skin of the most washed of mankind, even the moisture of the sweetest mouth, harbors them by the million! One thing, however, they cannot stand, and that is boiling. Boil them, or the stuff in which they are flourishing, and they cease to live; in the phraseology of the "Bacteriologist," the liquid or solid substance so treated is "sterilized."



BACILLI AND MICROCOCCI IN TUBERCULAR DEPOSIT.

By means of sterilized nutriment we can test any object for the presence of bacteria. We prepare a broth suitable for their nourishment and sterilize it. If kept hermetically sealed (as are preserved vegetables and tinned meats) no bacteria will appear in the broth. Touch the broth with my lady's finger, with any stick or stone, or add to it a drop of purest spring water, and it will after a few hours swarm with bacteria and putrefy.

A VISION OF A WORLD WITHOUT BACTERIA. This was the discovery of Theodore Schwann, also celebrated for his cell theory. He showed fifty years ago that what we call "putrefaction" is not the result of death but of life. The unpleasant smell and the disintegration of dead bodies, whether of plants or animals, is entirely due to the bacteria—it is the accompaniment of their digestion. If you destroy all the bacteria present by means of boiling heat, and then prevent the access of new bacteria (which are blown about in the dust of the air), dead bodies never putrefy. Supposing that by the fiat of an Omnipotent Being all bacteria could be annihilated, the earth's surface would soon be covered with dead bodies remaining unchanged year after year, century after century. The seas and lakes would be choked with them, and we should have to use them for paving our roadways and building our houses. But, worse than that, all the carbon and nitrogen which we living beings use in turn in our successive occupancy of the earth's surface from generation to generation would soon be tied up. There would be no food for the green plants; herbiferous creatures would cease to exist. The contemplation of these imaginable horrors gives us some notion of the part played by bacteria in the order of Nature.

VARIETIES OF THE INVISIBLE WORLD OF BACTERIA. All bacteria are not alike in their requirements as to food and in the substances—variously smelling, variously colored, poisonous or harmless, liquid or gaseous—to which they give rise; just as some animals are herbivorous, some carnivorous—as some produce musk, some ambergris, others venom, others wax and so on—so do we find variety in this invisible world, rendered visible only by the modern microscope. There are kinds—species, as the naturalist says—of bacteria as distinct from one another as the cow and the skunk. The commonest species are those which live on ordinary vegetable and animal refuse. They make a good deal of disagreeable smell, but there is not much harm in them, and, like the manufacturing chemists, who, next to bacteria, are of all beings the most offensive to the olfactory sense, they perform valuable service by manufacturing soluble ammonia and nitric

(the food of green plants) from the viscid and solid carcasses which once were living.

KOCH'S DISCOVERY OF TUBERCULAR BACILLI; TUBERCULOSIS AND ITS REMEDY. With regard to this discovery, Dr. Koch gave the following account in an interview with a medical correspondent of the *New York Sun*, in December, 1890:

I discovered the tubercular bacillus eight years ago. It was at first warmly disputed, but it is now generally admitted. I have ever since then been engaged in the study of the deadly parasite, and have been endeavoring to obtain an inoculating fluid which would kill the bacilli and bring about a sufficiently strong and healthy local reaction to expel them from the body without at the same time destroying healthy organisms. Of course, this latter has been the difficulty. There is very little use of my saying just now what the inoculating fluid is, or how I obtained it. It has cost me years of my life, and I propose to retain the secret for a few weeks longer from publicity, though it is already known to my assistants and to many of my professional friends. Now we will sum up the results of the treatment so far in the cases in which the physical condition of the patient was good. Lupus has yielded easily to the inoculating treatment, even when the cases had been of many years' standing. The bacilli have been destroyed completely after a number of injections, of course, varying with each case, and the web of lupus has in some cases been sloughed off, but in the majority it has been easily removed surgically. The narbe or star which marks the spot where it existed is not so large or the disfigurement anything like so great as is the case with the sharp spoon treatment in which the tissue is scooped out. Consequently the danger of lessening the usefulness of the affected limb is much less, and I think the danger of a recurrence is also lessened. Now, as to the effect upon living tuberculosis. Though the disclosure is premature, I will tell just how we stand. I have twenty patients with whom I personally follow the treatment minutely, and they represent (and I have, of course, chosen them on this account) the graduated stages of the disease. In fifteen of these patients the bacilli have completely disappeared from the sputa. They have gained much in weight, in general appearance, and in spirits, which last is a not to be neglected symptom. In the remaining five cases I regret to say there is not the slightest indication that the ordinary course of the disease has been stopped. These are cases in which I found already large cavities in the lungs. In these, the cough, the rattle in the throat, and the almost undiminished number of bacilli in the sputa continues. All of these symptoms, I repeat, have disappeared in the other cases. Of course, nothing can be considered final yet, the first injection to a human being having only been made seventy days ago. I hope for good results in all cases in which the vital organs are intact.*

Professor Koch, in an article in the "Deutsche Medizinische Wochenschrift," describes the lymph as consisting of a brownish transparent liquid. It is so prepared as to be proof against deterioration. When,

*The *Sun's* correspondent thus describes Dr. Koch's manner in the interview: "It is impossible for one to reproduce here Prof. Koch's modest, shrinking manner, and the skillful way in which he avoids all personal mention of himself in relating the story of his unique medical discovery. The patients in the Charité and the private clinics worship him like a god. When he appears in their wards he is hailed as a deliverer. I myself saw a patient stoop down swiftly and kiss his hand, which homage, however, made the Professor very angry. To-day Koch spoke in the highest terms of his great confrère, M. Pasteur of Paris. "We both," he said, "began to study bacteriology at about the same time, but we came to it by different ways. He began with chemistry, I with botany and the study of the plant parasites."

however, it is diluted with water to the necessary degree for use, the matter is liable to decay. It is necessary, therefore, that the attenuations should be perfectly sterilized by heat and preserved in wadding covering, or prepared with a solution of phenol 50 per cent. strong. When taken into the stomach the curative matter proves to have no effect. It must be applied subcutaneously by means of a valveless syringe. The kind of a syringe recommended by Professor Koch is one furnished with a small hollow rubber ball. In thousands of cases, he says, where it has been used for subcutaneous injections, not a single abscess resulted. When the curative matter is applied to a patient the usual course is to inject under the skin of the back, between the shoulder blade and in the proximity of the loins. His experiments show that human beings are much more susceptible to the effect of the new substance than are guinea pigs, which have been largely used in the course of the investigations. Two cubic centimeters of the fluid applied to a guinea pig produced little, if any, apparent effect. Twenty-five hundredths of a cubic centimeter, however, intensely affected a healthy, full-grown man, who was subjected to experiment. Professor Koch experimented with the fluid upon his own body, and describes the effect. He injected twenty-five hundredths of a cubic centimeter of the fluid under the skin of his upper arm. Three or four hours after the injection was made he experienced a contraction of the limbs and a marked feeling of lassitude. At the same time he felt a desire to cough, together with difficulty of breathing. These symptoms increased rapidly, and in the fifth hour he experienced an unusually violent rigor. The shivering lasted for nearly an hour, and was accompanied with nausea and vomiting. The temperature of his body rose to 39.6 centigrade. After a period of twelve hours the symptoms began to abate, the temperature of the body declined, and on the following day resumed its normal degree. The heaviness of the limbs and the feeling of lassitude, however, continued for some days, during which time the point on his arm at which the injection was made continued to be painful and remained red. The experiments so far conducted show that the lowest limit of effective strength of the fluid in a healthy human body is one hundredth of a cubic centimeter. When this amount is applied to a healthy human subject, it produces little or no reaction. The same result follows when fluid of this strength is applied to diseased persons who are suffering from other than tuberculous affections; but in persons affected with tuberculosis the same quantity produces a strong, general and local reaction. The general reaction consists of an attack of fever, which usually begins with shivering, the temperature of the body rises to over 39, and in some instances even to 41 centigrades. At the same time pains in the limbs are noticeable. The patient coughs, experiences much irritation and great exhaustion. Some patients also suffer nausea and vomiting. In some cases there is noticed a slight icteric (jaundice-like) coloring, or exanthema, resembling measles, on the chest or neck. The symptoms just described begin to manifest themselves four or five hours after the injection of the curative substance. They last from 12 to 15 hours. The patient is not much affected by the attack induced by the fluid, and after it is over feels comparatively well; even better, in fact, than before the injection. The reaction produced in the internal organs, especially the lungs, when the curative substance is injected, is not, of course, open to observation, apart from the increased expectoration and cough. Professor

Koch expresses the belief that his remedy will certainly prove a cure for incipient phthisis. Whether, however, the cure will be final and definite has not, he says, been clearly proved. Further experiments and continued use of the remedy will be necessary to determine this question.

The curative properties of the new remedy, Professor Koch declares, are of still greater importance for diagnosis. What the fluid kills is not the tubercular bacillus, but the tubercular tissue. This fact indicates the well-defined limits which the efficacy of the remedy will be able to reach. In other words, it can only influence living tuberculous tissue. It has no effect whatever on dead tissue, such as decayed caseous matter, necrotic bones and the like. More than this, it produces no effect upon the tissues which have been already killed by the application of the remedy. It is quite possible that such dead tissue may still contain living tubercular bacilli. These may then be either expelled with the necrotic tissue, or it may be that under special circumstances they may again invade adjacent living tissues. It follows, therefore, that tuberculous tissue that is still living must first be made to decay. When this has been accomplished every effort must be made to remove the dead matter by surgery. In cases where this is impossible and secretion can only slowly proceed by the self-help of the organism threatened, the living tissue must at the same time be protected by continual applications of the remedy so as to guard against the re-immigration of the parasites. Patients with pronounced tuberculosis of the lungs have proved far more susceptible to the remedy than those suffering with surgical tubercular affections. As a general rule the coughing and expectorations are increased somewhat after the first injections. Then they become gradually less, and, in the most favorable cases, will ultimately wholly disappear. In the cases experimented upon under the direction of Professor Koch, the expectorations gradually lost their purulent property and assumed a mucous character. The number of bacilli expelled usually decreases only when the expectorations begin to assume a mucous appearance. The bacilli then disappear entirely for a time, but on occasions again appear until expectoration totally ceases. At the same time the night sweats cease, the patients begin to look better and to increase in weight. Patients who have been treated in the early stages of phthisis have all been freed from morbid symptoms within from four to six weeks, when they may be regarded as healed. Consumptives with large cavities in their lungs will probably only experience benefit from the new remedy in exceptional cases, though most cases show temporary improvement. Professor Koch deprecates the mechanical and indiscriminate application of the remedy. He holds that it would be preferable that the treatment should be applied in suitable institutions, where careful observation would be possible. In all cases he emphasizes the necessity of early treatment. Only in incipient stages of disease, he declares, can the remedy fully develop its efficacy.

THE LYMPH REMEDY. On Jan. 15, 1891, Dr. Koch, in a lengthy written statement, explained to the public the methods by which he discovered the lymph used by him as a remedy for tuberculosis. After describing his numerous experiments extending through years of investigation resulting in finding the curative substance needed, he added: "The remedy which is used in the new treatment consists of a glycerine extract, derived from the pure cultivation of tubercle bacilli. Into the simple extract there naturally passes from the tubercular bacilli besides the effective substance all the other matter soluble in 50 per cent. glycerine. Consequently, it contains a certain quantity of mineral salts, coloring substances, and other unknown extractive matter.

Some of these substances can be removed from it easily. The effective substance is insoluble in absolute alcohol. It can be precipitated by it, though not, indeed, in a pure condition, but still combined with the other extractive matter. It is likewise insoluble in alcohol." Dr. Koch closes his statement with some learned technical observations on the specific action of the lymph when injected into the human system affected by tuberculosis. For these the professional reader must be referred to medical journals, in which they may be found in full.

BACTRIS (from a Greek word meaning a "cane"), a genus of slender palms, numbering about forty species, found along marshy regions in the tropics, where it sometimes forms impenetrable forests. The Maraja palm of this species bears a grape-like fruit, which is eatable. *Toboga canes* are made from the stems of *Bactris minor*.

BACULITES, a genus of the fossil family of *Ammonitida*, differing from the true ammonite in the perfectly straight form of the shell, which tapers to a point, and is either round or compressed.

BADAGRY, a port of Upper Guinea, from which the expedition of 1825, under Lander and Clapperton, started on an exploring tour through Central Africa. It is under British rule, and formerly traded extensively in slaves.

BADALONA, a Spanish seaport in the province of Barcelona, near the town of that name. It carries on ship-building and glass manufacture. The surrounding country is fertile and orange groves abound.

BAD AXE, a small village of Michigan and the county-seat of Huron county; it has several churches, banks, two newspapers and a lumber-mill.

BADDERLOCKS, or **HENWARE** (*Alaria esculenta*), an edible sea-weed of the sub-order *Fucaceæ*, growing on rocks in deep water, on the shores of Britain, Iceland and the northern parts of Europe. It has a stem four to eight inches long, pinnated with a few short leaflets, which contain the seeds, and a membranous olive-green frond two to twelve inches long, with a stout mid-rib.

BADÉAU, ADAM, born in New York city, Dec. 29, 1831. He entered the United States army in 1862, and was aide to Brig.-Gen. Thomas W. Sherman. While serving in this capacity he was wounded in Louisiana. In 1864 he became military secretary to General Grant, in which capacity he remained till 1869. He was sent by the government to London and Madrid, and accompanied General Grant not only on his campaigns, but on his tour round the world. He has written a romance, a collection of essays, and two volumes on the life of General Grant.

BADEN, GRAND DUCHY OF, a state of the German Empire. Area, 5,891 square miles. Population (1885), 1,601,255. Capital, Karlsruhe, with a population in 1885 of 61,074. For the early history of Baden, see *Britannica*, Vol. III, p. 224.

The present royal family was gazetted Jan. 1, 1891, as follows:

Friedrich I (reigning Grand Duke), born Sept. 9, 1826, second son of Grand-duke Leopold I, and of Princess Sophie, of Sweden. Ascended the throne of Baden at the death of his father, April 24, 1852. Married Sept. 20, 1856, to Grand-duchess *Luise*, born Dec. 3, 1838, the daughter of King Wilhelm I, of Prussia. *Offspring*:—I. *Friedrich Wilhelm*, born July 9, 1857; married Sept. 20, 1885, to *Hilda*, daughter of the Duke of Nassau. II. *Victoria*, born Aug. 7, 1862; married Sept. 20, 1881, to crown prince *Gustaf*, of Sweden.

Brothers and Sisters of the Grand-duke: I. Princess *Alexandrine*, born Dec. 6, 1820; married May 3, 1842, to Duke Ernst, of Saxe-Coburg-Gotha. II. Prince *Wilhelm*, born Dec. 18, 1829; married Feb. 11, 1863

to Princess Marie Romanovska, born Oct. 16, 1841, daughter of the late Duke Maximilian, of Leuchtenberg. Offspring of the union are two children:—1. Princes Marie, born July 26, 1865; married July 2, 1889, to Friedrich, hereditary prince of Anhalt. 2. Prince Maximilian, born July 10, 1867. III. Prince Karl, born March 9, 1832; married May 17, 1871, to Rosalie von Buest, elevated Countess von Rhena, born June 10, 1845. IV. Princess Marie, born Nov. 20, 1834; married Sept. 11, 1858, to Prince Ernst, of Leiningen. V. Princess Cecilia, born Sept. 20, 1839; married Aug. 28, 1857, to Grand-duke Michael, of Russia.

The constitution of Baden vests the legislative authority in a house of parliament composed of two chambers. The upper chamber comprises the princes of the reigning line who are of age; the heads of the mediatized families; eight members elected by the nobility; the Roman Catholic archbishop of Freiburg; the superintendent of the Protestant Church; two deputies of Universities; and eight members nominated by the Grand-duke, without regard to rank or birth. The second chamber is composed of 63 representatives of the people, 22 of whom are elected by towns, and 41 by rural districts. Every citizen not convicted of crime, nor receiving parish relief, has a vote in the elections. The elections are indirect, the citizens nominating the Wahlmänner, or deputy-electors, and the latter the representatives. The members of the second chamber are elected for four years, one-half of the number retiring at the end of every two years. The chambers must be called together at least once every two years.

The Grand-duke has a civil list (including allowances to the princes and princesses of the royal household) of 1,944,840 marks—\$486,210.

The population of the nine chief cities in 1885 was reported as follows:

Mannheim....61,373	Pforzheim...37,201	Baden.....12,779
Karlsruhe....61,066	Heidelberg...26,928	Rastatt.....11,743
Freiburg.....41,340	Konstanz.....14,601	Bruchsal.....11,662

For the religious preferences of the people, see RELIGIONS OF THE WORLD, in these Revisions and Additions.

The statistical reports of 1890 showed that one-half of the people are engaged in agriculture, the other half mostly in manufactures. The meadows comprise 800 sq. miles, the forests cover 2,200 sq. miles, and part of the timber is exported. The chief manufactures are cigars, cotton and silk stuffs, straw hats, brushes and trinkets, clocks, chemicals, paper and machinery. There are 1,616 elementary schools, 58 colleges and other middle schools and technical academies, also two universities. There are 860 miles of railway, almost entirely belonging to the state, constructed at a cost of \$106,750,000. The government budget for 1890 was estimated at \$10,050,000; the public debt in 1888 (chiefly for railways) was \$80,920,000.

The public schools (not including private) of Baden in 1889 embraced two great universities and 1,734 others, with 4,905 teachers and 297,071 students.

BADEN, JACOB, a Danish philologist, born in Vordenborg, in 1735, died in 1804.

BADENOCH, a district of Inverness in the north of Scotland.

BADGE, a distinctive mark or sign, an honorary decoration, or special cognizance; as, for example, the badge of a society, the badge of a police, etc. Badges are either conferred by the State or assumed by the individual for purposes of distinction, the former class having very frequently had their origin. Of badges conferred by public

authority, for the purpose of inciting to exertion and gratifying honorable ambition, numerous instances are to be met with in every part of the world. The garter of the English knight, the golden fleece of the Spanish grandee, the button of the Chinese mandarin will occur as familiar examples. Of badges assumed for the purpose of distinction none are more famous than the white or red roses of York and Lancaster. Different countries have also distinctive badges, generally connected with the history either of the actual ruling or of some former dynasty. The rose of England, the thistle of Scotland, the golden harp and trefoil of Ireland, and the emblems of the several States of the American Union are familiar. In the Ashmolean Museum, Oxford, is an old and interesting badge, called King Alfred's Jewel. It is of gold, and was found in Athelney. See Britannica, Vol. XI, p. 709.

BADGER. See Britannica, Vol. III, p. 227. The American badger, *Taxidea americana*, very common in the West, differs from the European species chiefly in the dental formula. From this animal Wisconsin has been nick-named the Badger State.

BADGER, GEORGE PERCY, born in Chelmsford, England, in 1815. In 1840 he was ordained a clergyman of the Church of England. He is best known, however, for his attainments and public services as an Orientalist, and by numerous literary works on Eastern subjects.

BADGHIS, a country lying between the Harirud and the Murghab rivers, north of Herat and south of the boundary between the Russian territories and Afghanistan.

BADIN, STEPHEN THEODORE, born in Orleans, France, in 1768, died in Cincinnati, Ohio, in 1853. He came to the United States after having received a classical education in a Roman Catholic college, and was the first priest ordained in this country. After a time spent in Georgia College, where he perfected himself in the English language, he was appointed to missionary work in Kentucky. For years he labored alone in this field, suffering great hardships. Later he was sent to the Indians of Michigan, among whom he worked successfully.

BAD LANDS, known also by their French name, *Mauvaises Terres*, are various desolate tracts of land found in the western parts of the United States. The term is applied especially to an extensive barren region lying between the South Fork of the Cheyenne and the North Fork of the Platte, commonly known as the Dakota Bad Lands. This region is arid, broken, and utterly waste. It is of tertiary formation. Fossil bones of large animals are found in abundance. The broken surface of the Bad Lands has been described as resembling massive artificial structures decked out with all the accessories of buttress and turret, arched doorway, and clustered shaft, pinnacle and tapering spire. A little grass is found here and there in the rainy season; otherwise this desolate region affords neither vegetable nor animal life, nor mineral productions.

BAEDEKER, KARL, born at Essen in 1801, died at Coblenz in 1859. He was a publisher of guide-books, after the style of Murray's *Hand-book*, which are now to be found in almost every European country. His description of the Rhine was his first guide-book.

BAER, VON, KARL ERNST, a Russian-German naturalist, born in Esthonia, 1792, died Nov. 29, 1876. He made discoveries in zoölogy and physiology, was the author of several works on animals, was professor of zoölogy at Königsberg and later was elected librarian of the Academy of Sciences in St. Petersburg. See Britannica, Vol. XXIV, p. 807; Vol. VIII, pp. 165, 749, 763; Vol. XVI, p. 839; Vol. XX, p. 321.

BAFFA, the *Paphos* of ancient times, a sea-port town on the southwest coast of the island of Cyprus. It has now fallen much into decay, and has but few inhabitants and a small trade in cotton, silk, and grain. Under Venetian rule it was a place of considerable importance.

BAGAMOYO, an African village which forms the starting-point for caravans going into the interior. It is situated on the eastern coast of Africa, opposite Zanzibar.

BAGASSE, **CANE STRAW**, or **CANE TRASH**, the refuse matter obtained during the expression of the saccharine juice from the sugar-cane.

BAGEHOT, **WALTER**, a distinguished English essayist and journalist, born at Langport in 1826, died in 1877. His principal productions are: *The English Constitution*; *Physica and Politics*; *Lombard Street*; and five volumes of essays on literature, biography, economics, and the depreciation of silver. At the time of his death he had been for seventeen years editor of the London "Economist." See *Britannica*, Vol. XIX, p. 396, *et seq.*; also Vol. VIII, p. 259.

BAGGAGE, a term applied in a general sense, in the United States, to the trunks, satchels, and similar receptacles, with their contents, which a traveler carries with him on a journey. In this sense in England, the word *luggage* is used. In law, such articles of apparel or ornament, and other small personal effects, as are of daily use for the convenience, comfort, or recreation of a traveler, including also small amounts of money used in defraying incidental expenses, but excluding merchandise, are protected as baggage. In military language, the clothes, provisions, utensils, and tents of an army are called its baggage.

BAGHAL, a Punjab hill-state in the northwest of India. Area, 124 square miles.

BAGHERIA, or **BAGARIA**, a town of Sicily, beautifully situated at the base of the isthmus which separates the Bay of Termini from that of Palermo. It is surrounded by groups of fine villas of the Sicilian nobility.

BAGHULCUND, or **REWAH**, the name given to five states of India lying south of the districts of Allahabad and Mirzapur, *Rewah*, *Nagode*, *Maihar*, *Sohawal*, and *Kothi*.

BAGMOND'S ROLL, so named from Bajimond, an Italian canon. It designates the valuation according to which the ecclesiastical benefices of Scotland were taxed from the end of the thirteenth century to the Reformation. See *Britannica*, Vol. I, p. 491.

BAGNARA, a town of Italy, situated on the Gulf of Gioja, about fifteen miles northeast of Reggio; it is noted for its excellent wine.

BAGNES, the convict prisons of France. In ancient times, the severest punishment, next to death, was that of the galleys. In 1748 these were abolished, and the convicts were employed at hard labor in arsenals and other public works, and the prisons in which they were lodged were called *bagnes*, from the Italian *bagno*; literally a bath, a name supposed to have originated in the fact that the slave prisons at Constantinople contained baths, or because they stood near the baths of the seraglio. In these establishments the labor of the convicts is turned to profitable account, and the various handicrafts are taught in the prison under the direction of overseers. The industrious and clever are enabled to earn small wages, and good behavior is rewarded with a gradual relaxation of restraint.

BAGNI DI LUCCA, a town of Italy, in the valley of the Lima. It contains several medicinal thermal springs, and is a fashionable bathing place.

BAGNO A RIPOLI, a charming suburb of Florence, Italy. It contains many fine palaces and villas, and is much frequented for its baths.

BAGNO IN ROMAGNO, a town of Italy, near the source of the Savio. It is famed for its hot mineral springs containing natron.

BAGOAS, a Persian soldier who poisoned his king, Artaxerxes Ochus, and then made Darius Codomanus king. The latter ungratefully killed Bagoas about the year 336 B. C.

BAGOT, **SIR CHARLES** (1781-1843), an English diplomatist who was minister to France (1814), ambassador to St. Petersburg (1829), and to Holland (1824), and lastly, governor-general of Canada.

BAGOT, **LEWIS** (1740-1802), an English bishop who in 1777 was made dean of Christ Church, Oxford, after which he was successfully bishop of Bristol, Norwich, and St. Asaph's.

BAGRADITES, the royal family of Georgia and Armenia. Bagrad had the privilege of crowning the Armenian kings; in the eighth century one of his descendants became king of Georgia, and thus the Georgian Bagradites originated.

BAGSHOT BEDS, or **BAGSHOT SAND**, beds of sand with occasional layers of clay, brick-earth, or pebbles. These beds belong to the Eocene Tertiary age, are found on London clay, and have a maximum thickness of 1,200 feet.

BAHAMAS. See under **WEST INDIES**, *Britannica*, Vol. XXIV, pp. 509-512.

BAHAR, one of the old Mohammedan provinces of India, occupying part of the valley of the Ganges, and traversed by that river, lat. 24° 12' to 25° 21' N., long. 88° 25' to 86° 6' E., included in the British presidency of Bengal. The area of the province is 42,417 square miles. The name of Bahar was also given to one of the administrative districts, now officially called Gayah. Area of the district, 4,718 miles. Among the minerals the most important are coal and mica. The latter, nearly as pellucid as glass, is sometimes found in blocks, yielding plates 36 by 18 inches. Potatoes, cabbages, cauliflower, lettuce, turnips, etc., have been introduced from Europe and succeed well. Of indigenous productions the most considerable are rice, pulse, sugar, cotton, indigo, and tobacco. The district is largely engaged in manufacturing muslins, silks, carpets, blankets, tents, tapes, threads, ropes, paper, glass, cutlery, jewelry, leather, ink, soap, and pottery. Population, 19,736,101; being an average of 553 persons to the square mile.

BAHIA HONDA, a harbor on the north coast of Cuba, 60 miles west-southwest of Havana, protected by a fort, and formerly much resorted to by privateers and slavers.

BAHR, an Arabic word signifying a large body of water; it is applied both to lakes and rivers.

BAHR, **JOHANN CHRISTIAN FELIX**, an eminent German philologist and critic, born at Darmstadt in 1798, died in 1872. He was educated at Heidelberg, where he gained the favor and friendship of Creuzer, whose symbolic system of interpretation in mythological matters he himself pursued at a later period. He was elected a professor in 1826. Previously he had occupied himself chiefly with the elucidation and criticism of Plutarch, the result of which was annotated editions: *Alcibiades*, *Philopomen*, *Flaminius*, and *Pyrrhus*. One of his most important works is his version of Herodotus. In 1835 he published his *De Universitate Constantinopoli Quinto Sæculo Condita*.

BAHRAICH, a town of India, in a district of the same name. It is visited annually in May by thousands of pilgrims to the shrine of Masaud, a Mohammedan saint. See *Britannica*, Vol. XVIII, p. 72.

BAHR-EL-ABIAD ("white river"), Arabic name for the main branch of the Nile. Its sources, so far as known, are Lakes Victoria Nyanza and Albert Nyanza, under the equator. It flows in a northerly direction, and unites with the Blue Nile at Khartum. It is navigable for about 1,300 miles.

BAHR-EL-AYRCK ("blue river"), the second great branch of the Nile. It runs in a northwestward direction, uniting with the White Nile at Khartum; is a large, rapid stream and by its overflows contributes greatly to the fertility of Lower Egypt. In length it is about 900 miles, and during high water the river is navigable for 500 miles.

BAIL. See *Britannica*, Vol. III, p. 241. Historically, the word bail, from the old French *baillier*, bears the general sense of a delivery; and in law is used, primarily, of one who, by becoming surety for the future appearance of a prisoner at court, delivers him from present custody; and, secondarily, of the security given for the procurement of such delivery.

BAILEY, PHILIP JAMES, a distinguished poet, born at Basford, in the county of Nottingham, in 1816. His early education was conducted in his native town, and afterwards he became a student at the University of Glasgow. He was called to the English bar in 1840, but never practiced. The first edition of *Festus*, the poem by which he is best known, was published in 1839, and in subsequent editions received a large amount of new matter. It attracted considerable attention in England, and even more in America. It is a wonderful work, when the age of the author at the period of its production is taken into account. It was commenced before the author had reached his 20th year, and completed in three years. In 1867 appeared his *Universal Hymn*.

BAILEY, a wall, space or prison. See *Britannica*, Vol. II, p. 460.

BAILEY, JAMES MONTGOMERY, born in Albany, N. Y., Sept. 25, 1841. He received only a common school education and learned the carpenter's trade. He served in the civil war till its close. On his return he purchased the "Danbury Times" of Danbury, Conn., changing its name to "Danbury News." He acquired considerable renown for the short, humorous sketches which he published in this paper. Among his books are: *Life in Danbury, England, from a Back Window, They All Do It, and The Danbury Boom*.

BAILEY JOSEPH, a farmer of Salem, Ohio, born April 28, 1827, killed by desperadoes March 21, 1867. He entered the United States military service, and distinguished himself for the engineering skill displayed in building two dams across the Red River to deepen the water in the middle of the channel and thus enable the ships belonging to the Mississippi flotilla to pass over the rapids. The scheme was successfully carried out, and Colonel Bailey was made brigadier-general, and received the thanks of Congress.

BAILEY, THEODORUS, born in Chauteaugay, N. Y., April 12, 1805, died in Washington, D. C., Feb. 10, 1877. He was a naval officer and twice circumnavigated the globe. When the Mexican war broke out, he conveyed an artillery company to California by way of Cape Horn. He took part in several expeditions, suppressed a riot in Panama, helped in restoring friendly feelings between the United States and the Fiji Islanders, and when the civil war broke out he commanded the frigate *Colorado*. He led in Farragut's attack on New Orleans, and was sent to demand the surrender of the city—a commission requiring great bravery. The navy yard at Portsmouth, N. H., was placed under his command from 1865 to 1867.

BAILIE, a Scotch term with several legal applications. It chiefly, however, and popularly, signifies a superior officer or magistrate of a municipal corporation in Scotland with judicial authority within a city or burgh.

BAILIFF: in English law, a legal officer who may be described as the keeper, protector, or superintendent of some duty or charge legally imposed upon him. The sheriff himself is the *Queen's bailiff*, and, as such, it is his business to preserve the rights of the crown within his bailiwick.

BAILIWICK, legally the county or district within which the sheriff's bailiffs may execute their office. Blackstone says that this word was introduced by the princes of the Norman line in imitation of the French, whose territory was divided into bailiwicks, as that of England into counties.

BAILLIE, LADY GRIZEL (1665-1746), a Scottish poetess, who wrote the song, *An' warena my heart licht I wad dee*, and is gratefully remembered for her tender and heroic devotion to her father, Sir Patrick Hume, during his concealment in the vault of Polwarth Church.

BAILLIE, ROBERT, known as Baillie of Jarviswood, and often called "The Sidney of Scotland," born in Lanarkshire about the middle of the 17th century. He distinguished himself during the latter part of the reign of Charles II by his bold opposition to the tyrannical misgovernment of the Duke of Lauderdale. He was accused of conspiring against the king's life, and of being hostile to monarchical government, was tried at Edinburgh, and condemned to death upon evidence at once insignificant and illegal. The sentence was carried into execution in 1684.

BAILMENT: in law, the contract by which goods are delivered to another person without the surrendering of ownership, which goods are to be returned or accounted for at a specified time. The word also refers to the act of bailing or being surety for a person under arrest. The person making the delivery of property is called the bailor; the one to whom the property is delivered is the bailee.

BAILY'S BEADS, named from Francis Baily, who first fully described them. They are appearances seen at the limb of the moon at the moment of internal contact in a total solar eclipse. They resemble a row of brilliant beads, and are the result of diffraction and irradiation, being very much exaggerated when the telescope is out of focus or imperfect.

BAILYSTOK, a fortified town of Western Russia, in the government of Grodno, situated on the Baily. It is well built, the streets are bordered with lime trees, giving it a very pleasant aspect. It has a palace and park, a commodious market and several churches. It has manufactories of woollens, hats, leather, soap, tallow, etc. Population, 16,985.

BAIN, ALEXANDER, a Scotch metaphysical writer, born at Aberdeen in 1818. He graduated at the University in that city in 1840. He occupied the chair of Natural Philosophy in the Andersonian University of Glasgow in 1845. He was appointed assistant secretary to the Metropolitan Sanitary Commission in 1847, and to the General Board of Health in 1850. The publication of *The Senses and the Intellect*, in 1855, and *The Emotions and the Will*, established his reputation as one of the profoundest investigators of psychological problems. His other important works include *Mental and Moral Science; Logic, Deductive and Inductive; Mind and Body—Theories of Their Relation; Education as a Science; English Grammar, and English Composition and Rhetoric*. He was appointed Regius Professor of Logic in the University of Aberdeen in 1860, and Lord

Rector of that University in 1881, and reelected in 1884. He was appointed Examiner in Logic in 1857, and Moral Philosophy in the University of London, and in 1878 was Examiner in Moral Science at the India Civil Service Examinations. See *Britannica*, Vols. I, p. 223; III, p. 534; VII, p. 648; XX, p. 43.

BAINBRIDGE, the county-seat of Decatur county, Georgia, is on the Flint River at the head of navigation. Much cotton is shipped from here. It is a railroad junction. The village is small, but contains six churches, three academies, one bank and has a newspaper.

BAINBRIDGE, a small town of New York, situated in Chenango county, on the Susquehanna River and the Albany and Susquehanna Railroad. It has several churches, a foundry, printing office, and a handsome park.

BAINBRIDGE, WILLIAM, a distinguished American naval commander, born in Princeton, N. J., in 1774, died July 28, 1833. He became a captain in 1800. In the war against Tripoli, his vessel, the frigate *Philadelphica*, having run aground, he remained a prisoner from October, 1803, to June 1805. In 1812 he was put in command of the *Constitution*, the *Essex* and the *Hornet*. In December of that year he captured the British frigate *Java*, mounting 49 guns.

BAINES, SIR EDWARD. See his father's biography, *Britannica*, Vol. III, p. 245. Sir Edward was born in Leeds in 1800, and died in 1890. He was for many years editor and principal proprietor of the "Leeds Mercury," and at the time of his death was believed to be the oldest journalist in Europe, having been connected with the press for seventy years. He represented Leeds in parliament from 1859 to 1874. He was a staunch Liberal, and was long known as an able temperance advocate and a strong non-conformist. He was knighted by the Queen in 1880.

BAINS (*i. e.* baths), the name of various watering places of France. Bains-les-Bains is one of these; it is situated 14 miles southwest of Epinal.

BAINS, the Latinized name of Michael de Bay, a theologian born in Hainault in 1513, died Dec. 16, 1589. He was professor of Divinity and later chancellor of Louvain University. Having adopted the doctrines of St. Augustine, he wrote on free-will and grace; but the pope, Pius V, condemned his work and the author retracted. Afterwards the Jansenists adopted and maintained his views.

BAIRAKTAR, grand vizier under Mahmud II, born in 1755, died Nov. 15, 1808. See *Britannica*, Vol. XXIII, p. 648, *et seq.*

BAIRD, HENRY CAREY, born at Bridesburg, Pa., in 1825. At the age of twenty he became a partner in the publishing house with which his name has been identified. He attained distinction as a writer and publisher of industrial and economic works.

BAIRD, JAMES, a Scotch philanthropist, born at Kirkwood in 1802, died in 1876. He amassed immense wealth as an iron-master. His blast furnaces employed at one time more than ten thousand men and boys. He endowed various schools, founded lectures, and spent vast sums of money in the mitigation of destitution among the people of his native land.

BAIRD, SPENCER FULLERTON, an eminent American naturalist and *littérateur*, born in 1823, at Reading, Pa., died in 1887. His first literary work of importance was a translation and revision of the *Iconographic Encyclopædia*. His writings on natural history were numerous and valuable. He was for many years secretary of the Smithsonian Institution. He was very prominently active in the work of the United States Commission of Fish and Fish-

eries. He was the recipient of many honors and medals from foreign societies and governments.

BAIZE, from the old French *baies*, a thick woolen fabric, with a long nap on one side, and usually of a plain red or green color. See *Britannica*, Vol. IX, p. 292.

BAJMOK, a large Hungarian village in the Bacs province, 16 miles southwest of Theresienstadt.

BAKALAHARI, a Bechuana tribe of Africa inhabiting that portion of the Kalahari desert lying between the Orange River and Lake Ngami. They are partly civilized, and their occupations are agriculture and goat raising.

BAKAN, a town on the Bistrisza River in Roumania.

BAKCHISERAI a town in a deep limestone valley in the Taurida, inhabited principally by descendants of the ancient Tartars. This place is noted as being the home of the early Crimean princes, whose ruined palace has been restored by the Russian government to its former splendor. The word comes from the Turkish, and means "Garden Palace."

BAKE, JAN, born at Leyden in 1787, died in 1864. He was professor of Greek and Roman literature in the University of Leyden from 1817 to 1857, and also a critical writer. He edited works by Cicero, Longinus and others.

BAKSHISH. The ordinary meaning of this word in Persian is a *present*; but in the East, in modern times, it has acquired the special signification of gratuity, which, however, the orientals do not quietly wait to receive, but demand loudly, even insolently. Every traveler, whether in Turkey or in Egypt, in Asia Minor or in Syria, if he receives the smallest service from anyone, is immediately reminded by the cry of, "Bakshish, Bakshish," to pay for the courtesy by a gift of money.

BAJOCCO, or **BAIOCCO**, was the name given to a piece of money, valued at about one cent. It was of copper and circulated throughout the Papal States.

BAKER, MOUNT, an eruptive volcano among the Cascades, situated in the northwest of Washington Territory, 20 miles from the boundary of Canada. It rises to a height of 11,100 feet.

BAKER, JOHN GILBERT, English botanist, born at Guishorough, Yorkshire, Jan. 13, 1834. See *Britannica*, Vol. XIX, p. 595.

BAKER, LAFAYETTE C., born at Stafford, Genesee county, N. Y., Oct. 13, 1826, and died in Philadelphia July 2, 1868. He was chief of the United States secret service, and in this capacity performed many brave acts. Colonel Baker organized the pursuit for the assassin of President Lincoln, and was present at Booth's capture and death. He was made brigadier-general. The *History of the United States Secret Service* was a book written by him, which throws light on the secret of the late war.

BAKER, SIR SAMUEL WHITE, an eminent explorer and author, born in London, England, in 1821. He first became known to the public by the establishment of a mountain colony in Ceylon, at Newera Ellia, in 1847, of which an interesting account is given in his *Eight Years' Wanderings in Ceylon*. In 1861 he organized at his own cost and conducted an expedition for the discovery of the sources of the Nile. In this expedition he was accompanied by his wife. Having reached the junction of the Atbara with the Nile, he explored the basin of the Blue Nile, and made his way to Khartum, where he organized a party to explore the course of the White Nile. He arrived at Gondokoro in the spring of 1863, where he met Captains Speke and Grant, who had started from Zanzibar on a similar quest, and reported having reached Victoria Nyanza, which they believed to be the source of the great river. Baker having assisted them to go on to

Khartum, resolved to follow up their discoveries, and without either interpreter or guide, and in face of many difficulties and dangers, set out from Gondokoro, and a year afterwards sighted the waters of a great lake, which he called the Albert Nyanza. The Royal Geographical Society awarded him the Victoria gold medal, and the Queen conferred upon him the honor of knighthood. He undertook a successful expedition into Central Africa on behalf of the Khedive in 1869, and in 1879 was sent by the British Government to investigate the resources of Cyprus. His *Wild Beasts and Their Ways* was published in 1890. See *Britannica*, Vol. I, p. 248; also Vol. XVII, p. 506.

BAKER, WILLIAM MUMFORD, an American clergyman and writer of fiction, born in Washington, D. C., in 1825, died in 1883. His principal work, *Inside: a Chronicle of Secession*, was published under the assumed name of "G. F. Harrington."

BAKEWELL, ROBERT, an English agriculturist, born about 1725, died in 1795. He is noted for his work in improving the breeds of cattle and sheep.

BAKHTEGAN, LAKE, a body of water in Persia, 60 miles long by 8 wide. It has no outlet. A salt marsh surrounds it, and large quantities of salt are obtained from the lake.

BAKONY WALD (Forest of Bakony), a densely wooded mountain range of Hungary, south of the Danube, dividing the great and little Hungarian plains. Immense herds of swine are annually driven hitherto to feed upon the mast of the forest.

BAKING POWDER, a substance composed of tartaric acid and bicarbonate of soda. All moisture having been carefully removed from these materials they are sifted together, and flour is added to dilute the strength. In baking bread, etc., baking powder is added to the flour to produce the escape of carbonic acid gas through the action of the water used in the mixture which raises the dough to its required lightness during the process of baking. As the properties contained in sour milk answer the purpose of tartaric acid, such milk is often used with bicarbonate of soda alone.

BAKUNIN, MICHAEL, born in Torschok, Russia, in 1814, died in Geneva in 1876. He was son of a rich family and enjoyed educational advantages at the military school of St. Petersburg, and later studied science in Berlin. He spent some time in Dresden, Paris, and Switzerland, at which last-named place he became acquainted with communistic and socialistic agitators. In 1847 he made a speech in Paris in favor of revolutionizing Russia. That government demanded his expulsion from the city, and after this he threw himself vigorously into all nihilistic movements in Europe. He is called the first nihilist. He was imprisoned, sentenced to death, exiled to Siberia, but escaped to Japan; then to the United States, and returned to London to resume his revolutionary work. He advocated the destruction of all things; belief in God we must get rid of; marriage and inheritance are to be abolished; conscience is to be regarded only as a matter of education. These doctrines are called "the very platform of the Russians conspiracy known as nihilism."

BALA BEDS, a local deposit, occurring in the neighborhood of Bala, in North Wales, and forming a group in the Lower Silurian of Murchison. They consist of a few beds, rarely more than 20 feet in thickness, chiefly composed of hard crystalline limestone, alternating with softer argillaceous bands, which decompose more freely, and leave the limestone like a cornice molding, affording a characteristic by which, at a considerable distance, the bala beds can be distinguished from the rocks of hard gritty slate above and below.

BALÆNICEPS ("whale-headed"). A grallatorial bird of monstrous size, inhabiting the region of the Upper Nile. See *Britannica*, Vol. XXII, p. 577.

BALAGHAT, the name of a British district in the Central Provinces of India; also applied to an extensive tract of country extending between the rivers Krishna and Tumbuddra and the farthest extremity of Mysore in the south.

BALACHONG, a Chinese article of food, prepared from putrid shrimps or small fish pulverized with spices and salt, after which they are dried and eaten with rice.

BALAHISSAR, a village in Asia Minor, in the southwest of the Angora province. It was here that the ancient Pessinus was situated, and the modern village contains the ruins of beautiful buildings, many of which have crumbled away, leaving only their finely carved marble columns, etc. Among the ruins are a castle, a circus, a fairly well preserved theater, and the magnificent Temple of Cybele, this deity being the patron goddess of the ancient city.

BALAKLAVA, or BALACLAVA, a small port on the Black Sea, in the Crimea, Russia. The inhabitants are chiefly Greeks. The town was anciently quite magnificent, as is shown by the ruins of mosques, etc. Homer has correctly described the bay, and this is supposed to be the port of the Læstrigions, where Ulysses landed. The place is now famed for having been the battle-ground in an action between the Russians and English, Oct. 25, 1854. Through the inefficiency of officials, British soldiers died of hunger and cold, while ships lying in the harbor were freighted with the necessary supplies.

BALANCE OF TRADE, the difference between the value of exports and imports in any country. When the value of the exports exceeds that of the imports, the balance of trade is said to be in favor of the country. A nation may be prosperous even when the value of its imports exceeds that of its exports.

BALANOGLOSSUS, a genus of worm-like animal supposed to represent a distinct class of Enteropneusta (gut-breathers). They have the peculiarities of vertebrates and of invertebrates and are of four species. See *Britannica*, Vol. XXIV, pp. 179, 187.

BALANUS. See ACORN SHELLS, in these Revisions and Additions.

BALASINOR, a tributary Indian state in the Guzerat province of Bombay, in area about 150 square miles. Balasinor is the chief town, and is fifty-one miles to the north of Baroda.

BALATON, LAKE, the largest lake in Hungary. Length 51 miles, width seven miles, area about 383 square miles. The water is slightly salt; thirty streams flow into this body of water, whose outlets are the Sio and Sarviz, which empty into the Danube.

BALBI, GASPARO, a Venetian merchant of the 16th century. He was the first traveler who has left an account of India beyond the Ganges. Business often called him to Aleppo; and from thence, on one occasion, he made a visit to India, which lasted several years. After his return he published, in 1590, the result of his travels in a volume entitled *Viaggio all' Indie Orientali*.

BALBUENA, DE BERNARDO, a Spanish poet, only three of whose poems remain. He was born at Val-



BALÆNICEPS.

de-Peñas in 1568, and died at Porto Rico in 1627. He was bishop of the last-mentioned place. *La gran-dea Mrijcana, El Siglo de Oro, and El Bernardo* are his works.

BALBUS, L. CORNELIUS, surnamed Major, born at Cadiz (Gades). He was a Roman officer who served under Cæsar in Spain in 61 B.C. He was chosen consul in 40 B.C.

BALCONY (It. *balcone*), a projecting gallery in front of a window or of several windows, with a balustrade or parapet before it and supported by consoles or brackets fixed in the wall, or by pillars resting on the ground below. The balcony was unknown in Greek and Roman architecture, and is probably an Italian contrivance, as the earliest examples of it occur in Italy, to the climate of which country it is peculiarly adapted.



BALCONY.

BALD, or **WHITE-HEADED EAGLE**, so called from the snow-white color of its neck and head. This bird is very large, being from seven to eight feet from tip to tip of its wings. Its food is fish, small animals, or any poultry it can get. This bird has been adopted as the national emblem of America.

BALDACHIN (It. *baldacchino*), a tent-like or umbrella-shaped canopy, overshadowing the altars, chairs and portals of the early cathedrals, and sometimes placed above thrones, generally sustained by pillars. One of the most celebrated is in St. Peter's at Rome. The Romans in the time of Constantine suspended the sacramental vessel by a cord fastened to the center of the interior of this canopy, which from its cup-like appearance they called *ciboria*. The baldachin originated in Eastern countries, where there was still another form, a square-shaped structure, which was borne above the head of a priest, who carried the host, or above the heads of monarchs as significant of greatness. The employment of these structures in Anglican churches was in 1873 declared illegal, in consequence of a suggestion that one be used in the building of St. Barnabas' Church. The baldachin was introduced into Italy through the medium of the crusades. See **CIBORIUM**, Britannica, Vol. II, p. 462, and **UMBRELLA**, Britannica, Vol. XXIII, p. 723.

BALDERIC, or **BAUDRY**, a French bishop and chronicler of the latter part of the 11th century. He endeavored to restore rigid monastic rule.

BALDMONEY, an umbelliferous plant used as a carminative medicine; it is also commonly applied to several kinds of gentian.

BALDNESS, an entire absence of hair from the head, sometimes hereditary, but more generally occurring from old age, or in consequence of disease, as fevers and skin diseases. See Britannica, Vol. XXII, p. 121.

BALDPATE (American widgeon, the *Mareca Americana*), a duck found in Mexico, United States, Canada, South America, and sometimes in Europe. It has a white crown and its plumage is marked with red, brown, chestnut and white. This duck is much esteemed for the delicacy of its flesh.



AMERICAN WIDGEON.

BALDRICK, or **BAUDRICK**, a band or sash worn partly as a military, and partly as a heraldic symbol. It

passes round the waist as a girdle, or over the left shoulder, and is brought down obliquely under the right arm, or is suspended from the right shoulder in such a way as to sustain a sword.

BALDUNG, HANS (Grün). See GRÜN HANS BALDUNG, Britannica, Vol. XI, p. 224.

BALDWIN, ABRAHAM, born in Guilford, Conn., Nov. 6, 1754, died in Washington, D. C., March 4, 1807. He graduated at Yale, was made chaplain in the army, studied law and was elected to the Georgia legislature; chosen delegate to the Continental Congress for three years, a member of the constitutional convention for four months, and a representative in Congress for eighteen years. He originated the idea of the Georgia University, and carried the scheme to a successful issue in the State legislature, and assisted a number of young men in obtaining an education.

BALDWIN, MATTHIAS WILLIAM, an American inventor and manufacturer, born at Elizabethtown, N. J., in 1795, died at Philadelphia in 1866. He made numerous and valuable improvements in locomotives, and perhaps constructed the first railway engine built in America.

BALDWIN, ROGER SHERMAN, born in New Haven, Conn., Jan. 4, 1793, died Feb. 19, 1863. He was an eminent jurist, and was associated with John Quincy Adams in conducting the famous Amistad captives case. He was successively assemblyman, senator and governor of his native State. In 1847 he went to the United States Senate. He was one of two electors "at large" for the choice of Abraham Lincoln, and his last public labors were performed at the "peace congress" of 1861, to which he was sent as a member.

BALDWINVILLE, a village 12 miles north of Syracuse, situated in Onondaga county, N. Y., and on Seneca River. The Oswego and Syracuse Railroad passes through the place.

BALEARIC CRANE, a bird found in the northern and western parts of Africa. It is noted for its beautiful crown of golden feathers and its red cheeks. The plumage of its body is slate colored. It is about four feet high, has a short bill, is gentle and harmless and is quite easily tamed.

BALECHOU, JEAN JOSEPH NICOLAS, a noted French engraver, born at Arles in 1715, died Aug. 18, 1765. In style he was brilliant, but his drawings lack exactness and nice finish. His best works are *Storm Calm, Women Bathing, Saint Genevieve*, and a full-length portrait of Augustus, King of Poland.

BALEN, HENDRICK VAN (1560-1632), a Flemish painter, and Van Dyck's first teacher. He ranks high among the artists of his time, although his paintings are somewhat lacking in spirit. His works show taste and harmonious coloring.

BALESTRA, ANTONIO, an Italian painter of the Venetian school, born at Verona in 1666, died April 2, 1740. He was a good colorist and skillful designer. His best paintings are *Saint Theresa, a Virgin*, and his own portrait.

BALFOUR, ARTHUR, philosophical scholar and author of *Defense of Philosophic Doubt*. He was born in 1848. See Britannica, Vol. XXI, p. 386.

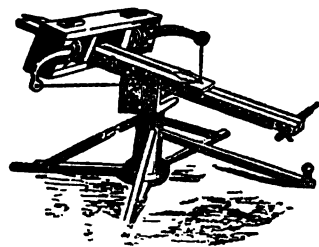
BALFOUR, FRANCIS MAITLAND, brother of Arthur B., was born at Edinburgh in 1851, and on July 19, 1882, he perished in an attempt to ascend one of the spurs of Mont Blanc. He was a noted embryologist. See Britannica, Vol. VIII, p. 169; Vol. XX, p. 418.

BALFOUR, JOHN HUTTON, M. D., F. R. S., born in Edinburgh, Sept. 15, 1808; died Feb. 12, 1884. He was professor of botany at Glasgow and afterwards in Edinburgh, and published a *Manual of Boto* and a *Class Book of Botany* and the article Botany in Britannica, Vol. IV, pp. 79-163.

BALFOUR, REV. WALTER, born in Scotland, 1777, and died Jan. 3, 1852. He was brought up a Presbyterian, but became a Baptist and later a Universalist. He wrote several books, among which were *Inquiries Concerning the Devil*, *Scriptural Import of the Words Translated Hell*, and *The State of the Dead*.

BALIOL, OR **BALLIOL**, EDWARD, a son of King John Baliol and heir to the Scottish throne. He was crowned at Scone in 1332, after an invasion of the country, but retained the throne only three months. He died in 1363. See *Britannica*, Vol. XXI, p. 489.

BALISTA, OR **BALLISTA**, a weapon among the larger kinds of military engines in use before the



BALISTA.

invention of gun-powder. The ballista, which was in the form of a cross-bow, propelled large and heavy missiles, chiefly through the reaction of a tightly twisted rope of hemp, flax, cat-gut, sinew or hair, or else by a violent movement of levers. It required a good deal of mechanism to bring about the propulsive force. The makers of the machine were very particular in the choice of women's hair, the sinews of a bull's neck, and the tendons of the deer, for fastening the elastic cord. The early chroniclers tell of a ballista which threw a stone weighing 360 pounds.

BALISTES, a genus of fishes. See *FILE-FISH*, *Britannica*, Vol. IX, p. 161.

BALIZE, OR **BELIZE**, a British colony on the Bay of Honduras, in the Caribbean Sea, extending in N. lat. from 16° 45' to 18° 30', and W. long. from 88° 10' to 89°, forming the southeast part of the peninsula of Yucatan. Its area is about 9,000 square miles. Population, about 30,000.

BALKASH ("large lake"), a lake of Asiatic Russia, having no visible outlet. Its length is 390 miles, and its greatest breadth 50 miles.

BALL, SIR ROBERT STAWELL, LL.D., F. R. S., born in Dublin, July 1, 1840. He studied at Trinity College, Dublin, and in 1865 Lord Rosse engaged him as his astronomer at Parsonstown. He became Professor of Applied Mathematics and Mechanics at the Royal Irish College of Science in 1873; the following year he was made astronomer royal for Ireland and Andrews professor of astronomy at Dublin University. He was knighted in 1886. He is well known as a lecturer and writer.

BALL, THOMAS, an eminent American sculptor, born at Charlestown, Mass., in 1819. His most esteemed works of art are statues of Washington, Webster and Everett, and busts of Choate and Webster.

BALLABGAHR, an Indian town situated in the Punjab in the native state of Ballabahr, of which it was once the capital. It carries on a food-grain trade and has several temples and a palace.

BALLACHULISH, a village of Scotland, 16½ miles south of Fort William, in Argyllshire, on the southern shore of the salt-water lake of Leven, noted for its extensive quarries of blue clay-slate, which have been worked since 1760, and give employment to nearly 600 men. The product of these quarries now averages annually about 17,000,000 roofing-slates, weighing some 30,000 tons. Population, about 1,000.

BALLADE, a French style of poem composed of one or more terms, or triplets, of stanzas, each of

which contained seven or eight lines. It usually ended with an envoy, and each stanza with the same line as refrain. The term is now often applied to poetry, divided into stanzas of the same length. See *Britannica*, Vol. IX, p. 644.

BALLANTINE, JAMES, poet and artist, born at Edinburgh in 1808, died in 1877. He learned the trade of a house painter, but studied drawing under Sir William Allen and turned his attention to staining glass, taking a prominent part in the revival of that art, and was employed to furnish the House of Lords with windows. His work on *Glass Staining*, published in 1845, was translated into German. Among his works are *One Hundred Songs, with Music* (1865), *Life of David Roberts, R. A.* (1866), *Lilias Lee* (1871), and numerous poems written from 1856 to 1865; he also wrote two volumes in prose, *The Gaberlunzie's Wallet* (1843), and *Miller of Deanhaugh*, in which are contained some of his best-known songs and ballads.

BALLANTINE, WILLIAM (1812-1886). He was an able sergeant-at-law, and for some years filled the office of magistrate at the Thames police court. He was mainly employed in criminal cases, the most important being the Tichborne case, the defense of the Guicowar of Baroda, and the Muller murder trial. He wrote *Experiences of a Barrister's Life* (1882), and an account of his voyage to America, called *The Old World and the New* (1884).

BALLANTRÆ, a Scotch fishing-village in the southern part of Ayrshire, at the mouth of the Stinchar. It has considerable occupation in fishing, and carries on the chief trade of the southwest fishery district.

BALLANTYNE, JAMES (1772-1883), and JOHN, his brother (1774-1821), Scotch printers employed by Scott in the publishing of his works. Scott afterwards secretly joined them in their business, and chiefly through his mismanagement they were at length bankrupt. See *Britannica*, Vol. XXI, p. 548.

BALLANTYNE, ROBERT M., a Scotch author, born at Edinburgh in 1825. His stories, which were generally founded on facts taken from his own experience and adapted for boys, were sound, sensible and popular. He began his literary career in 1856, writing tales concerning incidents that took place during his residence among the Red Indians and fur traders in the forests of Rupert's Land. He had published his first work, however, in 1848, an account of his six years' experience in the territories of the Hudson Bay Company (1841-1847). In 1887 he had issued 74 volumes, of which 62 were separate tales.

BALLAST, a heavy substance employed to give a ship sufficient hold of the water to insure her safe sailing with spread canvas when her cargo and equipment are too light. The term ballast is also employed by civil engineers to signify the sand or gravelly material which is held as a packing between railway sleepers in order to give them solidity.

BALLENY ISLANDS, a group of five small volcanic islands in the Antarctic Ocean. Lat. 66° 44' S. Long. 163° 11' E.

BALL-FLOWER, an ornament peculiar to the decorated style of Gothic architecture which prevailed in the 14th century. The ball-flower, so named from its resembling a ball placed in a circular flower,



BALLOON-FISH.

is supposed by some to be an imitation of a pomegranate, by others of a hawk's bill.

BALLINROBE, a small town on the Robe River, in the County of Mayo, Ireland. It is situated 17 miles from Castlebar. See *Britannica*, Vol. XV, p. 650.

BALLASTIC PENDULUM, an instrument invented by Benjamin Robins in the latter part of the last century, to ascertain the velocity of projectiles, and to prove the quality of gunpowder. See

GUNNERY, *Britannica*, Vol. XI, p. 297.

BALLOON-FISH, the families of *Tetrodontidæ*, *Diodontidæ* and *Triodontidæ*. Several species are found in America; they are so called from their power to inflate themselves with air. The sea-hedgehog.



DIODON.

BALLOT SYSTEM, AUSTRALIAN. For ballot and other methods of voting in various countries, see *Britannica*, Vol. III, pp. 288-92. The "Australian ballot system," now exciting large attention in the United States, where it was adopted by many of the States in 1889 and 1890, seems to have been first suggested by the Hon. Francis S. Dutton, member of the legislature of South Australia from 1851 to 1865, and twice during that period at the head of the government. He first proposed it in the legislature of 1851. No law under the proposed system was adopted by the legislature until the session of 1857-58, when a modified plan was enacted under the name of the "elections bill." Its results gave immediate satisfaction, and everywhere the new machinery was declared to "work with the greatest smoothness, ease and economy." The whole aspect of the election was said to have completely changed. "Rioting and disorder disappeared completely, and the day of election became a day of quietness—so much so that a stranger would not recognize the presence of any unusual interest." By the Ballot Act of 1862, its essential principles were applied to all elections other than to the legislative council and the assembly. In 1876 the system was made to cover the election to district councils, and in 1887 was applied to rural government also; so that the system extended to all elections in the colony of South Australia.

In the colony of Victoria the system was adopted for parliamentary elections soon after its introduction into South Australia; in 1861 it was applied to county and municipal elections. The system was adopted for parliamentary elections in Tasmania in 1858, and later for all other elections. New South Wales adopted it the same year.

The Australian ballot system was introduced into the Dominion of Canada as follows: It was adopted by British Columbia, February, 1873 (Ballot Act 36 Vict.); by the Ontario legislature in 1874 (Ballot Act 37 Vict.); by the Dominion parliament, 1874 (Dominion Elections Act 37 Vict.); by the legislature of Quebec, 1875; by the general assembly of Nova Scotia, 1875 (Statutes 1875, chap. 26); by the Northwest Territories, 1885 (by the Lieut. Gov. in Council); and by the Manitoba assembly, 1886 (Elections Act 1886, chap. 25). At later dates application of the system was made to cover the municipal as well as the legislative elections in the several provinces of the Dominion.

On the European continent Belgium was the first to introduce the system. This, after numerous unsuccessful attempts, was effectively done on July 9, 1877. The English electoral acts were adopted with various important modifications. In 1879 the Grand Duchy of Luxembourg adopted the Belgian method almost in its entirety. In Italy the various reforms relating to the secret ballot, as adopted by the other European nations, which had followed the Australian lead, were consolidated in the acts

of Jan. 22 and May 7, 1882, and were formally announced by royal decree of Sept. 14, 1882. In order to render the law more certain of enforcement, a reading and writing qualification on the part of the voter was imposed by the consolidated act of 1882.

In the United States the earliest practical efforts in the direction of legislative action were put forth in Michigan in 1835, when a bill embodying the Australian system was introduced by Mr. Geo. W. Walthew, of Lansing. The bill failed of a majority; but in 1837 the bill in a revised form was again presented and passed the House, but failed in the Senate. In Kentucky a bill embodying the system in part, but applying only to the municipal elections of the city of Louisville, was drafted by Arthur M. Wallace, of that city, and was enacted by the legislature Feb. 25, 1838, with only one dissenting vote. In New York the system was embodied in a bill known as the Saxton bill, and passed both houses of the legislature in 1838, and after some modification was again passed in 1839, but in both cases it was vetoed by the Governor. Early in 1890 the bill was further changed, to meet the Governor's objections, and then again passed and became a law, and under its provisions the November elections throughout the State were held. In Massachusetts the first legislation in favor of the system dates from May 30, 1838, when the Governor approved a bill embodying the leading features of the reform method. In 1839 the example of Massachusetts was followed by the legislatures of other States in the following order: Indiana, Rhode Island, Wisconsin, Tennessee, Minnesota, Missouri, Michigan, and Connecticut. In 1890 the adoption of the general system took place in other States, as follows: Washington, New York, Maryland, and Vermont.

It will be seen by the preceding epitomized chronological outline that South Australia was the pioneer in the introduction of the notable Ballot Reform system, now engaging public attention in so many countries, and in many of the States of our own national federation. Upon the electoral law of that province, perfected substantially in 1879, the ballot laws of many other countries are based, with the introduction of such modifications in various details as have been regarded as desirable to adapt it to the differing conditions of those countries and states. That Electoral Law (42, 43 Vict., No. 141) embraced 106 sections. We quote below only those portions of the full text which are needed to give the reader a clear exhibit of the voting system. The first 45 sections, relating mainly to the appointment of officers and registration, we omit:

46, 47. (Form of election-writ; the polling-day to be not less than two and not more than thirty days from the day of nomination.)

48. In order that any person may become or be a candidate at any election, he shall be nominated by not less than persons entitled to vote at such election, in manner fo'

ing, that is to say: After the issue of the writ and before the time fixed for the nomination, there shall be delivered to the returning officer a nomination paper, in the form, or to the effect of the form in the Tenth Schedule hereto, naming such person as a candidate at such election, and signed by the persons nominating as aforesaid, and having at the foot thereof a statement, under the hand of the person so nominated, that he consents to act if elected.

49. (Publication by returning officer of dates of nomination and election and of polling-places.)

50. The returning officer shall at noon, on the day of nomination, attend at the chief polling place, and there publicly produce the several nomination papers he shall have then received, and give notice of the names of the persons nominated.

51. In case there shall be no greater number of candidates duly nominated than are required to be elected, the returning officer shall declare such candidate or candidates to be elected, and make his return accordingly.

52. In case more such candidates shall be duly nominated, the returning officer shall give notice thereof of the names of the candidates, and of the day and time of taking the poll.

53. (Polling-booths to be provided, and poll-clerks and door-keepers to be appointed.)

54. Each polling-booth shall have separate compartments, and shall be provided with a ballot-box having an inner cover, with a cleft therein, for receiving the voting papers, and a lock and key, and an outer cover with a lock and key; and the said compartments shall be constructed so as to screen any voter therein from observation, and shall be furnished with pencils for the use of voters.

55. The returning officer shall cause voting papers to be printed which shall contain the Christian and surnames of the several candidates arranged in alphabetical order according to such surnames; and if there are two candidates of the same surname, then according to the Christian name of such candidates; and if there are two candidates of the same Christian name and surname, then according to the residences of such candidates, arranged in the like order, and a square printed opposite the name of each candidate and he shall obtain a sufficient number of voting papers.

56. Before the hour of polling the returning officer shall deliver to the substitutes at each polling-booth a list of the electors on the said roll who have been registered for six months, and who claim to vote at such polling-booth, herein called "list of voters," together with a copy or copies of the roll in force for the division or district, as the case may be, for use at the said polling, and shall sign each page of such list; and shall also deliver to each substitute, and himself retain such numbers respectively of the voting papers as shall be sufficient for the use of the electors at such booth.

57. Before delivering the voting papers to the electors, each returning officer, or his substitute, shall initial such papers on the face thereof, and fold them, and keep an exact account of all initialed voting papers.

58. On the day of election the poll shall be taken at the several polling-places according to the following regulations:—

(1.) (Hours of opening; care of the ballot-box.)

(2.) (Hours of closing.)

(3.) Every person proposing to vote shall state to the presiding officer, or to some of his clerks, his Christian name and surname, and if so required any other of the particulars, necessary to be expressed in the roll, which the said officer may require for the sole purpose of enabling him to ascertain the name upon the roll intended by such person.

(4.) The presiding officer or voting clerk shall ascertain if the name intended by the voter is upon the list of voters; and if so found he shall, subject as hereafter provided, deliver to such voter a voting paper bearing the initials of the returning officer, or his substitute, and shall place a mark against the voter's name on the list of voters.

(5.) If a person representing himself to be a particular elector named on the rolls applies for a voting paper after another person has voted as such elector, the applicant shall, upon duly answering the questions in the Eleventh Schedule, be entitled to receive a voting paper in the same manner as any other voter.

(6.) The voter shall forthwith retire alone to some unoccupied compartment of the said booth, and shall there in private and without delay indicate the name of each candidate for whom he intends to vote by making a cross, the center of which cross shall be contained within the square opposite the name of such candidate, and shall then fold the voting paper, and immediately deliver it so folded to the presiding officer, who shall openly forthwith, and without unfolding the same, deposit it in the ballot-box; and the voter shall then quit the polling-booth.

(7.) Any voter may signify to the presiding officer that by reason of blindness he is unable to comply with the last preceding regulation; and thereupon the presiding officer, if satisfied that such voter is afflicted with blindness, shall permit any agent named by such voter to accompany him into the compartment set apart for the purpose, to mark the voting paper on such voter's behalf, and hand the same to the returning officer, who shall deposit the same in the ballot-box.

(8.) Any person who, by mistake or accident, shall spoil any voting paper, may, before the same shall have been de-

posited in the ballot-box, upon signifying the same to the returning officer and delivering up the spoiled voting paper, obtain a fresh voting paper; and the spoiled voting paper shall be then and there destroyed by burning the same.

(9.) (Provision for closing and sealing the ballot-box.)

59. The returning officer (or his substitute), the poll clerks, and door-keepers and scrutineers (not exceeding two for each candidate, to be appointed in writing), and electors about to vote, shall alone be permitted at any one time, without the consent of the returning officer or his substitute, to enter or remain in the polling-booth during the taking of the poll.

60. (Questions to voters as to qualifications, etc.)

61. If the person so proposing to vote shall refuse to answer any question or shall answer the same in such manner as to show that he is not qualified to vote, he shall not be permitted to vote, and he shall forthwith return to the presiding officer the voting paper, if any, delivered to him, and which paper shall thereupon be immediately destroyed by the said presiding officer.

62. (Ballot-boxes to be delivered to the respective returning officers.)

63. All voting papers issued to any substitute, and not used by him, and all lists of voters, shall be returned by him to the returning officer, with the ballot-box.

64. (Proceedings relative to the counting of the voting papers.)

The returning officer shall reject all voting papers not initialed, or which shall contain crosses against the names of a larger number of candidates than are required to be elected, or shall contain anything marked or written other than the initials of the returning officer or his substitute, and the cross indicating the name of such candidate for whom the elector intends to vote.

67. The returning officer of the district shall send to the returning officer of the province, a return, in a tabular form, of the number of electors on the roll, the number of voting papers found in the ballot-boxes, the number of voting papers allowed, the number of voting papers rejected, distinguishing the number, 1st, not initialed by the returning officer or his substitute; 2d, voting for more candidates than entitled to be elected; 3d, containing writing or marks by which the voter can be identified; 4th, unmarked or informally marked voting papers.

71. No election shall be held to be void in consequence solely of any error on the part of any returning officer or deputy, which shall not affect the result of the election, or of any error or impediment of a mere formal nature.

72. Every person who—

(1.) Forges or fraudulently defaces or fraudulently destroys any nomination paper, or delivers to the returning officer any nomination paper, knowing the same to be forged; or

(2.) Forges or counterfeits or fraudulently defaces, or fraudulently destroys any voting paper or the initials on any voting paper; or

(3.) Without due authority supplies any voting paper to any person; or

(4.) Fraudulently puts into any ballot-box any paper other than the voting paper which he is authorized by law to put in; or

(5.) Fraudulently takes out of the polling-booth any voting paper; or

(6.) Without due authority destroys, takes, opens, or otherwise interferes with any ballot-box or voting papers then in use for the purposes of the election; or

(7.) Refuses to deliver to the returning officer or his substitute any voting paper in his possession, whether he shall have obtained such voting paper for the purpose of recording his vote or not,—

shall be guilty of a misdemeanor, and be liable, if he is a returning officer, or an officer or clerk in attendance at a polling-booth, to imprisonment for any term not exceeding two years, with or without hard labor; and, if he is any other person, to imprisonment for any term not exceeding six months, with or without hard labor; and any attempt to commit any offense specified in this section shall be punishable in the manner in which the offense itself is punishable.

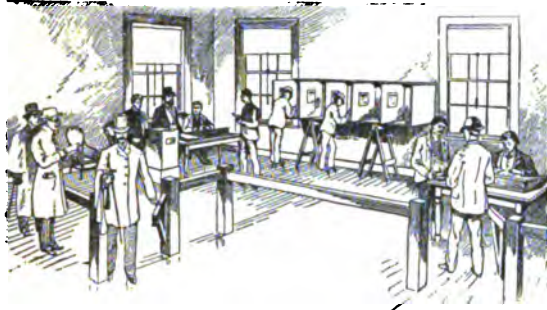
73. In any indictment or other prosecution for an offense in relation to the nomination papers, ballot-boxes, and voting papers at an election, the property in such papers and boxes may be stated to be in the returning officer at such election.

85. If any returning officer for the said province, or any district returning officer, after having accepted office as such, shall neglect or refuse to perform any of the duties which by the provisions hereof he is required to perform, every such returning officer or district returning officer shall, for every such offense, forfeit any sum not less than ten nor exceeding two hundred pounds; and in like manner if any substitute, clerk, or other officer or person appointed or required to perform any duty, under or by virtue of this act, shall neglect or refuse to perform any of the duties which by the provisions hereof he is required to perform, every such clerk or other officer or person shall, for every such offense, forfeit and pay any sum not less than five and not exceeding fifty pounds.

(Sections 87-100: Related to the Court for the trial of "Disputed Returns.")

101. When any matter or thing is hereby directed to be performed on a certain day, and that day shall happen to be Sunday, Good Friday, Christmas Day, or other public holiday, the said matter or thing may be performed on the next succeeding day, not being any of the days aforesaid.

(Sections 102-106 relate to general involving local questions.)



MODEL OF POLLING ROOM PROVIDED FOR BY THE MASSACHUSETTS ACT, and copied from a sample Massachusetts ballot of November, 1890, giving full instructions to the voter as to the method of filling up and depositing his ballot.

In most cases in the United States the adoption of the new ballot system was largely due to the precedent energetic work performed by the Civil Service or Ballot Reform Associations organized in the various States. The Rhode Island Ballot Reform Association, in a well-written paper advocating the adoption of the Australian system, closed its urgent arguments by tersely summarizing the advantages of the system, as follows:

1. A secret ballot, cast as proposed in this plan, interposes the most effectual preventative of the bribery of the voter ever devised.
2. A secret ballot secures the voter against the coercion or undue solicitation of others, and enables the most dependent elector to vote as his conscience dictates, in perfect freedom.
3. Excuse for assessments of candidates is taken away. A poor man is placed on an equality with a rich man as a candidate. Money will be less of a factor in politics.
4. The voter will be "alone with his country, his conscience, and his God," and elections will be more than ever the intelligent and conscientious registering of the popular will.
5. This method of ballot reform has been much discussed in the United States for several years, and has received general favor, being recognized, after careful scrutiny, as a practical and salutary measure.

AUSTRALIAN BALLOT SYSTEM, as adopted by the legislature of Massachusetts in 1888 and 1889. The law was entitled "an Act to provide for printing and distributing ballots at the public expense, and to regulate voting at State and city elections":

SECTION 1. All ballots cast in elections for national, State, district, and county officers in cities and towns after the first day of November in the year eighteen hundred and eighty-nine, and all ballots cast in municipal elections in cities after that date, shall be printed and distributed at public expense, as hereinafter provided. The printing of the ballots and cards of instructions to voters shall in municipal elections in cities be paid for by the several cities respectively, and in all other elections the printing of ballots and cards of instruction, and the delivery of them to the several cities and towns, shall be paid for by the Commonwealth. The distribution of the ballots to the voters shall be paid for by the cities and towns respectively. The term "State election," as used in this act, shall apply to any election held for the choice of a national, State, district, or county officer, whether for a full term or for the filling of a vacancy, and the term "State officer" shall apply to any person to be chosen by the qualified voters at such an election. The term "city election" shall apply to any municipal election so held in a city, and the term "city officer" shall apply to any person to be chosen by the qualified voters at such an election.

NOMINATIONS OF CANDIDATES.

2. An convention of delegates, and any caucus or meeting of qualified voters, as hereinafter defined, and individual voters to the number and in the manner hereinafter

specified, may nominate candidates for public office, whose names shall be placed upon the ballots to be furnished as herein provided.

3. Any convention of delegates representing a political party which, at the election next preceding, polled at least three per cent of the entire vote cast in the State, or in the electoral district or division thereof for which the nomination is made, or any convention of delegates who have been selected in caucuses called and held in accordance with a special statute providing therefor, and any caucus so called and held in any such electoral district or division, may for the State or for the district or division for which the convention or caucus is held, as the case may be, by causing a certificate of nomination to be duly filed, make one such nomination for each office therein to be filled at the election. Every such certificate of nomination shall state such facts as may be required as above for its acceptance, and as are required in section five of this act; shall be signed by the presiding officer and by the secretary of the convention or caucus, who shall add thereto their places of residence; and shall be sworn by them to be true to the best of their knowledge and belief, and a certificate of the oath shall be annexed to the certificate of nomination.

4. Nominations of candidates for any offices to be filled by the voters of the State at large may be made by nomination papers signed in the aggregate for each candidate by not less than one thousand qualified voters of the State. Nominations of candidates for electoral districts or divisions of the State may be made by nomination papers signed in the aggregate for each candidate by qualified voters of such district or division, not less in number than one for every one hundred persons who voted at the next preceding annual election in such district or division, but in no case less than fifty. In the case of a first election to be held in a town or ward newly established, the number of fifty shall be sufficient for the nomination of a candidate who is to be voted for only in such town or ward; and in the case of a first election in a district or division newly established, other than a town or ward, the number of fifty shall be so sufficient. Each voter signing a nomination paper shall add to his signature his place of residence, with the street and number thereof, if any, and each voter may subscribe to one nomination for each office to be filled, and no more. Women qualified to vote for members of the school committee may sign nomination papers for candidates for the school committee. The nomination papers shall before being filed be respectively submitted to the registrars of voters of the cities or towns in which the signers purport to be qualified voters, and each registrar to whom the same is submitted shall forthwith certify thereon what number of the signatures are names of qualified voters, both in the city or town for which he is a registrar, and in the district or division for which the nomination is made; one of the signers to each such separate paper shall swear that the statements therein are true, to the best of his knowledge and belief, and the certificate of such oath shall be annexed, and he shall also add his post-office address.

5. All certificates of nomination and nomination papers shall, besides containing the names of candidates, specify as to each, (1) the office for which he is nominated; (2) the party or political principle which he represents, expressed in not more than three words; (3) his place of residence, and, in case of a nomination for a city office, with street and number thereon, if any. In the case of electors of president and vice-president of the United States, the names of the candidates for president and vice-president may be added to the party or political appellation.

6. Certificates of nomination and nomination papers for the nomination of candidates for State offices shall be filed with the secretary of the Commonwealth at least fourteen days previous to the day of the election for which the candidates are nominated. Such certificates and papers for the nomination of candidates for the offices of mayor and of aldermen in cities shall be filed with the city clerks of the respective cities at least ten days previous to the day of such election, and for the nomination of candidates for all other city offices at least six days previous to the day of such election.

7. The certificates of nomination and nomination papers being so filed, and being in apparent conformity with the provisions of this act, shall be deemed to be valid, unless objection thereto is duly made in writing. Such objections or other questions arising in relation thereto in the case of nominations of State officers shall be considered by the secretary of the Commonwealth and the auditor and attorney-general, and the decision of the majority of these officers shall be final. Such objections or questions arising in the case of nominations of city officers shall be considered by the board of registrars of voters, together with the city clerk, if not a member of such board, and the city solicitor; and the decision of a majority of these officers shall be final. In case such objection is made notice shall forthwith be mailed to the candidates affected thereby, addressed to their residences as given in the certificates of nomination or nomination papers, and to any party committee known to the secretary or clerk, as the case may be, as specially interested in the nomination. It shall be proper for the officers above named, in the decision of any question as to the proper political or party designation of candidates, to distinguish between candidates nominated by certificates of nomination, and those nominated by nomination papers.

8. Any person whose name has been presented as a candidate may cause his name to be withdrawn from nomination, by request in writing signed by him and acknowledged before an officer qualified to take acknowledgments of deeds, and filed with the secretary of the Commonwealth ten days, or with the proper city clerk five days, as the case may be, previous to the day of election; and no name so withdrawn shall be printed upon the ballots. No nomination published and posted as herein provided shall be subsequently omitted as invalid.

9. All certificates of nomination and nomination papers when filed shall be open under proper regulations to public inspection, and the secretary of the Commonwealth and the several city clerks shall preserve the same in their respective offices not less than five years.

FORM OF BALLOTS.

10. All ballots for use in State elections shall be prepared by the secretary of the Commonwealth, and all ballots for use in city elections shall be prepared by the clerks of the several cities respectively. Every general ballot, or ballot intended for the use of all male voters, which shall be printed in accordance with the provisions of this act, shall contain the names of all candidates whose nominations for any offices specified in the ballot have been duly made and not withdrawn in accordance herewith, and shall contain no other names. Except that in the case of electors of president and vice-president of the United States the names of the candidates for president and vice-president may be added to the party or political designation; the name of the city or town in which the candidate resides shall be added to the name of each candidate on ballots for State offices; and the street, with street number, if any, on which a candidate resides, shall be added to the name of each candidate on ballots for city offices; and there shall also be added to all the names of candidates their party or political designation. The names of candidates for each office shall be arranged under the designation of the office in alphabetical order, according to surnames, except that the names of candidates for the offices of electors of president and vice-president shall be arranged in groups, as presented in the several certificates of nomination or nomination papers. There shall be left at the end of the list of candidates for each different office as many blank spaces as there are persons to be elected to such office, in which the voter may insert the name of any person, not printed on the ballot, for whom he desires to vote as candidate for such office. Whenever the approval of a constitutional amendment or other question is submitted to the vote of the people, such questions shall be printed upon the ballot after the list of candidates. Special ballots in cities, containing only the names of candidates for the school committee, shall also be prepared in like manner and printed for the use of women qualified according to law to vote for members of the school committee. The ballots shall be so printed as to give to each voter a clear opportunity to designate by a cross-mark [X] in a sufficient margin at the right of the name of each candidate, his choice of candidates and his answer to the questions submitted, and on the ballot may be printed such words as will add the voter to do this, as "vote for one," "vote for three," "yes," "no," and the like. The ballot shall be substantially of the length now required by law and two or more times such width. Before distribution the ballots shall be so folded in marked creases that their width and length when folded shall be those of the ballot now required by law. On the back and outside when folded, shall be printed "Official Ballot for," followed by the designation of the polling-place for which the ballot is prepared, the date of the election, and a fac-simile of the signature of the secretary of the Commonwealth or city clerk who has caused the ballot to be printed. The special ballots printed in cities for the use of women qualified to vote for school committee shall contain the additional indorsement that they are for such use only, and shall be on tinted paper, but of a different tint from that of specimen ballots. Except as otherwise herein provided, ballots shall be printed in accordance with the existing provisions of law.

11. All ballots when printed shall be folded as hereinbefore provided and fastened together in convenient numbers in packages, books or blocks, in such manner that each ballot may be detached and removed separately. A record of the number of ballots printed and furnished to each polling-place shall be kept and preserved by the secretary of the Commonwealth and the several city clerks.

12. There shall be provided for each voting place, at which an election is to be held, two sets of such general ballots, each of not less than one hundred for every fifty and fraction of fifty registered male voters therein, and likewise two sets of such special ballots, each of not less than one hundred, for every fifty and fraction of fifty women qualified to vote for school committee therein; and it shall be the duty of the registrars of voters in each city or town in which an election for State officers is to be held, to certify to the secretary of the Commonwealth, at such time as he shall require previous to any such election, the number of male registered voters in each voting precinct or in each town which is not divided into voting precincts.

INFORMATION TO VOTERS.

13. The secretary of the Commonwealth, in case of a State election, and the several city clerks, in case of city elections,

shall prepare full instructions for the guidance of voters at such elections, as to obtaining ballots, as to the manner of marking them, and the method of gaining assistance, and as to obtaining new ballots in place of those accidentally spoiled, and they shall respectively cause the same, together with copies of sections twenty-seven, twenty-eight, twenty-nine, and thirty of this act to be printed in large, clear type, on separate cards, to be called cards of instructions; and they shall respectively furnish the same and the ballots for use in each such election. They shall also cause to be printed on tinted paper, and without the fac-simile indorsements, ten or more copies of the form of the ballot provided for each voting place at each election therein, which shall be called specimen ballots, and shall be furnished with the other ballots provided for each such voting place.

14. The secretary of the Commonwealth shall, five days at least previous to the day of any election of State officers, transmit to the registrars of voters in each city and town in which such election is to be held, printed lists containing the names, residences, and party or political appellations of all candidates nominated as herein provided for such election, and to be voted for at each polling place in each such city and town respectively, substantially in the form of the general ballot to be so used therein; and the registrars of voters shall immediately cause the lists for each town or voting precinct, as the case may be, to be conspicuously posted in one or more public places in such town or voting precinct. The secretary of the Commonwealth shall likewise cause to be published prior to the day of any such election, in at least two newspapers, if there be so many, published in each county, representing, as far as practicable, the political parties which, at the preceding election, cast the largest and next largest number of votes, a list of all the nominations made as herein provided, and to be voted for in such county, so far as may be, in the form in which they shall appear upon the general ballots.

15. The city clerk of each city shall four days at least prior to the day of any city election therein, cause to be conspicuously posted in one or more public places in each voting precinct of such city a printed list containing the names, residences, and party or political appellations of all candidates nominated, as herein provided, and to be voted for in such precinct, substantially in the form of the general ballot to be so used therein; and he shall likewise cause to be published prior to the day of such election in at least two newspapers, if there be so many, published in such city, representing the political parties which cast at the preceding election the largest and next largest number of votes, a list of all the nominations made, as herein provided, and to be voted for in such city, so far as may be, in the form in which they shall appear upon the general ballots.

DELIVERY OF BALLOTS TO CITIES AND TOWNS.

16. The secretary of the Commonwealth shall send, separately and at different times or by different methods, the two sets of general and special ballots, together with the specimen ballots and cards of instruction printed by him, as herein provided, to the several city and town clerks, so as to be received by them twelve hours at least previous to the day of election. The same shall be sent in sealed packages, with marks on the outside clearly designating the polling-place for which they are intended and the number of ballots of each kind inclosed; and the respective city and town clerks shall on delivery to them of such packages return receipts therefor to the secretary. The secretary shall keep a record of the time when, and the manner in which the several packages are sent, and shall preserve for the period of one year the receipts of the city and town clerks.

17. The two sets of ballots, together with the specimen ballots and cards of instruction printed by the city clerks, as herein provided, shall be packed by them in separate sealed packages, with marks on the outside clearly designating the polling precincts for which they are intended, and the number of ballots of each kind inclosed.

18. The several city and town clerks shall send to the election officers of each voting-place before the opening of the polls on the day of election one set of ballots so prepared, sealed, and marked for such voting-place, and a receipt of such delivery shall be returned to them from the presiding or senior election officer present, which receipt, with a record of the number of ballots sent, shall be kept in the clerk's office. At the opening of the polls in each polling-place the seals of the packages shall be publicly broken, and the packages shall be opened by the presiding election officer, and the books or blocks of ballots shall be delivered to the ballot officers hereinafter provided for. The cards of instruction shall be immediately posted at or in each voting shelf or compartment provided in accordance with this act for the marking of the ballots, and not less than three such cards and not less than five specimen ballots shall be immediately posted in or about the polling-room, outside the guard-rails. The second set of ballots shall be retained by the respective clerks until they are called for or needed for the purposes of voting, and, upon the requisition in writing of the presiding election officer of any voting-place, the second set of ballots shall be furnished to such voting-place in the manner above provided as to the first set.

19. In case the ballots to be furnished to any city or town or voting-place therein, in accordance with the provisions of this act, shall fail for any reason to be duly delivered, or in case after delivery they shall be destroyed or stolen, it shall

be the duty of the clerk of such city or town to cause other ballots to be prepared substantially in the form of the ballots so wanting and to be furnished; and upon receipt of such other ballots from him, accompanied by a statement under oath that the same have been so prepared and furnished by him, and that the original ballots have so failed to be received or have been so destroyed or stolen, the election officers shall cause the ballots so substituted to be used in lieu of the ballots wanting, as above.

ADDITIONAL ELECTION OFFICERS.

20. Two inspectors, with two deputy inspectors, additional to those now provided for, shall be appointed in each voting precinct in cities and in towns divided into voting precincts, and the provisions of law relative to inspectors and deputy inspectors shall be applicable to such additional officers. Two of the inspectors acting in each voting precinct shall be detailed to act as ballot clerks. In towns not divided into voting precincts, two inspectors, with deputy inspectors, shall be appointed, in accordance with the provisions of law applicable to such officers in towns so divided, and the two inspectors thus serving shall act as ballot clerks. The two ballot clerks detailed and appointed as above in each voting precinct and town shall have the charge of the ballots therein, and shall furnish them to the voters in the manner hereinafter set forth. A duplicate list of the qualified voters in each precinct and each town not divided into precincts shall be prepared for the use of the ballot clerks, and all the provisions of law relative to the preparation, furnishing, and preservation of check-lists shall apply to such duplicate lists.

VOTING SHELVES OR COMPARTMENTS.

21. The officers in each city or town whose duty it is to designate and appoint polling-places therein shall cause the same to be suitably provided with a sufficient number of voting shelves or compartments, at or in which voters may conveniently mark their ballots, so that in the marking thereof they may be screened from the observation of others, and a guard-rail shall be so constructed and placed that only such persons as are inside said rail can approach within six feet of the ballot boxes and of such voting shelves or compartments. The arrangement shall be such that neither the ballot-boxes nor the voting shelves or compartments shall be hidden from view of those just outside the said guard-rail. The number of such voting shelves or compartments shall not be less than one for every seventy-five voters qualified to vote at such polling place, and not less than three in any town or precinct thereof, and not less than five in any voting precinct of a city. No persons other than the election officers and voters admitted as hereinafter provided shall be permitted within said rail, except by authority of the election officers for the purpose of keeping order and enforcing the law. Each voting shelf or compartment shall be kept provided with proper supplies and conveniences for marking the ballots.

PREPARATION OF BALLOTS.

22. Any person desiring to vote shall give his name, and, if requested so to do, his residence, to one of the ballot clerks, who shall thereupon announce the same in a loud and distinct tone of voice, clear and audible, and if such name is found upon the check-list by the ballot officer having charge thereof, he shall likewise repeat the said name, and the voter shall be allowed to enter the space inclosed by the guard-rail as above provided. The ballot clerk shall give him one, and only one, ballot, and his name shall be immediately checked on said list. If the voter is a woman, she shall receive a special ballot containing the names of candidates for school committee only. Besides the election officers, not more than four voters in excess of the number of voting shelves or compartments provided shall be allowed in said inclosed space at one time.

23. On receipt of his ballot the voter shall forthwith, and without leaving the inclosed space, retire alone to one of the voting shelves or compartments so provided and shall prepare his ballot by marking in the appropriate margin or place, a cross [X] opposite the name of the candidate of his choice for each office to be filled, or by filling in the name of the candidate of his choice in the blank space provided therefor, and marking a cross [X] opposite thereto; and, in case of a question submitted to the vote of the people, by marking in the appropriate margin or place, a cross [X] against the answer which he desires to give. Before leaving the voting shelf or compartment the voter shall fold his ballot, without displaying the marks thereon, in the same way it was folded when received by him, and he shall keep the same so folded until he has voted. He shall vote in the manner now provided by law before leaving the inclosed space, and shall deposit his ballot in the box with the official indorsement uppermost. He shall mark and deposit his ballot without undue delay and shall quit said inclosed space as soon as he has voted. No such voter shall be allowed to occupy a voting shelf or compartment already occupied by another, nor to remain within said inclosed space more than ten minutes, nor to occupy a voting shelf or compartment for more than five minutes in case all of such shelves

or compartments are in use, and other voters are waiting to occupy the same. No voter not an election officer whose name has been checked on the list of the ballot officers, shall be allowed to re-enter said inclosed space during said election. It shall be the duty of the presiding election officer for the time being to secure the observance of the provisions of this section and of other sections relative to the duties of election officers.

24. No person shall take or remove any ballot from the polling-place before the close of the polls. If any voter spoils a ballot he may successively obtain others, one at a time, not exceeding three in all, upon returning each spoiled one. The ballots thus returned shall be immediately canceled, and together with those not distributed to the voters, shall be preserved and with the check-list used by the ballot clerks, which shall be certified by them to be such, shall be secured in an envelope, sealed, and sent to the several city and town clerks, as required by law in the case of the ballots cast, and the other check-list used.

25. Any voter who declares to the presiding election officer that he was a voter prior to the first day of May in the year eighteen hundred and fifty-seven, and cannot read, or that by blindness or other physical disability he is unable to mark his ballot, shall, upon request, receive the assistance of one or two of the election officers in the marking thereof, and such officer or officers shall certify on the outside thereof that it was so marked with his or their assistance, and shall thereafter give no information regarding the same. The presiding officer may, in his discretion, require such declaration of disability to be made by the voter under oath before him, and he is hereby qualified to administer the same.

26. If the voter marks more names than there are persons to be elected to an office, or if for any reason it is impossible to determine the voter's choice for any office to be filled, his ballot shall not be counted for such office. No ballot without the official indorsement shall, except as herein otherwise provided, be allowed to be deposited in the ballot-box, and none but ballots provided in accordance with the provisions of this act shall be counted. Ballots not counted shall be marked "defective" on the back thereof, and shall be preserved, as required by section twenty-four.

PENALTIES.

27. A voter who shall, except as herein otherwise provided, allow his ballot to be seen by any person with an apparent intention of letting it be known how he is about to vote, or place any distinguishing mark upon his ballot, or who shall make a false statement as to his inability to mark his ballot, or any person who shall interfere, or attempt to interfere with any voter when inside said inclosed space, or when marking his ballot, or who shall endeavor to induce any voter before voting to show how he marks or has marked his ballot, or otherwise violate any provision of this act, shall be punished by fine of not less than five dollars nor more than one hundred dollars; and election officers shall report any person so doing to the police officer in charge of the polls, whose duty it shall be to see that the offender is duly brought before the proper court.

28. Any person who shall, prior to an election, willfully deface or destroy any list of candidates posted in accordance with the provisions of this act, or who, during an election, shall willfully deface, tear down, remove or destroy any card of instruction or specimen ballot printed or posted for the instruction of voters, or who shall, during an election, willfully remove or destroy any of the supplies or conveniences furnished to enable a voter to prepare his ballot, or shall willfully hinder the voting of others, shall be punished by fine of not less than five dollars nor more than one hundred dollars.

29. Any person who shall falsely make or willfully deface or destroy any certificate of nomination or nomination-paper, or any part thereof, or any letter of withdrawal; or sign any such certificate or paper contrary to the provisions of this act; or file any certificate of nomination or nomination-paper or letter of withdrawal, knowing the same or any part thereof to be falsely made; or suppress any certificate of nomination or nomination-paper, or any part thereof which has been duly filed; or forge or falsely make the official indorsement on any ballot; or willfully destroy or deface any ballot, or shall take or remove any ballot outside of the inclosure provided for voting before the close of the polls, or willfully delay the delivery of any ballots, shall be punished by fine not exceeding one thousand dollars, or by imprisonment in the jail not more than one year, or by both such fined an imprisonment.

BALLOU, HOSEA, an American clergyman and author, and one of the founders of the Universalist denomination in America, born at Richmond, N. H., in 1771, died in 1852. He was literally a self-educated man, having learned to form the letters of the alphabet with a piece of charcoal on a strip of birch-bark. He began to preach early in life, and was successively minister of congregations in Portsmouth, N. H., Salem, Mass., and Boston. He

was editorially connected with the "Universalist Magazine" and the "Expositor," and wrote numerous religious books, the principal being *Notes on the Parables and Examination of the Doctrine of a Future Retribution*.

BALLOU, HOSEA (1796-1861), grand-nephew of the above, also an eminent Universalist minister, author, editor and the first president of Tufts College.

BALL'S BLUFF, Loudoun county, Va., a steep bank 150 feet high, on the right side of the Potomac River. The place is famous for having been the scene of a battle between the Union forces and Confederates, Oct. 21, 1861, in which the former were badly defeated, and their leader, Col. E. D. Baker, killed.

BALLSTON (BALLSTON SPA), the county-seat of Saratoga county, N. Y. It is on the Rensselaer and Saratoga Railroad, and distant from Saratoga about six miles. The mineral springs here are acidulous chalybeates, and are considered among the best in the United States.

BALLY, a Celtic word meaning "town." It is used as a prefix in the names of many Scottish or Irish places.

BALLYETT, EMANUEL (1700-1773), a French antiquarian and bishop. He was a member of the Barefooted Carmelites' order.

BALLYMONEY, an Irish market town in Antrim, about fifty-three miles from Belfast. It carries on linen manufacture.

BALM, COL DE, the name of a mountain pass which forms that portion of the route from Martigny to Chamounix, which lies between Mont Blanc and the Dent du Midi. The summit rises to a height of 7,200 feet.

BALMERINO, a small Scottish village in the county of Fife, on the Tay Firth. Near this village are the ruins of a Cistercian abbey, dating from 1227, whose lands became the property of Sir James Elphinstone, made Lord Balmerino in 1604. The sixth and last lord was executed on Tower Hill in 1746 for his share in the rebellion of 1745.

BALOTRA, a town of India, in the Rajpoot state of Goodpoor, situated on the Loonee. It is a resort of pilgrims, who, on their way to Dwarka, often crowd the bazaars of the town, thus providing for its inhabitants their principal means of subsistence.

BALSAM, CANADA, an article of commerce obtained by puncturing the blisters which are found on balsam trees (*Abies balsamea* and *Abies grandis*), and gathering the sap. It is used in the composition of medicines, varnish, etc.

BALSAM, a name given the garden flower, often called "lady's slipper." It is found native in the East Indies, and some varieties are native in Europe and the United States. The flower is irregular, calyx and corolla hardly to be distinguished. There are about 135 varieties. The snap-weed, or touch-me-not, is so named because the ripe pods burst open on being touched, and scatter the seeds. The plant may be trained, by pinching and pruning, into various shapes, making it bloom more profusely and adding to its appearance. The stems of one of the species—Fulvous or Tawney Impatiens—are sometimes used as a poultice for tumors to reduce inflammation, and a salmon-red dye can be made from its deep orange flowers.

BALSAMINACEÆ, or **BALSAMINEÆ**, a natural order of succulent, herb-like plants, thought by some botanists to be a sub-order of the *Geraniaceæ*.

BALSAMODENDRON, the name given to a genus of small bushy trees of the natural order *Terebinthaceæ*. They are characterized by a scanty

foliage, and by the resinous substance called balsam, which the fruit and wood yield. They usually strongly resemble a shrub, and in some cases are covered with spines. There are several species, Balsam (or Balm) of Gilead, Elemi, Myrrh and Bdellium, and they are all generally found in Arabia, Eastern Africa, and the East Indies. See *Britannica*, Vol. III, p. 293; Vol. XVII, p. 121.

BALTIA, the Basilia of Pytheas, according to a tradition, a large island distant three days' sail from Scythia. It is impossible to identify the island at the present time, but some think the word Baltic derived from Baltia.

BALTIC PROVINCES (in Russia), a term which in a wider sense comprehends the five Russian governments bordering on the Baltic, namely: Courland, Livonia, Esthonia, Petersburg, and Finland. In a restricted sense, it often designates the first three. The Baltic Provinces once belonged to Sweden, except Courland, which was a dependency of Poland. They came into the possession of Russia, partly in the beginning of the 18th century, through the conquest of Peter the Great, partly under Alexander in 1809. They have an area of about 200,000 square miles, with a population of 5,000,000, including St. Petersburg.

BALTIC QUESTION, the controversy between Russia and the Baltic provinces of Livonia, Esthonia, and Courland. Peter the Great promised them freedom of conscience and the maintenance of their German administration. The conduct of Alexander II was such that the people insisted on his confirming the rights and privileges allowed them by Peter the Great. Articles were signed in February, 1856.

BALTIMORE. To what is given in the *Britannica*, Vol. III, p. 298, relative to this important American city, we add the following: Baltimore has an excellent harbor, and freight is readily transferred from the railways to the shipping. Among the public buildings are the Bialto, where the stock boards meet, the Academy of Music, the City Court-house, United States Court-house, Post Office, Exchange, Athenæum and Maryland Institute. There is also in Baltimore a shot-tower 246 feet high.

The principal institutions of learning are the Johns Hopkins University and hospital, situated at Clifton, within the city limits, having a large endowment; the Peabody Institute, which includes an academy of art and conservatory of music; Loyola College; St. Mary's College and Seminary, and the University of Maryland, which includes law and medical schools. The public schools include Baltimore City College, a State normal school, and 120 graded schools. Instruction is given separately to boys and girls, and separate schools are kept for colored children. Charitable institutions here are numerous—such as the infirmary, three asylums for the insane; the State institution for the blind, one for deaf-mutes, one for the blind (colored), and many orphanages, asylums, hospitals, homes for aged women, for old men, and for the friendless, besides a State penitentiary, jail and house of refuge. Patterson Park on the east side, containing 54 acres, and Riverside Park on the south side of the city, are very handsome. Of the suburban cemeteries, Greenmount is the most extensive.

The export trade of Baltimore, both foreign and domestic, is immense, including naval stores, cotton and provisions. The imports include goods manufactured in Europe and products of West Indies and South America. The average annual value of imports from 1880 to 1888 was \$13,880,117; average annual exports for the same years, \$51,633,000. The Patapsco River furnishes a great and unailing

water power. The debt of Baltimore, Jan. 1, 1891, may be thus stated:

Total funded debt, par value.....	\$30,116,752.50
Total guaranteed debt par value.....	992,000.00
<hr/>	
Total debt.....	31,108,752.50
Value of sinking fund.....	7,300,000.00
<hr/>	
Productive and interest-bearing assets.....	23,808,752.50
Leaving balance of debt.....	10,763,220.91
<hr/>	
Leaving balance of debt.....	13,045,531.59

Among the historic events of this city were the bombardment of Fort McHenry by the British, and the battle of North Point, where the British were expelled in the war of 1812-15.

The population in 1770 was 13,503; 1780, 26,514; in 1810, 35,538; in 1820, 62,738; in 1830, 80,625; in 1840, 102,313; in 1850, 169,054; in 1860, 212,418; in 1870, 267,354; in 1880, 332,313; population by city census of 1888, including "the Belt" (a portion of the county annexed to the city that year), 416,805. Of these 64,509 are colored. Population in 1890, 433,547.

BALTIMORE, a small village of Ireland, on the bay of the same name, in the county of Cork. It is seven miles south-west of Skibbereen, and has an extensive occupation in fishing. There is here a technical school founded in 1887 by the Baroness Burdett-Coutts, in which are taught all the branches pertaining to fishing-net-making, sail-making, and other industries of a sea-faring life.

BALTIMORE, LORD (SIR GEORGE CALVERT), born in Yorkshire, England, about 1582, died in London, April 15, 1632. He was the first Lord Baltimore. He graduated at Oxford and then went abroad for travel. James I made him secretary of state, but he changed to the Roman Catholic religion in 1624 and resigned his office. He was interested in colonization and spent much money on a settlement in Newfoundland, which place he visited, but finding it too cold he sailed southward to Virginia. Charles I granted him the land now comprised in Delaware and Maryland, but Lord Baltimore died before the papers were satisfactorily completed. He was a popular man in his time; a strong believer in the divine right of kings; yet he advocated popular institutions and freedom of conscience. See *Britannica*, Vol. IV, p. 713; Vol. XV, p. 605; Vol. XVII, p. 385; Vol. XVIII, p. 495.

BALTIMORE BIRD, or **BALTIMORE ORIOLE**, a very beautiful American bird, found in all parts of the United States, and as far north as 55° N. lat.,



THE BALTIMORE ORIOLE.

but migrating to tropical or sub-tropical regions in winter. The genus to which it belongs is usually referred to the natural family of *Icteridæ*.

The Baltimore oriole is about seven inches in length. Its bill is conical, very acute and a little curved; the plumage brilliant, particularly in the adult males, glossy black, finely contrasting with bright orange and vermilion; the cause, it is said, of its name—the Baltimore livery being yellow and black. The tail is longish, rounded and slightly forked. The bird is remarkably active and lively, its song extremely agreeable. Its nest is a curious and interesting structure, a pendulous cylindrical pouch of six or seven inches long, usually suspended from two twigs at the extremity of a lofty drooping branch, the materials, which vary according to circumstances, being woven together with great nicety. It is sometimes sewed through and through with long horse-hairs. They are quite distinct from the true orioles.

BALTIKISTAN, the name of the Alpine region which lies below the Karakorum and Himalaya Mountains, having an average height of 11,000 feet. Here rises a lofty peak which ascends to an elevation of 28,278 feet above the sea level and is surpassed in height only by Mt. Everest. The natives belong to the Mongolians, and they are under the government of Kashmir. This region is also called Little Thibet, and it is watered by the Upper Indus.

BALTJIK is a Bulgarian town, constituting one of the ports of the Black Sea. It is situated 20 miles north-east of Varna, and not far from it lies the ruined town of Tomi, the home of Ovid during his exile.

BALUCHISTAN, a British protectorate south of Afghanistan. Population, about 500,000. For early history, see *Britannica*, Vol. II, pp. 299-303.

The reigning sovereign is Mir Khudadad Khan, Khan of Khelat, who succeeded his brother in June, 1857; born 1841; eldest son, Mir Muhammad Khan.

KHANS OF KHELAT SINCE 1700.

Abdulla Khan.	Mihrab Khan, 1819-1840.
Muhabbat Khan.	Shah Nawaz Khan, abdicated.
Nasir Khan I, 1755-1795.	Nasir Khan II, 1840-1857.
Mahmud Khan.	Khudadad Khan, reigning.

The power of the Brahui khans of Khelat was founded towards the end of the 17th century by a hill chief named Kambar. Called in to protect the Hindu Raja of Khelat against marauders from the east, Kambar first expelled these invaders and then overthrew the Hindu dynasty. His successors gradually made themselves supreme from Khelat to the Arabian Sea, and about 1740 Abdulla Khan, the fourth Brahui khan of Khelat, was acknowledged as chief of Baluchistan by Nadir Shah. The districts of Quetta and Mustang were granted to Abdulla's son, Nasir Khan I, by Ahmed Shah, the Durani king of Afghanistan. Nasir Khan's grandson, Mehrab Khan, was killed in the storming of Khelat by a British force in 1840. His son, Nasir Khan II, was acknowledged by the British Government in 1841, and in 1854 a treaty was executed with him, under the terms of which he received a yearly subsidy of 50,000 rupees. Nasir Khan was succeeded by his brother, Khudadad Khan, now reigning, with whom a fresh treaty was concluded in December 1876, by which the subsidy was raised to 100,000 rupees a year. The Khan also made over the district of Quetta to be administered by British officers, at first receiving the surplus revenue, but since 1882 an annual quit-rent of 25,000 rupees.

The Khan of Khelat is at the head of a confederacy of chiefs, but his powers cannot be precisely defined. In all important matters he is amenable to the advice of the agent to the Governor-General of India, who also arbitrates in disputes between the Khan and minor chiefs.

The area of Baluchistan includes British Baluchistan, assigned to England by the Ameer of Af

ghanistan in 1878, constituted a chief commissionership in November, 1887, and comprising Pishin, Shorarud, Kach, Kawas, Harnai, Sibi and Thull-Chotiali, with an area of about 11,100 square miles. The nomad Baluchis are the most widely spread race, the Brahuis of the eastern plateau being the dominant race.

The principal towns are Khelat, Mustung, Kozdar, Bela, Kej, Bagh, Dadar, Gandavi Nushki, Sarawan, Pasni, Sonmiani, and Quetta.

The religion is Mohammedan.

There is no standing army; but the Khan could perhaps assemble, at an emergency, 10,000 irregular tribal levies, indifferently armed. The fortifications recently erected by the Indian government lie within the territory under British administration. The numerous forts scattered about Independent Baluchistan could offer no resistance against artillery.

The Khan of Khelat's revenue consists of his subsidy from the Indian government of 100,000 rupees a year, his quit-rent of 25,000 rupees for the Quetta district, and a share in the agricultural produce taken from the inferior cultivators in Independent Baluchistan, Brahuis being exempt.

The agricultural produce of Baluchistan is limited, owing to the scanty and uncertain rainfall, but most of the crops grown in India may be found in the country. Petroleum is found at Khatum. Baluchistan is an immense camel-grazing country. Local manufactures are unimportant, being confined to a few matchlocks and other weapons. The chief exports are wool, hides, madder, dried fruit, bdellium, tobacco and dates. In 1888-89 the exports to British India were valued at 500,000 rupees, and the imports from British India at 396,000 rupees.

The country through which the Bolan and Scind-Pishin Railways run is under British administration. Elsewhere camels serve as a chief means of transport.

There is a line of telegraph to Quetta, and the submarine cable from Karachi to the Persian Gulf touches at Gwadar.

BAMBERGER, LUDWIG, a distinguished author and statesman, born in Mentz, Germany, in 1823. He supported the revolution of 1848, and on its failure became an exile. In Paris he became known as a writer on finance and political economy. He returned to his native town after the war of 1866, and was a member of the customs-parliament. During the Franco-Prussian war he was an adviser of Bismarck at the headquarters of the latter, and afterwards assisted in the adjustment of the affairs of Alsace. He was elected to the imperial parliament in 1871, where he strongly opposed the adoption of the protective tariff. The writings of Bamberger are numerous and influential, dealing in a masterly way with the financial, labor and other social questions of the hour.

BAMBINO, a term in art descriptive of the swaddled figure of the infant Saviour, which, surrounded by a halo and watched over by angels, occasionally forms the subject of altar pieces in the Roman Catholic churches.

BAMBOCCIADE (*bamboccio*, Italian word, meaning simpleton), a word derived from Bamboccio, the surname of a painter called Peter van Laer, who

lived between 1613 and 1674. He painted grotesque scenes of common life, such as rural festivals. The word is, therefore, applied to pictures which represent boorish frolics.

BAMO, B'HAMO, or B'HAN-MO, the most important city of Burmah, Farther India; is situated on the Irrawaddy, at the mouth of the river Tamping. Vast quantities of goods, brought here by camel caravans, are annually exported. Cotton is a chief production.

BAN and ARRIÈRE BAN. In feudal times in France the term meant the entire military force of the country. The *ban* was the barons summoned to war; the second levy, which included their vassals, was known as the *arrière ban*.

BAN, or BANUS, the term used in Eastern Hungary for military governors of certain districts or *banats*. They were appointed by the king, and had extensive political, military and judicial rights. Dalmatia, Slavonia, Bosnia, Croatia and Makovia were the chief banats, but they were finally united under the banats of Croatia and Dalmatia.

BANANA-BIRD, a native of the West Indies and warm parts of America. It is larger than the Baltimore bird though of the same species. Its colors are tawny and black, with white bars on the wings. It also suspends its nest at the end of twigs to be out of the reach of snakes and monkeys.



BANANA-BIRD.

BANAS, or BUNAS, the name by which three rivers of India are known. The first, in Rajputana, taking its rise in the mountainous region of the Arvalli, flows through Mewar for 120 miles in a north-easterly direction, then southeasterly for about 180 miles, and pours its waters into the Chambal. The second river rises in the same land, flows southwest for 180 miles and dissolves itself in the Runn of Cutch. The third, a river of Bengal, in Chutia Nagpur, runs 70 miles toward the northwest, and falls into the Son, near Rampur. See *Britannica*, Vol. XX, p. 260, and Vol. XXII, p. 98.

BANC, legally a seat or bench of justice, and in this sense has given rise to the expression of the courts of law, "sitting in banc," or *in banco*; that is, sitting together on the bench of their respective courts, in term-time, and otherwise, as provided by statute.

BANCO, a commercial term meaning the standard money in which a bank keeps its accounts, as distinguished from the current money of the place. The term is now chiefly applied to the money in which the Hamburg bank keeps its accounts, which is not represented by any coinage. Genoa had at one time a bank standard, and the present current money being different from that is still called "fuori banco" outside the bank.

BANCROFT, GEORGE, son of Rev. Aaron Bancroft, born at Worcester, Mass., Oct. 3, 1800, died at Washington, D. C., Jan. 17, 1891. He graduated at Harvard in 1817 and went to Germany, where he spent two years studying German, French and Italian literature, Greek philosophy, natural history, Arabic, Hebrew and Scriptural interpretation. The University of Göttingen conferred upon him the degree of Ph. D. It was at this time that he selected history for his special branch of work. He removed to Berlin and made the acquaintance of Humboldt, Savigny, Goethe and other famous men. He further pursued his studies with Schlosser, the historian. He returned to the United States in 1822, and, after serving as a Greek tutor in Harvard for a year, started, in partnership with Dr.



BAMBINO.

Joseph G. Cogswell, the Round Hill school at Northampton, Mass. About this time he declined the nomination to the Massachusetts assembly, and later the nomination to the State senate. He was engaged in making translations from Schiller, Goethe and the poetical works of Heeren. Mr. Bancroft was a Democrat, and Van Buren made him collector of the port of Boston in 1838. In 1842 he was an unsuccessful candidate for governor, but, on the election of Polk to the presidency, was made Secretary of the Navy. It was through his influence in his official capacity that the Annapolis Naval Academy was established. He issued the famous orders to take possession of California in the event of war with Mexico, and (while acting as Secretary of War *pro tem.*) he ordered the American troops to march into Texas. Mr. Bancroft was honored with several foreign missions. In 1846 he was sent as minister to the Court of St. James; in 1867, to Prussia; in 1868, to the North German Confederation; in 1871, to the new German Empire, whence he was recalled three years later, at his own request. He had an active part in settling with England the question of the North-western boundary. The second important treaty in which he was engaged was that concerning expatriation rights. This was discussed by Germany and the United States. The conclusion arrived at was that a person has freedom to choose to what country he will render allegiance. Great Britain afterwards subscribed to this treaty. Mr. Bancroft's greatest work was that of the historian. In 1834 he began the publication of his *History of the United States*. It opens with the discovery of America by Columbus and chronicles events down to the close of the Revolutionary War and the formation of the Constitution. This is a very exhaustive history, and has received the highest commendation from such scholars as Prescott, Edward Everett, Von Raumer, Baron Bunsen and George Ripley. In 1885 he completed the revision of his history, and it was then published in five volumes. Mr. Bancroft delivered many addresses, which he had published. He also was at work on a biography of James K. Polk. Mr. Bancroft had made his winter home in Washington for several years. He was a man of careful habits, fond of walking and horseback riding. His manners were extremely courteous. His height was somewhat below the average, and in his youth he was spoken of as "Little Bancroft." In a letter to a friend, written in 1882, he says: "I was trained to look upon life here as a season for labor. Being more than four score years old I know the time for my release will soon come. Conscious of being near the shore of eternity, I wait without impatience and without dread the beckoning of the Hand which will summon me to rest."

BANCROFT, HUBERT HOWE, born in Granville, Ohio, May 5, 1832. He went in 1848 to Buffalo and entered the bookstore of his brother-in-law. Four years later he was sent to California to establish a branch business. Here he became interested in collecting books relative to the history of the Pacific coast. He was so fortunate as to secure the library of the Mexican emperor Maximilian. He collected a library of 45,000 volumes. With this material at hand Mr. Bancroft has begun a history of that region. At great pains he has obtained from pioneers and settlers many valuable narratives which have since been written down and indexed. He has published *The Native Races of the Pacific States* (five vols.). In this work he has been aided by an experienced corps of writers. He has planned to publish 39 volumes of the *History of the Pacific States of North America*. Mr. Bancroft is an en-

ergetic business man as well as a learned and accomplished writer. His executive ability has enabled him to collect this fine library and to commence upon so great a work as this history promises to be. In 1886 he met with a great loss in the burning of his brother's store, where the sheets of seven volumes of his history were kept.

BAND, or **BANDS**, formerly a portion of clerical dress and the only relic of the ancient *amice*, a linen vestment which was used in the ancient church to cover the shoulders and neck of the priest. It also formed part of the dress of functionaries in schools of old foundation, and of members of the bar, and consists of two pieces of linen pendant from the neck.

BANDAJAN, a Himalaya mountain pass of Kashmir. The mountains surrounding this pass are composed of gneiss, and the summit rises to an elevation of 14,854 feet above sea level. Here snow continually rests. It is situated in lat. 30° 22' N., long. 78° 4' E.

BANDANA, a kind of printed handkerchief of Indian origin. The cloth is first dyed Turkey-red, and then the pattern is made by discharging the color with bleaching liquor in a powerful Bramah press. The pattern to be discharged is cut out on two plates of such metal (lead) as may not be acted on by the liquor, and of the full size of the handkerchief. A dozen or more are put in at once between the plates, and so many of these courses are entered together as fill the press, when the pressure is applied, and the liquor is run in on the uppermost plate, which is grooved on the upper side to receive it, and holed to pass it from plate to plate through all the cloth-folds in the press. The pressure on the cloth, to make clean work by preventing the spreading of the liquor, is enormous. The patterns in the real bandana style of printing are spots and diamond prints the best suited for discharging, and even for these a pressure of 500 tons is required to work them clean.

BANDA ORIENTAL, the former name of URUGUAY. See *Britannica*, Vol. XXIV, pp. 14-16.

BANDEL, ERNST VON, an eminent modern sculptor, born at Anspach in 1800, died near Donauwörth in 1876. He studied at Munich, where in 1820 he sent to the exhibition a life-sized plaster figure of Mars reposing, which attracted much attention, and at Nuremberg and Rome. His principal work was the statue of Arminius, 90 feet high, near Detmold, which the Emperor William unveiled on Aug. 16, 1875.

BAN-DE-LA-ROCHE, otherwise known by its German name as the Steinthal, a valley of Lower Alsace, in the Vosges mountains. It is noted as the scene of the labors of Oberlin, "the Pastor of the High Alps," whose tomb is at Fonday, a village at the entrance to the valley.

BAND-FISH, or **SNAKE-FISH**, a genus of fishes of the Ribbon-fish family. The body is much elongated and compressed. The bones a little more solid than a mere fibrous network, and everything else exhibits a corresponding delicacy, so that specimens are seldom obtained in an uninjured state. All the species inhabit quiet depths, and are incapable of contending with waves and currents. They are native of Japanese waters, though one species is not rare in the Mediterranean.

BANDICOOT RAT, **MALABAR RAT**, or **PIG RAT**, the largest species of rat, which sometimes weighs three pounds, and measures from 24 to 30 inches in length from tip to tail. Its flesh is eaten by the coolies of India and esteemed very delicate, being thought to resemble young pork. This rat is found in Ceylon and certain parts of India; dry and hilly districts are its favorite

haunts. It is a very destructive animal in gardens, roots and grains being its chief food.

BANDIERA, **ATTILIO** and **EMILIO**, two brothers descended from a distinguished aristocratic family of Venice and well known for their tragic fate. They were lieutenants in the Austrian navy, their father being rear-admiral, but instead of sharing his pro-Austrian sentiments they cherished enthusiastic dreams of the free and united Republic of Italy. In 1842 they entered into correspondence with Mazzini. In 1843 they believed that the time had come for a revolution, but their premature appeal finding no practical response they fled to Corfu in 1844, where they endured many bitter disappointments and much misery. At length, misled by false rumors of a rising in Naples, with which it is supposed the Neapolitan police had something to do, they ventured to land with 20 companions at the mouth of the small river Nieto, in Calabria, believing that their appearance would be the signal for a general insurrection. The Neapolitan government expected them, as one of their companions, *Boccheciampe*, had betrayed them. They were attacked by an overwhelming force and were nearly all taken prisoners at once. Nothing was ever allowed to transpire respecting the trial of these men. Attilio and Emilio were shot with seven of their comrades, in the public square of Cosenza, July 25, 1844. They died joyfully, exclaiming "Viva l'Italia!" A year later their remaining companions were pardoned.

BANDIT, a word originally signifying a "banished" or outlawed person. Then one who, because outlawed, wages war against civilized society, and finally a highway robber. The bandits, or banditti, formed in Italy in earlier times, as it were, a separate community or guild, who submitted to their own stringent laws, carried on both open and secret war with civilized society, and kept up a certain romantic idea of honor. By means of the severe measures which were adopted in 1820 by the Papal government against the banditti and their abettors their haunts were broken up. Those who still occasionally disquiet the frontiers of Naples are in general people settled on the spot who regard robbery and murder as a trade.

BANDONG, a commercial town of Java near the volcano Gunong, an eruption of which destroyed, in 1822, eighty villages. See *Britannica*, Vol. XIII, p. 600.

BANEBERRY, a perennial herb found in the north of Europe, including two American species which have long been used by the Indians for the cure of snake-bite. It is also known as "Herb Christopher."

BANER, **BANNIER**, or **BANNER**, **JOHAN**, a famous Swedish general, born near Stockholm, June 23, 1595, died May 10, 1641. He led the right wing of the army at the battle of Leipsic, and after the death of King Gustavus Adolphus, he was commander-in-chief.

BANGOR, a city of Maine, and county-seat of Penobscot county, beautifully situated at the head of navigation on the west bank of the Penobscot River, at its junction with and on both banks of the Kenduskeag. It is an important railroad center, a port of entry, and one of the greatest lumber depots in America. An abundant water-power is supplied by the Kenduskeag, and, by means of a dam built across the Penobscot in connection with the Holly system of water-works. The season of navigation lasts about eight months, during which more than two thousand cargoes of lumber are shipped, averaging some 200,000,000 feet annually. The vessels entering this port in the coasting and foreign trade are mostly American, and number nearly four hundred, about half of which, aggregating a tonnage of

nearly 35,000, are enrolled, registered and licensed here. An important commercial interest is the manufacture of boots and shoes; and there are numerous other manufactures, including iron, lumber, machinery, furniture, trunks, carriages and sleighs, and an extensive establishment for burnetizing. Bangor is the seat of Bangor Theological Seminary, and contains a number of very valuable libraries. It was first named *Norombega*, after the supposed Indian city mentioned in the *Anatomy of Melancholy*, and in *Paradise Lost*. The name was changed to *Kenduskeag* in 1769, and afterwards to Bangor, in honor of the psalm-tune of that name. Bangor became a city in 1834. The population in 1840 was 8,627; in 1850, 14,432; in 1860, 16,407; in 1870, 18,289; in 1880, 16,856; in 1890, 19,090. See *Britannica*, Vol. III, p. 314.

BANGOR-ISCOED (**BANGOR BELOW THE WOOD**), an inland village, beautifully situated in a fertile and richly wooded country, on the right bank of the Dee, on the borders of Flint and Denbigh shires, North Wales, five miles southeast of Wrexham. Population, 554.

BANGS, **NATHAN**, an eminent American clergyman, born near Bridgeport, Conn., May 2, 1778, died May 3, 1862. In 1802 he was admitted to the New York conference of the Methodist Episcopal Church, and the next six years of his life were spent in arduous labors in the then almost pathless forests of Canada as an itinerant preacher. In 1810 he was transferred to New York city, which was ever after the headquarters of his labors for his denomination. In 1820 he assumed charge of the Methodist Book Concern, and under his management its business was vastly extended. From 1820-28 he was editor of the "Methodist Magazine," and from 1826-28 of the "Christian Advocate." In 1832 he assumed editorial charge of the "Methodist Quarterly Review." In 1841 he became president of Wesleyan University, Middletown, Conn.

BANIAN (from the Sanscrit *bani*, a merchant), a word used in India to designate a merchant or trader generally. It is more particularly applied to the great merchants in the west of India, especially in the seaport towns, who, by means of caravans, carry on a very extensive trade with the interior of Asia, even to the borders of Russia and China.

BANIAN DAYS, a sailor's phrase, nearly equivalent to the *jours maigres* of the French. The term denotes the days when no meat is served out to a ship's crew. The term is derived from the practice of Banian traders.

BANISHMENT, excepting in the penal sense of transportation, with which it is popularly synonymous, can only now be said to have a legal meaning historically. Formerly, in England, parties who were required to abjure the realm, that is, renounce and depart from the country, were, so to speak, banished. But the word appears to have a more technical and precise significance in the Scotch law than in the English, as a punishment of exile from Scotland is inflicted on persons convicted of certain offenses for which that punishment is provided.

BANIWAS, a tribe of Indians living along the Amazon and Rio Negro rivers.

BANJO, a musical instrument, somewhat like the guitar, but having a head similar to that of a drum or tambourine. It was invented by Joel Walker Sweeney, an American musician, who, while traveling through the South with a wagon circus, had learned to play on the rude instrument of the plantation slave. This was a large, long-necked gourd, with a stick for a



BANJO.

staff, over which was stretched four horsehair strings. Sweeney's first improvement on this rudimentary banjo was in the substitution of the tamberine head for the gourd. This he made out of a meal-sifter, which he covered with old sheepskin. Several modifications followed; but it was not till he had added the fifth string, which he called the "thumb string," that the real banjo of American negro minstrelsy was produced. The instrument has grown in popularity, and many varieties of it have been introduced, some having as many as nine strings. Sweeney often performed before Queen Victoria with great applause. He was born in 1813, and died in 1860. His grave is at Appomattox, Va., his native town.

BANK-BAN, ban, or chieftain, during the first part of the thirteenth century, of Hungary, lives in Hungarian literature and has a romantic fame. His wife was seduced by Eckart, Queen Gert-rude's brother, the Queen aiding in the evil deed. Discovering the Queen's participation, he aroused the people to help him break into the palace and kill her. King Andreas II, returning from the war in Poland, put the murderer to death.

BANKES, HENRY (1757-1834), was educated at Westminster and at Trinity College. He was in Parliament from 1780 to 1824. He is the author of *Civil and Constitutional History of Rome, from the Foundation to the Age of Augustus*.

BANKING SYSTEM IN UNITED STATES. For the history of banking in various countries and for the discussion of numerous economic questions growing out of the general subject of banking, see Britannica, Vol. III, pp. 315-341.

The present system, known as the National Bank-note System of the United States, was devised and recommended to Congress during the civil war by Salmon P. Chase, Secretary of the Treasury. Its chief purpose was two-fold—first, to secure in the most effective way a sure market for the United States bonds, whose issue was rendered imperative by the continuance of the civil war; and, second, to provide a uniform, safe and most convenient monetary system for the promotion of business transactions and the development of trade and industries among the people. Its whole history shows that its date was most opportune and its methods most wisely directed.

The first act of the National Congress under which the system was organized, was approved by President Lincoln, Feb. 25, 1863. The law was extensively revised and reenacted June 3, 1864. Previous to these dates the system of State banks universally prevailed, of which there were, in the 34 States then existing, 1,601, with an aggregate capital of \$429,000,000. More than 10,000 different kinds of bank-notes were in use in a total circulation of about \$202,000,000.

The act of 1864 provided for the establishment, in the Government Treasury Department at Washington, of a national bank bureau, with a chief officer, to be known as comptroller of the currency. Under the provisions of the new law any number of persons, not less than five, might be organized into a national banking association, the capital in no case to be less than \$100,000, except that in any cities containing a population of not more than 6,000 the capital should not be less than \$50,000; and in cities having a population of not less than 50,000, the capital must not be less than \$200,000. Not less than one-third of the capital was required to be invested in United States bonds, upon which circulating notes could be issued equal to 90 per cent. of the current market value, but not exceeding 90 per cent. of the par value of the bonds deposited. These were to be received at par in the United States in all payments to and from the Government, except for duties on imports, interest on the public debt, and in redemption of national currency. As early as March 3, 1865, an important additional act was passed requiring that every banking association should pay a tax of 10 per cent. on the notes of any person or State bank used for circulation or paid out by them. This act

virtually resulted in taxing State bank circulation out of existence.

A total issue of \$300,000,000 of circulation was authorized by the act of 1864; but an act of May 12, 1870, authorized an increase of circulation to \$354,000,000. Another act, that of June 20, 1874, provided that any bank by depositing with the United States Treasury in sums not less than \$9,000 at a time, might withdraw a proportionate amount of the bonds on deposit as security for its circulating notes. An act passed Jan. 14, 1875, removed all limitations as to the amount of the circulating notes of the banks, except the restrictions in the provisions in the law then existing, but required the Treasurer to retire legal tender notes to the amount of 80 per cent. of the additional bank-notes issued, and to continue such retirement until there should be a reduction of the legal tender notes to the amount of \$300,000,000. The provision of the law requiring a reduction of legal tender notes was repealed May 31, 1878.

The National Bank act also required that the national banks in the city of New York should hold in their vaults in lawful money 25 per cent. of their deposits and circulation as a reserve fund. The banks in other redeeming cities were required to hold the same percentage of reserve, but were to be permitted to keep one-half of this reserve in cash deposits in the city of New York. Banks in other cities were required to hold a reserve of 15 per cent., three-fifths of which might consist of balances due from approved associations in the redeeming cities.

With regard to interest on loans, the national banks were allowed to charge at the rate allowed by the States in which they were located, and in case the State had fixed no rate, the banks were allowed to charge 7 per cent.

Under the national banking law, shareholders are held individually, equally and ratably liable for all the debts of the association to the extent of their amount of stock in addition to the amount invested therein. Also the law required that before declaring a dividend, the bank should carry one-tenth of their net profits of the preceding half year to a surplus fund until the same should amount to 20 per cent. of the capital, and should also deduct all losses and bad debts from the net profits.

All these provisions of the national banking law indicate the great care with which the monetary interests of the country were guarded, and the resultant history of the system shows the wisdom manifest in its general plan, and the great excellence of its chief provisions. During the year 1865, nearly all banks in United States, operating under

the State laws, adopted the national system. The number has constantly increased and the number of additions to the system during the year closing Oct. 31, 1890, was larger than that of any previous year since the first. The 307 new banks organized during the last year had an aggregate capital of \$36,250,000, and are distributed among 41 States and Territories. In nearly all cases the banks whose corporate existence would have expired during the year applied for and received from the Government extensions under the act of July 12, 1882. These facts show the increasing popularity of the system.

COMPARATIVE GROWTH FOR TEN YEARS. The number of National Banks in the United States in 1872 was 1,852, with a capital of \$465,676,023, reporting that year a surplus of \$105,181,942, total dividend that year of \$46,687,115, and net earnings amounting to \$58,075,430. The official reports of the same items from 1880 to 1890 furnish the figures of the following table:

Year ending Sept. 1.	No. of national banks.	Capital.	Surplus.
1880.....	2,072	\$454,215,062	\$120,145,649.00
1881.....	2,100	458,994,485	127,288,394.00
1882.....	2,197	473,947,715	133,570,931.00
1883.....	2,350	494,640,140	141,232,187.00
1884.....	2,582	518,605,725	147,721,475.00
1885.....	2,665	524,599,602	146,908,495.00
1886.....	2,794	532,459,921	155,030,894.00
1887.....	3,049	578,462,765	173,913,440.97
1888.....	3,098	583,589,145	184,416,990.92
1889.....	3,170	596,302,518	194,818,192.19
1890.....	3,353	625,089,645	208,707,786.00

Year ending Sept. 1.	Total dividends.	Total net earnings.	Ratio of dividends to capital.
1880.....	\$36,411,473.00	\$45,186,084.00	8.02
1881.....	38,377,485.00	53,622,563.06	8.33
1882.....	40,791,928.00	58,321,394.00	8.73
1883.....	40,878,678.00	54,007,148.00	8.30
1884.....	41,254,473.00	52,362,783.00	8.00
1885.....	40,656,121.00	43,636,497.00	7.80
1886.....	42,412,303.00	55,165,385.00	7.96
1887.....	44,153,407.92	64,506,869.66	7.98
1888.....	46,581,657.89	65,390,486.78	8.02
1889.....	46,618,060.27	69,618,265.07	7.82
1890.....	51,158,888.33	72,065,563.53	8.19

After the above table was completed the annual report of the Hon. Edward S. Lacey, the comptroller of the currency, was issued, furnishing some later additional figures. His report states that on Oct. 31, 1890, the number of national banks was 3,567, with a total capital stock of \$659,782,865; bonds deposited to secure circulation, \$140,190,900; and bank-notes outstanding, \$179,755,643, including \$54,796,907 represented by lawful money deposited to redeem the circulation still outstanding. The net increase of national banks during the year was 248; the net increase the previous year was 168; the average yearly net increase for the previous ten years had been 127. On Oct. 2, 1890, the individual deposits in the national banks in the United States aggregated \$1,564,845,275.

NATIONAL BANK ISSUES AND REDEMPTIONS. The following table gives the amount of national bank-notes of each denomination issued and redeemed since the organization of the system, and the amount of each outstanding Oct. 31, 1890:

Denominations.	Issued.	Redeemed.	Outstanding.
Ones.....	\$23,169,677	\$22,300,061.00	\$869,616.00
Twos.....	15,496,088	15,311,146.00	184,942.00
Fives.....	544,798,840	494,306,190.00	50,492,650.00
Tens.....	461,340,000	408,621,260.00	52,718,740.00
Twenties.....	288,328,560	244,261,900.00	44,076,660.00
Fifties.....	97,468,100	87,709,800.00	9,758,300.00
One hundreds.....	147,273,800	130,587,900.00	16,785,900.00
Five hundreds.....	11,947,000	11,764,000.00	183,000.00
One thousands.....	7,879,000	7,833,000.00	46,000.00
Total.....	\$1,597,084,515	\$1,417,684,567.00	\$179,400,968.00

To the amount outstanding should be added the "unrepresented fractional notes," aggregating \$25,748.25.

REDEMPTION OF NOTES OF BANKS REDUCING OR CLOSING CIRCULATION. The Congressional act of June 20, 1874, provides as stated above for a reduction of the outstanding circulation of banking associations upon the deposit of lawful money with the United States Treasurer, in sums of not less than \$9,000 severally, and the act of July 12, 1882, requires a deposit of lawful money for the retirement of the old circulation whose corporate existence has been extended. Under these acts, and on account of liquidating and insolvent banks, the sum of \$451,299,591 had been deposited with the treasurer prior to Oct. 31, 1890, including \$2,663,720 deposited for the redemption of notes of national gold banks, and \$97,685,833 for the redemption of national bank-notes for the retirement of the old circulation of banks whose corporate existence had been extended.

There are now no national gold banks in existence; but there were yet in outstanding circulation, Oct. 31, 1890, notes of extinct gold banks to the amount of \$134,727, and lawful money to cover their redemption was in the treasury at that date.

PUBLICATION OF FREQUENT REPORTS. For the greater protection of shareholders and depositors, the law provides that the comptroller of the currency shall call upon each national bank five times in each year for a detailed report of its condition on some past day specified by the comptroller. These reports are made under oath, and published in some local newspaper. They exhibit the resources and liabilities of the bank in such detail as to enable its shareholders and depositors and other creditors to judge as to the wisdom of its management and the character of its financial condition. Once in each year these reports are printed in a bound volume accompanying the annual report of the comptroller.

RECEIVERSHIPS. The comptroller is clothed by law with the responsibility of appointing receivers and of directing and supervising the affairs of receiverships and the conduct of receivers appointed by him. The Supreme Court of the United States has denominated a receiver as "an agent of the comptroller," and from the manner of his appointment he is regarded by all the courts as an officer of the United States, especially when jurisdictional questions are raised.

It has been held that "a receiver may sue in his own name or in the name of the bank, deriving the right from the United States statutes, and that his personal citizenship does not affect his position in the courts of the United States." "By virtue of his commission and under the direction of the comptroller he takes possession of the books, records, and assets of every description of a national banking association, and is authorized to collect all debts, dues, and claims of every description belonging to it, and upon the order of a court of competent jurisdiction sells and compromises all bad or doubtful debts, and in like manner disposes of all real

estate and personal property of the association, under an order of the court.

"All moneys so collected are remitted to the Treasurer of the United States, with the exception of such as are necessary for the payment of current expenses, and from time to time dividends to creditors are paid by the comptroller's checks, on an assistant treasurer of the United States, forwarded to and delivered by the receivers.

"The funds of an insolvent bank collected by a receiver are held in trust by the treasurer of the United States, and are not invested in interest-bearing securities, but are distributed among creditors as often as the amount justifies the preparation of dividend schedules and checks by a receiver and the clerical force under his immediate control.

"A varying proportion of the liabilities of a trust are always represented by claims unproved and in dispute until its close, and whenever dividends upon proved claims are paid sufficient funds are reserved to place all other claims upon an equal footing whenever their proper status has been determined. The rights of all bona fide creditors are observed, and lapse of time will not defeat a just claim before the affairs of the trust are closed on the simple ground of laches. The statutes do not make the decision of the comptroller or the receiver in rejecting a claim against a trust final, and therefore whenever a claim is rejected the responsibility of a determination as to law and facts rests with the courts."

SOURCES OF PROFIT IN BANKING. Originally the national banks realized a considerable profit from their circulating notes, but the high rate of premium commanded in the market in later years by the interest-bearing bonds of the United States, which the law requires the banks to deposit as security for their circulation, has rendered the issue of circulating notes in most localities unprofitable. Hence the later reports of the comptroller show that the national banks now organizing issue only the lowest amount of circulating notes obligatory under the law.

The banks rely chiefly on their deposits as their principal source of profit; these deposits are returned to the business public in the shape of loans properly secured, and thus the money is continually kept in circulation among the people. We quote from the annual report of the comptroller bearing date Dec. 1, 1890:

"They [the national banks] are fully cognizant of the fact that no profit will be realized on account of the right to issue notes, and proceed in their organization mainly because of the gain to result by reason of deposits.

"The deposits of a bank usually bear a close relation to the degree of confidence reposed in it by those who live within the sphere of its business activities. The unprecedented success which has, as a whole, attended the operations of banks in the national system during its twenty-eight years' trial, has inspired a degree of confidence not attained by any of its predecessors. In the early years of the system depositors were in some degree doubtful as to its success, and deposits were correspondingly meager. As a consequence, banks were then organized chiefly to secure the profit on circulation.

"It is curious to note how steadily the relative proportion of deposits to capital has increased from year to year, and how close a relation the increased gain by reason of augmented deposits bears to the diminished profits by reason of note issues. This is illustrated by noting the relative increase of capital and deposits during the period extending from Jan. 1, 1866, to Oct. 2, 1890. At the former date the aggregate capital of all national banks amounted to \$403,357,346, and their individual deposits were \$520,212,174. At the latter date the aggregate capital had increased to \$650,447,235, and the individual deposits to \$1,564,845,275. During this period of about twenty-five years the capital stock account shows an increase of \$247,069,889, equal to 61 per cent., while the individual deposits exhibit an increase of \$1,044,638,101, or over 200 per cent.

"This comparison indicates that the rate of increase of deposits has been relatively three and one-half times that of capital. While this growth is, in a certain degree, attributable to the general increase of the capital and business of the country, it is to a greater extent owing to the age of the system and the unexampled success which has attended its operations and the increased confidence thereby inspired. Whatever may be the opinion entertained with regard to the expediency of granting to banks the right to issue notes for circulation, it will be universally conceded that the public welfare is promoted by the augmentation of bank deposits. In this respect we find the interests of the banks and of the whole people identical. It is of great importance that the circulating medium of the country be kept within the channels of trade. Whenever the surplus earnings of the wage-workers, the professional men, the farmers, the manufacturers, and the tradesmen are permitted to remain idle in

the custody of individuals, legitimate borrowers are caused to pay increased rates of interest, and business and commerce languish for want of adequate banking facilities.

"It is true, beyond controversy, that the national system is admirably adapted to the most thorough and complete utilization of the present supply of money, and all good citizens, and especially those who are honestly of the opinion that this supply is inadequate to the demands of business should oppose any and all efforts to embarrass or destroy an admirable system in successful operation when none of its opponents is able to suggest any agency adapted to an equally efficient service."

BANKRUPTCY. At the present writing, 1891, the bankruptcy laws of Great Britain remain substantially as described in Britannica, Vol. III, pp. 341-45. See also the same article for the earlier history of the bankruptcy laws of the United States. The act of 1867 (U. S. Congressional Laws), after repeated amendments and modifications, was re-enacted in 1874, and finally repealed in 1878; and the whole subject was again left to the regulation of the laws of the individual States.

BANKS, in navigation, are elevations in a sea or river, generally composed of sandy soil; they are sometimes called shoals and are covered, or partially covered, with water.

BANKS, JOHN (1709-1751), an English writer, and the author of *Critical Review of the Life of Oliver Cromwell*.

BANKS, JOHN, an English dramatist of the 17th and 18th centuries, the author of *The Unhappy Favorite*; or, *Earl of Essex*, and other tragedies. The dates of his birth and death are unknown.

BANKS, NATHANIEL PRENTISS, born at Waltham, Mass., Jan. 30, 1816. After receiving a common school education he became a machinist, a lecturer, an editor, a lawyer, and finally a member of the State legislature. In 1852 he was sent to Congress, but left his party on account of their advocacy of the extension of slavery. He joined the Republicans, who sent him for another term to Congress. He was successively Speaker of the House, Governor of Massachusetts, and, when the war broke out, major-general of volunteers, and soon commander of the Army of the Potomac. In 1862, having gained some advantage at Winchester, his force followed the Confederates to Harrisonburg. Stonewall Jackson unexpectedly fell upon him, obliging a retreat. His command fought at Cedar Mountain, Port Hudson (where 6,000 prisoners were taken), and along the Red River. Relieved of command in 1864, he resigned his commission. From this time till 1877 (except one term) he was sent to Congress from Massachusetts; his active support of Horace Greeley for the presidency costing him his re-election in 1872. He was for a long time chairman of the committee on foreign relations. He has been United States marshal for his State. In 1888 he was again elected Representative to Congress.

BANKS LAND, an island in the Arctic Ocean, 70 miles southwest of Melville Island. It is intersected by the parallel of 74° north, and by the meridian of 116° west.

BANKSIA, a genus of shrubs of the natural order *Proteaceæ*. The species have hard, dry leaves, generally white or very pale-green beneath, and present a remarkable appearance from the umbellate arrangement of their branches, which bear toward their extremities oblong heads of numerous flowers. The flowers secrete much honey. They are natives of Australia, forming a characteristic feature of its vegetation.

BANNACKS, OR **BONACKS**. See *Britannica*, *INDIANS, AMERICAN*, in these Revisions and Additions.

BANNOCK, a cake of home-made bread, common in Scotland. It is usually composed of pease-meal

or of pease and barley meal mixed, prepared without any leaven; it is baked on a circular plate of iron, called a griddle. The bannock is doubtless of great antiquity—being, in fact, the primitive cake, only varied in material, of every country.

BANNs OF MARRIAGE. See *Britannica*, **MARRIAGE**.

BANQUETTE: in fortification, a foot-bank (bench) or raised way, just inside a breast-work, on which soldiers may stand to fire guns without being too much exposed to the enemy.

BANSHEE, the name of a female character in the mythology of Ireland and the Scottish Western Highlands. See *Britannica*, Vol. V, p. 300.

BANTAMS, dwarf fowls kept for ornament or as pets. During the last century many new varieties have been originated, and there are now bantams of all the principal breeds. The most curious are the dwarfed Asiatic fowls, cuckoo and Japanese bantams. The Golden Sebright differs from the Silver in being marked with yellow instead of white lacings. The Game bantams are very fine, though not larger than a pigeon, the cock and hen weighing 24 and 20 ounces each. See *Britannica*, Vol. XIX, p. 646.

BANTU, the name applied to the languages and people of several African tribes inhabiting the region situated between 20° S. lat. and 60° N. lat. They are divided into three branches, the Kaffirs and Zulus inhabiting the Galla and Somali country in the east, the Bechuans dwelling in the central part, and the western division being peopled by the tribes dwelling in the region between the Gulf of Guinea and the west coast of the Hottentot country. See *Britannica*, Vol. XII, p. 802; Vol. XVII, p. 319; Vol. XXII, p. 729; languages, Vol. XIII, p. 820; Vol. XVII, p. 318; Vol. XVIII, p. 780; Vol. XXII, p. 729; Vol. XXIV, p. 827.

BANVARD, JOHN, born in New York about 1820, and educated in the schools of that city. He executed a panorama of Venice, and afterwards one of the Mississippi River. In order to accomplish the latter work he traveled in a skiff for thousands of miles. He has traveled in Europe, painted many pictures, published over 200 poems, several dramas, and, among others, the following works: *Description of the Mississippi River, Pilgrimage to the Holy Land,* and *The Private Life of a King.*

BANVILLE, THÉODORE DE, author of poetical and prose works, born in Moulins, France, in 1820. His first volume, *Les Caryatides*, was published in 1841; other of his writings are: *Rimes Dorées, Les Exiles, Les Occidentales, Trent-six Ballades Joyeuses, Les Stalactites, Esquisses Parisiennes, Contes pour les Femmes, Comédies, Odes Funambulesques, Petit Traité Poésie de Française, Contes Féeriques,* and *Mes Souvenirs.* See *Britannica*, Vol. XIV, p. 206.

BANYULS-SUR-MER, a town of France, in the Pyrenees Orientales, with a fishing port on the Mediterranean. The celebrated wines of Grenache and Rancio are produced in its vicinity. Near the town are four old towers, one of which marks the division between France and Spain. This place was the immediate scene of many encounters between French republicans and Spaniards during the first French Revolution.

BANYUMAS, a town in Java, at the opening of a large valley on the left bank of the Serajo. See *Britannica*, Vol. XIII, p. 606.

BANXRING (TUPAIA), a squirrel-like, insectivorous mammal, native of Sumatra, Borneo, India and Java.

BAOUR-LORMIAN, PIERRE MARIE FRANÇOIS LOUIS, a poet and translator, born at Toulouse, France, on March 4, 1770, and died in 1857. He

translated Tasso and Ossian, and wrote several tragedies.

BAPAUME, a fortified town of France, department of Pas-de-Calais. A portion of the allied troops advanced to this place after compelling the French to abandon their fortified position, and to retreat behind the Scarpe in 1793.

BAPTISTS, CANADIAN, GERMAN, SEVENTH-DAY. See **RELIGIOUS DENOMINATIONS**, in these Revisions and Additions.

BAQUOY, JEAN CHARLES, an engraver of Paris, France, born in 1721, died in 1777.

BAQUOY, PIERRE CHARLES, son of the preceding, born in 1750, died in 1829. He was a French engraver, whose best work is *Martyrdom of St. Gervais and St. Protas.*

BAR, any elongated piece of wood, metal, or other solid substance. In the iron manufacture, bar is a rod either round or square shaped. The round ones are made by passing the iron red-hot through a bore or hole in a plate, and the square ones by passing it likewise red-hot through a roller-mill between two rollers counter-grooved, with their triangular-grooved faces forming the square opening of the passage of the iron.

BAR, a bank opposite the mouth of a river formed when the larger body of water arrests the current of the tributary and compels it to deposit the mud and sand which it has brought, near its own mouth. A bar soon forms a delta, as in the cases of the Mississippi and Nile rivers.

BAR: in music, the space between two perpendicular lines drawn across the staff dividing it into equal measures of time.

BAR, or **BARR:** in heraldry, one of those more important figures known as *ordinaries*. The "honorable ordinaries" are commonly reckoned as ten in number, the sub-ordinaries, or minor charges, being much more numerous. The bar, like the fess, is formed by two horizontal lines passing over the shield; but it differs from it in size, the fess occupying a third, the bar only a fifth part of the shield.

BAR, a Russian town where the nobility of Poland formed a confederation to counteract the Russian influence over their king, Stanislas Augustus. The same year, 1768, the Russian army captured Bar and exiled the confederates. They declared the king dethroned and took him to Warsaw. After four years of fighting Russia suppressed this revolution.

BAR, DE AIMÉ FLEURY, a French general, born at Thiers in 1783, died in 1861. He served in the wars of Napoleon I, again in Algiers, and was made lieutenant-general and later a senator.

BARABOO, city of Wisconsin, county-seat of Sauk county, situated on a railroad and the Baraboo River; iron mining, grain, fruit and hop-raising are carried on.

BARACOA, a seaport town on the northeast coast of Cuba, belonging to the Spaniards. In its vicinity is a remarkable mountain called the Anvil of Baracoa.

BARADA, a Syrian river, which flows through the city of Damascus. Before reaching the city it divides into two branches; these are thought to be the Abana and Parphar of the Bible.

BARAGA, FREDERICK, a devoted Roman Catholic bishop, born in Treffen, Austria-Hungary, June 29 1797, died at Marquette, Mich., Jan. 19, 1868. He came to the United States and devoted his life to work among the Indians, laboring among the Ottawas of Michigan, and the Chippewas at La Pointe. His work was attended with great hardship, but he did not spare himself, and he died in the midst of his labors. He wrote works of devotion in the

Slavonic dialect; a prayer and hymn-book in the Ottawa language, also one in the Ojibway dialect; the *History, Character, Manners and Customs of the North American Indian* (in German); and a grammar and dictionary of the Chippewa language.

BARAGUAY D'HILLIERS, Louis, a distinguished general of the French Empire, born in Paris in 1764. He received an appointment in the army of Italy from Napoleon, and was a sharer in all the campaigns of 1796-97. He was made a general of division, and in virtue of Napoleon's treaty with the Venetian Republic, May 16, 1797, commandant of Venice. He accompanied the expedition to Egypt, and afterwards successively held appointments in the armies of the Rhine, the Tyrol, and in Catalonia. He headed a division in the Russian campaign of 1812, but on the retreat he incurred the displeasure of Napoleon. He was sent as governor to Berlin, where he died from grief and exhaustion.

BARATARIA BAY, an inlet of the Gulf of Mexico in Louisiana, connecting the Mississippi River and the Bayou la Fourche. Fort Livingston was erected in 1840-50 on the west end of Grande Terre Island, at the bay's entrance.

BARB (probably derived from Barbary), a breed of horses originated among the Moors and introduced into Spain. The thoroughbred horse of the present doubtless descended from the Barb. "Godolphin Arabian" was an animal of this breed. In New Jersey the name barb is applied to the kingfisher.

BARBADOES CHERRY, the name given in the West Indies to the fruit of two small trees, *Malpighia urens* and *Malpighia glabra*, which are cultivated for its sake. Clusters of fruit are produced from the axils of the leaves.

BARBADOES GOOSEBERRY (*Pereskia aculeata*), a pleasant West Indian fruit, produced by a plant of the natural order *Cactææ*, with a round stem, thick flat alternate leaves, and large strong spines. The fruit has expectorant properties.

BARBADOES TAR, a dark, inflammable liquid which, by distillation, yields naphtha, with asphalt as a residuum.

BARBARA, SAINT, who suffered martyrdom at Nicomedia, in Bithynia, about 236, or, according to other accounts, at Heliopolis in Egypt, about 306, was of good birth, and well educated by her father, Dioscorus. To avoid disturbance in her studies he had a tower built for her, where she spent her youth in the deepest solitude. While in this retirement she was led, through Origen, it is said, to embrace Christianity. Her father, a fanatic heathen, learning of his daughter's conversion, and failing to induce her to renounce Christ, delivered her up to the governor, Martianus, to be dealt with by the law. Martianus, struck with the intelligence and beauty of the maiden, attempted first by arguments to make her relinquish Christianity, but when that failed he had recourse to the most exquisite tortures. At last the father offered himself to strike off his daughter's head. Scarcely was the deed done when he was struck by lightning. Hence Saint Barbara is to this day prayed to in storms. For the same reason she is the patron saint of artillery, and her image was at one time frequently placed on arsenals, powder-magazines, etc. The powder-room in a French ship of war is to this day called Sainte-Barbe.

BARBAROUX, CHARLES, one of the most distinguished and energetic of the Girondists, born at Marseilles in 1767. The new ideas of equality and fraternity found in him a warm advocate, and he did much to promote their spread. He was elected special delegate of Marseilles to attend the

constituent assembly at Paris. He returned to his native town, where he was received with enthusiasm, and was soon after chosen delegate to the convention. While there he adhered to the Girondists, and boldly opposed the party of Marat and Robespierre. In May, 1793, he was proscribed as a royalist and an enemy to the Republic. He wandered about the country, hiding himself as he best could, but he was finally taken and perished at Bordeaux by the guillotine, June 25, 1794. He understood the revolutionary crisis much better than most of his party, and had they all generally possessed anything like his energy and sagacity, much bloodshed and horror would have been spared to France.

BARBED AND CRESTED, heraldic terms by which the comb and gills of a cock are designated when it is necessary to particularize them as being of a different tincture from the body. The common English term is *Wattled and Combed*.

BARBEL, the common English name of several species of cyprinoid fishes, particularly the *Barbus vulgaris* of the rivers of the temperate parts of Europe. It is abundant in the Thames, Weser, Elbe and Rhine. The barbel of the Nile sometimes weighs seventy pounds. It is not found in American waters.

BARBER'S ITCH, the name given to two diseases. (1.) When there is a pustular eruption caused by too close or frequent shaving. (2.) When there is ringworm in the hair of the beard caused by using unclean or contaminated razors, etc. The disease can be cured by perfect cleanliness and the use of soothing ointments if the difficulty is not of a very serious nature.

BARBERRY, a shrub of a genus (*Berberis*) of plants of the natural order *Berberidææ*. All the species, which are numerous, and found in temperate climates in most parts of the world, except in Australia, are shrubs with yellow flowers having a calyx of six leaves, a corolla of six petals, and six stamens, which, when touched at the base, display a considerable degree of irritability, starting up from their ordinary position of reclining upon the petals, and closing upon the pistil, apparently a provision to secure fecundation. The fruit is a berry with two or three seeds. Many of the species are evergreen. The common barberry (*Berberis vulgaris*), a native of most of the temperate parts of Europe, Asia and North America, produces its flowers and fruit in pendulous racemes. Some of the evergreen species are employed for hedge plants, as *Berberis dulcis*, the Sweet Barberry, a native of the southwest coast of America.

BARBERTON, a town of the Transvaal, about 300 miles north of Durban. It is named after a prospector of the De Kaap gold-fields, and is the headquarters of the new mining industry of that region. See *Britannica*, Vol. XXIII, p. 518.

BARBÈS, ARMAND, a French revolutionist, born in Guadeloupe, Sept. 18, 1809, died at The Hague, June 26, 1870. On charges which were not substantiated he was imprisoned from 1834 to 1835, again from 1839 to 1848, and for a term of several years following 1848.

BARBESIEUX, DE LOUIS FRANÇOIS LE TELLIER, marquis, born at Paris in 1668, died in 1701. He was minister of state during the reign of Louis XIV.

BARBET, a variety of poodle-dog which is very intelligent, faithful to its master, cross with strangers, and quite liable to disease.

BARBON, a French family of famous printers who lived in the 16th century. John Barbon, of Lyons, was the head of the family, and from his press came the handsome edition of Clement

Marot's works. Hugh Barbon brought out the celebrated edition of *Cicero's Letters to Atticus*. Joseph Gerald Barbon published a continuation of the series of Latin classics in duodecimo. In the British Museum there is a complete set of the Barbon classics.

BARBOURSVILLE (Cabell Court-house), West Virginia, the county-seat of Cabell county, situated on the Guyandotte River and the Chesapeake and Ohio Railroad. A normal school is in the town. On July 13, 1861, the Federal troops fought a battle here with the Southern army, in which the former were victorious.

BARBY, a walled town of Prussian Saxony, on the left bank of the Elbe, 15 miles southeast of Magdeburg. It is well built and has an old castle. Population, 5,600, chiefly engaged in the manufacture of woollens and linens.

BARCAROLLE, a species of song peculiar to the gondoliers of Venice. The name is also applied to musical compositions for voice or piano-forte of a similar character.

BARD, a fortress and village of Piedmont, situated on the left bank of the Doire, about 23 miles south-southeast of Aosta. When the French crossed the St. Bernard in 1800, the fortress of Bard offered a resistance to their farther advance into Italy, which might have proved effectual had the Austrian garrison been sufficiently on the alert. The French failed to take the fortress by storm, but they succeeded in dragging their artillery under and past the guns of the fort during the night, and were far on the road to Ivrea before the Austrian commander was aware that they had passed. Bard was taken a short time after by the French, and destroyed, but has since been restored. Population, about 600.

BARDINGS, or **BARD**, the name of the horse armor used during the Middle Ages. It was in four pieces: one to protect the face and head; one for the neck; one for the shoulders and chest; one from the cantle of the saddle to the tail. A horse thus protected with armor was called "barded."

BARDSTOWN, county-seat of Nelson county, Ky., and the southeastern terminus of a branch of the Louisville and Nashville Railroad. It contains churches, an orphan asylum, an academy, St. Joseph's Seminary and College (Catholic), and a female college; it also has flouring mills and distilleries.

BAREBONE'S PARLIAMENT, so called from one of its members, Praise-God Barbon, or Barebone, was a gathering of 139 persons who met at the summons of Oliver Cromwell, July 4, 1653, and is known as the "Little Parliament." They were to be "faithful, fearing God and hating covetousness;" but their work did not prove to be conducive to the welfare of the country, and they were allowed to resign in December of the same year. See *Britannica*, Vol. VI, p. 602.

BAREFOOTED FRIARS and **NUNS**: The name of an order of Roman Catholic monks and nuns, who wear sandals or go barefooted.

BARÈGES, mixed tissues adapted for women's dresses, called, in France *Crêpe-de-Barèges*. Barèges were first manufactured at Bagnères de Bigorre. They are usually a mixture of silk and worsted, an inferior kind being composed of cotton and worsted.

They vary in color and are sometimes light in tint, with printed patterns. All are of a slight fabric for summer wear.

BAREGINE. Many algæ are found growing in mineral springs, especially those of a sulphuric nature. The product of their growth is a mucus-like substance, somewhat resembling the white or glair of an egg. This deposit is particularly abundant in the hot springs at Barèges, from which baregine derives its name. It imparts a flesh broth flavor and odor to the water, which is prized, and is sometimes imitated by adding animal gelatine to the sulphur-baths where baregine is deficient.

BARENTS, WILLIAM, a celebrated Dutch navigator of the 16th century. He made a number of voyages toward the North Pole. He discovered the islands of Spitzbergen while endeavoring to find a northeast passage to India. Barents Sea is named after this intrepid explorer. He died in 1597, while on a voyage of exploration. Parts of his journal have recently been found by members of different expeditions to the Polar regions. See *Britannica*, Vol. X, p. 184; also XIX, 317.

BARFOD, PAUL-FREDEBIC, a distinguished Danish poet and publicist, born in 1811. His principal work is *Narratives from the History of the Fatherland*. His style is charming, and all his writings, which are numerous, are very popular in Denmark.

BARGA PASS, a mountain pass among the Himalayas, situated in the Punjab, in the northern portion of Bashahr state. Its highest point is 15,000 feet above the sea-level. Not a mile from it there are two other and more elevated passes.

BARGAIN AND SALE, to be effective, under the State laws, severally, of the United States, must be attended either by the immediate payment of a part or the whole of the price, or by the transfer of the personal possession of the property involved. See *SALE*, *Britannica*, Vol. XXI, pp. 206-10; also under *REAL ESTATE*, Vol. XX, p. 308.

BARGE. Two uses of this name are peculiar to the United States. It commonly denotes a double-deck passenger or freight boat, having no motive power of its own, but intended to be attached by a hawser to a tow-boat. Such a boat is used either for the transportation of bulky produce, such as hay and straw, or for the carrying of passengers for short distances in smooth water on pleasure excursions. A lapstreak somewhat like a shell, but better adapted to rough water, and used by racing crews while in training, is also known in America as a barge. See *Britannica*, Vol. XXI, p. 30.

BARGE, an old town of Piedmont, Italy. It has a college, manufactories of fire arms, and there are slate quarries in the neighborhood. In 1808 the town suffered severely from an earthquake.

BARGEBOARD, or **VERGEBOARD**, the board used to cover the place where the roof extends out over a wall. It is generally employed to conceal a rafter and is often made quite ornamental.

BAR HARBOR, a famous summer resort in Hancock county, Maine, on the eastern side of Mount Desert Island, on Frenchman's Bay.

BARIATINSKI, ALEXANDER IVANOVICH, PRINCE, field-marshal, born in Russia, 1814, died in Geneva, March 9, 1879. He was educated in company with the future Czar, Alexander II, entered the army and became lieutenant-general in 1852. In 1856, Alexander II, having ascended the throne, Bariatinski was placed in charge of the forces in the Caucasus, and after three successful campaigns he stormed Ghunib, and captured Schamyl.

BARILLA, or **SODA ASH**, an impure carbonate of soda procured from plants which grow in salt marshes, or other places near the sea; it forms a



BARDED.

considerable article of commerce, being used in the manufacture of soap and of glass, and for other purposes in the arts. The greatest quantities of barilla are produced in Spain and the Balearic Islands. The Canary Islands, Italy and France also contribute a part. The Spanish barilla is most esteemed, especially that produced near Alicante, which is chiefly obtained from the *Salsolasativa*, a plant of the natural order *Chenopodiaceæ*.

BARINAS, name of a province and a city of Venezuela. The province has a fertile soil and many streams. Its chief productions are cacao, coffee, hides and tobacco. Barinas (or Varinas) is the capital of the province.

BARINGO, a lake of Africa northeast of Victoria Nyanza. It lies almost under the equator; is 20 miles long, 3,000 feet above the sea, and though it has several inlets and no outlet its water is fresh.

BARING-GOULD, SABINE, a noted English *littérateur* and divine, born at Exeter in 1834. His early studies embraced a wide range, and he accumulated a vast store of out-of-the-way knowledge, especially of matters pertaining to the Middle Ages. His principal works in this line are: *The Book of Werewolves; Post-medieval Preachers; Curious Myths of the Middle Ages; Curiosities of Old Times*. His numerous writings include many religious and historical works. Of a number of novels his earliest, *Mehalah*, and his *Richard Cable*, are stories of uncommon power.

BARITONE, or BARTONE, a male voice whose compass partakes of both bass and tenor. It is not so deep as the lowest bass nor so high as tenor. Its range is from lower *G* of the bass cleff to lower *F* of the treble.

BARKER, EDMUND HENRY, a well-known English philologist, born in 1788, at Hollym in Yorkshire, died in London, March 21, 1839. He studied at Cambridge. Besides editions of several Latin classics and numerous contributions to periodicals, he was led, during his residence with the famous philologist Parr, to undertake a revision of Stephens's *Thesaurus Linguae Græcæ*. This work was violently assailed by Bloomfield, against whom he wrote his *Aristarchus Anti-Bloomfieldanus*. He assisted Professor Dunbar in the compilation of the Greek and English Lexicon, published in 1813.

BARKER, GEORGE FREDERIC, physicist, born in Charlestown, Mass., July 14, 1835. He was assistant professor of chemistry at Yale and Harvard, of natural philosophy at Wheaton (Ill.) Colleges, and of chemistry at the Albany Medical College. In 1873 he had the chair of physics at the University of Pennsylvania. He was a delegate to the International Congress of Electricians held in Paris in 1881, and a commissioner of the United States at the International electrical exhibition held at the same time, and received from the French government the decoration of the Legion of Honor with the rank of commander.

BARKER, JACOB, financier, born in Maine in 1779, died in Philadelphia in 1871. During his business career he made and lost several fortunes, having early entered a commission house in New York and engaged in the shipping business and in speculations in oil. His last fortune, accumulated in New Orleans, where he had established himself in 1834, was swept away by the civil war. He was one of the originators of the Tammany society, and was elected a State senator. In an insurance case he delivered a legal opinion, when sitting in the court of errors, opposed to that of Chancellor Kent, which was sustained on appeal. He was accused of fraud in connection with the failure of an insurance company, and conducted his own defense with much ability. The indictment was quashed on a new

trial, though Mr. Barker had been at first found guilty.

BARKER, JOSIAH, born in Marshfield, Mass., Nov. 16, 1763; died in Charlestown, Mass., Sept. 23, 1848. He was a ship-builder, and in 1810 the government made him naval constructor. He built the ships *Virginia*, *Warren*, *Cumberland*, and other war-vessels.

BARLAAM, a bishop who lived in the fourteenth century. He pursued his studies at Thessalonica and then went to Constantinople, where he changed from the Roman Catholic to the Greek religion. He was made abbot of St. Salvador, but on his return to Italy he adopted the Roman Catholic faith and was given the bishopric of Gieraci in the kingdom of Naples.

BAR-LE-DUC, a town in France 125 miles east of Paris by railroad. It has a public library, a communal college, a normal school, manufactories of cotton-goods and hosiery, and an extensive trade in timber, wines, iron and wood.

BARLEYBREAK, or BARLEYBRAKE, a popular game, very common in the reign of James I, and with certain modifications in name and practice still played by young persons in England and Scotland. The game consisted in one person chasing the rest around the stacks in a farm-yard, and when one was caught he or she had to assist in capturing the rest. The origin of the name is doubtful. Dr. Jamieson suggests that, in Scotland, the locality of the game may have given it its name.

BARLEYCORN, JOHN, a personification of barley as the source of malt-liquor or whiskey, used jocularly, and also in humorous poetical effusions. There exists a whimsical English tract of old date, under the title of *The Arraigning and Indicting of Sir John Barleycorn, Knt., Printed for Timothy Tossopot*, in which Sir John is described as of "noble blood," well beloved in England, and a maintainer of both the rich and the poor.

BARLOW, FRANCIS CHANNING, born at Brooklyn, N. Y., Oct. 19, 1834. He was a soldier in the civil war, who left his law practice and editorial work on the "New York Tribune" to enter the army. He fought at Fair Oaks, Antietam, Chancellorsville, Gettysburg, Spottsylvania and Petersburg, distinguishing himself for bravery and receiving the title of brigadier-general. After the war he was Secretary of State of New York (1865-1868); was appointed by President Grant U. S. marshal of the southern district of the State, and 1872-73 was attorney-general of the State.

BARLOW, JOEL, an author and diplomatist, born at Redding, Conn., March 24, 1754, died in Poland, near Cracow, Dec. 24, 1812. After graduating from Yale he spent some time in the army as chaplain. He then took up law and started the paper "American Mercury." He edited the *Book of Psalmody*, wrote the famous *Vision of Columbus*, resided in London for two years, where he wrote *Advice to the Privileged Orders*. He lived for some time in France, and was sent by the United States on important missions to Algiers, and to France, on the last of which he died while attempting to reach Napoleon, then retreating from Russia.

BARMECIDE'S FEAST, an "Arabian Nights" tale, which is as follows: Shacabac, a beggar, for two days had had nothing to eat, so determined to visit Barmecide, a noble of Persia, and ask for food. He did so, and found the hospitable Barmecide already at his dining table, which was covered with empty dishes. In a humorous mood the Barmecide offered his guest several dishes, one after another, asking how he liked the rice soup, the bread and the meat? Shacabac entered into the spirit of the joke and pretended to eat, praising mea

time the different viands. The host at the conclusion of the imaginary feast offered wine, but after refusing to drink, saying in excuse that he had already eaten too much, Shacabac took an empty glass and drank an imaginary bumper. In high good-humor the host urged him to drink again, but the guest averred he was quarrelsome when in liquor. The host insisted, so the poor man drank, and to confirm his words struck his host a smart blow across the face, for which he apologized profusely. The Barmecide was satisfied with the joke, and then had his guest served with a substantial repast.

BARMOUTH, a picturesque watering-place of Wales at the mouth of the Maw river. On the opposite side of the river is the mountain Cader Idris.

BARNACLE. See **DISTRIBUTION**, *Britannica*, Vol. VII, p. 279. Mr. Huxley (*Anat. Invert.*) mentions the barnacle as a "crustacean fixed by its head, and kicking the food into its mouth with its legs." Properly, the term denotes the *Lepas anatifera*, a stalked cirriped of the family *Lepadidæ*; but in the United States the name is used also—sometimes exclusively—of a sessile cirriped, as the *Balanus*, commonly called sea-acorn, or acorn shell. Barnacles are often found attached in great numbers to the bottoms of sea-going vessels; the sessile *Balanidæ* adhering closely in colonies, the pedunculated *Lepadidæ* hanging in large clusters.

BARNACLE, or **BARNACLE GOOSE**, a species of wild goose, of the genus *Bernicla*, found in northern Europe, and sometimes in America. It is related to the brent-goose and to the common wild goose, but is somewhat smaller. It was represented in the fables of former times as having derived its origin from the cirriped called the barnacle, which was popularly supposed to be the fruit of a tree growing by the sea-shore.

BARNARD, **LADY ANNE**, eldest daughter of James Lindsay, fifth earl of Balcarres, born in Scotland 1750, died in London May 6, 1825. She married Andrew Barnard, colonial secretary to Lord Macartney at Cape of Good Hope, who died in 1807. She was the author of *Auld Robin Gray* in 1772, but did not acknowledge its authorship till 1823.

BARNARD, **CHARLES**, author, born in Boston, Mass., Feb. 13, 1838. He was successively a clerk, a theological student, a florist and a journalist. He has been editor of "Vox Humana," and assistant editor of the Boston "Journal of Commerce," "Boston Post," and editor of "World's Work Department" in the "Century." He has written many short stories, and among his published books are *My Ten-Rod Farm*; *The Soprano*; and *Knights of Today*. He writes "Talks About the Weather," "Talks About Our Useful Plants," and similar articles for the "Chautauqua Circle." He is also a writer of operas and dramas.

BARNARD, **FREDERICK AUGUSTUS PORTER**, a famous educator, born in Sheffield, Mass., May 5, 1809, died in New York city, April 27, 1889. He was educated at Yale and taught there, afterwards going as instructor to the Hartford Asylum for the deaf and dumb. He took orders in the Episcopal church, and about the same time, 1854, occupied the chairs of mathematics, natural philosophy and chemistry in the University of Alabama. From 1856 to 1861 he was president of this University. Upon the outbreak of the civil war he resigned his position and came North. In 1864 he was called to the presidency of Columbia College, and this position he held for the remainder of his life. He was sent as United States commissioner to the universal exposition in Paris, 1867. In 1878 he went on a similar mission to the exposition held in the same city. He

was a member of the Labrador expedition sent out in 1860 to observe the sun's eclipse. Several colleges conferred degrees upon him. He was president of the American Association for the Advancement of Science, and of the American Institute. He wrote many reports, essays, and books. His principal works are: *Treatise on Arithmetic*; *Analytic Grammar with Symbolic Illustration* (for use in schools for the deaf and dumb); *Letters on Collegiate Government*; *History of the U. S. Coast Survey*, and *The Metric System*. He was one of the original incorporators of the National Academy of Sciences. His best work was done at Columbia College, whose usefulness and strength he greatly increased. He was interested in the higher education of women, and provided in his will for an annex to Columbia—the Barnard College for Women.

BARNARD, **HENRY**, born at Hartford, Conn., Jan. 4, 1811. He graduated at Yale and became a lawyer; in 1837 he was elected to the legislature, where he was active in instituting prison and asylum reforms. He started high schools, teachers' institutes, a normal academy and reorganized the public school system. He was secretary of the board of school commissioners in Connecticut, school commissioner of Rhode Island, president of the University of Wisconsin, and later of St. John's College at Annapolis. He has been a voluminous writer on educational subjects, and in 1886 made a collection of his publications, which comprised 52 volumes. From 1867 to 1870 he held the important office of U. S. commissioner of education.

BARNARD, **JOHN Goss**, brother of Frederick A. P. Barnard, born in Sheffield, Mass., May 19, 1815, died at Detroit, May 14, 1882. He was a soldier, and graduated at West Point. He was engaged in engineering on the Gulf coast, at the Pensacola and the New Orleans fortifications. After the Mexican war, in which he saw service, he was sent to survey the isthmus of Tehuantepec in the interest of the proposed railroad from ocean to ocean. In 1855 he was superintendent of the West Point military academy. During the war he had important engineering commissions to fulfill. General Barnard was not only a brave soldier, but was also an author and mathematician. He wrote *Survey of the Isthmus of Tehuantepec*, *Dangers and Defenses of New York*, *Eulogy of General Totten*, and other works.

BARNARDO, **THOMAS J.**, F. R. C. S. E., a philanthropist of England, who lived in the nineteenth century. He was the founder of homes for destitute children. Dr. Barnardo in 1887 reclaimed 10,000 children of the street and placed them in charitable institutions. Under his charge are 33 institutions, which include an immigrant depot in Ontario, a home for babies, and an industrial farm in Manitoba.

BARNBURNERS, a nickname for one of the two factions into which the Democratic party of New York was divided about the year 1848. Some of the leaders of this faction were Col. Samuel Young, Michael Hoffman, and Monorable Silas Wright. The Barnburners were opposed to the extension of the canal system, extension of slavery in the Territories, and to public debts, corporate privileges, etc. The Barnburners, after a few years, were incorporated with the Free-soil party. The faction opposed to them was called "Hunkers." The story of the farmer who burned his barn in order to kill his rats is the source of the nickname Barnburners.

BARNEGAT BAY, **NEW JERSEY**, a body of water 23 miles long, in Ocean county, connected with the Atlantic by an inlet one mile wide, and separated from the ocean by the low islands, called Squan Beach and Island Beach. A tall light-house stands on the south side of the inlet.

BARNES, DANIEL HENRY, born at Canaan, N. Y., April 25, 1785, died near Troy, N. Y., Oct. 27, 1828. He was a graduate of Union College, and his first position after leaving his studies was in the Poughkeepsie Academy. He became a Baptist and was licensed to preach. In Schenectady he had charge of a classical school, which was connected with his *Alma Mater*. President Francis Wayland, Bishop Alonzo Potter and Dr. Erskine Mason were among his pupils. He was professor of languages in the New York Baptist Theological Seminary. A little later he started what proved to be a very successful English and classical school in the same city. He was chosen president of Waterville College in Maine, but declined the honor. He was a philologist, conchologist, and eminent classical scholar; he wrote much on geology, and assisted Dr. Webster in compiling his dictionary.

BARNES, THOMAS, born in 1786, died in 1841. He was educated at Christ's Hospital, London, and Pembroke College, Cambridge. For twenty years he was editor of the "London Times."

BARNES, WILLIAM, an eminent divine, philologist, and perhaps the first of English purely pastoral poets; born in Dorsetshire in 1800, died in 1886. His poetical world was the secluded vale of Blackmore, and its humble inhabitants, with all their quaintness and humor, are photographed with charming artistic truth. His collected poems were published, in 1879, as *Poems of Rural Life in the Dorset Dialect*. Among his philological works, many of which were very valuable, was an attempt to teach English in purely English words, which has been characterized, from his use of such terms as "time-takings" for tenses, "mark-words of suchness" for adjectives, as making large demands upon the reader's patience. His life, written by his daughter, appeared in 1887. See *Britannica*, Vol. VII, p. 372.

BARNESVILLE, a village of Georgia, about sixty miles south of Atlanta, is the seat of the Gordon Institute, and contains also an excellent high school.

BARNESVILLE, a manufacturing town of Ohio, about thirty miles west of Wheeling. It is finely situated as the center of an extensive agricultural district, noted especially for its strawberries. It is the seat of Olney College.

BARNETT, JOHN, English musician and composer, born in 1802, died in 1890. He wrote, besides other operas, *The Mountain Sylph*, *Fair Rosamond*, and *Farinelli*. His nephew, John Francis Barnett, born in 1838, has composed *The Ancient Mariner*, a cantata, *Paradise and the Peri*, *The Raising of Lazarus*, *The Lay of the Last Minstrel*, and *The Good Shepherd*.

BARNEY, JOSHUA a naval officer, born in Baltimore, Md., July 6, 1759, died at Pittsburg, Pa., Dec. 1, 1818. He was made lieutenant for bravery on the schooner *Wasp*. He was three times taken prisoner by the English, but exchanged. After having captured the *Charming Mollie*, he was twice taken a prisoner, but escaped from jail. He was given a ship, and sent to clear the Delaware of British privateers. He captured the *General Monk*, an 18-gun ship, and for this was voted a sword by the Pennsylvania legislature. During the war of 1812 he was assigned to the defense of Washington, and here he was made prisoner by the English for the seventh time. In 1815 he was sent on a mission to Europe, but ill-health compelled his return. His declining years were spent on a farm.

BARNFIELD, RICHARD, born at Norbury, England, in 1574, died at Stone, Staffordshire, in 1627. He was educated at Brasenose College, Oxford, and wrote three volumes of poetry. His verse is quaint but over-luxuriant. The ode, *As it Fell upon a*

Day, and the sonnet, *If Musique and Sweet Poetrie Agree*, were for a long time attributed to Shakespeare.

BARN OWL, or **CHURCH OWL**, is the common white owl, of which the American variety is the *Aluco pratincola*. Other varieties are found in nearly all the temperate regions of the earth, constituting together the family *Aluconidae*. They are carnivorous, and are valuable as destroyers of mice. See *Britannica*, Vol. XVIII, pp. 88-91.

BARNUM, PHINEAS TAYLOR, the well-known public showman, born at Bethel, Conn., July 5, 1810. In his youth he was clerk in a country store, and then agent for a lottery company. In 1829 he started the unsuccessful newspaper "Herald of Freedom." He came across Joyce Heth, a colored woman, the reputed nurse of Gen. Washington, and said to be 160 years old. He bought her, and by his shrewdness as a showman earned considerable money. Within a year the woman died, and Mr. Barnum traveled south with small shows, wrote for newspapers, sold Bibles, exhibited negro dancers, and finally purchased Scudder's American Museum in New York. Here he exhibited a woolly horse, a white negress, a Japanese mermaid and Charles S. Stratton (the famous General Tom Thumb). His greatest venture was made in regard to Jenny Lind; he offered her \$1,000 a night for 150 nights. For these concerts he netted \$350,000. So great was the enthusiasm caused by Mr. Barnum's advertising that \$650 is said to have been paid for a single ticket. He built his residence at Bridgeport, Connecticut, in imitation of the Brighton Pavilion, and encouraged business enterprises in the town, laid out streets and planted trees. A clock manufacturing company which came to Bridgeport through his influence involved him financially, but he paid his creditors and built up another fortune by exhibiting Gen. Tom Thumb in England and by delivering lectures. Mr. Barnum has twice suffered loss by having his museum burned. He established a traveling menagerie and museum, which he called "The Greatest Show on Earth." The elephant "Jumbo" was one of his greatest "cards." Mr. Barnum has four times been a member of the Connecticut State legislature, has been mayor of Bridgeport, has delivered numerous lectures on temperance and practical affairs, has written his autobiography (an interesting and amusing account of his struggles and artifices), and has given liberally to benevolent objects, one of his gifts being a museum building for Tufts College, near Boston. Died April 7, 1891.

BAROACH, name of a district and its capital in British India. A large trade is carried on in grain, cotton and seeds. In the city there is a Brahminical hospital for all kinds of sick animals, even insects being received.

BAROMETRIC LIGHT, the name given the luminous appearance which is seen when the mercury of a barometer is shaken or moved through a space of a few inches; the Torricellian vacuum becomes light because of the frictional electricity generated by the mercury against the glass. The experiment is most successful when performed in the dark and in frosty weather.

BAROMETZ, or **TARTARIAN** or **SCYTHIAN LAMB**, the prostrate stem (rhizome) of a fern (*Cibotium barometz*) which grows in the salt plains near the Caspian Sea. It is shaggy with a silky down, and has a sort of general resemblance to an animal. In the days of ignorant credulity, when the story of the phoenix was received as a truth of natural history, and barnacles were believed to grow into geese, and horse's hairs into eels, marvelous tales were told of the barometz, which was supposed to

partake of the nature of a plant and of an animal; to grow on a stalk and eat grass like a lamb.

BARON, BERNARD, born in Paris, 1700, died in London, 1762. He was a distinguished engraver and a pupil of Nicolas Henri Tardieu.

BARON, MICHAEL, born at Paris, Oct. 8, 1653, died Dec. 3, 1729. He was the son of a leather merchant and a handsome actress. Molière early became his friend and instructor. Baron was very handsome, and became famous as a writer of plays and an actor.

BARON, PIERRE, known as Peter Baro, born at Étampes, France, and died in London, 1596. On account of his Protestantism he had to leave France for England. Here he was appointed to the chair of divinity in Cambridge. Opposed to Calvinism, and very outspoken as to his views, he met with great opposition and was accused of heresy and a desire to lead the church back to Rome. He was at last obliged to resign his office and spent the latter part of his life in retirement.

BARON OF BEEF, a large piece of beef, consisting of both sides of the back, or double sirloin, and weighing, according to the size of the animal, from 50 to 100 pounds. The term probably originated in a fanciful allusion to the word *sir-loin*, inasmuch as *baron* is the superior title.

BAROTSE, a central branch of the Bantu family of African negroes, living in a valley of the Upper Yambesi, which river floods the Barotse valley, rendering it very fertile.

BAROZZIO DA, GIACOMO, a famous Italian architect, sometimes called Vignola, born at Vignola, in Modena, in 1507, died in Rome in 1573. He studied painting at Bologna, but subsequently turned his attention to architecture at Rome. He designed the palace of Cardinal Farnese (Caprarola), and at the death of Michel Angelo became architect of St. Peter's. The Escorial Palace in Madrid was designed by him. He left several works on architecture; *Regole de' Cinque Ordini d'Architethera* is still a standard authority.

BARQUE, or BARK, a name frequently given to ships, but with no very definite meaning. Sometimes it denotes simply a ship of small size, but more technically it applies to three-masted vessels, whose mizzen-sails are fore and aft instead of being square.



BARQUE.

BARR, AMELIA EDITH, born at Ulverton, Lancashire, England, March 29, 1831. Her father was Rev. William Huddleston. She was educated at Glasgow, and in 1850 married Robert, son of Rev. John Barr, a pastor of the Scottish Free Kirk. In 1854 the family came to the United States and resided in Austin, Texas, and later in Galveston. In 1869, after the death of her husband and three sons she brought her three daughters to New York, where she became a governess, but after two years she began to write for newspapers sketches which were well appreciated. Her first book, *Romance and Reality*, was followed by *Scottish Sketches*, *Jan Vedder's Wife*, *A Daughter of Fife*, *A Bow of Orange Ribbon*, and other novels.

BARR, or BARRA, a small kingdom of Mandingo, in western Africa. Its area is about 750 square miles. The surface is somewhat marshy, but fertile and well cultivated.

BARRA MANSA, a Brazilian town on the Parahiba River, 70 miles northwest of Rio Janeiro.

BARRACUDA, a large fish of the perch family, found in the Atlantic Ocean. It is very voracious, and its length is from 6 to 10 feet. Its flesh is poisonous at certain seasons of the year. The scientific name of this fish is *Sphyræna plicuda*.

BARRAFRANCA, a town of Sicily, in the district of Piazza, about 10 miles southeast of Caltanissetta. Population of about 6,100.

BARRANQUILLA, the chief port of the United States of Colombia, situated on the Magdalena River, 15 miles from the place where it enters the Caribbean Sea. A bar at the river's mouth has hindered ocean steamers from entering the port of Barranquilla, but this has been partially removed. The inland trade is very extensive and largely controlled by Germans.

BARRANTES, VINCENTE, a Spanish author, born at Badajoz, March 29, 1829. He wrote dramatic pieces, political satires, ballads and stories. He was the author of a historical work on the Philippine Islands.

BARRATRY, the offense of inciting and stirring up quarrels. One act of this kind is not sufficient to maintain an indictment for the offense, but it must be shown that the party accused frequently, or at least on more than one occasion, conducted himself in the way imputed. Therefore the principle of the law appears to strike at the habit or disposition of evil-minded persons who would incite to quarreling, or busy-bodies, as they are in fact called in the old law reports. In the law of Scotland barratry is defined as the crime committed by a judge who barter's justice for money. There is also barratry of mariners, which signifies the fraud of the master or mariners of a ship tending to their own advantage, but to the prejudice of the owners.

BARRE, a manufacturing village of Worcester county, Mass., in Barre township. It has an institution for feeble-minded children. The township is intersected by Ware River, and has a station on the Ware River Railroad.

BARRE, a village of Washington county, Vermont. It has a school called Goddard Seminary. The township of the same name has a granite quarry, and manufactures of agricultural tools, wooden goods, ice-tools, etc.

BARRE, DE LA ANTOINE LE FÈVRE, a French naval officer, died May 4, 1688; was governor of Guiana in 1663, and of Canada, 1682-85.

BARREL, a large cylindrical vessel primarily used for holding liquids. It is now a measure for various quantities. In the United States and in England the barrel-measure differs. In the former place a barrel may denote a certain weight. Thus a barrel of flour is understood to be 196 pounds; beef, pork, fish or salt, 200 pounds. A barrel is supposed to contain 31½ gallons (wet measure), or 3¼ bushels (dry measure), although the bushel-measure varies in different States.

BARREL ORGAN, a cylinder or barrel, turned by a crank, fitted on the inside with pegs which, as the handle is turned, opens valves admitting currents of air to pipes, and thus harmonious sounds are produced. Instead of pipes wires are sometimes used. Barrel organs are used by street-musicians, and cost from \$100 to \$300, according to the size.

BARREN ISLAND, a small volcanic island 8,500 yards in diameter, lying in the Bay of Bengal, east of the Andaman Islands.

BARRETT, BENJAMIN FISK, born at Dresden, Maine, June 24, 1808. In 1832 he graduated at Bowdoin and six years later at the Cambridge Unitarian Seminary, where he became a convert to the doctrines of Swedenborg. He preached in New York and Cincinnati till 1850, when, his health fail-

ing, he gave up pulpit work and engaged in mercantile business in Chicago, and four years later was made pastor of the New Church Society in Philadelphia. He wrote many books on the doctrines of the New Church.

BARRETT, LAWRENCE, born at Paterson, N. J., April 4, 1838, died in New York city, March 20, 1891. He first appeared as an actor at Detroit in 1853, and subsequently at Pittsburg, St. Louis and Chicago, and at New York city in 1856. He supported such actors as Edwin Booth and Charlotte Cushman. He played in Boston after this, but at the opening of the civil war he volunteered, serving as a captain in the 28th Massachusetts. He played at Philadelphia, Washington, and then at New York. Here he began acting Iago to Booth's Othello. For the next few years he was engaged in acting, studying the literature of the stage, and managing different theaters. Since about 1864 he has been a star actor. He has played much with Booth in opposite characters. Mr. Barrett has written a life of Edwin Forrest.

BARRIAS, FELIX JOSEPH, an eminent French historical painter, born in Paris in 1822. His picture of *Electra*, exhibited at Philadelphia in 1876, attracted considerable attention. His principal work is a series in the chapel of St. Genevieve in Paris, illustrating incidents in the life of that saint.

BARRICADES, hastily constructed fortifications made to obstruct the progress of an enemy, or to serve as a defense. They may be built of earth, trees, wagons, paving-stones, or any material at hand.

BARRIER ACT, that which was passed by the general assembly of the Church of Scotland, Jan. 8, 1697, according to the provisions of which no change could be made in the laws of the church without first referring such proposed change to all the presbyteries and getting a majority vote in its favor. This act is held of much importance both by the free and the established church of Scotland.

BARRIERE, JEAN FRANÇOIS, a writer of France, born in 1786, died 1868. With Berville he edited a valuable book for historical reference, *Mémoires Relatifs à la Révolution Française*. He wrote *Mémoires Relatifs au XVIIIème Siècle*.

BARRIERE, THEODORE, a French dramatist, born at Paris in 1823, died Oct. 16, 1877. He wrote *Les Faux Bonhommes*, *Cendrillon* and *Le Démon de Jeu*.

BARRIER REEF, a coral reef, about 300 miles in length, extending along the northeast coast of Australia, and being from 10 to 18 miles distant from the shore.

BARRIER TREATIES, the name of several treaties concluded between England and foreign powers. The first treaty, which was made in 1709, was between the Dutch and English, the former agreeing to maintain the English queen's title and the Protestant succession; the English at the same time to help the Dutch preserve their border towns. In 1718, at Utrecht, a similar treaty was concluded between the English and Dutch. In 1715 a third treaty was signed at Antwerp between England, the Netherlands and the Emperor Charles VII.

BARRING OUT, a custom that formerly prevailed in English schools and consisted in the scholars taking possession of the school room and fastening the doors against the master, at whose helplessness they scoffed from the windows. The usual time for barring out was immediately prior to the periodical vacation. It seems to have been a rule, understood in barring out, that if the scholars could sustain a siege against the master for three days, they were entitled to dictate terms to him regarding the number of holidays, hours of recreation, etc., for the ensuing year.

BARRINGTON, HON. DAINES, an English jurist and naturalist, who attained considerable distinction. He died in 1800. Two of his best known works are *Dissertation on the Linnæan System*, and *Observations upon the Statutes, Chiefly the More Ancient, from Magna Charta to the 21 Jac. I, c. 27*.

BARRINGTON, GEORGE, a thief and an author, the son of a silversmith named Henry Waldon. He was born at Maynooth, Ireland, in 1756. While a youth he ran away from school and went to London. Here he became a pickpocket, one of his crimes being the robbing of Prince Orloff of a snuff-box set with diamonds, valued at \$150,000. In 1790 he was sentenced to transportation to Botany Bay, but on the voyage he revealed a conspiracy among the convicts, and was rewarded in 1792 by having his sentence commuted. At Paramatta, New South Wales, he became superintendent of the convicts, and high constable. He wrote *A Voyage to Botany Bay, The History of New South Wales*, and *The History of New Holland*.

BARRINGTONIACEÆ, a natural order of exogenous trees and shrubs, natives of tropical countries, and generally very beautiful both in foliage and flowers. This order is sometimes included in *Myrtaceæ*. The stamens are very numerous, and form a conspicuous part of the flower. The fruit is fleshy with bony seeds lodged in pulps. The *Moordilla (Barringtonia speciosa)* is described as a tree which much attracts the attention of travelers in Ceylon. It has dark glossy leaves, and delicate crimson-tipped white flowers. This order is sometimes included in *Myrtaceæ*.

BARRIOS, JUSTO RUFINO, a statesman of Central America, born at Guatemala, July 17, 1835, died at Chalchuapa, April 2, 1885. He studied law, but in 1867 took part in the revolutionary struggles then going on in his country. It was largely through his efforts on the battlefield that the régime established by Carrera (the "thirty years") was put to an end, and General Garcia Granados made president. As chief of the army, Barrios was called to put down two insurrections, and in 1878 he was elected president of Guatemala. His administration was marked by revolution and by an attempt to assassinate him. In 1880 the Republic, having framed a liberal constitution, reelected General Barrios to the six years' presidency. After considerable trouble the question of boundary between Mexico and Guatemala was settled and General Barrios made a tour through Europe and the United States. On his return he endeavored to consummate a union of all the Central American States (1885); but while the proposition met with favor in Guatemala, Salvador took exceptions and war ensued. General Barrios' troops met with their accustomed success till they entered Chalchuapa, where the bullet of a sharpshooter killed General Barrios. His army was panic stricken at the calamity and fled. General Barrios has been accused of harsh measures and cruelty, but no doubt his enemies overestimated his defects. He was a good organizer, equipped his soldiers better than any others in Central America, and kept them in good drill. He made Guatemala a clean, pleasant city, established a police force, introduced the telegraph and railroad, built bridges, founded schools, and did much for the upbuilding of his native land.

BARRIQUE, an an-
deaux, equal to 228 li

BARROSA, a villag
southeast of Cadiz,
place where General
ful of English troops
the French, after his

of Bor-

ssouth-
as the
hand-
over
eated,

one of the most glorious victories of the peninsular campaign. More than 2,000 French were killed, 800 prisoners taken, six pieces of cannon, and an eagle—the first captured in the war.

BARROT, CAMILLE HYACINTHE ODILLON, a French jurist and statesman, born at Villefort, Lozere, in 1791, died in 1873. In 1814 he became an advocate in the Court of Cassation, Paris, and soon acquired a high reputation as an eloquent pleader. At the Revolution of 1830 he was one of the three commissioners appointed by the provisional government to accompany Charles X from Rambouillet to Cherbourg. Under the new government he was appointed prefect of the department of the Seine, but resigned this office in a few months, and declined the post of ambassador at Constantinople, offered by Louis Philippe. He took a conspicuous part in the reform movement of 1847, and attended several of the provincial reformed banquets which led to the revolution of 1848. He retired from political life in 1851.

BARROW, a river of Ireland, next in importance to the Shannon. Its head is in Queen's county, and its course is south and west as it flows toward the Atlantic. Near New Ross the Nore and Suir rivers join it, and they are called "The Three Sisters." The mouth of the Barrow, called Waterford harbor, is nine miles long. The river is 100 miles long and navigable for about sixty-five miles.

BARROWE, HENRY, an English lawyer, who was attracted by the teachings of John Greenwood, who preached against the Roman Catholics and Puritans. Barrowe, who had led a wild life, joined in the religious crusade for independency. Being arrested in 1586 on the charge of publishing seditious books, he was for the remainder of his life confined in the Fleet prison, and only taken thence to be hanged with John Greenwood, April 6, 1593.

BARRUNDIA, JOSÉ FRANCISCO, born at Guatemala, Central America, about 1780, died at New York, Aug. 4, 1854. He headed the revolutionary party in its struggle for independence, and in 1829 was made president of the Republic. He wrote a narrative of the Central American history, and in 1852 was called again to the presidency, but declined, as three out of the five republics had seceded. With the view of again gaining popularity in Guatemala he went to the United States as minister from Honduras, but died on the mission.

BARRY, the name in heraldry given to a shield, which is divided into bars. The divisions are four, six or some even number. *Barry-bendy* is where the shield is divided by lines drawn barwise and bendwise. *Barry-pily* is where the shield is divided bar-wise and diagonally.

BARRY, a small island in the Bristol Channel, twelve miles southwest of Cardiff. It has the ruins of an ancient castle and two chapels.

BARRY, MARTIN, an eminent English physician, born at Fratton, 1802, died at Beccles, in April, 1855. He was educated in the London medical schools and Edinburgh University. He was a voluminous writer, especially on animal development and embryology, in which departments he made important discoveries.

BARRY, DU MARIE JEANNE GOMARD DE VAUBERNIER, Countess, born Aug. 9, 1746. She was mistress of Louis XV of France, and exerted great political influence. She suffered death by the guillotine during the reign of Terror, Dec. 3, 1793.

BARRYTON, a musical instrument now obsolete, called in Italian *viola di bardone*. It has six or seven gut-strings, while under the neck are strings of ass, 16 in number, which are played with the mb. A bow is used on the gut-strings.

BART, or BARTH, JEAN, a French naval officer, famous for his bold exploits. He fought against the Dutch in a privateer, and for his daring exploits was made commander of a squadron as well as captain in the royal navy. He died April 27, 1702.

BARTER, the exchange of one commodity for another, instead of the sale of a commodity for money. In new or barbarous countries trade is generally carried on by barter.

BARTH, a seaport town of Prussia, at the mouth of the Barth River.

BARTHELEMY, SAINT, HILIAIRE, JULES, a learned Frenchman, born 1805. A member of the Institute, formerly a representative of the people. During 1828-1830 he was one of the editors of the "Globe," a Paris paper. In 1833 he desisted from political strife, and betook himself to more quiet pursuits, and in 1838 was professor of Greek and Latin philosophy in *Collège de France*. His principal writings are his translations of Aristotle's works.

BARTHOLDI, FREDERIC AUGUSTE, a French sculptor, born in Alsace-Lorraine, April 2, 1834. He studied painting in Paris under Ary Scheffer, but gave this up to devote himself to sculpture. He executed the La Fayette statue in New York city, the *Lion of Belfort*, *Giref*, and the famous light-house statue, *Liberty Enlightening the World*, which was presented, at his suggestion, to the United States government by the French people. This bronze statue is itself 152 feet 2 inches high, and is placed on a pedestal 177 feet 9 inches high, on Bedloe's Island in New York harbor, where it was unveiled Oct. 28, 1886. It is a triumph of technical skill. Bartholdi has been made commander of the Legion of Honor.

BARTHOLIN, CASPER, born at Malmö, Sweden, in 1585, died July 13, 1680. He was a precocious youth, and pursued his studies at the University of Copenhagen, and at Rostock and Wittenberg. He wrote medical works, and was professor of medicine and of divinity.

BARTHOLIN, THOMAS, an eminent physician, born in Copenhagen, Oct. 20, 1616, died at Hagsted, Dec. 4, 1680. He was professor of anatomy in his native city, and wrote a treatise on the liver, the lymphatic vessels (which he claimed to have discovered), and a book called *Anatomia*.

BARTHOLOMEW, EDWARD SHEFFIELD, a sculptor of Connecticut, born 1822, died at Naples, May 2, 1858. He first practiced dentistry, but soon turned his attention to the study of painting and sculpture, in which latter branch he won distinction. Some of his works are *Blind Homer led by His Daughter*, *Eve, Youth and Old Age*, *Eve Repentant*, and *Ganymede*.

BARTHOLOMEW FAIR, an annual festival held at West Smithfield, London. The charter for the fair was granted by Henry I, to his jester, a monk named Rafer, who founded the St. Bartholomew church and priory. The charter was granted in 1188, and the fair, which was a great merry-making, opened each year on Aug. 24 (old style). The visitors engaged in all sorts of sports, contests and trading. The fair was held several days, but it at length became a nuisance, and in 1850 was abolished.

BARTIZAN, a small overhanging closet or turret built over doorways or on the corners of buildings. Bartizans were made for defense, and had small loopholes or windows, but in modern architecture they are only added for ornament.

BARTLETT, JOHN RUSSELL, **BARTIZAN.** born at Providence, R. I., Oct. 23, 1805, died May 23, 1885. In early life he was in the banking busi-



ness, but abandoned it to enter the book-importing trade. He was corresponding secretary of the American Historical Society, a member of the American Ethnological Society, one of the commissioners appointed to fix the boundary between Mexico and the United States, and was Secretary of State for Rhode Island for 17 years. Among his books are *The Progress of Ethnology*, *A Dictionary of Americanisms*, *Literature of the Rebellion*, and *Primeval Man*.

BARTLETT, JOSEPH, an adventurer, born at Plymouth, Mass., June 10, 1762, died at Boston, Oct. 20, 1827. He graduated at Harvard, and after studying law went to England, where he fell in with a gambling set of young men. Having lost his money and been sent to jail, he earned his release by play-writing. He was by turns an actor, importer, soldier (in Shays' rebellion), lawyer, and a member of the Maine legislature. He delivered an original poem, "Physiognomy," at a meeting of the Harvard Phi Beta Kappa Society, and at a Fourth of July celebration at Boston recited a poem entitled "The New Vicar of Bray," which became famous. In 1805 he edited the "Freeman's Friend."

BARTLETT, JOSIAH, M. D., an American patriot and statesman and first Governor of New Hampshire, born at Amesbury, Mass., Nov. 21, 1729, died May 19, 1795. He studied and practiced medicine, becoming eminent in the profession by his discovery and appliance of new remedies. In 1765 he was delegate to the legislature. From this time onward he was in public office. He was a zealous Whig notwithstanding the efforts of the British government to secure his fealty. As a member of the Continental Congress he was the first to vote for the Declaration of Independence and the second to sign it. Dr. Bartlett was appointed general naval agent (1776), was elected to Congress (1778), was successively chief justice of the court of common pleas, muster master of troops, justice of the superior court, chief justice, three times chosen president of New Hampshire, and the governorship was his last office.

BARTLETT, TRUMAN, a noted sculptor, born in Vermont in 1835. *The Angel of Life*, *Wisdom*, and *The Wounded Drummer Boy* are among his principal works.

BARTLETT, WILLIAM HENRY, an artist and popular writer, born in London in 1809, died in 1854. He was a pupil of Britton, the architect, who afterwards employed him to make drawings for his *Cathedral Antiquities* and *Picturesque Antiquities of English Cities*. He visited America several times and traveled in Europe and in the Holy Land, enriching his portfolio with innumerable interesting scenes. There were devoted to these countries no less than 19 quarto volumes, containing about 1,000 engravings from his sketches, and letter-press from his own pen and those of his fellow-travelers, Dr. W. Beattie, N. P. Willis and Miss Pardoe. He died on a voyage from Malta to Marseilles.

BARTOL, CYRUS AUGUSTUS, a clergyman, born at Freeport, Maine, April 30, 1818. He graduated at Bowdoin and at Cambridge divinity school. In 1837 he was made assistant pastor of the West Church (Unitarian) of Boston. He has written several religious works.

BARTOLI, TADDEO, an Italian painter, who lived between 1362 and 1422. He belonged to the Siennese school.

BARTOLI, DANIELO, a scholarly Jesuit, born at Ferrara in 1608, died at Rome in 1685. He was rector of the Jesuit College at Rome.

BARTOLI, PIETRO SANTO, a painter and a skillful etcher, born 1635, died 1700.

BARTOLOMEO, SAN, a town of Naples, in the province of Capitanata. Population, 5,450.

BARTON, ANDREW, a Scotch naval commander under James IV. He lost his life in an engagement on the Downs, Aug. 2, 1511.

BARTON, BERNARD, an English poet, born in London, Jan. 31, 1784, died in 1849. His parents were members of the Society of Friends, to whose tenets Barton adhered through life. In 1810 he became clerk in a banking house at Woodbridge, in which situation he continued until within two years of his death. His first poetical efforts were published in 1812, under the title of *Metrical Effusions*, which brought him in correspondence with the poet Southey. *Poems by An Amateur*, and *Poems* (1820), increased his reputation and gained him the friendship of Lamb and Byron. After his death, which took place suddenly, his daughter published *Selections from the Poems and Letters of Bernard Barton*.

BARTON, BENJAMIN SMITH, born at Lancaster, Pa., Feb. 10, 1766, died at Philadelphia, Dec. 19, 1815. He studied at York, Pa., in Philadelphia, Edinburgh and London. He became a physician, and settled in Philadelphia. He held a professorship in the University of Pennsylvania, and was a member of different American and European societies. He wrote articles for journals and published books on botany and other subjects.

BARTON, CLARA, born in Oxford, Mass., about 1830. In 1854 she entered the Patent Office as a clerk, having previously been a successful teacher in Bordentown, N. J. When the war broke out she resigned her clerkship and devoted herself to the care of the wounded soldiers, and in 1864 was at the front as superintendent of the hospitals in the Army of the James. On the conclusion of the war she conducted a search for missing soldiers of the Union armies, and at Andersonville identified and marked many graves of Union prisoners. She has since done good service abroad in her chosen line of work, aiding efficiently the Red Cross society during the Franco-German war, and when the American Red Cross society was organized, in 1881, became its first president. See RED CROSS SOCIETIES, in these Revisions and Additions.

BARTON, THOMAS PENNAED, born at Philadelphia in 1803, died April 5, 1869. He was the son of Dr. Benj. S. Barton. He was a man of literary taste and had a fine library, which included 2,000 rare editions of Shakespeare, and which he bequeathed to the Boston Public Library.

BARTON BEDS, a strata of sand and clay included in the Bagshot beds.

BARTON-ON-HUMBER, an ancient town in North Lincolnshire, England, formerly one of the important ports of the Humber River. The most important articles of production are ropes, sacking, pottery, tiles, brick and whiting. Quarries in the vicinity yield chalk and oolite. One of the objects of interest is St. Peter's Church, built about the time of the Conquest.

BARTON'S BUTTONS (also called Iris Ornaments). Mr. John Barton succeeded, by means of a dividing engine, in engraving on steel and similar surfaces lines which were distant from one another only two ten-thousandths of an inch. Steel dies thus marked with hair lines are used to stamp buttons and articles of ornament. These, when stamped, reflect the colors of the rainbow.

BARTRAM, JOHN, born near Darby, Pa., March 23, 1699, died at Kingsessing, Pa., Sept. 22, 1777. He acquired an extensive knowledge of medicine, surgery and botany. Linnaeus called him the "greatest natural botanist in the world." On the Schuylkill River, at the place called Kingsessing, he laid out a botanical garden, which was the

first of the kind in America. He traveled to make botanical collections, wrote accounts of his excursions, and received the honorable appointment of American botanist to George III.

BARTRAM, WILLIAM, son of the preceding, born at Kingessing, Pa., Feb. 9, 1739, died at the same place July 22, 1823. He was a botanist and traveled in the eastern States, making scientific collections. For several years he raised indigo on the St. John's River in Florida. He published books descriptive of his travels, was connected with scientific societies, made a very complete list of native birds, and illustrated Barton's *Elements of Botany*.

BARTSCH, JOHANN ADAM BRERNHARD, a German engraver, born in Vienna, Aug. 17, 1757, died there Aug. 21, 1821. He wrote *The Painter-Engraver*.

BARU, a fine, woolly substance, found at the base of the leaves of the *Saguerus saccharifer*, one of the most valuable sago-palms of the Indian archipelago. It is used for caulking ships, for stuffing cushions, and for other similar purposes.

BARYE, ANTOINE LOUIS, born in Paris, Sept. 24, 1795, died June 25, 1875. He served in the army in 1812-14, and afterward took up drawing and modeling. His teachers were Bosio and Baron. He became especially famous for his statuettes of animals, some of which are to be seen in the art galleries of New York and Baltimore. He received the cross of the Legion of Honor.

BAS, or BARZ, a small island in the English Channel, belonging to France, situated off the north coast of the department of Finisterre. It is about three miles in length and two in breadth, on an elevation 223 feet above the sea, and is defended by two forts and batteries. It has a light-house, and a population of about 1,200, whose chief occupation is fishing.

BASALT, a volcanic rock of feldspar and hornblende, or augite. It is a variety of trap-rock, of conchoidal fracture, compact in texture, and either black or dark green or gray in color. Its characteristic columnar structure, as seen at the Giant's Causeway and at Fingal's Cave, is remarkable. See *Britannica*, Vol. X, p. 235.

BASCOM, HENRY BIDLEMAN, an eloquent bishop of the Methodist Episcopal Church, South, born at Hancock, N. Y., May 27, 1796, died in Louisville, Ky., Sept. 8, 1850. He was licensed to preach when in his nineteenth year. His first work was done in Ohio, on the frontier, where he suffered many hardships. Subsequently he preached in Tennessee and Kentucky. He was appointed chaplain to Congress, and later he accepted the presidency of Madison College, Uniontown, Pa. He was called to the presidency of four different colleges—three calls coming at the same time. He was a delegate to several important Methodist conventions, and became editor of the "Southern Methodist Quarterly Review." The works of Bishop Bascom have been edited by Rev. T. N. Ralston.

BASCOM, JOHN, born at Genoa, N. Y., May 1, 1827. He graduated at Williams College and at Andover Theological Seminary; was tutor and also professor at Williams. While teaching here he was pastor of a church in Vermont. In 1874 he was called to be president of the Wisconsin University.

BASE: in heraldry, the lower part of the shield. Dexter, middle and sinister base mean, respectively, the left corner, middle and right lower corners.

BASE: in architecture, the lowest part of a wall, that part on which a pillar or shaft rests. The column is the only one having no base. As

a usual thing the base is half the lower diameter of the shaft. The base has two parts, the plinth and the molding. The former is a flat, square block on which the molding (generally circular in shape) rests. See **COLUMN**, in these Revisions and Additions.

BASE, or Bass, in music is the deepest or lowest part, by whatever instrument it may be performed. The base next to the upper part is most striking, the freest in its movements, and richest in effect. In respect to harmony the base is the most important part in music, containing more frequently the fundamental notes of the chords, while on it is formed the most important and effective figure in music, called "organ point." Base is also the name of the lowest and deepest quality of the human voice. It only begins to show itself at the years of manhood, and is generally a change from the alto voice of a boy. Base is also an old stringed instrument, with from five to six strings, played with a bow. Double base (contra-bass) is the deepest toned of stringed instruments.

BASE BALL, a game which has become so popular in the United States that it has won the title of "The National Game." It was probably named from the bases used in making the runs, which constitute one of its prominent features. The origin of the game is a matter of dispute. Some contend that it was evolved from the old game of "rounders," known to the boys of England, and adduce in support of their theory the coupling of base ball with cricket by Jane Austen in Northanger Abbey. Others maintain that it is a development of the school-boy game of "one old cat," in which there were a pitcher, a catcher and a batter. For the early history of base ball, with diagram, description and early rules of the game, see *Britannica*, Vol. III, pp. 406-7.

The National Association of Base Ball Players was organized March 10, 1858. The first contest for the championship took place the same year at the Elysian Fields, Hoboken, N. J. As early as 1866 base ball had become so popular that on Oct. 1 of that year 80,000 people gathered to witness the championship game to be played in Philadelphia; and so dense was the crowd that the players were unable to proceed, and the contest was postponed. In 1871 the National gave place to the Professional Association, which was organized March 17; and the employment of paid players became a recognized feature of the conduct of the championship matches. This association was superseded by the National League, organized Feb. 2, 1876. From the date of its formation to the present writing, 1891, twenty-three cities have had representative clubs in the National League. The International Association, representing professional clubs in the United States and Canada, was formed Feb. 20, 1877. A similar association, bearing the same name and composed of seceders from the International League, was formed in 1887. The International League was formed in 1886, by the union of the clubs of the New York State League and those of Toronto and Hamilton; it was known temporarily during 1888-1889 as the International Association. The National Association, made up of eastern professionals, was in existence from 1879 to 1881. The National League Alliance was formed in 1877. The Eastern Championship Association was organized in 1881. The American Association was formed Nov. 2, 1881. The Northwestern League was organized Jan. 2, 1879. The Western League in 1886. The Western Association, Oct. 28, 1887. The Inter-State Association, Nov. 9, 1882. The Union Association existed from 1883 to 1885. The Eastern League was in existence for about four years following



BASE.

Sept. 25, 1883. The Southern League began in 1885, and lasted three years. The New England League, following the short-lived Eastern and Southern N. E. leagues, was organized in 1885 and continued in existence three seasons. The Central League was formed in 1887. The Atlantic Association succeeded the New England and Central leagues in 1889. The brief existence, during 1890, of the Players' League is memorable in base ball circles on account of the spirited contests between that organization and the National League, from which it had been formed, and with which, after much controversy, it was reunited. Among the minor professional leagues are the Ontario, Central Inter-State, Tri-State, Middle States or Inter-State, North Pacific, and the various distinctive associations named from their respective States. The principal amateur associations are those composed of students of the various colleges from which they are severally named.

The trip of the American base ball players to England in 1874 is noted in *Britannica*, Vol. III, p. 406. Fourteen games of base ball were played between the Boston and Philadelphia clubs. Seven games of cricket, the national game of Great Britain, were also played with the best elevens in the principal cities of England and Ireland, in all of which the Americans met with easy and uninterrupted success. Other trips abroad by American players have been two to Havana, in 1879 and 1886, and a tour around the world in 1888-89. The Chicago club and a picked team known, as the All America, accompanied by newspaper correspondents and others, left Chicago Oct. 20, for San Francisco, Honolulu, Auckland, Sydney, Melbourne, and other principal cities of Australia, Colombo in Ceylon, the Pyramids of Egypt, Brindisi, Naples, Rome, Florence, Paris, London, Bristol, Manchester, Liverpool, Birmingham, Glasgow, Belfast, Dublin, Queenstown, New York, Philadelphia, and Chicago, arriving April 20, having made the trip in just six months and played fifty-three games.

Of "best-on-record" performances, the largest number of innings played is 24, by Harvard vs. Manchester, at Boston, May 11, 1877. The quickest game was played in 47 minutes by Dayton vs. Ironton, at Dayton, Sept. 19, 1884. The largest number of games played by a club during any season is 186, by the Detroit club, March 11 to Oct. 26, 1887. The largest number of games played by an individual player is 184, by S. L. Thompson, of the same club during the same season. For the honor of having thrown a ball the greatest distance there are several claimants. The recorded distance is 406 feet $7\frac{1}{2}$ inches, by John Hatfield, at Brooklyn, Oct. 15, 1872. It is claimed, however, that a ball was thrown 406 feet $\frac{1}{2}$ inch by Ed. Crane, at Cincinnati, Oct. 12, 1884; and another 402 feet $2\frac{1}{2}$ inches by H. Vaughn, at Buffalo, June 23, 1890. The official count of the aggregate number of spectators at the games of the national and players' leagues during the season of 1890 is 1,794,565.

BASE OF OPERATIONS: in military tactics, the spot on which the commander-in-chief relies for his magazine or stronghold. It is not only the source of supplies, but also the place where the sick and wounded are sent, and where the army falls back when pressed by the enemy.

BASECOURT (BASSE COUR), the outer court of a feudal mansion, which contained the stable-yard and accommodation for servants. It was distinct from the principal quadrangle, and was sometimes constructed of timber.

BASEDOW, JOHANN BERNHARD, a German educational reformer, born in Hafnburg, Sept. 11, 1728, died in Magdeburg, July 25, 1790. He sought to

realize the ideas of Rousseau. He founded at Dessau, in 1774, a model school, which he called *Philanthropin*. He endeavored to awaken a sentiment of cosmopolitanism and to popularize learning. His numerous works drew attention to, and aroused interest in, the subject of education and set in circulation many good ideas.

BASEDOW'S DISEASE, or GRAVES' DISEASE, or Exophthalmic Goitre, a disease more frequent among women than among men. Its characteristic symptoms are enlarged thyroid gland, prominent eye-balls and palpitation. Patients usually recover from this difficulty, as its remedies are gentle exercise, nourishing food and chalybeates.

BASELLA, a genus of plants belonging to the natural order *Chenopodiaceæ*. The species are all tropical. They have twining stems, in common use as pot herbs in the East Indies, and are cultivated in China. In the neighborhood of Paris they are raised in hot beds, transplanted into warm borders, and furnish a substitute for spinach in the summer. *Basella rubra* yields a very rich purple dye. The great fleshy root of *Basella tuberosa*, a South American species, is edible.

BASHAHR, one of the Punjab hill states on the lower slopes of the Himalayas. The province has an area of 3,320 square miles. The river Sutlej flows through it from east to west. The people are of the Hindoo race.

BASHAW (Turkish, *basch*; Arabic, *basha*; Persian, *pasha*, the way in which the word is now generally written), signifies head, or master, a Turkish title of honor given to the viceroys, provincial governors, generals, and other distinguished public men. The term bashaw is also used to characterize a man of an arrogant and domineering disposition.

BASHEE, or BASHI ISLANDS, a small cluster in the line between Luzon, the chief of the Philippine chain, and Formosa, in lat. 21° N. and long. 122° east. They are a dependency of the Philippines, having been colonized by the Spaniards in 1783, and they form a link in the vast archipelago which, from Formosa to Sumatra, inclusive, connects the southeast of China with the west of Malacca. They were discovered in 1687 by Dampier, who called them Bashi Islands on account of the popularity among the islanders of an intoxicating liquor of that name.

BASHI-BAZOUKS, irregular troopers in the pay of the Sultan. They are mostly Asiatics, from some of the pashalics in Asiatic Turkey. They are wild, turbulent men, ready to enter the Sultan's service under some leader whom they can understand, and still more ready to plunder whenever an opportunity offers.

BASIDOH, or BASSADORE, a village at the west end of the Island of Kishm. It has a hospital and a bazaar.

BASIENTO, or BASENTO, a river of Italy, which, rising in the Apennines, west of Potenza, flows in an east-south-east direction through the province of Basilicata to the Gulf of Taranto. Near its mouth are the remains of the once-famous city of Metapontum, where Pythagoras ended his days.

BASIL, a name given to several herbs of the natural order *Labiatae*. The species are all natives of the tropics, or of the warmer temperate parts of the world, and are generally characterized by a pleasant aromatic smell and taste. Cultivated for culinary purposes, being used as seasoning.

BASILEAN MANUSCRIPT, the name given to two Greek manuscripts of the New Testament. One is a nearly complete copy of the Gospels written at Constantinople, about the eighth century; the other a copy of the whole New Testament, which must have been written in the tenth century.

These valuable manuscripts are in the library at Bâle.

BASILIAN MANUSCRIPT, a manuscript of the Apocalypse, now in the Vatican, which manuscript derives its name from the Basilian monastery in Rome, where it formerly belonged. It is written in uncial characters and is of the eighth century.

BASILIAN MONKS, or **MONKS of St. BASIL**, a religious order originated in the year 363 by Saint Basil the Great. His system was approved by the Pope. Monasteries of this order are found in Italy, Spain, Asia Minor and other countries.

BASILICON, a name given to an ointment composed of yellow wax, black pitch, resin and olive oil. These materials are melted together over a slow fire, and the mixture while hot is strained through linen. Basilicon ointment is used as a gently stimulant application to blistered surfaces, indolent ulcers, burns, scalds and chilblains.

BASILICON DORON, a celebrated prose work of King James VI, of Scotland, written for the instruction of his son, Prince Henry. It consists of three books. The first treats "Of a King's Christian Duty Toward God;" the second, "Of a King's Duty in His Office;" and the third, "Of a King's Behavior in Indifferent Things." It was first published in 1599. It has been translated into Latin and French, and is now considered a literary curiosity. See *Britannica*, Vol. XIII, p. 558; XXI, p. 509.

BASILISCUS, an emperor of the East, who died about 477. He was a brother of Verina, the wife of Leo I. The latter sent him with an armed force against the Vandal Genseric, who conquered him. In the year 474 he endeavored to usurp the throne, but Zeno defeated him.

BASIM, or **BASSIM**, a town of India, situated in a very populous and fertile district of the province of Berar. It is 413 miles northeast of Bombay.

BASIN, a geographical term, meaning the tract of land drained by a river. The hills or mountains dividing one river basin from another are called water-sheds.

BASIN: in geology, the term applied to a depression in the strata in which beds of a later age have been deposited.

BASKING SHARK, the popular name given to a species of shark (*Selache maxima*) on account of its fondness for reposing on the surface of the water in the sun. Bone-shark, sail-fish, sun-fish, or ho-mother are other vernacular names for this fish. Several barrels of oil are sometimes obtained from the liver of a single shark of this species. See *Britannica*, Vol. XII, p. 646; Vol. XXI, p. 777.

BASRA, **BASSORAH**, **BALSORA**, or **BUSSORAH**, a town of Asiatic Turkey, on the west bank of the Euphrates, 70 miles from the Persian Gulf. The river at Basra divides into several channels, and ships can sail from the gulf to the city, making it a place of considerable commercial importance. The climate is unhealthy, and the houses are mostly low huts. It was a place of great importance a few centuries ago, and the Turks and Persians had many conflicts to decide as to its ownership.

BASS, or **BASSWOOD** (corruption of the Danish and German word *bast*, meaning inner bark), the linden or lime tree, common in the United States. Its leaves are serrate and nearly heart-shaped; it bears a woody, one-celled nut, and its blossoms furnish abundant honey for bees. The wood is soft and light, of little use for fuel, but valued for carriage making. The bark of the ornamental basswood, *Tilia heterophylla*, is common in the southern and western parts of the United States, and frequently grows to a great size and height. See **LIME**, or **LINDEN**, *Britannica*, Vol. XIV, p. 648; Vol. XIII, p. 808.

BASS, the name of a food fish, originally called perch. There are many species, for which some of the popular names are black bass, calico bass (spotted variety found in the St. Lawrence), channel bass, grass bass (*Centrarchus hexacanthus*), Oswego bass, red bass (*Labrax rufus*), rock bass (*Centrarchus æneus*), sea bass, striped bass, and white bass (*Labrax albidus*). This fish is found in fresh or salt water, and in or near the countries of Europe and North America. The name of the typical fish is *Labrax lupus*.

BASS, **MICHAEL THOMAS** (1799-1884), a famous English brewer. He was very wealthy, and used his money for many benevolent purposes.

BASSADORE, the principal station on the Persian Gulf for British ships. It is at the western end of the island of Kishm.

BASSE-CHANTANTE: in music, the higher of the two basses in a score, partaking of more melody, and performed by the violoncello.

BASSE-CONTRAÎTE, a French term in music, meaning a bass melody of a few bars repeated throughout the piece, while other parts vary.

BASSEIN, a city of India, situated in a district of the same name and on the left bank of a branch of the Irrawaddy. It commands the navigation of the river, and is in the possession of the English. Also a ruined town in the presidency of Bombay, situated on an island of the same name.

BASSES, two ledges of rocks to the southeast of Ceylon, distinguished as **GREAT** and **LITTLE**—the former group being more to the southwest, the latter more to the northeast. Their importance arises merely from their position, which is in a great thoroughfare of traffic.

BASSET HORN (*Corno di bassetto*), the richest and softest of all wind instruments, invented in Passau, in 1770. It is similar to the clarinet in tone and fingering.

BASSIA, a genus of plants of the natural order *Sapotaceæ*. The species are trees, tropical or subtropical, the flowers being remarkable for their fleshy corolla, and for the abundance of oil or butyraceous fat which the seeds contain, and which is used for many purposes by the inhabitants of the countries to which they are indigenous. The fruit has a pulpy rind, and three or four one-seeded cells; the ovary has eight cells, but some of them are always abortive. *Vitellaria Lucuma* is highly valued, and forms an important article of internal commerce in the interior of Africa. The seeds of the fruit are dried in the sun, or in an oven, and the kernels are boiled in water, in order to obtain the butter from them, which not only keeps a whole year without salt, but is whiter, more solid and more pleasant to the taste than the butter of cow's milk. It is used both as an article of food and medicine.

BASSIA LONGIFOLIA, a native of Coromandel, yields a large quantity of oil, which is used for lamps, soap-making, and sometimes in cookery; the fleshy flowers are eaten and much esteemed. The timber is so hard and durable as to be compared in quality to teak.

BASSOMPIERRE, **FRANCOIS**, **BARON DE**, born at Harnel, Lorraine, in 1579, died in 1646. Belonging to one of the oldest French families, he came at the age of 20 to the French court, where he gained the favor of Henry IV. After the murder of the king he was appointed colonel of the Swiss Guards. In 1622 he was raised to the rank of marshal of France, and took the pass of Suza by storm in 1629. He became an object of suspicion and dislike to Richelieu, who caused him to be cast into the Bastille in 1631, where he remained twelve years. His memoirs, written in the Bastille, are rendered interesting by their spirited style.

BAST (or **PHLEUM**), the inner bark of the stems of exogenous plants or trees. In the latter case it is readily distinguished from the wood and the true bark, as it lies between the two. Flax, hemp and jute are made from the bast of certain plants. Ropes, mats and even shoes are made from the inner bark of trees. The linden-tree furnishes the bast for the manufacture of the last three articles mentioned.

BASTARDY, another name for illegitimacy. The laws of the several States with regard to bastardy are all founded upon and in most cases similar to those of the English law, fully set forth in *Britannica*, Vol. III, pp. 426-28.

BASTARDY, DECLARATOR OF, a suit which may be instituted in the Scotch court of sessions for the purpose of having it declared that the lands or other property belonging to a deceased bastard, belong to a donatory, in virtue of the gift from the crown.

BASTIAN, ADOLF, German traveler and anthropologist, born at Bremen, June 26, 1826. He pursued his studies at Berlin, Heidelberg, Prague, Jena and Würzburg. In 1851 he sailed to Australia as ship's doctor, after which he visited North and South America, Europe, Asia and Africa, collecting, in the mean time, a wonderful store of information concerning the history of man. He published thirty works, among which are: *Der Mensch in der Geschichte*, *Die Völker des östlichen Asien*, *Religions-philosophische Probleme*, and *Der Fetische an der Küste Guineas*.

BASTIAN, HENRY CHARLTON, English physiologist, born at Truro, Cornwall, in 1837. He was educated at Falmouth and the University College in London, where he became successively professor of pathological anatomy, hospital surgeon and professor of clinical medicine. He is a champion of the spontaneous generation theory. Among his works are: *Modes of Origin of Lowest Organisms*, *Beginnings of Life*, *Evolution*, and *The Brain as an Organ of Mind*.

BASTIDE, JULES, a French journalist and politician, born in Paris in 1800. He was minister of foreign affairs in 1848, and member of the constituent assembly. In 1821 he became one of the first members of the French Carbonari; in 1832 was condemned to death, but escaped to London, was pardoned in 1834, and returned to Paris. In 1847 he founded the *Revue Nationale*. During the revolution of 1848 he was minister of foreign affairs.

BASTIEN-LEPAGE, JULES, a French painter born at Damvillers in 1850, died in 1884. Cabanel was his instructor. He painted *In Spring*, *The First Communion*, *The Beggar*, and *Joan of Arc Listening to the Voices*. He was a fine portrait painter.

BASTINADO, a name given to the punishment in use over the whole East, which consists in blows with a stick, generally upon the soles of the feet, but sometimes upon the back.

BASTION (formerly called bulwark): in fortification, an earthwork or projecting tower, built usually at the corner of a wall surrounding a city. A bastion is generally five-sided; the two sides farthest from the city-wall are called the "flanks;" the two which unite them with the city-wall are called "faces," and the fifth wall is the "gorge;" this connects the two face-walls and joins the curtain-walls. Some bastions are hollow, but military engineers consider solid ones best for defense. The top of the bastion is built sufficiently strong to support heavy guns. Detached bastions are sometimes built opposite the chief angles of a place, and smaller bastions are behind them within the walls.

BASUTOLAND, a British crown protectorate in South Africa, adjoining Cape Colony on the north-

east. Area, 10,293 square miles. Population in 1888: (estimated), 180,000. Capital, Maseru, with a population of 660. The Basutos raise immense herds of cattle. White or European settlements are prohibited.

The productions are wool, wheat, mealies, and Kafir corn. There are indications of iron and copper and coal has been found and is used in some parts, two mines being actively worked for local supply.

Basutoland was annexed to the Cape in August, 1871, but it was placed directly under the authority of the Crown from March 13, 1884.

The territory is now governed by a resident commissioner under the direction of the high commissioner for South Africa, the latter possessing the legislative authority, which is exercised by proclamation.

In 1890 there were 100 schools, chiefly missionary, with 5,042 scholars, the schools receiving a government grant of \$23,170. There are no navigable water-ways, but the roads are good, the postal approaches being through Cape Colony and the Orange Free State. The revenue in 1889 was \$186,050; expenditures, \$174,360; exports, about \$500,000.

BASUTOS, a South African race of the great Bantu stock and allied to the Bechuanas. These people belong to the same stock as the Kaffirs, but are superior to them in intelligence and inferior in bodily development and warlike energy. The political nation of Basutos originated about 1800. Their second king was Moshesh, who did considerable for his people. He fought the English and Boers for forty years, at the end of which time (1860) the English were victorious. Until 1884 the English had trouble with the newly-acquired territory, but all difficulties were then settled by its becoming an appendage of the British Crown.

BASYLE, a name formerly given to a simple and compound substance, which can unite with oxygen to produce a base. Thus all the metals are examples of basyles, and ammonium, ethylemethyle, etc., represent compound basyles. The term now in use is radical, or compound radical.

BAT: in military matters, originally the name of a kind of pack-saddle, and so a bat-horse was a baggage-horse bearing a bat or pack.

BATANGAS, a seaport town of the Philippines island of Luzon and capital of the province of the same name. Lat. 13° 45' N., long. 121° 5' E., 50 miles south from Manilla, founded in 1581. It is well built, has an elegant appearance, is finely situated on an extensive bay, which opens into the Strait of Mindoro. Considerable advantage is taken of its facilities for commerce. Population of town and district, 17,000.

BATARDEAN, a strong wall of masonry built across the outer ditch of a fortress to sustain the pressure of water when one part of the ditch is dry and the rest is wet. It is built up to an angle at the top, and is armed with spikes to prevent the enemy from crossing, and sometimes a stone tower is provided to strengthen the defense. There is a sluice-gate to regulate the admission of water.

BATATAS, or **SWEET POTATO**, a perennial plant with long creeping stems, heart-shaped leaves on long stalks, and variously lobed large purple flowers much resembling those of the best known species of *Convolvulus*, and very long oblong acuminated tubers. It is a native of the East Indies, but is now cultivated in all tropical and sub-tropical countries for its tubers, which are highly esteemed as an article of food, eaten either roasted or boiled. They are sweet, wholesome and nutritious, but somewhat laxative. It is extensively cultivated in the States bordering on the Atlantic as far north as middle New Jersey, where it is of superio-

quality. The plant grows on sandy soils in Georgia and Carolina.

BATAVI (sometimes written *Vatavi*), German people who anciently lived in a part of Holland, on or near the island Batavia, which lies between a branch of the Rhine, the Waal River, and Meuse River. They were subjects of Rome, having been conquered by Germanicus, but were allowed many privileges. They were exempt from taxation, but were obliged to furnish soldiers for the Roman wars.

BATAVIA, the island inhabited by the Batavi. Batavian Republic was the name given the Netherlands May 16, 1795, and by this they were called till June 5, 1806, when they were made into the kingdom of Holland, under Louis Bonaparte.

BATAVIA, a manufacturing town of Illinois, pleasantly situated on Fox River, about seven miles north of Aurora. It contains a private asylum for the insane, known as Bellevue Place, and extensive manufactories of machinery, windmills and paper.

BATAVIA, a town of western New York, on the Tonawanda Creek. It has a State institution for the blind, and manufactories of plows, sashes and blinds, and agricultural implements.

BATCHIAN, or **BATJAN**, an island of the Dutch East Indies in the Molucca or Spice Islands group. Its area is about 900 square miles; the country is mountainous and fertile. Among the productions are gold, copper, rice and cloves.

BATENBURG, one of the Netherlands, in the province of Gelderland, situated on the right bank of the Maese, nine miles west of Nymegen. It is worthy of notice only on account of its association with the Romans, whose *Oppidum Batavorum* it was.

BATES, EDWARD, born in Belmont, Va., Sept. 4, 1793, died in St. Louis, Mo., March 25, 1869. After receiving his education he intended to go to sea, but was prevented. He served in the Virginia militia in 1813 and then went to Missouri, where he practiced law. He was made prosecuting attorney for the St. Louis circuit, and then attorney-general of Missouri. In 1822 he was sent to the legislature. In 1850, after having devoted about twenty-five years to the profession of law, he was offered the position of secretary of war by President Fillmore, but declined. At the National Republican convention where Lincoln was nominated for the presidency, Mr. Bates' name received many votes. After Mr. Lincoln's election he chose Mr. Bates for attorney-general.

BATES, JOSHUA, born at Weymouth, Mass., in 1788, died at London, Sept. 24, 1864. He early showed great business aptitude, and at fifteen entered the counting-house of William Gray & Son, of Boston. In 1812, having been unsuccessful in a business venture with Mr. Beckford, he returned to his old firm and was sent by them to Europe, where he formed acquaintances in the foremost business houses. In 1828 John Baring and himself were taken into the firm of Baring Brothers & Co. When difficulties arose between the United States and England with reference to the war of 1812, Mr. Bates was chosen umpire (1854), and his decisions gave entire satisfaction. Although much of his life was spent in England, yet he kept a kindly feeling for his own country, and in 1854 he gave \$50,000 to the city of Boston to provide for a public library. Afterwards he presented the library with 30,000 volumes.

BATES, SAMUEL PENNIMAN, born at Mendon, Mass., Jan. 29, 1827. He graduated at Brown University, and then spent several years in teaching in Massachusetts. His lectures to teachers occasioned the founding of the first normal schools in that section of the State. In 1857 he was called to

Pennsylvania as superintendent of schools in Crawford county. In 1860 he became deputy state superintendent of schools. His writings are mostly on educational subjects. He has published the *Battle of Gettysburg*, *Battle of Chancellorsville* and other historical works.

BATESVILLE, a prosperous educational town of Arkansas, county-seat of Independence county, pleasantly situated on the north bank of the White River, about ninety miles north of Little Rock. It contains several flouring mills and woolen mills, and is the seat of Arkansas College, Batesville Academy, and Soulesbury Institute.

BATH, the county-seat of Steuben county, N. Y., situated at a railroad junction. It has a court-house, several churches, an orphan asylum, two newspapers and the New York State Soldiers' Home.

BATHORI, ELIZABETH, the niece of Stephen Bathori, king of Poland, and wife of Count Nadasdi. A Hungarian nobleman, born in the latter half of 16th century, died in 1614. Her diabolical cruelty has condemned her memory to eternal infamy.

BATHOS, a term employed by critics to designate a ludicrous descent from a lofty thought to a mean one, or sinking below the ordinary level of thought in a ridiculous effort to aspire. It is of the essence of bathos that he who is guilty of it should be unconscious of his fall, and while groveling on the earth should imagine he is still cleaving the heavens.

BATH STONE, a building stone extensively used in England on account of its beauty. It is obtained from the quarries in the Lower Oolite in Wiltshire and Somersetshire. The name is derived from the neighborhood of several of the quarries to Bath.

BATHYBIUS, a name given by Huxley to the tenacious, slimy masses of so-called animal matter found at certain places along the sea-bottom, usually at a great depth. The name is from two Greek words meaning "deep" and "life," yet it is a matter of much scientific doubt whether *Bathybius* is a living organism.

BATHYMETRY, the art of measuring depths at sea. The greatest depth yet found in the ocean is 4,575 fathoms.

BATIGNOLLES, a thriving town northeast of Paris, France, of which city it forms a suburb. Population, 43,820.

BATISTE, a fine texture of cotton thought to have derived its name either from its original maker, Baptiste, or from its use in drying the foreheads of children after baptism.

BATLEY, a manufacturing town of the West Riding of Yorkshire. It has 50 mills and factories, where are manufactured different kinds of heavy woolen cloth, such as army cloth, druggets, etc. The city has a town-hall, over 30 churches, a chamber of commerce, a mechanics' institute and a market place.

BAT MALTHÆA, a fish of the Atlantic, remarkable for its grotesque shape. Its scientific name is *Malthæa vespertilio*.

BATMAN, the soldier groom of a mounted officer. In the British army officers are allowed a body servant as well as a groom for their horse. During active service the batman takes his place in the ranks. See **BAT**.

BATN-EL-HAGAR, a stony district, along the Nile, in latitude 21°—22° north, and longitude 30°—40°, 31° 10' east. The Nile in the upper portion of the district is often forced by the approaching rocks into a very narrow channel, and its navigation is frequently interrupted by small islands, rocks and cataracts. The district is peopled by Arabs.

BATON, the name of a short staff, presented by the sovereign to each field-marshal as a symbol of his newly-bestowed authority. It is also the name of a long staff carried by the drum-major of an infantry regiment.

BATON ROUGE, a city of Louisiana, capital of the State, and of East Baton Rouge parish (county), is on the east bank of the Mississippi River, 130 miles above New Orleans. From 1847 to 1864 it was the State capital, when it gave place to New Orleans, and again has been the State capital since 1882. The situation is on a bluff about 25 feet above the highest water-mark, and affords a fine view of the river and surrounding country. The district is exceedingly fertile, yielding abundant crops of cotton, sugar, Indian corn, sweet potatoes, etc. Several weekly newspapers and one tri-weekly are published here. It has a court-house, State penitentiary, national arsenal and barracks, military hospital, asylums for the deaf and dumb and blind, and a State University. On the 5th of August, 1862, Gen. Breckinridge attacked the Union army here and was repulsed. The Union Gen. Williams defending the city was killed in the action. Population in 1870, 6,498; in 1880, 7,197; in 1890, 10,397. See *Britannica*, Vol. III, p. 442.

BATON-SINISTER, an heraldic indication of illegitimacy; a bar laid diagonally over the family arms, on a shield from sinister to dexter. The terms "bar-sinister" or "bastard-bar" are erroneously used for "baton-sinister."

BATRACHOMYOMACHIA, *The Battle of the Frogs and Mice*, a Greek mock-heroic poem erroneously ascribed to Homer, with whose work it has been generally printed. Pigres of Caria, who lived in the times of the Persian wars, was named among the ancients as its author. It is a parody on the *Iliad*, in which the military preparations and contests of beasts, with single combats, intervention of the gods, and other Homeric circumstances, are described with much humor.

BATSHIAN, one of the Moluccas, lying southwest of Gilolo. It belongs to the Dutch, who in 1610 took it from Spain, or rather from Portugal, then a portion of the Spanish monarchy. Its area is 900 square miles. It is almost intersected by the equator, being only 35' south, with a longitude of 127° 35' east. It produces large sago and cocoa palms, rice and the best cloves in the Moluccas. Chief town Batshian, near the center of the island. Population, 1,110.

BATTA, an allowance to the British army in India in addition to the ordinary pay of officers. The pay is fixed, but the batta varies according to the part of the country in which the troops are placed, and also depends upon the circumstances of their being in the field or in cantonments. If in the field, or more than 200 miles from the presidential government, the officers receive full batta; if in garrison within that distance, half batta.

BATTASZEK, a market town of Hungary, county Tolna, on the west of the Danube. Population, 6,642.

BATTEN, **LAY** or **LATHE**, the swing utensil of a loom by which the welt or woof is struck home, and in which the shuttle runs.

BATTENS, sawn timber of smaller dimensions than the kind called planks. They are usually from 12 to 14 feet long, seven inches broad, and 2½ inches thick. Cut into two boards (1¼ inch thick), they are used for flooring; cut into three boards, they are put on roofs below slates; in narrower pieces they are put upright on walls for fixing the laths for plastering.

BATTER, a term used in architecture with reference to a wall which inclines away from the perpendicular as it rises from the ground.

BATTERSEA, a southwest suburb of London, situated on the south bank of the Thames. It is partly laid out in market-gardens, and has many manufactories. The flats called Battersea Fields, once famed as a rich botanical station, are now formed into a public park. Adjacent to the park the Thames is crossed by Battersea bridge, Albert bridge, Chelsea bridge and a railroad bridge.

BATTHYANYI, **LOUIS**, Count, a Hungarian patriot, born in 1806 at Presburg. Appointed to the presidency of the ministry in 1848, he favored a liberal policy, and at the end of six months had to resign. When his friends were defeated in battle by the Austrians he was court-martialed and unjustly condemned to death. He was shot Oct. 6, 1849.

BATTLE-AXE, a weapon much employed by the early northern nations, Celtic and Scandinavian, and requiring great strength in its use. It could be held with one hand or with both hands. When held with one hand it could be wielded equally by horse and foot; but if held by both hands it could be wielded by foot soldiers only. The battle-axe had a longer handle and a broader, stronger, and sharper blade than the common axe. See *Britannica*, Vol. II, p. 555.

BATTLE CREEK, a flourishing city in Calhoun county, Michigan, on the Kalamazoo River, at the mouth of Battle Creek, and on the Michigan Central and the Chicago & Lake Huron Railroad at the point of their crossing. It is 45 miles southwest of Lansing, the State capital, 121 miles west of Detroit, and 163 miles east-northeast of Chicago. Battle Creek affords great water-power, which has helped to build up the manufacturing interests. Here are manufactories of thrashing machines, hoes, carriages, and furniture, knitting mills, and several flour mills and iron foundries. The city is well supplied with churches, has one high school and an Advent college. The Potter House (hotel) is a fine building, and the public school building cost \$80,000. Population in 1880, 7,063; in 1890, 18,090.

BATTLEDOOR, or **BATTLEDORE** (probably from the Spanish, *batidor*, a beater), the name of an instrument shaped like a small racket, and used in playing battledoor and shuttlecock. This game has been a favorite one in Europe since the fourteenth century.

BATTLEFORD, a Canadian town in Saskatchewan on the river of the latter name, at its junction with Battle River. This place was formerly the capital of the Northwest Territory.

BATTLEMENT, a notched or indented parapet used in fortification. The rising parts are called cops or merlons, the spaces by which they are separated, crenels, embrasures, and sometimes loops. The object of the device is to enable the soldier to shelter himself behind the merlon while he shoots through the embrasure. The bas-reliefs of Nineveh and the Egyptian paintings testify to its antiquity.

BATTLE-PIECES, paintings which represent military conflicts. The *Battle of the Amazons*, by Rubens, and *Battles of Alexander the Great* are fine specimens.

BATTLE, **WAGER OF**: in ancient English law, a kind of trial for the decision of controversy, in which the accused threw down his glove and demanded to prove his guilt or innocence by a fight with his accuser, the weapons chosen being staves or wands. If the prosecutor accepted the challenge he picked up the glove and the fight took place before the court of law, continuing till the stars came out at night, or till one of the combatants was killed. The three kinds of cases tried in this manner were: in issues joined upon a writ of right; in appeals of felony; and court-martial or court of chivalry.

trials. Women and infirm people could choose champions and were not themselves obliged to fight. William the Conqueror introduced this "wager of battle," and it was only in 1818 that the barbarous law was repealed.

BATTUE (*battre*, the French word, to beat), a method of killing game where a large number of hunters get together and shoot hares, rabbits or pheasants as they are driven out of the woods by men who beat the bushes. In the Highlands deer are sometimes hunted in this way.

BATURIN, a town of Russia. It was founded by Stephen Bathory, king of Poland, and was at one time a favorite residence of the hetmans of the Cossacks, of whom Mazeppa, who in 1708 sold himself to the Swedes, is the most notorious. This place, with its once beautiful grounds, is going rapidly to decay.

BAUDELOCQUE, JEAN LOUIS, an expert French surgeon, born at Picardy in 1746, died in 1810. He was appointed by Napoleon as first accoucheur to attend Marie Louise, and he wrote *Art des Accouchements*.

BAUDISSION, WOLF HEINRICH FRIEDRICH KARL, COUNT, a German author and translator, born Jan. 8, 1789, died April 4, 1878. He translated the works of various English authors, and some of Molière's comedies. In company with Tieck he translated a number of Shakespeare's works.

BAUDRILLART, HENRI JOSEPH LÉON, a French political economist and publicist, born in Paris in 1821. He was appointed to the chair of political economy in the College of France in 1866, and became general inspector of libraries in 1870.

BAUDRY, PAUL, a French painter, born at La Roche-sur-Yon in 1828, died in 1886. He studied at Paris and Rome, was for ten years employed in the decorations of the foyer of the Grand Opera in Paris, and was elected member of the Académie des Beaux-Arts. Two of his best works are *Assassination of Marat* and *Punishment of a Vestal Virgin*.

BAUER, BRUNO, a German philosopher and biblical critic, born at Eisenberg, Sept. 6, 1809, died April 18, 1882. He was son of a porcelain-painter, and received his education at the University of Berlin, where he was made doctor of theology. From this time (1834) onward he devoted himself to so-called "scientific criticism of the Bible. He was a rationalist of the extreme type. He held the professorship of theology at Bonn, but his views were so pronounced that he was forbidden to lecture, and he therefore removed to Berlin. He eventually believed that the Scriptures had no authority and were mere fabrications. In his last published work, *Critique of the Epistles of St. Paul*, he endeavors to prove the four leading epistles to be apocryphal. Bauer's frequent change of theological opinion alienated the regard of his friends, besides bringing about a complete rupture between himself and the church. He was a voluminous writer, and to the earlier part of his life belong the works: *Criticism of Strauss's Life of Jesus*; *Journal of Speculative Theology and Critical Exposition of the Religion of the Old Testament*. In 1840 he wrote *Critique of the Evangelical History of John*, and three years later *The Question of Liberty and My Own Private Affairs, and Christianity Unveiled*. For a time he devoted himself to historical writing, publishing *History of Germany During the French Revolution and the Reign of Napoleon*, and *History of the French Revolution Until the Establishment of the Republic*. It is generally admitted that Bauer is reckless in his biblical criticisms—more agile in detecting error than truth. He is spoken of as the "Voltaire of modern Germany."

BAUER, CAROLINE, a German actress born at Heidelberg, in 1807, died at Zurich, Oct. 18, 1878. At

the age of fifteen she made her début on the stage and was a brilliant success in both comedy and tragedy. At twenty-two she married Prince Leopold, afterward king of the Belgians, but their union was short and unhappy. She returned to the stage and in 1844 married a Polish count. She published two volumes of theatrical reminiscences, and six years after her death her *Posthumous Memoirs* were printed.

BAUER, GEORGE LORENZ, a German linguist and theologian, born Aug. 11, 1755, died Jan. 12, 1806. He occupied the chair of Oriental languages at Altdorf in 1789, and in Heidelberg in 1805. Two of his works are *Hermeneutica Sacra Veteras Testamenti* and *Biblische Theologie des Neuen Testaments*. His theological views were those of a rationalist.

BAUER, WILHELM, a German soldier and inventor, born at Dillingen, Dec. 23, 1822, died June 18, 1875. He made a diving boat, improved torpedoes used for the destruction of ships, and improved the method of firing guns under water. In the Schleswig-Holstein war he served gallantly and afterwards fought in the Russian army.

BAUERLE, ADOLPH, a German author of comedies and novels, born April 9, 1786, died Sept. 19, 1869. His works are amusing delineations of life in Vienna. He was the author of *Die moderne Wirthschaft*, *Die falsche Primadonna*, and *Der Tausendasa*.

BAUERNFELD, EDWARD, VON, a noted German dramatist, born at Vienna, Jan. 3, 1802. Among his popular comedies are *Die Bekentnisse*, *Bürgerlich und Romantisch* and *Grossjährig*.

BAUGE, a town in the department of Maine-et-Loire, France, 23 miles east-northeast of Angers. The English, under the Duke of Clarence, were defeated here in 1402. The town has manufactories of linens and woollens. Population, 3,000.

BAUHINIA, a genus of plants of the natural order *Leguminosæ*. The upper petal is somewhat remote from the rest; the leaves are generally divided into two lobes. The species are natives of the warmer regions of both hemispheres, and some of them are remarkable for the size and beauty of their flowers. Most of them are twining plants, stretching from tree to tree in the tropical forests, but some are small trees, as the mountain ebony of Jamaica, so called from the color of its wood. The inner bark of the Mallow climber, an East Indian species, is employed in making ropes. The leaves of various species are used for medicinal purposes.

BAUMGARTEN, MICHAEL, a German theologian, born March 25, 1812. He was made professor of theology at Rostock in 1850. He suffered fine and imprisonment for publishing works denouncing the State Church of Mecklenburg. He was in favor of disestablishment, and a member of the Protestant-verein. He wrote *Schleirmacher as Theologian*, and an *Apostolic History*.

BAUMGARTNER, ANDREAS VON, BARON, an Austrian statesman, born Nov. 23, 1793, died July 29, 1865. He had the chair of physics at Vienna in 1823, and in 1851 was made Austrian minister of trade and public works, also president of the Academy of Sciences at Vienna. He wrote a book called *Naturlehre*.

BAUMGARTNER, GALLUS JACOB, a Swiss politician born, Oct. 18, 1797, died July, 1869. He belonged to the liberal party, and was one of the revisers of the constitution of St. Gall. In 1848 he founded "Neue Schweizer Zeitung." One of his published works was *Die Schweiz in ihren Kämpfen und Umgestaltungen von 1830 bis 1850*.

BAUMSTARK, ANTON, EDWARD and REINHOLD, a family of eminent German writers. Anton, born at Sinzheim in 1800, occupied, for nearly half a century the chair of classical philology at Freiburg, where he died in 1878. His son Reinhold, born at

Freiburg in 1831, attracted much attention by his *Thoughts of a Protestant on the Pope's Invitation*, a work which was soon followed by his joining the Roman Catholic Church. His numerous writings embrace many valuable biographies, including those of his father and himself. Edward, brother of Anton, born at Sinzheim in 1807, devoted himself to the study of political economy, and for some years taught that science in the University of Greifswald and in the Academy of Political Science and Agriculture at Eldena. He was elected to the national assembly after the revolution of 1848. He advocated the union of German interests, and was a prominent supporter of Bismarck's policy. His writings are nearly all upon economic subjects.

BAVARIA, KINGDOM OF, a crown state of Germany. Area, 29,632 sq. miles. Population (in 1885), 5,420,199. Capital, Munich, with a population of 261,981.

Royal families of Bavaria, as gazetted Jan. 1, 1891: King Otto William Luitpold, born April 27, 1848; succeeded his late brother, Louis II, March 13, 1886. Regent, Prince Luitpold, born March 12, 1821, uncle of the late and present king; appointed regent June 14, 1886; married April 15, 1844, to Archduchess Augusta of Austria, who died April 28, 1864. Offspring of the union:

I. Prince Ludwig, born Jan. 7, 1845; married Feb. 20, 1868, to Archduchess Maria Theresa of Austria-Este, of the branch of Modena, born July 2, 1849, of which marriage there are issue ten children.—1. Prince Rupprecht, born May 12, 1869. 2. Princess Adelgunda, born Oct. 17, 1870. 3. Princess Marie, born July 6, 1872. 4. Prince Karl, born April 1, 1874. 5. Prince Franz, born Oct. 10, 1875. 6. Princess Matilda, born Aug. 17, 1877. 7. Prince Wolfgang, born July 2, 1879. 8. Princess Hildegard, born March 5, 1881. 9. Princess Wiltrud, born Nov. 10, 1884. 10. Princess Helmutrude, born March 22, 1886.

II. Prince Leopold, born Feb. 9, 1846, Commander-in-Chief of the 1st Bavarian Corps; married April 20, 1873, to Archduchess Gisela of Austria-Hungary, eldest daughter of the Emperor-King Franz Joseph I. Offspring of the union are:—1. Princess Elisabeth, born Jan. 8, 1874. 2. Princess Augusta, born April 28, 1875. 3. Prince George, born April 2, 1880. 4. Prince Konrad, born Nov. 23, 1888.

III. Theresa, born Nov. 12, 1850.
IV. Arnulph, born July 6, 1852, Lieut.-General 1st Division in the infantry of the Bavarian army; married April 12, 1882, to Princess Theresa of Liechtenstein. Offspring, Prince Heinrich, born June 24, 1884.

The late Prince Adalbert, brother of Prince Luitpold, married to Princess Amelia, Infanta of Spain, left the following issue.—1. Prince Ludwig Ferdinand, born Oct. 22, 1859; married April 2, 1883, to Maria della Paz, Infanta of Spain; offspring, Prince Ferdinand, born May 10, 1884; Prince Adalbert, born June 8, 1886. 2. Prince Alphonso, born Jan. 24, 1862. 3. Princess Isabella, born Aug. 31, 1863; married April 14, 1883, to Prince Tommaso of Savoy, Duke of Genoa. 4. Princess Elvira, born Nov. 22, 1868. 5. Princess Clara, born Oct. 11, 1874.

United with the royal family of Bavaria is the branch line of the dukes of Bavaria, formerly Palatine Princes of Zweibrücken-Birkenfeld. The head of this house is Prince Karl Theodor, born Aug. 9, 1839, son of the late Maximilian, Duke in Bavaria, and married (1) Feb. 11, 1865, to Sophia, Princess of Saxony; (2) April 29, 1874, to Maria Josepha, Princess of Braganza.

The civil list, with allowances to the members of the royal family, is at present (Jan. 1891), 5,647,912 marks, equivalent to \$1,411,978.

Under the constitution the crown is hereditary in the male line, and to the king belongs the sole executive authority. The legislative functions are exercised jointly by the king and parliament, consisting of an upper and lower house, for which see Britannica, Vol. III, pp. 450-454.

The population of the chief cities Dec. 1, 1885, was as follows:

Munich (München).....	261,981	Bamberg.....	31,521
Nuremberg (Nürnberg).....	114,891	Kaiserslautern.....	31,449
Augsburg.....	65,906	Bayreuth.....	23,559
Würzburg.....	55,010	Hof.....	22,357
Ratisbon (Regensburg).....	36,098	Ludwigshafen on	
Fürth.....	35,455	Rhine.....	41,042

The total value of the mining products in 1888 was reported at 7,464,148 marks. The quantity of beer manufactured was 278,000,000 gallons, of which 27,000,000 of gallons were exported. On Jan. 1, 1890, Bavaria had 3,348 railways, of which 2,920 belonged to the state. There are three great universities—at Munich, Würzburg and Erlangen.

The budget of 1890-91 amounted to \$70,072,910. The public debt in 1890 (including railway debt) was \$335,100,695, about three-fourths of which was for railways.

For religion of Bavaria, see RELIGIONS OF THE WORLD in these Revisions and Additions.

BAVARIA, a colossal statue at Munich, bearing the name of the country of which it is a personification. It was erected by King Louis, the model having been executed by Schwanthaler. The figure bears a German aspect. The Bavarian lion, the guardian of her kingdom, reposes at the side of the female in a sitting attitude. The statue is 65 feet high, the pedestal being 30, so that the whole monument has a height of 95 feet. It was cast from the bronze of Turkish and Norwegian cannon. Internally it is very remarkable. Through the back part of the pedestal a door leads to a stone staircase consisting of 60 steps. The figure itself is hollow, and resembles a mine, with a side-passage, which leads into the lion. A staircase of cast-iron of 58 steps leads through the neck up into the head, where there are two sofas and several openings for the enjoyment of the view. The head contains standing room for 31 persons. The figure consists of seven pieces, the lion of five. The monument was uncovered on Aug. 7, 1850.

BAVINS, in the pyrotechny of warfare, are small bundles of easily ignited brush-wood, from two to three feet in length; they are made by arranging the bush ends of the twigs all in one direction, tying the other ends with small cord, dipping the brush ends into a kettle containing an inflammable composition, and drying them. They are employed among the combustible materials in fire-ships.

BAWBEE, or BABEE, the popular designation of a half-penny in Scotland, now dropping out of use. The origin of the term is obscure, but it is most probably a corruption of *bas billion* (French), applicable to debased copper money. In the plural form, the word is often popularly used in Scotland to signify money generally. In Scottish song *bawbee* is synonymous with a girl's fortune or marriage portion, as *Jenny's bawbee*.

BAWR, DE, ALEXANDRINE SOPHIE GOURY DE CHAMPGRAND, BARONESS, a French novelist born at Stuttgart, in 1777, died Jan. 1, 1861. She was the wife of Saint-Simon, the noted Socialist.

BAXTER, ROBERT DUDLEY, a statistical writer, born at Doncaster, England, in 1827, died in 1875. He was a prominent member of the statistical and other scientific societies, and a voluminous writer.

BAXTER, WILLIAM EDWARD, a Scotch *littérateur* and statesman, born at Dundee in 1825, died in 1890. His writings are chiefly descriptive of his travels in Europe, Asia, Africa and America. He was returned to parliament for the Montrose burghs in 1855, 1868, and 1874. He resigned his seat in 1885. He was successively Secretary to the Admiralty and Secretary to the Treasury. He was well known for his opposition to church establishments.

BAXTERIANS, a term applied to those who adhered to Baxter's theological system. The tendency of Baxter's views was toward a more liberal theology, but they are deficient in logical consistency. Nevertheless they have been, and still are, embraced by many pious people, especially among the dissenters, who shrink from accepting what they

consider the hard conclusions of Calvinism or the latitudinarian views of Arminianism.

BAY, a name given to a number of trees and shrubs, resembling the Laurel, *Laurus nobilis*, which is also called sweet bay. The red bay of the southern states of America is *Laurus Caroliniensis*. The white bay is *Magnolia glauca*, and the loblolly bay is *Gordonia Lasianthus*, both of North America. Bay leaves are sometimes used in cookery for the flavor. Since early times they have been associated with popular superstitious usages.

BAYA, a small East Indian bird of the great family of the *Fringilidæ*, and of a genus to some of which, from their remarkable manner of constructing their nests, the name weaver bird is often given. It is yellow, spotted with brown, the throat black, the beak conical and large. Its nest is very curious, suspended from a slender twig of a lofty branch, so that monkeys, squirrels and serpents may not reach it, and rendered still more secure by its form, which is very much like a bottle; the entrance, how-



BAYA.

ever, is from beneath, and not from above, with lateral openings to separate chambers, in one of which the female sits upon the eggs, while another is occupied by the male, who there pours forth his song. The nest is composed of fine fibers of leaves and grass. The bird is easily tamed, and can be trained to fetch and carry at command.

BAYAMO, or SAN SALVADOR, a town in the eastern part of Cuba, in a healthful and fertile region on the northern slope of the Sierra Maestra.

BAYANA, or BIANA, a town of India, formerly of considerable importance, having had in time past a fine fort and many temples in the city and near it. These are now in ruins. Bayana is 50 miles southwest of Agra in the Rajput state of Bhurtpur.

BAYARD, JAMES ASHETON, born in Philadelphia, July 28, 1787, died in Wilmington, Del., Aug. 6, 1815. He graduated at Princeton and then practiced law at Wilmington. In 1797 he conducted the famous impeachment case of William Blount of North Carolina. When Burr and Jefferson were rival candidates in the presidential election of 1800, Bayard and Alexander Hamilton were influential in the election of Jefferson. He sat in Congress from 1793 to 1813, with but one year's exception. He went to St. Petersburg and afterward to Holland to assist as one of the peace commissioners in concluding the war of 1812, and was therefore one of the signers of the treaty of Ghent.

BAYARD, JAMES ASHETON, son of the preceding, born at Wilmington, Del., Nov. 15, 1799, died at the same place, June 13, 1880. He was brother of Richard Henry Bayard. The two brothers, the father, Jas. Asheton Bayard, Sr., Thomas F. (son of James Asheton Bayard, Jr.), and Governor Bassett, grandfather of the first two mentioned, occupied seats in the United States Senate. The subject of this sketch studied and practiced law at Wilmington, and was United States attorney for his State during an Buren's presidency. He entered the Senate in 51, and was successively re-elected in 1857 and

1862. Mr. Bayard was a Democrat, a believer in State rights, an eminent lawyer, and a man possessed of a high sense of honor.

BAYARD, JEAN FRANÇOIS ALFRED, born at Charolles, March 17, 1796, died Feb. 19, 1853. He wrote a great number of popular comedies, two of which were *Les Gamins de Paris*, and *La Reine de Seize Ans*.

BAYARD, RICHARD HENRY, born at Wilmington, Del., 1796; died at Philadelphia, March, 4, 1868. He graduated at Princeton, studied and practiced law in his native city, and in 1836 was elected to the United States Senate. Before his term expired he was elected chief justice of Delaware. He was again sent to Congress, and from 1850 to 1853 he represented his country at Brussels.

BAYARD, THOMAS FRANCIS, the son of James A., and brother of Richard H. Bayard, born at Wilmington, Del., Oct. 29, 1828. He received most of his education from the Flushing school, and afterwards entered a mercantile house in New York. In 1848 he gave this up and returned to his native city, where he studied and practiced law. He served one year as United States district attorney for Delaware. From 1869 to 1875 and from 1881 to 1885 he represented his State in the United States Senate. During the early part of his service his father also sat in the Senate. President Cleveland selected Mr. Bayard for his Secretary of State in 1885. Mr. Bayard was a member in 1876-77 of the famous electoral commission; he was a candidate for the Democratic nomination for the presidency in 1880 and 1884.

BAYBERRY, the fruit of *Laurus nobilis*, the common bay tree; also the wax-myrtle, *Myrica cerifera*, and its fruit. The latter produces a coating of wax known as bayberry-tallow, or myrtle-wax, sometimes employed for making candles, and much used in pharmacy. This tree has active medicinal properties. It is found along the Atlantic coast of the United States.

BAY CITY, is the capital of Bay county in Michigan, situated on the east bank of the Saginaw River, five miles from Saginaw Bay, 78 miles north-northeast of Lansing, the capital of the State, and 108 miles north-northwest of Detroit. It is on the Jackson, Lansing & Saginaw Railroad, and is the terminus of the Detroit & Bay City and the East Saginaw Railroad. The city is handsomely laid out, having wide and straight streets, crossing at right angles. Several of the avenues are 80 to 100 feet wide. This city has extensive mills for sawing timber, and has a great lumber trade. Here also are manufactured and exported great quantities of salt. The city is well and substantially built, the business portion chiefly of brick. It is connected with West Bay City (formerly Wenona) and Salsburg on the other side of the river by three bridges. One of these was built by the Michigan Central Railroad Company for its own use. The Holly system of water works is used to supply the city with pure water from the Saginaw Bay. There are about 20 churches, good schools, a high school and public library. Here are two national banks and two other banks. Bay City was incorporated in 1865. Population in 1860, 1,583; in 1870, 7,064; in 1880, 20,693; in 1890, 27,826.

BAYER, JOHANN, born at Augsburg, Germany, about the year 1572, died in 1660. He was an earnest Protestant pastor, but he is now remembered for the new system which he introduced for the naming of the stars. He published *Uranometria*, which contained 51 astronomical charts. These were not altogether accurate, but he employed the method of naming the stars in a constellation after the letters of the Greek alphabet, those of greatest brilliance being named in order from the first letters. This

method has been followed from his time to the present.

BAYEUX TAPESTRY (see *Britannica*, Vol. III, p. 458; Vol. VIII, p. 162), a piece of pictorial needlework, 214 feet long, 20 inches wide, containing the figures of 625 men, 200 horses, 40 ships, besides dogs, birds, etc. It was discovered in the cathedral of Bayeux in 1730; it is now preserved under glass in the public library in the Hotel de Ville of the same town.

BAY ISLANDS, a small group in the Bay of Honduras, about 150 miles to the southeast of Balize, embracing only 25' of latitude and 1° 15' of longitude. The chief island is Ruatan, and the others of any consequence are Bonacca, Utila, Burebret, Helena and Morat.

BAYLEN, a town in the province of Andalusia, Spain, situated 22 miles north-northeast of Jean. It is celebrated as the place where the Spaniards won their first and only victory over the French in July, 1808. It has manufactories of linen, glass, bricks, tiles, soap, etc. Population, 4,976.

BAYLES, JAMES C., born in New York city, July 3, 1845. He served for a time in the civil war, but ill-health obliged him to resign his lieutenant's commission. He turned his attention to journalism, and was editor of the New York "Citizen," and afterwards of the New York "Commercial Bulletin," the "Iron Age," and the "Metal Worker." He has made a study of metallurgy, sanitary topics and the labor question; on these subjects he has written and lectured.

BAYLEY, JAMES ROOSEVELT, born in New York city, Aug. 23, 1814, died at Newark, N. J., Oct. 3, 1877. He graduated at Trinity College, Hartford, in 1835. After a year's study of medicine he turned his attention to theology, and was in 1840 established as rector in Harlem. Becoming dissatisfied with certain Episcopal doctrines, he resigned his charge and went to Europe. He became a Roman Catholic and studied for the priesthood in Paris. He was made vice-president and then president of St. John's College, Fordham; was pastor of a church on Staten Island; private secretary to Bishop Hughes, and in 1853 was created first bishop of Newark. He was an industrious laborer for the cause of his church, collecting valuable information in respect to its early history; traveling extensively and visiting Europe and the Holy Land; encouraging Roman Catholic education and helping to found colleges and religious orders. In 1872 he was made archbishop of Baltimore—the highest honor ever given by the Pope to an American priest. Archbishop Bayley was a philanthropic man, an untiring worker and the author of historical works relating to the Roman Catholic church.

BAYLY, Lewis, bishop of Bangor, Wales, born at Caermarthen, died in 1632. His famous book, *The Practice of Piety*, passed through fifty-one editions, besides being translated into several foreign languages. His son, Thomas, became a Catholic, and wrote *The End of Controversy*.

BAYLY, THOMAS HAYNES, an English song-writer and author, born at Bath, Oct. 13, 1797, died April 22, 1839. He studied law and theology, but discovering his talents as a ballad writer, he gave up these pursuits and went to London, where he composed *The Soldier's Tear*, *I'd Be a Butterfly, Oh No*, *We Never Mention Her*, and others. Besides popular songs he wrote tales, a novel, volumes of verse, and several dramatic pieces.

BAYNE, PETER, a writer and editor, born at Fodderty, Ross-shire, Oct. 19, 1830. He studied in Aberdeen and later edited newspapers in Glasgow, Edinburgh and London. He wrote *Christian Life at the Present Time*, *Lessons from My Masters*, *Two Great Englishwomen*, and *Life of Luther*.

BAYNES, THOMAS SPENCER, a versatile author, born at Wellington, Somerset, March, 24, 1823, died May 30, 1887. He pursued his studies at Bristol College and Edinburgh University. He assisted Sir William Hamilton in a translation of *Port Royal Logic* and an *Essay on the New Analytic of Logical Forms*. From 1857 to 1864 he was assistant editor of the "Daily News," at the end of which time he took the chair of logic, rhetoric and metaphysics in St. Andrews University. He was a magazine contributor, and editor of the ninth edition of the *Encyclopædia Britannica*.

BAY OF ISLANDS, a large bay on the western coast of Newfoundland, north of St. George's Bay, inclosing a number of islands. The name is also given to a settlement on the bay, on what is called the French shore. Herring fishing is the chief industry, about 30,000 barrels being annually taken. Limestone, marble, and quantities of gypsum are found here. A large, deep and safe harbor near the northern extremity of New Zealand is also called Bay of Islands. On its southern side is the port and town of Russell, with a United States consul.

BAYONNE (bā-yon) is a rapidly growing city in Hudson county, N. J. The population has doubled in the last decade. It is about 6 miles southwest of New York city, situated on the New York and Newark bays. The former villages of Bergen Point, Centerville, Bayonne and Saltesville now compose this city, through which runs the Central Railroad of New Jersey. Bayonne is separated from Jersey City by Morris Canal, and from Staten Island by the Kill-von-Kull. On the Kill-von-Kull the Port Johnson coal docks are situated, near Bergen Point. At these docks several hundred men are employed in receiving and shipping coal. About 30 to 40 trains run daily to and from New York. Here are a dozen churches, five public schools, also color-works, paint-works, chemical-works and petroleum refineries. Population in 1880, 9,372; in 1890, 18,996.

BAY RUM, a fragrant liquid obtained by distilling the leaves of the bay-berry (*Myrsia acris*), a tree which grows in the West Indies and belongs to the order *Myrtaceæ*.

BAY SALT, a name applied to common salt procured from sea-water by solar evaporation. It is principally obtained from salt-marshes, which exist along the coast of France and on the shores of the Mediterranean.

BAY VIEW, a thriving town of Wisconsin, situated on Lake Michigan, two miles south of Milwaukee. It contains extensive iron-works, and in the vicinity are establishments for the manufacture of glass. A Roman Catholic college and convent are located in the adjacent village of St. Francis.

BAY-WINDOW, a window which projects outward, forming a bay or recess in a room. It is sometimes incorrectly called a "bow-window." A bay-window may have three or more sides, but is always straight-sided.



BAY-WINDOW.

BAZAAR, or **BAZAR**, a Persian word originally meaning an Oriental market-place, where all sorts of goods and also slaves are exposed for sale. Ispahan, Tabriz, Constantinople and Cairo have famous bazaars. In the United States the word has come to signify a store or a booth where miscellaneous or fancy articles are sold, usually for charitable purposes.

BAZAINE, FRANÇOIS ACHILLE, a marshal of France, born at Versailles in 1811, died in 1888. He

became a soldier in 1831, and served in Spain, Algiers, the Crimea and Italy. He was with the expedition to Mexico in 1862, and was put in command of the army in 1863. He was made commander-in-chief of the Imperial Guard in 1869. He commanded a corps near Metz at the outbreak of the Franco-Prussian war, and on the eve of the retreat of August, 1870, he took command of the main armies of France. After the defeat at Gravelotte he retired again to Metz, where he capitulated, surrendering his entire force of 173,000 men. For this he was court-martialed in 1873, and sentenced to death, which was commuted to imprisonment for twenty years. In 1874 he escaped from the Isle Ste. Marguerite, and succeeded in reaching Madrid. In 1883 he published a book in justification of himself.

BAZALGETTE, SIR JOSEPH WILLIAM, an English civil engineer of French descent, born in 1819. He won fame by constructing sewers, altering streets, and making river bankments. He was engineer-in-chief of the metropolitan board of works in London. He introduced a method of working underground in the laying of water and gas pipes, thus avoiding the tearing up of pavements.

BAZANCOURT, CÉSAR DE, baron, a French writer, born in 1810, died Jan. 25, 1865. Louis Philippe made him director of the library of Compiègne, and under Napoleon III he held the office of historiographer. He wrote histories of the Crimean, Italian, Chinese and Cochinchinese wars of Napoleon III, besides a *History of Sicily Under the Norman Rule*.

BAZARDJIK, a Bulgarian town which holds an important fair in April. Tatar Bazardjik, a town of Eastern Roumelia, 23 miles west of Philippopolis. It has warm baths.

BAZEILLES, a village of France on the right bank of the Meuse River, 4 miles southeast of Sedan. September 1, 1870, the day of the battle of Sedan, it was burned by the Bavarians, but it has since been rebuilt.

BAZIN, ANAIS DE RANCOUT, French lawyer and historian, born at Paris in 1797, died in 1850. He wrote *History of France Under Louis XIII*.

BAZIN, ANTOINE PIERRE ERNEST, a French physician, the descendant of a long line of medical practitioners, was born at St. Brice, Feb. 20, 1807. He has written much on skin diseases, and in 1847 became physician and professor of dermatology in the St. Louis hospital of Paris.

BAZIN, ANTOINE PIERRE LOUIS, brother of the preceding, born March 26, 1799, died in January, 1863. He was a translator of many Chinese works, a professor of the Chinese language, and author of a grammar of the Mandarin dialect.

BAZLEY, SIR THOMAS, Bart., an English manufacturer and politician, born at Gilnow, Lancashire, England, in 1797. In 1826 he employed over 1,000 persons at Manchester in the making of fine cotton and lace thread. He established free schools and lectures for his employés. He entered Parliament in 1858, where he was known as a free-trader and anti-corn-law man.

BAZOCHÉ, or **BASOCHE**. When the French parliament began to administer justice, and ceased to be the grand council of the king (about the fourteenth century), those noblemen who formed the royal train were called *courtiers*, and those who attended on the sittings of the French parliament took the name of *basochians*, or parliament clerks. The latter, in the spirit of fun, chose a king, chancellor, and other officers from their own number; but Henry III would not allow of a mock king, and suppressed that office, but exalted that of chancellor. This mock court held meetings for the admin-

istration of justice, circulated a kind of currency, and had many ridiculous rites and ceremonies. They began the performance of farces, which even the king sometimes attended. These farces were the beginning of French comedy.

BEACH, MOSES YALE, an eminent American inventor and publisher, born at Wallingford, Conn., in 1800, died in 1868. He was long connected financially with the New York "Sun," and is regarded as the originator of the American one-cent newspaper. He invented the rag-cutting machine now generally used in the making of paper, and was much interested in experiments on machines for propelling balloons.

BEACH PLUM (*Prunus maritima*), a straggling bush found growing along the Atlantic coast of the United States. It bears a red or purple fruit, which is somewhat like the cultivated plum, and which is eaten either fresh or preserved.

BEACON, any signal set upon a height, but especially the alarm-fires at one time used to spread the intelligence of foreign invasion or other great events. Fire signals were in use in the earliest times, and notices of them are found in the literature of ancient Persia, Palestine and Greece. They were made by kindling a pile of wood on the tops of lofty mountains, and keeping the flame bright by night, or having the fire so covered as to emit a dense smoke by day.

BEACON, in maritime affairs a signal of warning against dangers, or for indicating the proper entrance into a channel, harbor or river. In recent times the construction of floating beacons has occupied a good deal of attention, as it is thought that in many cases they might supply the place of costly light-houses.

BEACONSFIED, BENJAMIN DISRAELI, EARL OF. See DISRAELI, BENJAMIN, in these Revisions and Additions.

BEAD: in architecture, a small round molding, sometimes termed an astragal. It occurs mainly among the classical styles, and is used in picture frames and other articles carved in wood.

BEADLE, an inferior parish officer in England, chosen and appointed by the vestry. His duty is to attend the vestry, to give notice of its meetings to the parishioners, to execute its orders, to assist the parish constable, and generally to do the business of the vestry and of the parish as their messenger or servant.

BEADS, ST. CUTHBERT'S, a title popularly given to the single joints of the articulated stems of encrinites. The central perforation permitted them to be strung as beads, and from the fancied resemblance, in some species, of this perforation to a cross, they were formerly used as rosaries and associated with the name of St. Cuthbert. They are also known as entrochites and wheelstones.

BEAGLE, a small variety of hound, sometimes used for hare-hunting. It has now been almost wholly superseded by the harrier, to which its name is sometimes given. The true beagle is smaller than the harrier, not above 10 or 11 inches in height at the shoulder, of stout and compact make, with long pendulous ears. It is remarkable for its exquisite scent and perseverance. The beagle gives utterance to a cry which has been regarded as particularly musical. The smallest are sometimes called LAP-DOG BEAGLES.

BEAKER, formerly the name of a drinking cup or bowl, but now applied to a vessel made of very thin glass, having a flat bottom, perpendicular sides, and a lip for pouring, and used in laboratories for making chemical solutions.

BEALE, LIONEL SMITH, an English physician and physiologist, born at London in 1828. His medical

writings, including works on microscopy, kidney diseases, urinary deposits, the distribution of nerves to voluntary muscle, and the structure and growth of the tissues, are important; and his *Protoplasm, Life Theories, Life and Vital Action*, and *Principles and Practice of Medicine in Slight Ailments*, are standard works.

BEAM: of a ship, one of the main timbers which assist to support the decks. They reach across from side to side, not only strengthening the decks, but also helping to uphold the sides of the hull, being themselves supported at the ends by massive pieces, called knees, standards and clamps.

BEAM TREE, WHITE, a tree of 20 to 40 feet in height; it has a straight erect trunk, and a round or oval head. The leaves are ovate cut and serrated, white and downy beneath; the flowers in large terminal corymbs; the fruit scarlet, and the size of a small pea; is acid and astringent, but becomes agreeable by incipient decay. It is sometimes called service-berry, and resembles it in quality, although much smaller. Beer is made of it by fermentation. The wood, very hard and fine-grained, is used for cog-wheels. The whiteness of the foliage makes the tree ornamental in plantations. It is a native of Europe and Asia.

BEAN-CAPER (*Zygophyllum fabago*), a small tree found in the Levant, where its flower-buds are used as a substitute for capers.

BEAN-FEAST, the name of an annual dinner given by employers to their employes; probably so called because of the prominence of beans or of a bean-geese at the repast. The name bean-feast was often given also to the bean-king's festival.

BEAN KING'S FESTIVAL, a social rite principally observed in France, from which country it seems to have been transplanted to Germany. On the evening of the Twelfth Day, or, as the Germans call it (in allusion to the legend that the wise men of the East who came to worship Christ were three kings), Three Kings' Day (Dreikönigstag), companies assemble to spend a few hours in mirthful relaxation. A large cake is baked with a bean hidden somewhere in it. The cake is then divided, each person present receiving a piece, and whoever obtains the one with the bean is king for the year. In this capacity he holds a mock-court, and receives the homage of the company, who also amuse themselves with other diversions. The bean king, however, is compelled to pay for his dignity; for he has to give an entertainment on the next Twelfth Night, that an opportunity may be afforded to choose another king.

BEAR-BAITING, a barbarous sport existing formerly in several countries, in which bears were baited by dogs. It was one of the established English amusements among the lower classes and the aristocracy alike; Queen Elizabeth, according to narration, herself witnessed these rude exhibitions. *Bear-garden* was the term applied to any place where bears were kept and publicly baited. Until lately, a certain spot situated near Westminster was known by this name.

BEARBERRY, a name somewhat loosely applied to several shrubs. The red bearberry (*Arctostaphylos uva-ursi*), also called bear's grape, bear's bilberry, and foxberry, is the "kinnikinnick" of the American Indian, and is much used in medicine as an astringent tonic, under the name of *uva-ursi*. The black bearberry (*Arctostaphylos alpina*) is a dwarf arctic-alpine trailing shrub, with black berries which are sometimes eaten. A species of *Rhamnus* known as bearberry, bearwood, and by the specific designation *purshianus*, from the fondness of bears for its berries, yields the *Sascara sagrada* bark, used as a tonic aperient.

BEARD, GEORGE MILLER, a physician, born at Montville, Conn., May 8, 1839, died in New York, Jan. 23, 1883. He studied at Phillips' Andover Academy and Yale College. In 1865, after over a year of experience as assistant surgeon on the gunboat *New London*, he settled in New York and devoted his attention to nervous diseases. Among his works are: *General Electrization, Stimulants and Narcotics, Eating and Drinking, Clinical Researches in Electro-Surgery, Legal Responsibility in Old Age, Hay Fever, Physiology of Mind Reading, Problems of Insanity, and Inebriety and Allied Nervous Diseases of America*.

BEARD, WILLIAM HOLBROOK, an artist, born at Painesville, Ohio, April 13, 1825. He devoted himself at first to portrait painting. He visited Europe, where he pursued his art studies for one summer. Returning, he settled in New York city and painted pictures of animals which he depicts in allegorical style. Some of his paintings are *Kittens and Guinea Pig, Bears on a Bender, Raining Cats and Dogs, Voices of the Night*, and *Who's Afraid?* A collection of his sketches entitled, *Humor in Animals*, was published in 1885. He had four sons, all of whom are clever artists. The best known is Frank, the third son, who was in the employ of Harper & Brothers during the war. He lectures, and at the same time illustrates his subject with free-hand sketches. He has published a book entitled, *The Blackboard and the Sunday School*.

BEARDSTOWN, one of the oldest towns of Illinois, situated on the Illinois River, about fifty miles west of Springfield. It has manufactories of machinery, iron, flour, woollens, and lumber, and the springs which yield the noted "Lithia Water."

BEARER COMPANY, an organization for the removal of wounded soldiers from a battle-field. The service, which was first introduced into the army of Great Britain in 1878, is well equipped, and forms a most efficient link between the battalion stretcher bearers and the field hospitals.

BEAR-LEADER. In former times bears were led about the streets muzzled and made to dance or stand on their hind legs for popular entertainment, small dancing dogs being usually added for the sake of attractiveness. Hence the phrase came to be used of a discreet person who took charge of a young man of wealth on his travels.

BEAR-PIT, a pit prepared for keeping bears, usually seen in zoological gardens. It is circular, measuring about 25 feet in diameter, and 20 feet deep. The sides, generally built with brick, the bottom level and paved with stone, and around are vaults for the residence of the bears; from the center of the pit rises a stout, tall pole, on which are cross-bars at proper distances, to enable the bears to climb to the top. The poles are sufficiently distant from the sides to prevent the bears from leaping out. The vaulted receptacles require to be cool and dry.

BEAR RIVER, a river of the United States, which rises in the Rocky Mountains and empties into Great Salt Lake. Its total length is about 400 miles.

BEAR RIVER, a port of entry in Digby county and township, Nova Scotia, at the head of navigation; it carries on shipping and a considerable manufacture in lumber and leather.

BEARS AND BULLS. See *Britannica*, **BULLS AND BEARS**.

BEAR'S GREASE. Under this name there were sold preparations for the toilet, represented to be of great efficiency in nourishing and promoting the growth of hair; these so-called preparations of bear's grease being for the most part composed of purified beef-marrow, hog's lard, or fat of veal and

spermaceti, along with almond oil, and some scented ingredients.

BEARING of a ship at sea is the direction in which she sails, in reference to the points of the compass. On shipboard, seamen often conveniently refer to the bearing of another ship, or of an object on shore, not to the points of the compass, but relatively to the line followed at the moment by the ship's keel. Thus the bearing of a distant object may be *ahead*, *astern*, on the *starboard bow*, on the *larboard quarter*, etc., the bow being between the head and the midship, and the quarter between the midship and the stern.

BEARING THE BELL, a phrase which signifies to take the lead or first place in anything, or to carry away the prize. This old colloquial phrase is said to have originated in a practice, at the early part of the seventeenth century, of giving a small golden or silver bell as a prize to the winner at horse-races.

BEAS, a river of India, one of the "Five Rivers" of the Punjab, rises in the Snowy Mountains, 13,320 feet above sea-level, and flows through the Kángra Valley to the plains of the Punjab, where it empties into the Sutlej. Its length is nearly 800 miles.

BEAT: in music, a signal given by the hand to insure simultaneous performances, the hand being raised on the unaccented, and lowered on the accented, part of the bar.

BEAT OF DRUM in military matters, is a signal or instruction conveyed by a particular mode of drum-beating. It is an audible semaphore, a telegraph which speaks to the ear instead of the eye. There are many varieties, known by the names of the general, the assembly, the foot march, the call to arms, the drummer's call, the sergeant's call, etc. Some of the same instructions or commands are also given by the bugle, and some by the trumpet.

BEATIFICATION is a solemn act in the Roman Catholic Church, by which the Pope, after scrutinizing the life and services of a deceased person, pronounces him blessed; after this he may be worshipped in a specified portion of the church, and the act holds out the prospect of future canonization, which entitles him to general worship in the church universal. It was introduced in the 12th century, and may be regarded as an inferior degree of canonization. See *Britannica*, Vol. V, p. 23.

BEATIFIC VISION, the direct vision of God, constituting the essential bliss of angels and of glorified saints, is, in respect of the latter, put by the Greek Church, and by most Protestants, after the day of judgment. The Council of Florence and the Council of Trent, however, declared that "the souls of those who have remained pure and spotless after baptism, and of those whose sins after baptism have been pardoned, either in this life or in the next, are immediately received into heaven."

BEATING AND WOUNDING, or simply wounding, is the name sometimes occurring in law books for the offense of seriously wounding or hurting another; it has also been described as an aggravated species of battery.

BEATING THE BOUNDS, the popular English expression for those periodical surveys or perambulations by which are preserved the early parish boundaries, the procedure, according to the general custom, being as follows: On Holy Thursday or Ascension Day the clergyman of the parish, in company with the parochial officers and other parishoners, followed by the master of the parish school together with the boys, visits the different parish boundaries, the boys striking each of these with peeled willow wands, from which action has come the expression beating the bounds. Sometimes the boys

themselves were beaten, to make the locality memorable. See *Britannica*, Vol. XVIII, p. 295.

BEATON, JAMES, uncle of Cardinal Beaton, was Archbishop of Glasgow, and afterwards of St. Andrews. He was a zealous opponent of the Reformation. He died at St. Andrews in 1539. See *Britannica*, Vol. III, pp. 465-66.

BEATON, JAMES, nephew of Cardinal Beaton, born in 1517, died in 1603. In 1552 he became Archbishop of Glasgow. On the death of Mary of Lorraine he withdrew to Paris. See *Britannica*, Vol. III, pp. 465-66.

BEATRICE, a city of Nebraska, and capital of Gage county, on the banks of the Blue River. It is nearly in the center of the county, which is very fertile, producing almost all kinds of grain and grapes grown in this country. It was settled in 1857, and incorporated as a city in 1883. During the last decade it has made rapid strides in population and business. Four great railroads center here: viz, Burlington & Missouri, Union Pacific, Rock Island, and Kansas City & Beatrice. It is the second city in the State in its railroad accommodations, Omaha, one hundred miles distant, standing first. The city is regularly laid out; streets are broad, crossing at right angles and well lighted with gas and electricity. There are six miles of paved streets, six miles of street car tracks, and abundance of good water from artesian wells. The Holly system of water works is employed, using twelve miles of mains. Telegraph and telephones afford all needed means of communication.

The public buildings are substantial, and built with much architectural taste. The new court-house is a fine stone structure of four stories, with a tower 120 feet high. The main front is 140 feet, and the east and west fronts each 82 feet. The style is Romanesque. The city-hall is a solid and commodious two story building. Other fine buildings are the Nebraska National Bank, Beatrice National Bank, Masonic Temple, Nebraska Institution for Feeble-minded Youth, and High School. There are six banks, including two national banks, and five public schools. The High School prepares pupils for admission to the State University. There is also an excellent Business College and a large free circulating library. The postoffice is self-supporting, and in addition pays \$7,000 annually to the government. The fire department is ample and efficient. Beatrice is noted for quarries of magnesian limestone, used as a building material. The river furnishes a fine water-power. The principal manufactures are cement, flour and lumber. Beatrice is the headquarters for the work of the United States land-office for the Nemaha district. Population in 1880, 2,447; in 1890, 13,921.

BEAUCE, a district of France, celebrated for the beauty and fertility of its grain-fields. The capital is Chartres.

BEAUCLERC, TOPHAM, an intimate friend of Samuel Johnson, and grandson of the first Duke of St. Albans, born in 1739, died in 1780. In 1768 he married Diana, daughter of the Duke of Marlborough, and divorced wife of Lord Bolingbroke.

BEAUFORT, HENRY, CARDINAL, natural son of John of Gaunt, and half-brother of Henry IV, born in 1377, died in 1447. He was made a cardinal in 1426. He was known as the wealthiest man in England. He was devotedly attached to King Henry V, to whom he lent sums of money almost fabulous for those days.

BEAUFORT, a town of North Carolina, capital of Carteret county, and a port of entry, is situated at the mouth of Newport River. Its harbor, defended by Fort Macon, is the best in the State. The

Cape Lookout Light-house, 156 feet high, is eleven miles southeast.

BEAUFORT, a town of South Carolina, capital of Beaufort county, and a port of entry, is situated on Port Royal or Beaufort Island, and on an arm of the sea called Port Royal River. There is an excellent harbor for vessels drawing 15 to 16 feet of water. The chief exports are lumber, rice, cotton, and phosphate of lime.

BEAUFORT, an inland district of the west division of Cape Colony, South Africa, chiefly used for pasturage; its oxen being, in seasons of abundant rain, decidedly the fattest in the colony. Its area is about 13,060 square miles. West Beaufort, its capital, is on the Gamka, 388 miles east of Cape Town.

BEAUCENCY, an ancient town of France, in the department of Loiret, situated on the right bank of the Loire, 15 miles southwest of Orleans. It was at one time surrounded by walls, flanked with towers and bastions, and defended by a strong castle, now ruined. In the histories of the wars of France it occupies a conspicuous place. It was successively in the hands of the Huns, Saxons, Normans and English, but it sustained most damage during the religious wars of the 16th century. It has manufactories of woollens, leather, etc., and has a trade in wine, wool, and corn. Population, 3,882.

BEAUHARNAIS, ALEXANDRE, VICOMTE DE, grandfather of Napoleon III, was born at Martinique in 1760. He served under Rochambeau in the American Revolution, and in 1789 he participated in the French Revolution. He was secretary of the National Assembly, and a member of the military committee. He declined the office of minister of war in 1793, and resigned the command of the Army of the Rhine. In 1794 the revolutionary tribunal sentenced him to death upon a charge of having acceded to the surrender of Mainz, and he died on the scaffold, July 23 of that year.

BEAUJOLAIS, a district of France, a subdivision of the old province of Lyonnaise, is noted for its fine vineyards, which yield the excellent Beaujolais wine.

BEAULIEU, a village of Hampshire, England, the site of an ancient Cistercian abbey founded by King John; the village is situated on the verge of the New Forest, near Lymington.

BEAUMONT, a town of Texas, county-seat of Jefferson county, situated on the Neches River, at the head of tide-water navigation, about 80 miles east of Houston. It is in the heart of the lumber belt of eastern Texas, and has a large trade in yellow pine and cypress lumber and shingles, which are here manufactured and shipped by water via Sabine Pass.

BEAUMONT, JEAN BAPTISTE ELIE DE, chief engineer and professor of geology in the School of Mines at Paris and in the *Collège de France*, born at Canon in 1798, died in 1874. He was a practical geological investigator, as well as a clear and acute speculator.

BEAUMONT DE LA BONNIÈRE, GUSTAVE DE, a French advocate and publicist, grandson of La Fayette, born in Sarthe in 1802, died in 1866. He became a member of the Chamber of Deputies in 1840, and of the National Assembly in 1848. In 1851 he was imprisoned for his opposition to the *coup d'état* of December. The works by which he is best known in America are *Slavery in the United States* and *The Penitentiary System of the United States*, founded upon personal observation during a visit to this country.

BEAUMONT, JOHN C., a rear-admiral of the United States navy, born in Pennsylvania in 1821, died in 1882. He was distinguished for his efficient

service during the shelling of Drury's Bluff and in the two attacks on Fort Fisher. He became a captain in 1872 and rear-admiral in 1881.

BEAUMONT, WILLIAM, born at Lebanon, Conn., 1796, died at St. Louis, Missouri, April 25, 1853. While United States surgeon at Mackinac in Michigan, he was called to attend Alexis St. Martin, who had been shot in the side. The wound healed, but an opening in the stomach remained, through which Dr. Beaumont was able to watch the process of digestion. The results of his investigations were published, and proved a valuable addition to physiological knowledge.

BEAUNE, FLORIMOND, an eminent French mathematician, born at Blois in 1601, died in his native town in 1652. He was a friend of Descartes, whose work he much improved. He is regarded by many as the proper founder of the integral calculus.

BEAUPORT, a manufacturing town of Canada, about four miles northeast of Quebec. It contains the famous Beauport Lunatic Asylum and important manufactories of lumber, nails and flour.

BEAUREGARD, PIERRE GUSTAVE TOUTANT, born near New Orleans, La., May 28, 1818. He graduated at West Point in 1838, standing second in a class in which were men who afterwards became famous generals. In 1847 he was made captain of engineers, having served at various stations, and during the war with Mexico in engineering work. When the Southern States seceded he offered his services, and those were his troops which opened fire on Fort Sumter. From this time onward he was virtually the commander of the Confederate troops. He was in command at Charleston for a year and a half; he reinforced Lee in 1864; defeated Butler, and held Petersburg. He attempted to check Sherman's march to the sea but was unsuccessful, and with General J. E. Johnston surrendered to Sherman in April, 1865. Since the war General Beauregard has been president of a railroad, adjutant-general of the State and manager of the Louisiana State lottery.

BEAVER, a remarkable rodent (*Castor fiber*), once common to all northern regions, but now confined chiefly to North America. It is characterized by a blunt nose, very short ears, webbed hind feet, and a tail flat, ovate, and covered on its upper surface with scales. The beaver is an object of much interest on account of the ingenious houses, with subaqueous entrances, which it builds on the banks of rivers and lakes, and for its remarkable skill in the construction of dams across streams. It is prized for its fur, and for a secretion called castor, or castoreum, much used in perfumery and formerly in medicine. See *Britannica*, Vol. III, pp. 475-6; Vol. XV, p. 418, and Vol. IX, p. 838.

BEAVER, JAMES ADDAMS, a descendant of a famous Huguenot family, born at Millerstown, Perry county, Pa., Oct. 21, 1837. He graduated at Jefferson College, and afterwards practiced law at Bellefonte. In 1861 he responded to the call of President Lincoln for volunteers, and was soon made lieutenant-colonel of a regiment. He was wounded at Chancellorsville, was present at Gettysburg, but not allowed to take command on account of physical weakness. He was in the Wilderness campaign, and was again wounded at Cold Harbor. At Petersburg he was injured, but returned to the battle-field of Ream's Station in an ambulance, and just as he had resumed command his right leg was shattered by a rifle-ball. It was amputated, and he was incapacitated for further military service. He was elected a trustee of the Pennsylvania State College; has been a popular campaign speaker, and was Republican governor of Pennsylvania from 1887 to 1891.

BEAVER, a town of Pennsylvania, county-seat of Beaver county, situated on the Ohio River, about twenty-five miles from Pittsburgh. It is the seat of Beaver Collegiate and Musical Institute, an academy, a seminary, and other excellent schools.

BEAVER, a city of Utah, county seat of Beaver county, situated on Beaver River, about 200 miles south of Salt Lake City. Lead and copper are found in the neighborhood, and there are manufactories of leather and woolens. Beaver is the seat of a fine academy.

BEAVER DAM, a city of Wisconsin, situated on Beaver Dam Creek, about 60 miles northwest of Milwaukee. It has an excellent water-power, and manufactories of woolens, flour, carriages and agricultural implements. It is the seat of Wayland University.

BEAVER FALLS, a manufacturing town of Pennsylvania, located on Beaver River, about 30 miles northwest of Pittsburgh. An excellent water-power and an abundant supply of natural gas are utilized in the manufactories of the town, which include those of iron, machinery, flour, cars, cutlery, wire fence, stoves and farming utensils. Beaver Falls is the seat of Geneva College.

BEBEERINE, an alkaloid obtained from the Greenheart bark, or *Bebeeru* of Demerara, and used in medicine in place of quinine, which it resembles in properties, though it is not so powerful in its action as a tonic and febrifuge. The condition in which it is generally sent into market is as the sulphate of bebeerine, occurring in shining scales of a pretty brown color, and soluble in water.

BEBEERU, or **BIBIRU**, the native name of the Greenheart of commerce, a tree of British Guiana, of the natural order *Lauraceæ*. The wood is very hard and durable, and is largely used in ship-building and for submarine structures, being remarkably free from the ravages of the ship-worm. The active principle of the bark is the bebeerine or bibirine of medicine, used in the form of a crude sulphate as a bitter tonic and febrifuge. See *Britannica*, Vol. III, p. 633.

BEACANOUR, a town of Canada, about 90 miles southwest of Quebec. It is the headquarters of an extensive trade in lumber and flour.

BECCAFICO, a little bird of the family *Sylviadæ*, or Warblers, a native of the southern parts of Europe, and in great demand for the table in Italy, its flesh being regarded as of peculiar delicacy. It is a mere summer bird of passage, and has a very pleasant song. Beccafico is an Italian name, and is sometimes extended to other birds of the same family used for the table.

BECCAMOSCHINO, a little bird of the family of Warblers, found in Italy, and remarkable for its nest, which resembles that of the tailor birds, usually placed in a bush of lengthened herbage, the leaves and stalks drawn over it, and a flooring formed for it by leaves curved across below, and sewed together generally with some kind of vegetable fibers.

BECHUANALAND, a British-African crown colony adjacent to the South African Republic on the east. Total area, 162,000 square miles, of which 45,000 form the crown colony proper. Population (of British colony in 1885), 44,135. The colony was "annexed" in 1884 to Cape Colony, and is under the general control of the British Governor of that Colony. The revenue in 1889, including military grant, was \$445,085, and the expenditure \$308,315.

A tax of 10s. per annum is levied on every native hut, and 10s. on each wife of a native. The seat of administration is at Vryburg in Stellaland, a settlement originally formed by the Boers on the border of the Transvaal. There are good roads.

There is a weekly post to Cape Colony and Matabeleland. The chief of the protectorate is Khama, with whom is an assistant commissioner.

BECK, CHARLES, PH. D., LL. D., born in Germany in 1798, died in 1866, was a philologist, professor of Latin and Literature, 1882, at Cambridge, Mass. He published several works, among which was *The Manuscripts of the Satyricon of Petronius Arbiter Described and Collated*.

BECK, DAVID, born 1621, died 1656, was a Dutch portrait painter, who studied under Vandyke. He worked with great speed and was remarkably successful. He was employed by Charles I of England, and by Queen Christina of Sweden.

BECK, JOHANN TOBIAS, a distinguished German theologian, born at Balingen in 1804, died in 1878. The scene of his labors was Tübingen, where he studied theology, and where, as professor of theology for many years, he combated the negative criticism of the "Tübingen school" of Bauer; not so much, however, by direct controversy as by the development of a system of biblical divinity founded upon faith in the text.

BECKER, GOTTFRIED WILHELM, a German author born at Leipsic in 1778, died there in 1854. He studied medicine, and in 1801 settled in Leipsic as a practicing physician and a writer of medical works, several of which reached many editions. In 1833 he entirely relinquished the practice of medicine, and devoting himself to literature became a fertile and admired contributor to many of its more popular branches.

BECKER, KARL, a German artist, born at Berlin in 1820. His subjects are mostly historical, but are chosen with a view to the display of gaudy coloring or intricate architectural combinations.

BECKER, KARL FERDINAND, born at Leipsic in 1804, may be named with Kiesewetter and Winterfeld as one of the best German writers on the history of music, and also as an excellent composer for the organ, as is proved by his trios and other compositions well adapted to the genius of the instrument. Among his works may be mentioned a *Choral Book*, or collection of psalm and hymn tunes; a catalogue of his musical library one of the most extensive in Germany; *The Composers of the 19th Century*, etc.

BECKERATH, HERMANN VON, born in Krefeld, Prussia, in 1801, died there in 1870. He took a prominent part in the political affairs of Germany. When Frederick William IV ascended the throne, Beckerath, aroused to a sense of the political state of the country, devoted himself to effecting its constitutional freedom. In 1843 he was elected representative of his native town in the provincial diet, and until 1852 was an active participant in the politics of Prussia.

BECKETS: on shipboard, a general name for any large hooks, short pieces of rope, or wooden brackets, used for confining ropes, tackles, oars or spars in a convenient place.

BECQUEREL, ANTOINE CESAR, a well-known physicist, born in France in 1788, died in 1878. Through certain experiments made by him on the liberation of electricity by pressure, in a course of study concerning the properties of yellow amber, Becquerel made discoveries which overthrew Volta's theory of contact, and he himself constructed the first constant pile. He afterward discovered a method of ascertaining the internal temperature of the animal body, and by physical applications demonstrated that upon the contraction of a muscle there is a development of heat. He is one of the inventors of electro-chemistry, and originated a method of electrotyping. In connection with his son (Alexander Edmond, born at

Paris in 1820) he made interesting researches concerning the solar spectrum and electric light.

BECSE, the name of two towns of Hungary, known as Old Becse and New Becse. They are situated about eight miles apart, on the Theiss River, 50 miles south of Szegedin.

BÉCSKEREK NAGY, or **GREAT BECSKEREK**, a town of Hungary in the county of Torontal, situated on the left bank of Bega, about 45 miles southwest of Temesvar, with which place it is connected by a canal. It is an important market town. Population, 19,700.

BED, an article of household furniture on which to sleep. Beds are and have always been of various styles, nearly all countries having their own peculiar form. As far as has been ascertained, the people of ancient Palestine had a simple sort of couch suitable for resting on during the day, or sleeping on at night, being easily moved. In the European countries the bed is of an open couch form, affording accommodation for but one person. It is composed of a frame or bedstead (See Britannica, Vol. IX, p. 849), upon which are placed one or two mattresses of hair or wool, and curtains, which hang from the ceiling, often accompany it. The Germans frequently lay a large flat bag of down above the other covering for the sake of warmth. The American style is generally that of the French, the open couch form. The folding tressel-bed, frequently seen in America, is, next to the oriental rug spread out on the floor, the simplest bed yet invented. It is constructed on the plan of a camp-stool, with a movable head-board to retain the pillow.

BED, or **STRATUM**, is a layer of sedimentary rock of similar composition, and of some thickness, cohering so that it may be quarried and lifted in single blocks. Beds frequently consist of many fine laminae or plates. The laminae are the results of intermissions in the supply of materials produced by river-floods, the ebb and flow of the tide, and similar causes, or by the more or less turbid condition of the water under which they were deposited.

BEDCHAMBER, **LORDS OF THE**, are twelve officers in the royal household of Great Britain, who wait in turn upon the king's person. They are under the Groom of the Stole, who accompanies the sovereign only on state occasions. There are also thirteen grooms of the bedchamber, who attend in turn. In the reign of a queen, ladies fill these offices, which are objects of high ambition. See Britannica, Vol. XXI, p. 37.

BÉDEAU, **MARIE ALPHONSO**, a French general, born at Vertou, 1804, died in 1863. In 1817 he entered the military school, and in 1825 received a commission in the army. He was aid-de-camp to General Gérard in the Belgian campaign of 1831-1832. He was sent to Algeria in command of a battalion in 1836, and was for a time governor of Algeria in 1847. He was appointed minister of war by the provisional government in 1848, an office which he changed for the command of the city of Paris, and as a republican member of the national assembly he opposed Louis Napoleon. Bedeau was arrested, with Cavaignac and others in 1851, and went into exile.

BÉDEGUAR, or **BEDGAR**, a remarkable gall, frequently occurring on the branches of several species of roses, mainly of the sweet-brier, on which account it is sometimes termed sweet-brier sponge. It is produced by different species of gall insect, sometimes by *Cynips rosæ*. It is generally roundish in form, often having a diameter of an inch or more; it has a spongy and fibrous nucleus, containing numerous cells, in each of which is a small

larva; it has a shaggy exterior covered with moss-like, branching fibers, which change from a green to purple or red. It was at one time esteemed as a medicine. See Britannica, Vol. X, p. 44; Vol. XIII, p. 143.

BEDELL, **GREGORY THURSTON**, born at Hudson, New York, Aug. 13, 1817. His father was a clergyman, and the son, after graduating from Bristol College, Pa., and the Virginia Theological Seminary, became rector of Trinity Church, West Chester, Pa. (1841), and then rector of the Church of the Ascension, New York city (1843). He has been assistant bishop of Ohio, and bishop of the diocese. Several of his addresses have been published.

BEDELL, **GREGORY TOWNSEND**, born on Staten Island, N. Y., Oct. 28, 1793, died at Baltimore, Md., Aug. 30, 1834. He was educated at the Episcopal Academy in Cheshire, Conn., and at Columbia College. He became rector of the Episcopal Church at Hudson, and subsequently at Fayetteville, N. C., and at Philadelphia, Pa. At the latter place St. Andrew's Church was established through his labors. He was the author of religious works and musical compositions.

BEDFORD, a town of Indiana, county-seat of Lawrence county. The chief manufactures are of wool and lumber, and among the principal buildings are a fine court-house and town hall. Bedford is the seat of an academy, and of the Bedford Male and Female College.

BEDFORD, a prairie town of Iowa, county-seat of Taylor county, situated on the One-Hundred-and-Two River, about 100 miles southwest of Des Moines. It is the center of a fertile agricultural district.

BEDFORD, a town in Pennsylvania, located on a branch of the Juniata, about 100 miles west of Harrisburg. The manufactures are principally of iron, which is mined in the vicinity. About a mile distant is Bedford Springs, a fashionable summer resort.

BEDFORD SPRINGS, a summer resort in Pennsylvania, near the town of Bedford, noted for the valuable medicinal waters of its mineral springs, and for its cool summer climate and charming mountain scenery.

BEDLAM (corruption of Bethlehem), the name of a hospital for lunatics in London. It was originally founded by Simon Fitz-Mary, in 1246, "as a privy of canons for brethren and sisters." When the religious houses were suppressed by Henry VIII, it fell into the possession of the corporation of London in 1537, who converted it into an insane asylum. In 1675 the building was pulled down and a new one erected in Moorfields; the present one was built in 1814 in St. George's Fields. The building with its grounds covers an area of 14 acres, and is lacking in nothing likely to insure the comfort and promote the recovery of patients. In former times the management was deplorable. The patients were exhibited to the public like wild beasts in cages, at so much per head, and were made sport of by visitors. The funds not being sufficient to meet the expenditure, partially convalescent patients, with badges affixed to their arms, and known as "Bedlam Beggars," were turned out to wander and beg in the streets. This practice appears to have been stopped in 1675. Now the management of the patients is so excellent that annually many are returned as cured. See Britannica, Vol. XIII, p. 110.

BEDLINGTON TERRIER, a dog so named from a village and parish of Northumberland, one of the districts in which the race has been extensively bred. This dog is highly esteemed for its sagacity and speed, and for its wonderful courage. It is a good water dog, and has a marked dislike for all

kinds of vermin; it will unflinchingly attack even the fox, the otter or the badger.

BEDLOE'S ISLAND, the site of Bartholdi's statue of *Liberty Enlightening the World*, is situated in New York harbor, within the limits of the city of New York. It was named from a former owner. It became, in 1800, the property of the United States. In 1841 the government erected here a fort, known as Fort Wood, which mounted seventy-seven guns. The fort is now disused, and the statue occupies nearly the whole of its interior.

BEDMAR, DE ALFONSO DE CUEVA, MARQUIS, born in 1572, died in 1655. He was appointed ambassador to Venice from the Spanish court in 1607, whereupon he entered into a bold and unscrupulous plot to destroy that city, through which act he has become lastingly notorious. (See *Britannica*, Vol. 24, p. 147.) Otway's popular and pathetic play, "Venice Preserved" is founded on this circumstance. Bedmar afterward became president of the council at Flanders, and in 1622 was created cardinal by the Pope. He subsequently went to Rome, after which he returned to Spain as Bishop of Oviedo.

BED OF JUSTICE: literally, the seat or throne occupied by the French monarch when he was present at the deliberations of parliament. Historically a bed of justice signified a solemn session in which the king was present to overrule the decisions of parliament, and to enforce the acceptance of edicts or ordinances which it had previously rejected. The last bed of justice was held by Louis XVI at Versailles in 1787.

BEDOS DE CELLOS, DON JEAN FRANÇOIS, a Benedictine monk, of the congregation of St. Maur, and the most learned and practiced master of the art of organ-building in the eighteenth century,

whose work on the art is of the greatest importance to the present day. He was born about 1714, at Chaux and died in 1797. He entered his order about 1726 at Toulouse, where he built several large and superior church-organs—was elected member of the Academy of Sciences in 1758, and completed for the Academy his great work, *L'Art du Facteur d'Orgues* in four volumes, large folio, with 137 copperplates, beautifully executed.

BED-SORÈS, a very troublesome complication of disease, to which, in many cases, a patient is liable through long confinement to bed, when unable or not allowed to change his position. When long confinement to bed is expected, attempts should be made to thicken the cuticle, and enable it to bear pressure better, by rubbing the skin with some stimulant, as spirits or *eau-de-cologne*.

BEDSTRAW, a genus of plants belonging to the natural order *Rubiaceæ*, and distinguished by a small wheel-shaped calyx and a dry two-lobed fruit, each lobe containing a single seed. The leaves as in the rest of the order, are whorled and the flowers minute, but in many of the species the panicles are large and many-flowered.

BEDWIN, GREAT, a town of Wiltshire on the Kennet and Avon canal, sixty-nine miles west-by-south of London. A fierce but indecisive battle occurred here in 874, between the kings of Mercia and Wessex. St. Mary's Church was built in the beginning of the fourteenth century and is constructed of flint, except the piers, arches, and dressings, which are of freestone. Jane Seymour, one of the queens of Henry VIII, was born here. In the end of the last century the remains of a Roman villa were discovered, included tesserae, bricks, a tessellated pavement, a huge leaden cistern, and the foundation of baths. Population, 2,068.

BEE ANATOMY AND BEE INDUSTRY. For the general subject of bees and bee culture in various countries, see *Britannica*, Vol. III, pp. 484-503. The illustrations herewith will properly supplement that portion of the article in Vol. III relating to the anatomy of bees. For convenience of reference, the illustrations are given in two plates. (See next page.)

BEE INDUSTRY IN THE UNITED STATES: The latest official government report (that of 1889), issued before these pages were sent to press, shows that among the minor branches of rural industry, bee-keeping is the most important. Every State and Territory reports bees and more or less honey, usually a hive or a few colonies for each farmer, rather than extensive apiaries and large production. In some localities, as in portions of New York, Ohio, Tennessee, Colorado, and California, where existing conditions are particularly favorable, apiculture is more prominent, dominating other industries in certain neighborhoods, though very rarely the leading branch over any considerable area. Honey and bees-wax are produced in every section of the country, and the aggregate value is very large, nearly equaling the value of the rice or the hop crop, and not much below that of buckwheat, and exceeding that of cane molasses, or of both maple syrup and sugar. It largely exceeds the aggregate value of all other vegetable fibers, excepting cotton.

The latest official record of production by States is the return of the national census for the year 1879. It made the honey production 25,743,208 pounds, and wax 1,105,689 pounds. After careful

of all available data of local values and mar-

ket prices, the average farm value of the honey was estimated at 22 cents per pound, and the wax at 33 cents, making the aggregate value of apiarian products, at the place of production, \$6,028,333. The product of the principal States in that year was as follows:

States.	Honey.	Wax.
	<i>Pounds.</i>	<i>Pounds.</i>
Tennessee.....	2,130,689	86,421
New York.....	2,088,845	79,756
Ohio.....	1,626,847	56,338
North Carolina.....	1,581,590	126,263
Kentucky.....	1,500,565	46,912
Pennsylvania.....	1,415,098	46,610
Illinois.....	1,310,906	45,640
Iowa.....	1,310,188	39,565
Virginia.....	1,090,451	53,200
All other.....	11,678,184	594,984
Total.....	25,743,208	1,105,689

Under the head of "all other," in the above statement, there is grouped the production of 36 States and Territories, ranging from 1,056,084 pounds of honey in Georgia to 50 pounds in Idaho.

Our foreign trade in honey has never been large, and the balance has fluctuated. During five years past our average annual exportation has been valued at only \$32,489 and importation at \$52,891, making the value of the net exportation only \$29,598. This little exportation goes principally to the United Kingdom, France and Germany, while our

foreign purchases come mainly from the West Indies and Mexico. The balance of trade is too small to affect the supply, and our domestic consumption is satisfied with our home production.

PLATE I. Fig. 1, the Queen Bee; 2, the Working Bee; 3, the Drone; 1a, 2a, 3a, the antennae; 1c, 2c, and 3c, the heads of queen, working bee, and drone; the head of the working bee is much flattened, as shown at 2c*. A, the margins of two wings; B, the 18 or 20 hooks placed on the anterior portion of the hinder wing, while the posterior margin of the fore-wing is beautifully folded over to receive them, so that when employed in fanning for ventilation the two wings on each side act as one, and present an unbroken surface to the air. The wings of workers are larger than those of the queen, but those of the drones are much larger still. Fig. 2b, shows the inner side of the hind-leg and pollen brush; 2b* the outer side and pollen basket. On entering a flower a bee often covers itself with pollen, and hence the need of the brush apparatus to reach home. The pollen basket is peculiar to the worker; neither the queen nor drone has anything of the kind. 2c, back view of the head, showing the opening into the oesophagus.

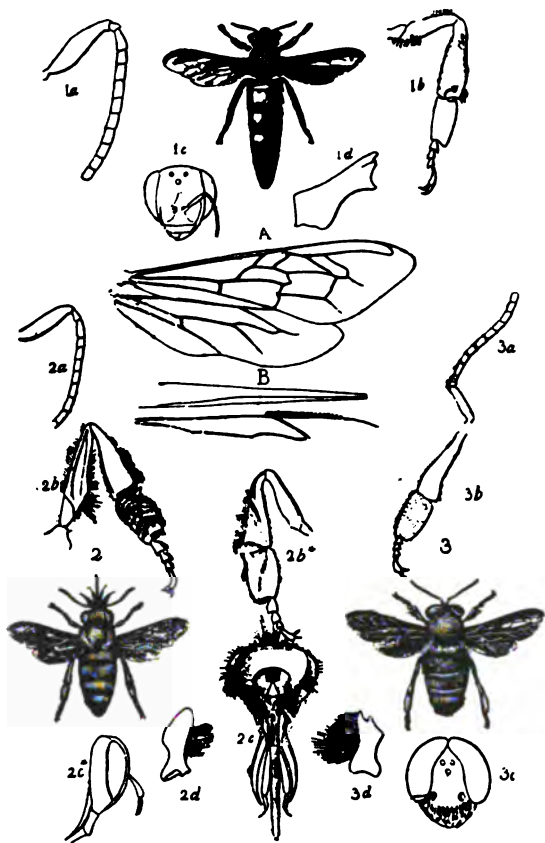


PLATE I.

PLATE II. b, b, b, the muscles that move the wings; e, e, the bases of the wings, the appendages consisting of two pairs arranged to hook together. Fig. 3a the lobial palpi; 3a the maxilla provided with hairs and with two feelers midway, known as maxillary palpi. 4. The sting of the working-bee, with its muscles and attachments; r, shows the muscles that move the sting, and q, the curved base of the outer sheath by which it is inclosed; the outer sheath consists of two fleshy claspers (q in the figure), inside of which is the linear sheath which forms an essential portion of the sting, and consists of two horny scales closely adhering to the darts; these last are composed of stiff filaments, barbed at the outer end with from five to ten teeth on one side, and they slide within the inner sheath and that within the outer sheath on the principle of the tubes of a telescope. The darts are first protruded in the act of stinging, and, by aid of the powerful muscles on each side at s, are buried in the flesh to the depth of one-twelfth of an inch; the inner sheath then follows, and, at the

same time, by a muscular contraction, the poison is forced along the groove in which the dart works, causing the well-known painful effects which arise from the sting of a bee. These darts are of slightly unequal lengths, so that the teeth on each side are not opposite to each other. From this arrangement it is easier for them to penetrate the flesh until the poison has been ejected. If the sufferer could only command himself so as to remain passive, the bee might be able to draw in those darts which protrude beyond the sheath and would then be able to withdraw the sting, and consequently inflict less pain, and also escape paying the penalty of her own life by leaving the whole stinging apparatus behind. The sting is about one-sixth of an inch long. The ducts which secrete the poison are at 4u, and the poison bag or reservoir at 4t. The drone and queen have no stings.*

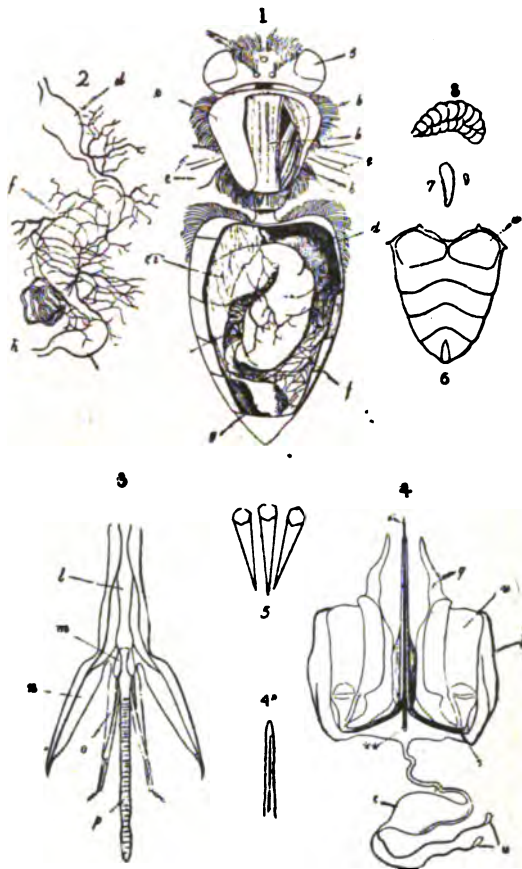


PLATE II.

6w, two wax pockets or receptacles for wax, which constitute the animal fat of the bee. The wax is not connected with the stomach, but exudes through the pores of the abdomen. The secreting vessels are probably contained in the membranes which line these pockets. 1 and 2h, biliary vessels which receive the chyle from the digested food in the bee's stomach.

Figs. 1 and 2d, the honey bag, an extension of the gullet or oesophagus, in which (though often called the 2d stomach) no digestion takes place; when full, it is about the size of a small pea. The bag is lined with muscles, by which the bee can discharge the honey into the store cells or send it forward into the oesophagus or true stomach for its own subsistence, (1 and 2f). Fig. 7, a bee's egg; 8, a young bee in a chrysalis condition. Fig. 5, three of the 3,500 lenses in the eye of the bee, all of them converging toward a common center.

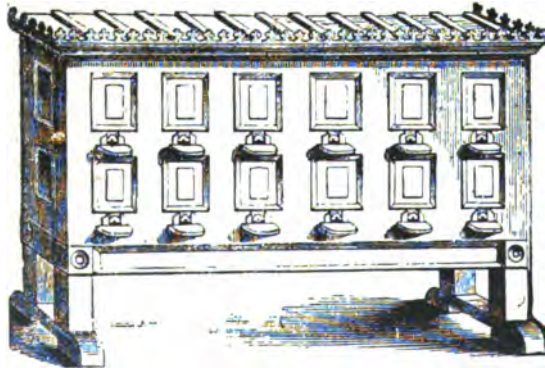
BEE-HIVES AND BEE-HOUSES. Numerous styles of these may be found in the various periodicals and hand-books devoted to the bee and honey industry of the country. Readers who propose to enter the business should furnish themselves with hand-

books, of which there are several of great practical value to the American public, and these hand-books should be supplemented by securing some live, current periodical which makes a specialty of the subject. The following cuts show a style much in use in countries of severe climates, especially in England and Scotland. They are covered with straw wrought in such manner as to combine beauty of finish with protection from cold.

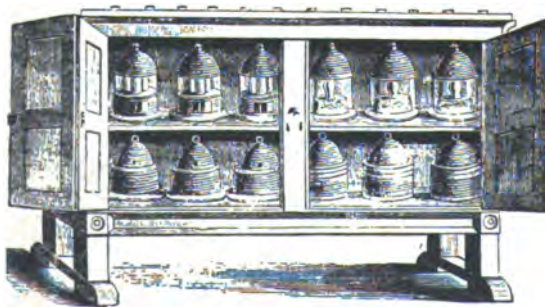
They can be made with or without supers, and so arranged as to be conveniently opened, carried or weighed. A sample of bee-house is also given, specially adapted to straw style of hive, but suggestive of other styles adapted to various kinds of hives. The front and rear views are both given by which their method and convenience in use will be readily indicated.



BEE-HOUSE.



BEE-HOUSE FOR 12 HIVES—FRONT VIEW.



BEE-HOUSE FOR 12 HIVES—BACK VIEW.

The annexed illustration shows the ornamental zinc cover, and renders but little description necessary. Three clumps of wood must be driven into the ground, and the three iron rods supporting the covering made fast to them with screws; there are screw-holes in the feet of the iron rods for the purpose. When thus secured, but little fear need be entertained of its being blown over by high winds.

In the roof two pulleys are fixed, so that, by attaching a cord, the upper hive covering the bell-glass supers may be raised with facility for the purpose of observing the progress made by the bees.

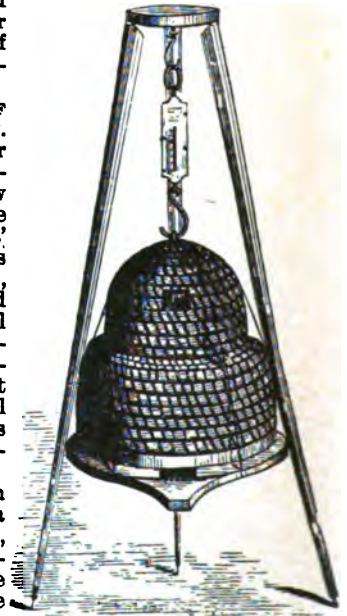
The ornamental zinc cover will form a pleasing object in the flower-garden when placed in a suitable position and neatly painted. Should the box style of hive be used, as is generally the case in most sections of the United States, a change in style of bee-house or cover will be at once suggested.

Next we insert an illustration suggestive of a convenient method of weighing hives, or sections of hives, of any form of construction.

BEST METHOD OF MARKETING HONEY. The following paper was read by Mr. Henry Segelken, of New York city, before the State Bee-Keepers' Association, at its meeting in Albany, Jan. 22-24, 1891, and is inserted by special permission. It supplies important information of great practical value to all interested in this rapidly growing industry:

For a 1-lb. section we recommend a single-tier crate, holding 24 or 25 sections. While we are not opposed to the double-tier crate, we believe the former is most desirable—at any rate for unglazed honey. If some of the combs in the upper tier start to leak, they will drop over the combs in the bottom rows and soil the whole crate.

Very often the shipper will figure the weight down to ounces, and mark the crate; for instance, gross, 28 lbs. 6 oz.; tare, 4 lbs. 4 oz.; net, 24 lbs., 2 oz. The 2 oz. we have to throw off every time—in fact, in some cases we are compelled to throw off quarters in order to effect a sale. All this can be, and should be, avoided by simply changing some of the combs



until the crate will weigh an even pound, or half pound, and by so doing he will receive pay for every ounce of honey. We would recommend to put only the *net* weights in plain figures on the end of the crates.

For glassed or unglassed honey we advise the use of heavy paper in the bottom of the crate, turned up about half an inch on the sides. If some of the combs should be broken down, this will prevent the honey from leaking through the crates. In addition, it is advisable to lay strips of wood of about 1/4 inch in thickness upon the paper, from side to side, for the combs to rest on. This will prevent the honey dripping from the broken combs from soiling the good combs. Of course, it is not necessary to go to this trouble when the honey is shipped in paper boxes.

For a paper box, we recommend those now used by nearly all the largest producers who use a paper box. It is made of heavy paste-board, and is strong enough to prevent breakage, unless the honey is handled unusually rough. Where honey is put up in paper boxes, we would advise the use of a crate holding 25 sections 5 by 5 (single-tier crate). The middle section on each side of the crate should be glassed, to show the quality of the honey. Honey put up in this style—clean, white crates, and boxes neatly labeled—will always sell at highest prices.



SINGLE-TIER CRATE.

“What part of the honey should be sent to market in paper boxes, glassed or unglassed?” Up to last year we have said, about one-third of each kind, as the demand was about equally divided. We now use 50 per cent. glassed, 30 per cent. paper boxes, and 20 per cent. unglassed, as near as we are able to estimate. During the season of 1889 we had more demand for glassed honey than for unglassed or paper boxes. We thought, perhaps, that year was an exception, but we have had more call for glassed honey this last season than the year before, and the demand for same is fast increasing. We could not nearly fill our orders for glassed honey this year, and could have sold thousands of crates more. We tried to substitute paper boxes and unglassed honey, but the trade would not have it in place of the glassed honey. We are of the opinion that this demand for glassed honey will be permanent, and we would therefore advise producers to glass more of their honey. It is certainly more profitable to glass the honey than to ship it in unglassed or in paper boxes. The producer receives the price of honey for every ounce of glass; besides, glassed honey will bring better prices than unglassed, and as good a price as paper boxes. The reasons why glassed honey has the preference seem to be these: The retailer can take every comb from the crate and make a handsome display of it (this, of course, can be done with the paper boxes, but the glass will show the quality of every comb); the dust cannot settle on the honey, and the glass will prevent inquisitive and curious customers from sticking their fingers in the comb.

Next comes the kind of section. For unglassed or paper boxes it does not matter which one is used—nailed, dovetailed or the one-piece section. For glassed honey we should say the nailed or dovetailed section is the most desirable, as the one-piece section does not seem to be strong enough to be glassed. Some producers will fasten the glass to the comb with small tin tags, others with small wire nails, and again others will glue them. Either method will answer the purpose if properly done. If glassed, a glue should be used which will *stick* and *hold* the glass to the section. We sometimes receive shipments of glassed honey glued, and as soon as touched the glass will fall from the sections and very often hurt the sale of the honey.

Another item of great importance is to have the sections weigh not over one pound each, and less if possible. Our market demands light weights at all times, be the honey glassed, unglassed, or in paper boxes. The latter two will generally weigh a little less than a pound, while glassed sections will in many cases weigh over one pound, especially if the standard section is used—4 1/2 by 4 1/2 by 1 3/4. We would advise producers to cut the section down in width and adopt a smaller one, say one 4/4 by 4 1/4 by 1 1/2 or even 1 1/4, so that when glassed the section will not weigh over 14 to 16 ounces. Heavy sections are generally rejected, and we find it slow work in moving them off.

For extracted honey—basewood, white clover or buckwheat—we prefer a keg of about 150 lbs., half barrel of about 300 lbs., or even barrels of 500 lbs., whichever can be obtained cheapest. We would not advise the use of 50-lb. square tins, as used exclusively in California. Our trade is accustomed to the wooden packages for all kinds of northern, eastern, southern and western honey, and we see no necessity for a change. The cans are more expensive than kegs or half barrels: the honey in cases will not sell for any higher price consequently nothing can be gained.

The shipping of comb-honey should be by freight altogether. We would advise shippers to load the honey in the cars themselves, properly protected. If this is done they may feel sure that the honey will arrive at its destination in good order under ordinary circumstances. Another point is that honey should be shipped only in original crates.

We would call your special attention to the *grading* of the honey, which is as important a question as any of the former, and in which too much care cannot be taken. Very often we receive honey which is not properly graded, and where off-grades are mixed in with the first-grade and marked No. 1 white honey. The outside combs will appear all right, but inside of the crate will be the poorer grade. We cannot take the trouble to open and examine every crate and comb, but have to rely on the shipper and go by the mark and the appearance of the crate. We sell and ship the honey, and the first thing we know, the party who bought it will complain about the quality and hold the honey subject to our order, and we must either have the honey shipped back to us or make an allowance satisfactory to the buyer. The shipper is also dissatisfied, as generally he expects highest market prices, and often will not admit that the honey was not properly graded, while no one but himself is to blame. All this can be avoided if the honey is properly graded.

Two grades of white honey are sufficient for our markets. For “fancy white,” select only what is fancy white. For a second grade or “fair white,” take combs that are stained or a trifle off in color, and combs scantily filled around the edges. Any combs mixed with dark or buckwheat honey should not be put in with the second grade. Such honey cannot be sold for white honey, and will not sell for more than buckwheat. In fact, a straight buckwheat finds better sale than mixed honey. This should be crated by itself and marked “mixed” or “dark” honey.

Our market demands a limited quantity of 2-lb. sections. About 10 per cent. of the honey we receive is in 2-lb. sections, which is sufficient to supply the demand. They should be glassed altogether and put in crates holding 12 or 15 sections.

Last, but not least, “What is the right time to ship comb-honey to market?” We have always advised early shipping, say during September and first part of October. Our experience teaches us that the early shippers obtain best prices and get quickest returns, be the crop large or short. In all our experience we have never known the market to advance during November and December, but it usually declines as the season passes along.

BEES AND BEE-KEEPING. For an elaborate, practical, highly interesting article on this subject, see *Britannica*, Vol. III, pp. 484-503. It is estimated that there are in the United States over 70,000 bee-keepers. The latest statistics giving a comparison of production for different countries are those of 1888, furnishing the following summaries:

Countries.	No. of hives.	Weight of honey in lbs.
France	950,000	23,000,000
Germany	1,454,000	40,000,000
Russia	110,000	4,000,000
Austria	1,550,000	40,000,000
Belgium	200,000	5,000,000
Holland	240,000	6,000,000
Denmark	90,000	2,000,000
Greece	30,000	3,000,000
United States	2,800,000	62,000,000
Total	7,424,000	188,000,000

Mr. Harbison, of California, was then reported as being the largest bee-owner in the world, having 6,000 hives, producing 200,000 pounds of honey yearly, valued at about \$40,000.

BEECHER, CATHARINE ESTHER, eldest child of Lyman, born at East Hampton, Long Island, Sept. 6, 1800, died at Elmira, N. Y., May 12, 1878. She was educated at Litchfield Seminary. Her betrothed lover, Prof. Fisher of Yale, was drowned while on a voyage to Europe, and her sorrow was so great that, according to her brother, Henry Ward, her religious faith was almost shipwrecked, and she only found relief by plunging into a life of great activity. The cause of female education was very dear to her heart, and in 1822 she started a school at Hartford, Conn., for young ladies. For ten years the school was carried on, and Harriet Beecher assisted in the teaching. The institu-

prospered, and 160 pupils were in attendance. She was the author of some school-books, several works on the woman question, and a number of books on religion. She believed and taught that physical and moral training should receive the same attention as intellectual development. For two years she conducted a school in Cincinnati, O. She assisted ex-Governor Slade, of Vermont, in a plan for supplying women teachers in the great West. Miss Beecher was an intensely practical woman, earnest, patient, energetic, and of great good-humor. She did not approve of classical and modern music, neither was she an admirer of art. For many years she worked under the disadvantage of great physical weakness. In her youth she was a Presbyterian, but in after years she became a member of the Episcopal church.

BEECHER, CHARLES, son of Lyman, born at Litchfield, Conn., Oct. 7, 1815. He was educated at the Boston Latin School, the Lawrence Academy at Groton, Mass., Bowdoin College, and Lane Seminary. He became a minister and was installed pastor of the Second Presbyterian church at Fort Wayne, Ind., in 1844. The First Congregational Church, of Newark, New Jersey, was his next charge; and from here he went to the First Congregational Church in Georgetown, Mass. He spent seven years in Florida, and on his return was made pastor of a church at Wysox, Pa. Mr. Beecher is a fine musician, and assisted in compiling the *Plymouth Collection of Hymns and Tunes*. He has published *David and His Throne*, *Pen Pictures of the Bible*, *Autobiography and Correspondence of Lyman Beecher*, and a few other works.

BEECHER, EDWARD, son of Lyman, born at East Hampton, L. I., Aug. 27, 1803. He graduated at Yale in 1822, and studied theology at Andover Theological Seminary and at New Haven. He was called to the Park Street Church, of Boston, where he remained for four years, and then was tendered the presidency of Illinois College at Jacksonville. Subsequently he was pastor of the Salem Street Church in Boston, and the Congregational Church at Galesburg, Illinois. Chicago Theological Seminary called him to the chair of exegesis. In 1872 he left the ministry and removed to Brooklyn, N. Y. He has been a constant writer for journals, and was editor of the "Congregationalist" for six years. He wrote two books, *Conflict of Ages*, and *Concord of Ages*, which created considerable discussion from the fact that he advanced the theory that "man's present life is an outgrowth of a former life as well as a prelude to a future one." He has published sermons, addresses and several religious books.

BEECHER, EUNICE WHITE BULLARD, wife of Henry Ward Beecher, born at West Sutton, Worcester county, Mass., Aug. 26, 1812. She received her education at Hadley, Mass., and after a seven years' engagement she married Mr. Beecher, and went to live in Lawrenceburg, Ind. In her early married life she wrote the story, *From Dawn to Daylight*. She has since published *Motherly Talks with Young Housekeepers*, *Letters from Florida*, *All Around the House*, and *Home*, and since her husband's death she has been engaged on a series of articles for the "Ladies Home Journal," entitled, *Mr. Beecher as I Knew Him*.

BEECHER, GEORGE, son of Lyman, born at East Hampton, L. I., May 6, 1809, died at Chillicothe, Ohio, July 1, 1843. He was a graduate of Yale, studied theology, and served successively as pastor of Presbyterian churches at Rochester, N. Y., and Chillicothe. His death was caused by the accidental discharge of a gun.

BEECHER, HARRIET. See Britannica, Stowe, Harriet Beecher.

BEECHER, HENRY WARD, the most famous son of Lyman Beecher, born at Litchfield, Conn., June 24, 1813, died at Brooklyn, N. Y., March 8, 1887. His studies were pursued at the Boston Latin School, Mount Pleasant Institute, Amherst College, and Lane Seminary. He was first installed as pastor of the Presbyterian Church at Lawrenceburg, Ind., in 1837. About this time he married Eunice White, the daughter of Dr. Artemas Bullard. From 1839 to 1847 he preached at Indianapolis, and then was called to the pastorate of the new Congregational Church at Brooklyn, N. Y. Mr. Beecher soon acquired the reputation of being a great pulpit orator. He had a flexible voice, was fond of using illustrations, his good-humor was inexhaustible, and he was fearless in denouncing social and political evils. All these qualities contributed to make the pastor of Plymouth Church exceedingly popular. In 1882 Mr. Beecher disavowed his belief in eternal punishment. As a platform lecturer Mr. Beecher's services were in great demand, and his sermons were for years published under the title of *Plymouth Pulpit*. He was an active supporter of the Republican party until 1884, when he voted for the Democratic nominee for the presidency. At the centennial anniversary of the birth of Robert Burns (Jan. 1859), Mr. Beecher was requested to deliver the oration, and this has been considered one of his most eloquent speeches. He delivered the oration at Fort Sumter in 1865, on the anniversary of its surrender. In 1878 he was elected chaplain of the 13th Regiment, National Guards, State of New York. When Henry W. Sage founded the "Lyman Beecher Lectureship" in Yale, Mr. Beecher gave the first three courses. In 1874 arose the "Tilton and Beecher scandal," which, when brought into church trial, resulted in Mr. Beecher's favor. Mr. Tilton carried the matter into the civil courts, but the jury disagreed, standing nine to three in Mr. Beecher's favor. Mr. Beecher at one time edited the "Cincinnati Journal," and afterwards the "Farmer and Gardener," the "New York Independent" (for about 20 years) and the "Christian Union." His list of published books is a long one. Some of the best known are *Star Papers*, *Lectures to Young Men*, *Aids to Prayer*, *Norwood* (a novel), *Yale Lectures on Preaching*, and *A Life of Christ*. He printed the *Plymouth Collection of Hymns and Tunes*, and from his pulpit discourses were compiled the books, *Life Thoughts*, *Notes from Plymouth Pulpit*, *Comforting Thoughts*, and others.

BEECHER, JAMES CHAPLIN, son of Lyman, born at Boston, Mass., Jan. 8, 1828, died at Elmira, N. Y., Aug. 25, 1886. He graduated at Dartmouth in 1848, and afterwards pursued his theological studies at Andover, being ordained a Congregational minister in 1856. He was chaplain of the Seamen's Bethel in Canton and Hong-Kong, China, until 1861, and in 1861-62 chaplain of the first New York Infantry. He was lieutenant-colonel of the 141st (1862-63), colonel of the thirty-fifth U. S. colored troops (three years), and in 1866 was mustered out of service as brevet brigadier-general. After the war he held pastorates at Owego, Poughkeepsie and Brooklyn, N. Y. He became insane, and after three years of suffering committed suicide at Elmira.

BEECHER, LYMAN, born in New Haven, Conn., Oct. 2, 1775, died in Brooklyn, N. Y., Jan. 10, 1863. He was the descendant of a New England family, whose original ancestors settled in New Haven in 1638. His father was a blacksmith, and, in consequence of his mother's death, he was adopted by his uncle, Lot Benton. Rev. Thomas Bray fitted him for college, and he graduated from Yale in 1797. Having pursued the study of theology during his

college term, he was licensed to preach a year later, and began his clerical labor in the Presbyterian Church at East Hampton, L. I., where he remained for eleven years. He had married Roxana Foote, and, as his salary was only \$400 a year, his wife taught a private school to assist in the support of the family. He was obliged to resign his charge and move to Litchfield, Conn., where he could get a better salary. Here he remained for sixteen years, winning fame by his eloquent sermons and his fearless denunciations of intemperance. The Hanover Church of Boston called him to its pastorate. This was a time of religious controversy, for Dr. Channing had broken with Congregationalism, and many people were following his lead. In this controversy Dr. Lyman Beecher took an active part, warmly upholding Puritan doctrine. After remaining here six years he was called to the presidency of the new Lane Theological Seminary, near Cincinnati and the pastorate of the Second Presbyterian Church of that city. The question of slavery began to be discussed in the seminary, and, as many of the students were from the South, the debate became violent. The trustees forbade further discussion, and all the students left the seminary. Some were induced to return, but this secession destroyed the prosperity of the seminary, and Dr. Beecher was unable to build it up again. In 1835 he was tried on the charges of heresy and hypocrisy by some of the more rigid Calvinists, but was acquitted. Leaving Lane Seminary in 1842, he returned to Boston and gave up his time to the revision of his books. The last years of his life were spent in Brooklyn, at the home of Henry Ward Beecher. He was famous for the boldness with which he denounced intemperance and other evils of the times. Among his publications are: *Remedy for Dueling*, *Six Sermons on Temperance*, *Skepticism*, *Political Atheism*. He was three times married, and was the father of thirteen children, most of whom achieved distinction.

BEECHER, THOMAS KINNICUT, son of Lyman, born at Litchfield, Conn., Feb. 10, 1824. His education was completed at Illinois College, of which his elder brother, Charles, was then president. After graduating, he was successively the principal of the Northeast Grammar School at Philadelphia, (1846-48), and the Hartford High School in Connecticut. In 1852 he was installed pastor of a Congregational Church at Brooklyn, N. Y. Two years later he removed to Elmira, N. Y., where he was given the care of the Congregational Church. Mr. Beecher has traveled in Europe, South America and California; has published a book entitled, *Our Seven Churches*, and served four months in the Army of the Potomac, as chaplain of the 141st New York volunteers, in 1863. He has been a frequent contributor to the "Elmira Advertiser," and is quite a popular lecturer. He is a well-known philanthropist, unsectarian and fraternal with regard to other Christian denominations.

BEEEDER, the capital of a district of the same name in the Nizam's territories, about seventy-five miles to the northwest of Hyderabad, being in latitude 17° 53' north, and longitude 77° 36' east. It stands near the right bank of the Manjera, a considerable tributary of the Godavery, and occupies a table land about 2,400 feet above the sea, and 100 feet above the adjacent country. Though it was formerly a place of grandeur and importance, yet it is at present chiefly remarkable for its manufactures in a compound metal made up of twenty-four parts of tin to one of copper.

BEE-EATER (*Merops*), a genus of birds found in Asia, Africa, and Southern Europe. They are nearly allied to the kingfishers, have rather long,

slightly arched beaks, long, pointed wings, and are mostly of a green color. In flight they resemble the swallow, and, like that bird, they feed on insects, but chiefly on bees and wasps.

BEEF-EATERS, a term applied to certain English functionaries, the yeomen of the Royal Guard, who have formed part of the train of the sovereign since the time of Henry VII, on state occasions. The wardens of the Tower of London are well known as "the Queen's Beef-eaters." Their costume or livery has been the same for four centuries, with the exception of some slight changes made in 1858.

BEEF-EATERS, a genus of birds of the order *Incesores*, tribe *Conirostrs*, to which the name ox-pecker is more correctly given. They have short bills, square at the base, and rather swollen at the point. They are accustomed to sit on the backs of buffaloes, camels, and other large animals, and feed upon the larvæ of gadflies, which they find in their hides. They are exclusively African. Livingstone mentions that, the sight of the bird being much more acute than that of the buffalo, it is much more easily alarmed by the approach of danger, and the buffaloes always begin to look about when the birds rise from their backs.

BEEF, SUPPLY OF, IN THE UNITED STATES. See Britannica, Vol. I, pp. 387-91. The United States official statistics show a gradual increase both in number of cattle and beef products. In 1889 the total number of cattle was 49,417,101, and a large increase for every year of the decade. The number of milch cows was 15,300,934, and of other cattle 34,116,167. The number and value of beef cattle and value of beef products exported to other countries during the same year had reached the following totals: Number of live cattle exported, 140,208; number of pounds of canned beef, 51,025,254; fresh beef, 137,895,391; salted or cured beef, 55,200,435; tallow, 77,844,555; these products having a total value of \$22,860,240.

Mulhall's Dictionary of Statistics, issued in 1886, reported the figures of the following comparative table of production and consumption of beef per annum in various countries of the world:

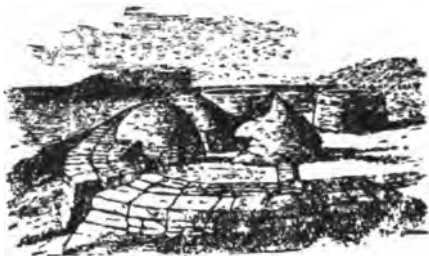
Countries.	Production in tons.	Consumption in tons.	Consumption, pounds per inhabitant.
United States.....	1,750,000	3,060,000	62
United Kingdom.....	666,000	1,640,000	52
France.....	550,000	1,210,000	40
Germany.....	785,000	1,405,000	40
Russia.....	1,050,000	1,920,000	24
Austria.....	655,000	1,090,000	37
Italy.....	165,000	295,000	12
Spain and Portugal.....	170,000	460,000	16
Belgium.....	82,000	190,000	44
Holland.....	95,000	98,000	42
Denmark.....	80,000	76,000	31
Sweden and Norway.....	150,000	196,000	48
Greece.....	12,000	31,000	.....
Roumania, etc.....	160,000	300,000	.....
Canada.....	135,000	198,000	52
Total in Europe, Canada, and U. S.....	6,505,000	12,169,000	

The same authority estimates the production of beef in Australia and in the Argentine Republic in the same year at 660,000 tons. See also **FOOD AND MEAT**, in these Revisions and Additions.

BEEF TEA, a light and pleasant article of diet, principally for the sick, is made from lean beef cut into small pieces and allowed to stand some time in cold water, and then set over a slow fire, where

it will simmer without boiling. A little salt should then be added.

BEEHIVE-HOUSE, or **HUT**, the name popularly applied to dome-shaped buildings in Ireland, considered the most ancient architectural remains in that country. They are round, of medium size and height, constructed of long, thin stones arranged,



BEEHIVE-HOUSES.

without cement, in horizontal layers slightly overlapping, and so gradually converging until they meet at the top. The square-headed doorway, as in the Egyptian style, narrows toward the top. See *Britannica*, Vol. II, p. 384; Vol. III, p. 397.

BEER, **ADOLF**, an Austrian historical writer, born in Moravia in 1831. He was professor of history successively in several institutions of learning, notably the technical high school in Vienna, where most of his historical works, and the results of his extensive travels, have been written.

BEER-MONEY, a peculiar payment to private soldiers in the English army. It was established in 1800, at the suggestion of the Duke of York, and consisted of one penny per day for troops when on home-service, as a substitute for an issue of beer and spirits. It still continues as an addition to the daily pay, and something in the mode of keeping military accounts induces the authorities to allow it to figure as a separate item, instead of being consolidated with the other elements of a soldier's pay.

BEERSHEBA SPRINGS, a fashionable watering place of Tennessee, situated on a spur of the Cumberland Mountain, near McMinnville. It is noted for its saline and chalybeate springs and its beautiful scenery.

BEESHA, a genus of grasses with the habit and most of the characters of bamboos, but remarkable for the fleshy pericarp which incloses the seed, forming a sort of berry. The species are few and are natives of the East Indies.

BEESTINGS, sometimes written **BIESTINGS**, the first milk yielded by a cow after calving; also formerly applied to the disease caused by drinking such milk.

BEESWAX, the wax which is secreted by bees, and of which their cells are constructed. See *Britannica*, Vol. III, p. 486; Vol. XXIV, p. 459.

BEESWING, a film which resembles the wing of a bee, and which appears upon certain old wines, especially port. The wine itself is often called *beeswing*, or is said to be *beeswinged*, referring to its age.

BEET-FLY, an insect which infests crops of mangold-wurzel, and other kinds of beet, depositing its eggs on the leaves, the soft parts of which the larvæ devour, causing them to assume a blistered appearance, and, when numerous, injuring the health of the plants. It is a two-winged insect of the family *Muscidae*, but not so large as the common house-fly.

BEETLE-STONES, the name given by the lapidaries of Edinburgh, to hard nodules of clay iron-

stone, found abundantly in a low cliff, composed of shale, at Newhaven, near Leith, or strewn upon the beach in that neighborhood. They take a beautiful polish, and have been employed to make letter-weights, and other ornamental articles. Some of the nodules contain fossil fish, and some a fossil of vegetable origin. See *COPROLITES*, *Britannica*, Vol. VI, p. 353.

BEETLING, a finishing mechanical process, applied originally to linen shirting, and afterwards to cotton shirting, in imitation of linen, to give the cloth a hard and wiry look, by flattening the yarn irregularly in an angled manner. Beetling is likewise a process in flax-dressing, to separate the woody from the flexible fibers of the plant.

BEET-ROOT SUGAR, the sugar which is obtained from the beet, but which, although similar to cane sugar, is inferior in sweetening power. Beet root contains an average of about ten per cent. of saccharine matter, and sugar-cane eight percent. more; the white Slesvig beet yields the best sugar. See *Britannica*, Vol. I, p. 381; Vol. XXII, pp. 626, 627.

BEET SUGAR. In 1880-90, the total yield of beet sugar in 1880-90 was over 3,600,000 tons. The German product was 1,250,000 tons, the French 750,000 tons, Russia 480,000 tons, Austria-Hungary 730,000 tons. The total product was nearly 50 per cent. more than that of 1887-88. Only a small amount of the total product was reported by the United States. Indeed, the sugar-beet culture in this country is only just beginning as a great industry. The immediate future, however, is full of promise. Investigations by the Agricultural Department in Washington in respect to the production of sugar from the sugar-beet have been of the most extensive nature. During the early spring of 1890, 5,000 packages of sugar-beet seed of the most approved varieties were obtained from European growers and sent to all persons in the country who had applied for them. Arrangements were also made by which the beets, after maturity, could be sent to the Department for analysis. As a result of this arrangement beets were received from about one thousand different localities in all parts of the country, and these were analyzed in the laboratory. The results of the analysis are, for the most part, extremely favorable, especially with those varieties which came from the northern and central portions of the country. It is not uncommon to find beets containing 15 per cent. of sugar, while in exceptional cases the percentage of sugar has risen as high as 20. Many beets were found of a strictly typical character, combining a perfect shape with the proper weight and a high content of sugar. A typical sugar-beet is conical in shape, smooth in its external contour, with a white, solid interior, weighing about one pound, and having a content of sugar of about 14 per cent. Many samples of such beets were received by the Department, showing that it is possible to produce in the United States sugar-beets of the highest type.

A large beet sugar factory has been erected at Grand Island, Nebraska, equipped with the most approved modern machinery, and this factory is now working sugar-beets at the rate of 300 tons per day. There is every reason to believe that the encouragement which has been extended to the sugar-beet industry, by the investigations of the Department and by act of Congress, will result ere long in the establishment of many additional sugar factories in those portions of the country which the data obtained by the Department show to be best suited for the purpose. When it is considered that 250 beet sugar factories of the size and capacity of those now in operation in California and Nebraska

will be sufficient to make one-half of the total sugar consumed in the United States, it is not idle to expect that in the course of a few years a large proportion of the sugar consumed in this country will be made from the sugar-beet.

An intelligent observer of the rapidly growing interest now developing in several States on this subject, expresses the opinion that in five years the people of the United States will produce all the sugar needed for the home supply.

BEETS, NICOLAËS, a Dutch poet, was born at Haarlem in 1814. He became pastor of a church at Heemstede, in 1838; in 1854 he removed to Utrecht, where, in 1875, he was appointed to the chair of theology in the university. Besides his poems he is the author of numerous literary and religious works. See *Britannica*, Vol. XII, p. 98.

BEFFANA, a corruption of *Epiphania* (Epiphany), and the name applied to a peculiar Italian custom prevailing on Three Kings' Day, or Twelfth Night. Tradition says that the Beffana was an old woman who, being busily engaged in house-cleaning when the three wise men of the East passed by on their way to offer their treasures to the infant Saviour, excused herself for not going out to see them, on the ground that she would have an opportunity of doing so when they returned. She, not knowing that they went home by another road, has been ever since watching for them. She is supposed to take a great interest in children, who, on Twelfth Night, are put to bed early, a stocking of each being hung before the fire. Soon the cry *Ecco la Beffana* is raised, when the children jump up and seize their stockings, each of which contains a present bearing some proportion in value to the conduct of the child during the year. One whose behavior has been particularly bad finds his stocking filled with ashes, in token of the Beffana's displeasure. There was a custom in Italy of carrying an effigy called the Beffana, on Twelfth Night, in procession through the streets, with much demonstration; it was probably the relic of one of the "mysteries" of the Middle Ages.

BEFFROI, the name of a tower used in the military sieges of ancient or mediæval times. When a town was to be besieged, this beffroi, which was movable, and as high as the walls, was brought near it. These towers were to cover the approach of troops, the highest being from twelve to fifteen stories, or stages, placed upon six or eight wheels. They were often covered with rawhides to protect them from the boiling grease and oil directed against them by the besieged. At the top there was a hinged drawbridge, to let down upon the parapet of the wall to aid in landing. Cæsar used this tower in his campaigns in Gaul.

BEG, or **Bey**, a Turkish title, rather vague in its import, and commonly given to superior military officers, ship-captains and distinguished foreigners. More strictly it applies to the governor of a small district, who bears a horse-tail as a sign of his rank. "Beglerbeg," or, more correctly, *Beilerbegi* (lord of lords), is the title given to the governor of a province who bears three horse-tails as his badge of honor, and has authority over several begs, agas, etc.

BEGGAR, one who solicits charity from the public. The word is supposed to have some connection with the fraternity known as *Beghards*. Begging, however, became so conspicuous a feature among these mendicant orders that the term originally applied to their sacred duties seems early to have acquired its modern vulgar acceptation. In a civilized, industrious country, the beggar, to have any chance of relief, must succeed in making the impression, whether true or false, that he is in actual

need of alms to keep him from starving. Among Oriental nations, on the other hand, this class is rather considered as endowed with the privilege of taxing their fellow-men than as objects of compassion. It has sometimes been supposed that a residue of this feeling of superiority characterizes the mental physiology of the mendicant of civilization, and that, abject as he seems, he considers himself to some extent a privileged person entitled to support without toiling as do the working classes. In Europe, during the Middle Ages, those doctrines of Christianity which teach the abjuration of selfishness and worldly-mindedness were exaggerated into profession of total abstraction from worldly cares and pursuits. Hence arose the large body of religionists, who, as hermits, or members of the mendicant orders, lived on the contributions of others. Later on these orders became the proudest and richest of the clergy; but while the chiefs lived in affluence the practices of the lower adherents fostered throughout Europe an injurious system of mendicancy.

BEGGAR-MY-NEIGHBOR, a game of cards usually played by two persons, between whom the cards are divided.

BEGHARMI, or **BAGIRMI**, a country of Central Africa, about 240 miles in length, and 150 miles in breadth. *Begharmi* proper is flat, slightly inclining toward the north, its general elevation being about 1,000 feet above sea level. From the numerous deserted villages in the country it appears that the population was once much greater than at present. The people are grossly superstitious; many are pagans, although Mohammedanism has been introduced among them.

BEGKOS, or **BEIKOS**, a large village of Anatolia, on the Bosphorus, eight miles from Scutari, said to be the place of the contest between Pollux and Amycus, in which the latter was killed. At the commencement of the Crimean war the allied fleets anchored in *Begkos* Bay, prior to their entering the Black Sea in 1854.

BEGONIA, a genus of exogenous plants, typifying the natural order *Begoniaceæ*, and found in nearly all warm regions. The various species are extensively cultivated on account of the brilliancy of their flowers. The stalks of certain species are used in cookery. Some species, also, are used as purgative medicines. See *Britannica*, Vol. XII, p. 265.

BEGONIACEÆ, a natural order of exogenous plants, named in honor of Michael Bégon, a French patron of science. They are herbaceous, with alternate leaves, which are oblique at the base and have large dry stipules; the flowers are in cymes, unisexual, the perianth colored, with four unequal divisions in the male flowers, and five or eight in the female; the stamens are numerous; the fruit is membranous, winged, three-celled, bursting by slits at the base, the seeds minute. The order contains 160 known species, all of which have pink flowers.

BEGONIELLA, a genus of exogenous plants of the natural order *Begoniaceæ*, indigenous to the United States of Colombia.

BEG-SHEHR, a fresh-water lake of Asia Minor Karamania, 44 miles southwest of Koniye, pr



BEGONIACEÆ.

sumed to be the ancient *Caralitis*. It is about 20 miles long and from 5 to 10 miles broad. It contains many islands and discharges itself by a river of the same name into Lake Soglah. On its east and north shores are the towns of Begshehr and Kereli, the old *Caralio*, which issued imperial coins, and which is also supposed to have occupied the site of Pamphylia.

BEGTASHI, a religious order in the Ottoman Empire, which had its origin in the 14th century. The name is believed to be derived from that of a celebrated dervish, Hadji Begtash, to whom also the order appears to owe its institution. The members use secret signs and pass-words resembling those of Freemasonry. Although numbering many thousands of influential persons in its ranks, the society does not appear to exercise any material influence in the religion or politics of Turkey.

BEGUM, a princess or lady of high rank in the East Indies. The term was brought into prominence among English-speaking people by the trial of Warren Hastings; one of the charges against whom was that of cruelty to two begums, who, being offered by him the alternative of lifting their veils before a stranger or losing their wealth, religiously chose to give up their treasures.

BEHAIM, MARTIN, a well-known navigator. See **BEHEM**, *Britannica*, Vol. III, p. 509.

BEHAM, BARTHEL (1502-1540), a German artist whose earlier works are quite in the manner of Albrecht Dürer. His portraits of the Emperor Charles V and his brother, the Emperor Ferdinand I, are well known for their fine conception and masterly treatment.

BEHAM, HANS SEBALD (1500-1550), a German artist, brother of Barthel, from whom he first received instructions in painting and engraving, and then of Albrecht Dürer. He possessed singular powers of invention, generally exercised on secular, and often on coarsely humorous subjects, occasionally also on those of a vulgar and indecorous class.

BEHM, DR. ERNST, a German geographer, born at Gotha, Jan. 4, 1830, died there March 15, 1884. In 1856 he became Dr. Petermann's chief assistant in editing the famous geographical periodical, *Mitteilungen*, to the editorship of which he succeeded on his chief's death in 1878. In 1872 he commenced, in conjunction with H. Wagner, the useful *Bevölkerung der Erde*, intended as a statistical supplement to the *Mitteilungen*; and from 1876 he had charge of the statistical department of the *Almanach de Gotha*.

BEHRING. See *Britannica*, Vol. III, pp. 509-10; and Vol. XIX, p. 318. See also **BERING**, **IVAN IVANOVICH**, in these Revisions and Additions.

BEILAN, a pass and town in the northern extremity of Syria, on the east shore of the Gulf of Iscanderoon. It is one of the two passes, supposed to be the lower one, mentioned by Cicero as capable of easy ascent on account of their narrowness. There seems to be no doubt that in the war between Darius and Alexander the Beilan Pass was an important consideration to both commanders. It has a population of 5,000, many of whom are wealthy, and is much esteemed for its salubrity and fine water, which is supplied by numerous aqueducts. It was a scene of battle between the Egyptians and Turks in 1832, when the latter were defeated.

BEIRAM, or **BAIRAM**, a Mohammedan festival, somewhat analogous to Easter. See *Britannica*, Vol. III, p. 246.

BEIT, an Arabic word, signifying house, abode or place, the equivalent of which in Hebrew is *Beth*. Thus we have in the former language *Beit-al-Hardin*, "the house of the sanctuary," or "the sacred house," and in the latter *Beth-el*, "house of God."

BEITH, a thriving inland town in the county of Ayr, Scotland, nine miles southwest of Paisley. Here cotton and muslin are manufactured, and in the neighborhood the famous Dunlop cheese is made.

BEITULLAH (Arab., House of God), the spacious building or temple at Mecca, which contains the Kaaba.

BEJAN, the name of the first or "freshman" class in some of the Scotch universities, and, of old, in many on the continent. The word is believed to be derived from the French *bec-jaune*, or yellow neb, a term used to designate a nestling or unfledged bird. In the University of Vienna the *bejan* was called *beanus*, a word of the same meaning and no doubt the same origin.

BEJAPUR. See **BIJAPUR**, or **BIJAIRPUR**, *Britannica*, Vol. III, p. 669.

BEKAA, the Cœle-Syria of the ancients, the "Plain of Lebanon" of the old Testament, and El Bekaa of the natives of Syria. It is inclosed between the parallel ranges of Lebanon and Anti-Lebanon, and is the richest and most beautiful plain of Syria, but although the soil is good and water abundant from the numerous mountain springs, a very small portion of it is cultivated.

BEK, ANTHONY, Bishop of Durham from 1283. He took a prominent part in the Scottish wars of Edward I, and held a command at the battle of Falkirk. In 1300 he became involved in ecclesiastical disputes, which lasted till his death, March 3, 1311. He was a prelate of great magnificence and unbounded ambition.

BETASHI, a mendicant order of dervishes, which had its origin in the 14th century.

BELAYING, one of the many modes of fastening ropes on shipboard. It is effected by winding a rope, generally a part of the running rigging, round a piece of wood called a cleat or a kevel, or else round a belaying pin, which is an ashen staff from 12 to 16 inches in length.

BELCHER, SIR EDWARD (1799-1877), a noted English naval officer. He was appointed in 1825 assistant surveyor to the expedition about to explore Bering Strait under Captain Beechey. He was made commander in 1829, and seven years later he was placed in charge of the *Sulphur*, bound for the western coasts of America and the Indies, on a tour of exploration. He returned within six years, during which time he had circumnavigated the globe, and rendered valuable aid in the Canton River to Lord Gough, whose successes over the Chinese were greatly due to Belcher's soundings and reconnaissances pushed to the interior.

BELCHTE, a town of Spain, in the province of Saragossa, about 22 miles from the city of that name, celebrated as the place, where, in 1809, the French under Suchet completely routed the Spanish under General Blake, capturing all their guns, with a loss of only forty men.

BELED-EL-JEREED, an extensive arid and sterile region lying east of Morocco, and stretching from Algeria on the north to the Sahara Desert on the south. It receives its name, meaning the "country of dates," from its one scanty production.

BELEM, a city of Brazil, on the right bank of the Para, the most southerly arm of the estuary of the Amazon.

BELEMNITES (Gr., *belemnion*, a dart or arrow), an interesting genus of fossil cephalopodous *Mollusca*, the type of a family called *Belemnitidæ*, to the whole of which the name belemnites is very generally extended, and which are closely allied to the *Septidæ* or cuttle family. See *Britannica*, Vol. XVI, p. 676. No recent species of this mollusk is known; fossil species, found in all the oölitic and cretace-

ous strata, from the lowest lias to the upper chalk, are very numerous. These remains are generally those of the shell alone, an internal shell, entirely included within the body of the animal, like that of the cuttle. The most perfect specimens have a double shell, consisting of a conical chambered portion (the *phragmocone*) inserted into a longer solid, somewhat conical or tapering and pointed sheath.

BELEMNITIDÆ, a family of extinct cephalopodous mollusks, typified by the genus *Belemnites*. It includes also the genera *Belemniteuthis*, *Belemnitella* and *Xiphoteuthis*.

BELFAST, a city of Maine, county-seat of Waldo county, and a port of entry. It is beautifully situated on a hillside overlooking Belfast Bay, about 30 miles south of Bangor. The harbor is deep, wide, and safe. The principal industries are ship-building, fishing, and the manufacture of paper, shoes, and iron.

BELFRY (Fr., *belfroi*), a word of doubtful origin; a bell-tower, or turret, usually forming part of a church, but sometimes detached from it, as at Evesham and Berkeley, in England, and still more frequently in Italy. A belfry belonging to a church situated in a deep glen was built upon a neighboring height, as at Ardcloch, Scotland, and at St. Feve and other places in Cornwall. At the close of the 17th century, it was a common thing in Scotland for the bell to be hung upon a tree, as at Aldbar, for instance. A belfry consisting of a mere turret, is called a *bell-gable*, or *bel-cote*, and always stands on the west end of the church. A smaller one is sometimes placed at the east end over the altar for the sanctus bell. After the 12th century, when the burghs began to gain influence, they asserted their right to have bells to call the burghers together for council or for action. Thus in the hearts of towns there arose municipal belfries.

BELGÆ, a name given by Cæsar to the warlike tribes which in his time occupied one of the three divisions of Gaul. Their country was chiefly level, lying between the Rhine and the Seine, and comprised modern Belgium, part of the Netherlands, and northeastern France. They were in all probability, chiefly of Celtic origin. See *Britannica*, Vol. IX, p. 527; Vol. X, p. 111.

BELGARD, a Prussian town, almost entirely surrounded by water, in the province of Pomerania, at the junction of the Leitnitz and the Persante, about sixteen miles southwest of Cöslin. It has an old castle and the inhabitants manufacture cloth.

BELGIOJOSO, a town of Lombardy, North Italy, pleasantly situated in a fruitful plain between the Po and the Olona, nine miles east of Pavia. It has a noble castle, in which Francis I spent the night previous to the disastrous battle of Pavia, in which he was made prisoner. Population, about 4,000.

BELGIOJOSO, CHRISTINA, PRINCESS OF (1808-1871), an Italian patriot who was twice exiled for taking an active part in revolutionary measures. In 1848 she equipped a cavalry force of 200 men at her own expense to assist in freeing Milan from the Austrian yoke. She was also a patroness of literature and art.

BELGOROD (Russian, *Bejelgorod*, "White Town"), a town in the government of Koursk, Russia, situated on the Donetz. Three important fairs are held here yearly. Population, 15,200.

BELGRAVIA, the most aristocratic part of the West End of London, the English metropolis, extending from Hyde Park Corner to Pimlico.

BELGIUM. Area, 11,373 square miles. Population (1888), 6,030,043; average population per square mile (1888), 530. Under its present constitution, adopted in 1830-31, Belgium is very properly classed as a limited monarchy. Capital, Brussels. For an elaborate article on the history, productions, and the changes in its constitution and for local map, see *Britannica*, Vol. II, pp. 514-31.

In 1830, a national congress proclaimed Belgium independent. Prince Leopold, of Saxe-Coburg, was chosen hereditary king, June 4, 1831. He died Dec. 10, 1865, and was succeeded by his son, Leopold II, who was born April 9, 1835. Under the reign of the latter remarkable prosperity has characterized the country. He will be especially remembered as the founder and patron of the Congo Free State, for his vigorous, most efficient support of Stanley's work in Central Africa, and for his influential efforts on behalf of the suppression of the African slave-trade. The king has been granted an annual civil list of \$660,000.

The king is the head of the executive power, but every official act must be countersigned by a responsible department minister, and the chambers are the sole interpreters of the constitution. The king's person is sacred; he transmits his power to his next male heir, and, in default of a male heir, he may nominate a successor, subject to the approval of the chambers. He may not suspend laws or dispense with their execution. He commands the land and sea forces, declares war, negotiates treaties of peace, alliance and commerce, which, however, must have the sanction of the chambers. The house of representatives is composed of one member for every 40,000 of the population, and the voters are those male citizens of not less than 25 years of age whose annual taxation is not less than 42 francs. The deputies not residing in Brussels are entitled to the pay of about \$84 per month while the chamber is in session. The senators, elected for eight years, number about half as many as the lower house, elected for four years; must be 40 years old and pay an annual tax of at least 1,000 florins. They are not entitled to any compensation for their services. In 1890 the senate numbered 69 members, and the representatives 136. For fuller notice, see *Britannica*, Vol. II.

The army, on a paid footing, in 1888 numbered 50,000 men with officers, under the colors, while the total force upon paper, available in emergency, was reported at 154,638. Exemption can no longer be obtained by purchase. Antwerp has the principal fortress. In 1888 the chambers voted \$1,920,000 for new forts on the Meuse, the new forts to be armed with guns placed in iron cupolas. Belgium has no navy proper, nor has it any colonies; but the king of the Belgians is, at the same time, "sovereign of the Free State of the Congo." In 1888 Brussels reported a population of 448,088; Antwerp, the chief port, 210,000, exclusive of suburbs; Ghent, 147,281, and Liege, 144,000.

The record of the Belgian royal family, as officially gazetted January 1, 1891, was as follows:

Reigning King.—Leopold II, born April 9, 1835, the son of King Leopold I, former Prince of Saxe-Coburg-Gotha, and of Princess Louise, daughter of the late King Louis Philippe of the French; ascended the throne at the death of his father, Dec. 10, 1865; married, Aug. 22, 1835, to Queen Marie Henriette; born Aug. 23, 1836; the daughter of the late Archduke Joseph of Austria.

Children of the King.—I. Princess Louise, born Feb. 18, 1858; married, Feb. 4, 1875, to Prince Philip of Saxe-Coburg-Gotha; born March 28, 1844; eldest son of Prince August, cousin of the reigning duke, and Princess Clementine of Orléans, daughter of the late King Louis Philippe of the French. II. Princess



Stéphanie, born May 21, 1864; married to the late Archduke Diéde Rudolf, only son of the Emperor of Austria and King of Hungary, May 10, 1881; widow 1889. III. Princess Clémentine, born July 30, 1872.

Brother and Sister of the King.—I. Philippe, Count of Flanders, born March 24, 1837; lieutenant-general in the service of Belgium; married April 26, 1867, to Princess Marie of Hohenzollern-Sigmaringen, born Nov. 17, 1845. Offspring of the union are four children: 1. Prince Baudouin, born June 3, 1869. 2. Princess Henriette, born Nov. 30, 1870. 3. Princess Josephine, born Oct. 18, 1872. 4. Prince Albert, born April 8, 1875. II. Princess Charlotte, born June 7, 1840; married July 27, 1857, to Archduke Maximilian of Austria, elected Emperor of Mexico July 10, 1863; widow June 19, 1867.

Since the above was gazetted, Prince Baudouin, nephew of the king and heir-apparent to the throne, died Jan. 23, 1891, very suddenly, aged 21 years. By his death his brother, Prince Albert, becomes heir-apparent to the Belgian throne.

Elementary education is compulsory, and is aided by a state grant of nearly \$5 per head, on the basis of attendance. The education grant in 1887 was \$2,060,100 for elementary education, and \$1,090,425 for secondary and higher education. There are four great universities—Ghent and Liege, controlled by the state, Brussels and Louvain, independent. Louvain has the "logical faculties."

French is the principal official language, but the Flemish has also been made an official language. The census of 1880 showed that about 45 per cent. of the people spoke French, 40 per cent. Flemish, and eight per cent. both French and Flemish. The prevailing religion is the Roman Catholic, but all religions are free under the constitution.

In 1889 the soil was divided among 1,169,406 proprietors; of the total area 58 per cent. was under cultivation. The exports to Great Britain alone in 1889 were valued at \$88,374,385. The public revenue in 1890 was \$83,149,100; public expenditure in 1890, \$80,173,120. The total public debt in 1890 was \$497,997,175.

The following table shows the respective commercial relations of the various nations with Belgium. The figures are compiled in francs, and are from the official Belgian returns of 1888:

Imports from—	Francs.	Exports to—	Francs.
France	289,010,139	France	342,680,888
Netherlands	216,115,703	England	256,101,563
Great Britain	182,557,286	Germany	200,127,708
Germany	168,943,432	Netherlands	172,020,189
United States	119,816,792	United States	52,208,494
Russia	149,783,457	Italy	24,296,197
Roumania	90,867,109	Switzerland	22,686,432
British India	55,915,890	Argentine Rep.	21,718,999
Argentine Rep.	54,798,639	Spain	19,831,633
Sweden-Norway	48,194,836	Brazil	13,795,940
Peru	32,204,977	Portugal	12,011,904
Brazil	24,533,811	Turkey	9,299,896
Italy	18,829,785	Sweden-Norway	9,293,011
Uruguay	15,248,859	China	7,756,888
Spain	10,976,538	Russia	5,906,538
Chile	8,445,851	Roumania	5,627,860
		British India	4,667,116

The latest official reports (those of 1886) announced 2,755 of railway, 1,984 being the property of the state, with a gross revenue of \$19,200,000; the telegraphs had a length of 3,893 miles; navigable rivers a length of 684, and the canals 560 miles.

BELGRADO, JAMES, an Italian Jesuit and a distinguished antiquary and mathematician, born at Udine in 1704, died in 1789. He wrote numerous works in Latin and Italian, mostly on scientific subjects.

BELIAL, a Hebrew word, signifying idle, wicked, unprofitable. The Scripture phrase, therefore, "s of Belial," was originally, in all probability, re Hebrew figurative expression, denoting

worthless or dissolute persons. At a later period the idea of evil which the word embodies seems to have been elaborated into a personality, and Belial is supposed by some to correspond to the Pluto of the Greeks.

BELKNAP, GEORGE EUGENE, naval officer, born in Newport, N. H., Jan. 22, 1832. He was appointed midshipman from the State in 1847, and had passed the various grades up to commander in 1866. In 1862-64 he commanded the iron-clad *New Ironsides*, and his handling of this new kind of vessel was much praised by Admirals Dupont, Dahlgren and Porter. He was engaged in important service during the civil war, and commanded successively the *Seneca* and *Canonius*, and after the war the *Hartford* and *Tuscarora*. On the last-mentioned steamer he engaged in deep-sea sounding, for the purpose of finding a route for a submarine cable between Japan and the United States. He was made commander in 1885.

BELKNAP, WILLIAM GOLDSMITH, soldier, born in Newburgh, N. Y., Sept. 7, 1794, died near Fort Wichita, Texas, Nov. 10, 1851. In the war of 1812 he was lieutenant, and advanced in rank till 1842, when, for services rendered in the Florida war, he was brevetted lieutenant-colonel. He established Fort Leavenworth, Kan., fought in the Rio Grande campaign, and for gallantry at Buena Vista was made brigadier-general. From 1843 to 1851 he commanded at Fort Gibson.

BELKNAP, WILLIAM NORTH, born at Newburgh, N. Y., Sept. 22, 1829, died Oct. 13, 1890. He graduated at Princeton, and practiced law at Keokuk, Iowa. He was a Democratic representative in the State legislature; went to the war and rose to the rank of major-general. From 1865 to 1869 he was internal revenue collector for his State, and in the last-mentioned year was chosen by President Grant as secretary of war. He held this office till 1876, when, being suspected of official corruption, he resigned. He was tried before the Senate, but acquitted on a legal technicality.

BELL, ALEXANDER GRAHAM, born at Edinburgh, Scotland, March 3, 1847. He was educated in the high school of his native city, then in the University of London, but was obliged to go to Canada for his health. In 1872 he came to reside in the United States, where he introduced his father's mode of instructing deaf mutes, and was made professor of vocal physiology in Boston University. Mr. Bell had for many years believed that sound could be communicated by electricity, and after a series of experiments, he invented and exhibited the first telephone in 1876. His invention has brought him great wealth and fame. He has also invented a photophone—a contrivance in which a beam of light is substituted for a wire in conveying sound. Mr. Bell is much interested in the education of deaf mutes, and at present is at work on an instrument for recording, which shall record speech by photographing the vibrations of a tiny stream of water. This inventor has his home in Washington, D. C.

BELL, ALEXANDER MELVILLE, born in Edinburgh, Scotland, March 1, 1819. His father, Alexander Bell, the inventor of a method for removing impediments of speech, was his teacher. He was an educator, and lectured at Edinburgh University, New College and University of London. On removing to Canada he was made instructor at Queen's College, Kingston. *Visible Speech*, a method of teaching deaf mutes, is his invention. He has written books on phonetics and elocution.

BELL, CURRER. See BRONTË CHARLOTTE, *Britannica*, Vol. IV, p. 364.

BELL, SIR ISAAC LOWTHIAN, F. R. S., D. C. L., officer of the Legion of Honor, born in 1816. He was educated at Edinburgh and Paris. After being engaged in extensive chemical works, he and his brothers founded the great Clarence iron smelting works on the Tees. He was the member of Parliament for Hartlepool from 1875 till 1880, and was made a baronet in 1885. He has written many papers on metallurgical and chemical subjects.

BELL, JOHN, a statesman, born near Nashville, Tenn., Feb. 15, 1797, died at Cumberland Iron Works, Tenn., Sept. 10, 1869. He was a graduate of the institution formerly known as Cumberland College. He studied law and became State senator in 1814. In 1827 he was sent to Congress, where he remained for seven terms. He was a free trader, but became a protectionist and a founder of the whig party. He was chosen speaker of the House in 1834, and took part in several important debates from 1836 to 1838. President Harrison, in 1841, made him secretary of war, but he resigned when President Tyler left the whig party. Mr. Bell was sent to the United States Senate after having spent several years in retirement. He opposed the policy of annexation, opposed the Lecompton constitution for Kansas, and was the nominee on the "constitutional union" ticket for President in 1860. Secession was a movement condemned by Senator Bell, but he was not in favor of "coercion."

BELL, JOHN, a sculptor, born in Norfolk, England, in 1811. The work by which he is best known in this country is his allegorical representation of the *United States Directing the Progress of the New World*, a copy of which, in terra-cotta, was sent to the Centennial Exhibition at Philadelphia, and afterwards to Washington. His *Andromeda Bound to the Rock* is the property of Queen Victoria. He has published a number of literary works, chiefly on sculpture and the allied arts.

BELL, THOMAS, born in England in 1792, died 1880; an eminent naturalist. He studied medicine at London, from 1814 to 1815, and in 1836 he was made professor of zoölogy at King's College in that city. In 1844 he became first president of the Ray Society.

BELL OF A CAPITAL, also called **BASKET**, the capital of a pillar denuded of the foliage, in which case it resembles the form of a bell reversed.

BELLA, a thriving town of Naples, in the province of Basilicata. Population, 6,000.

BELLADONNA LILY, a very beautiful species of amaryllis, with rose-colored drooping flowers clustered at the summit of the leafless flowering stem. It is a native of the Cape of Good Hope and of the West Indies; it has become naturalized in Madeira. The flowering stem is about 18 inches high.

BELLAGGIO, an Italian village situated on the promontory that separates the two arms of Lake Como. Its hotels are among the finest in Italy, and some of its lovely villas contain valuable art collections. Population, 966.

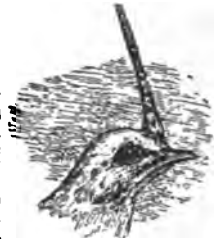
BELLAIRE, a commercial and manufacturing city of Ohio, situated on the Ohio River, about five miles below Wheeling. It contains important manufactures of glass, tinware, and flour, besides machine-shops, foundries and nail-works; and abundance of iron, coal, limestone and fire-clay are found in the vicinity.

BELLAMY, EDWARD, author, born in 1850 at Chicopee Falls, Mass. He was educated at Union College, studied in Germany for a year, and, on his return to America, he studied law and then turned his attention to journalism. During 1871-72 he was successively on the staff of the New York "Evening

Post" and of the "Springfield Union." He has written *A Nantucket Idyl*, *Miss Ludington's Sister*, *The Blind Man's World* and *Looking Backward*. The last mentioned is a very popular book.

BELLAMY, JOSEPH, a clergyman and educator, born at Cheshire, Conn., in 1719, died at Bethlehem, Conn., March 6, 1790. He graduated at Yale, and at the age of eighteen was licensed to preach. He spent his life preaching at Bethlehem, where, about 1742, he established a divinity school, which was most successful and was attended by many eminent men. Some of Dr. Bellamy's works are *True Religion Delineated*, *The Nature and Glory of the Gospel*, and *The Law Our Schoolmaster*.

BELL-BIRD, a bird of a genus nearly allied to the cotingas, but characterized by a very broad bill, soft and flexible at the base and hard toward the extremity. It is about the size of a jay; the male is of snow-white plumage. It is found in South America, and is remarkable for the metallic resonance of its cry, which resembles the tolling of a bell. It generally takes its place at the top of a lofty tree, and the tolling can be heard at the distance of three miles. It resounds through the forest not only in the morning and evening but also at mid-day, when the heat of the blazing sun has imposed silence on almost every other creature. See *Britannica*, Vol. XII, p. 139, and Vol. XXIV, p. 139.



BELL-BIRD.

BELL, BOOK AND CANDLE. The excommunication by Bell, Book and Candle is a solemnity belonging to the Church of Rome. Two or three sentences from the conclusion of the form of excommunication in the Scottish Church previous to the Reformation explain its symbolism: "Cursed be they from the crown of the head to the sole of the foot. Out be they taken from the book of life. (Shuts the book.) And as this candle is cast from the sight of men, so be their souls cast from the sight of God into the deepest pit of hell. (Casts the candle on the ground.) Amen." The rubric adds: "And then, the candle being dashed on the ground and quenched, let the bell be rung"—the bell being tolled as for the dead.

BELLE-ALLIANCE, the name of a farm in the province of Brabant, Belgium, 18 miles south of Brussels. It has become famous as the position occupied by the center of the French army in the battle of Waterloo, 1815.

BELLE-DE-NUIT, a name given to a certain tropical species of *Convolvulaceæ*, with extremely beautiful and fragrant flowers, which open only during the night. The species to which perhaps the name more particularly belongs, is *Ipomœa Bona Nox*, the Moon Flower, or Evening Primrose, a native of the forests of the West Indies and of tropical America.

BELLEFONTAINE, a beautiful manufacturing town of Ohio, county-seat of Logan county, noted for its healthfulness, and as having the highest elevation of any town in the State. The manufactures are chiefly woolens, carriages and railroad cars.

BELLEFONTE, a town of Pennsylvania, county-seat of Centre county, beautifully situated on Spring Creek, at the foot of Bald Eagle Mountain. It contains important manufactories of railroad cars, glass, axes, printing presses and other machinery, and a number of foundries, furnaces and rolling mills. It stands in the midst of charming scenery, and contains a large spring of the purest water, from which it derives its name.

BELLEGARDE, a hill fortress of France. Situated on the Spanish confines, on the road from Perpignan to Figueras, and in the pass between Col-de-Portus on the east and Col-de-Panizas on the west; it has belonged alternately to each nation. Here the French under Philip III were defeated by Peter III of Arragon in 1285. In the fourteenth century it consisted only of a fortified tower, captured by the Spaniards in 1674, and again by the French in 1675. In 1793 it was blockaded and taken by the Spaniards, but was retaken by the French in the following year.

BELLE ISLE, an island in the Atlantic, about midway between Newfoundland and Labrador, is chiefly known as giving name to the adjacent strait on the southwest, which forms the most northerly of the three channels between the Gulf of St. Lawrence and the open ocean.

BELLISLE, CHARLES LOUIS AUGUSTE FOUQUET, Duc de, marshal of France, born at Villefranche, in Aveyron, Sept. 22, 1684, died Jan. 26, 1761. He early distinguished himself in the wars in Italy and the Low Countries against Spain, and afterwards in Poland. In the war of the Austrian succession he stormed Prague in 1741 and in the following year conducted the marvelously skillful retreat to Eger. In 1757 he was made war minister, and as such introduced important improvements in the French service. See *Britannica*, Vol. IX, p. 586.

BELLEVUE, a mining town of Idaho, situated in the northern part of Alturas county, between the Wood and Little Wood Rivers. It is the business center of an important mining region, and of the farming and stock-raising industries of the vicinity.

BELLE PLAINE, a village of Iowa, about thirty-five miles west of Cedar Rapids, and two miles north of the Iowa River. It contains railroad machine-shops, manufactories of flour and gloves, and is an important center of transportation for grain.

BELLEROPHON, a genus of extinct gasteropodous mollusks, represented by a great number of species occurring in the Silurian, Devonian and Carboniferous rocks in many parts of the world.

BELLES-LETTRES, a term adopted from the French, and generally used in a vague way to designate the more refined department of literature, but has in fact no precise limits. In English usage it is synonymous with another vague expression, *polite literature*, including history, poetry, and the drama, fiction, essay and criticism.

BELLEVILLE, a town of France, in the department of the Seine, forming a suburb of Paris, and inclosed by the new fortifications. It has manufactories of cashmeres, varnished leather, articles of polished steel, chemical stuffs, etc. There are springs at Belleville which have supplied Paris with water from a very early date, and it has tea-gardens and other places of amusement much resorted to by the Parisians. It has been a center of communistic agitation. Population, 75,000.

BELLEVILLE, a prosperous city of Illinois, and capital of St. Clair county, built on elevated ground; is on the St. Louis and Southeastern, the St. Louis, the Belleville and Southern and the Illinois and St. Louis Railroads. The distance from St. Louis is fifteen miles, from Springfield, the State capital, 110 miles. A branch road also runs to O'Fallon in the same county. Here are eight or ten churches, a convent, good schools, one national bank and one savings bank, two daily German papers and two weekly English papers. Here are several breweries, and large manufactories of various kinds, such as of iron, nails, flour, thrashing machines, steam engines, pumps, drills, etc. Here also are valuable

and easily-worked mines of bituminous coal. Population in 1880 was 10,683; in 1890, 15,360.

BELLEVILLE, a city of Kansas, county-seat of Republic county, is the center of a rich agricultural and mining district, and the seat of a college.

BELLEVILLE, a thriving town in the province of Ontario, Canada, situated on the Bay of Quinte, Lake Ontario, forty-eight miles west of Kingston by rail. It is the seat of Albert University, founded in 1857. Population, 9,516.

BELLEVUE, a beautiful town of Iowa, located on a high bank of the Mississippi, about twenty-five miles below Dubuque. It is a fashionable summer resort, and an important center of transportation, by rail and water, for grain, stock and produce.

BELLEVUE, a manufacturing town of Michigan, about twelve miles northeast of Battle Creek. It contains important manufactories of lumber, flour and iron, and produces excellent lime.

BELLEVUE, a village of Nebraska, county-seat of Sarpy county, on the Missouri, fifteen miles below Omaha. It contains an excellent high school and a manufactory of bee-hives.

BELLEVUE, a manufacturing town of Ohio, forty-five miles southeast of Toledo. It contains a number of foundries and machine-shops, and manufactories of carriages, plows and barrels, and is an important grain market.

BELLINGHAM BAY, a village of Washington, on the bay of the Pacific of the same name. It produces large quantities of lignitic bituminous coal, considered the best on the Pacific coast.

BELLINGHAM, RICHARD, born in England, 1592, died, Dec. 7, 1672. He came to Boston in 1634, was one of the original patentees of the colony, and after being deputy-governor, in 1641 was elected governor, again in 1654, and from 1665 up to his death he held that office; being deputy-governor thirteen years and governor ten years. In 1664 he was chosen major-general. Bellingham was an obstinate man, but one who commanded respect. He was intolerant with regard to religious sects which differed from his own.

BELL METAL, a sonorous alloy used in making bells. The principal ingredient is copper; the alloy, being generally twenty to twenty-five per cent. of tin, zinc or other metal, is sometimes used, however, with the copper.

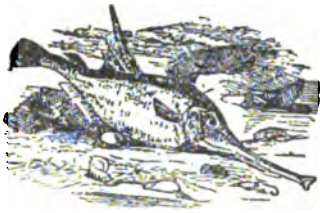
BELLOMONT, or **BELLAMONT**, RICHARD COOTE, earl of, the eldest son of Baron Coote of the Irish peerage, born in 1636, died at New York, March 5, 1701, and was buried at the Battery. He now lies in St. Paul's churchyard on Broadway. In England the subject of this sketch held several prominent offices. He was member of Parliament in 1688, and treasurer and receiver general, several years later, to Queen Mary. Being appointed governor of New York and Massachusetts in 1795, he started for the former place, and during his stay became extremely unpopular. He went to Massachusetts in 1699, where he was received cordially. The king had sent him out with the primary object of suppressing piracy, and the governor, with the king's consent, equipped a ship of his own and sent Captain William Kidd to clear the surrounding waters of pirates. Kidd turned pirate, and the governor was even suspected of complicity. Bello-mont evinced his honesty by going to New York and waging a ruthless war on illegal traders. This made him unpopular, and petitions were sent to England for his recall. These troubles hastened his death.

BELLOT STRAIT is the passage connecting Prince Regent Inlet with Peel Strait or Sound, and separating North Somerset from Boothia Felix. Kennedy, in his search for Franklin, discovered its

eastern entrance, and named the strait after his lamented companion, Bellot. See Britannica, Vol. III, p. 549. After four fruitless attempts to explore it, the achievement was accomplished by McClintock; it is about 20 miles long, and at its narrowest part about one mile wide, running between granite shores rising from 1,500 to 1,600 feet. The winds and the waters have full sway here, the water flowing from the west in permanent currents and flood tides.

BELLOWS FALLS, a manufacturing village in Windham county, Vermont. It is situated on the Connecticut river, which here has a fall of forty-four feet in half a mile and furnishes water power for the manufacture of paper, farming-implements, and woolen goods.

BELLOWS FISH, a local name for several species of fishes; particularly in Rhode Island, or the angler-fish; and, in Europe, for the trumpet-fish of the Mediterranean and Atlantic coasts.



TRUMPET-FISH.

BELLOWS, HENRY WHITNEY, an eminent Unitarian clergyman, born at Boston, Mass., June 11, 1814, died in New York

city, Jan. 30, 1882. He graduated at Harvard and afterwards at the Cambridge divinity school. He was ordained pastor at the Congregational Church in New York, and here he remained for forty-three years. He was editorially connected with the "Christian Inquirer," "Christian Examiner" and the "Liberal Christian." Several notable addresses were made by him on public occasions. He was president of the U. S. Sanitary Commission, holding office from 1861 to 1878—during which time \$15,000,000 in supplies and \$5,000,000 in money were distributed according to his directions.

BELLOY, PIERRE LAURENT BUIRETTE, born in Saint-Flour, Auvergne, in 1727, died in 1775. He was one of the first French dramatists who ventured to introduce on the stage native instead of Greek or Roman heroes.

BELL ROCK, or **INCHCAPE**, an old red sandstone reef in the German Ocean, twelve miles southeast of Arbroath, and almost opposite the mouth of the Tay. It is 2,000 feet long, and at spring-tides part of it is uncovered to the height of four feet, the sea being only three fathoms deep for one hundred yards around. It caused at one time a great deal of shipwreck, and tradition states that the abbot of Aberbrothwick (Arbroath) placed a bell on it, "fixed upon a tree or timber, which rang continually, giving notice to the saylers of the danger."

BELLS. For general article on BELLS, see Britannica, Vol. III, pp. 536-39. American bells are now found in all quarters of the globe. The special aim of bell-founders in the United States is to produce the greatest volume and prolongation of tone, combined with the best quality of sound and the highest traveling character from the least weight of metal, and these results have attained to such an extent as to secure to the trade a greatly extended and rapidly increasing patronage. American manufacturers may be congratulated upon the generally acknowledged fact that their bells are uniformly designed and cast with superior excellence in all these respects. As the musical qualities, purity and beauty of tone and power, that distinguish the best bells from those of an inferior class depend largely on the purity of the material used, the greatest care is taken as to the selections made. The following is quoted from the circular sent out in 1891 by one of the oldest and leading American firms:*

"Sets of bells, of all kinds, in foreign countries are usually called *peals*; in America the term is applied to those which are attuned to harmonic intervals, while those which are attuned to diatonic intervals are called *chimes*. Thus, a set of bells upon the

*1. We guarantee that all the copper melted and used in the manufacture of the bell or bells will be the purest new ingot copper that can be obtained, said copper being guaranteed to us to be the purest manufactured.

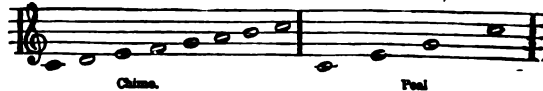
*2. We guarantee that, with each *seventy-seven pounds* of said copper, we will melt and mix not less than *twenty-three pounds* of best new imported block tin.

*3. We guarantee that an analysis of the bell or bells will show that the bell metal is composed of the best of copper and tin only, and that it is not in any manner debased by the addition of any cheap metal or metals.

*4. We further guarantee that no cheap, impure or brittle ingot copper, and that no old copper, with its accumulations of solder and dirt, will be used in the manufacture of the bell or bells."

* That of Meneely & Co., West Troy, N. Y., to whom we are indebted for special favors in the preparation of this article.

eight notes of the music scale is a chime; a set upon the first, third, fifth and eighth is a peal:

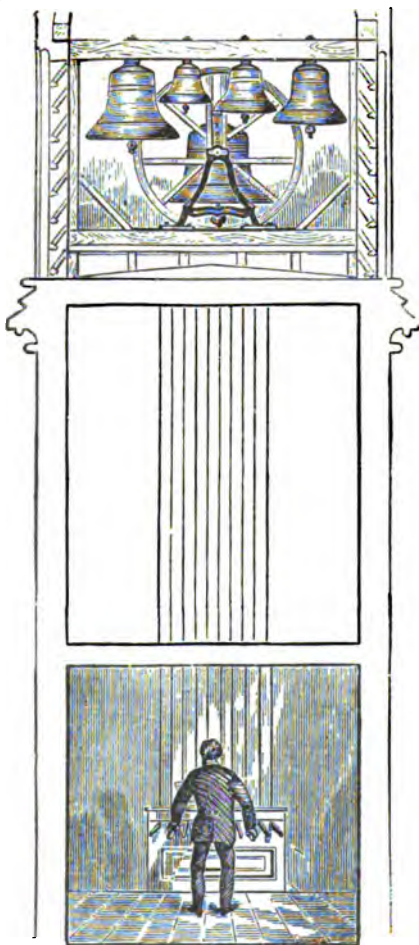


"The smallest number of bells that may be said to compose a chime is five, while what might be called the natural number—corresponding to the notes of the natural scale—is eight; but as the addition of an extra bell giving the note of the flat seventh creates a new series of diatonic tones in the key of the fourth, thus allowing music of two different keys to be played, this bell is usually added to the octave, so that a full chime is now understood to consist of at least *nine* bells, which number may, of course, be increased by adding bells which produce other tones, either within or beyond the octave.

"The best manner of mounting chimes is to provide the largest bell of the set with the usual fixtures, so that it may be rung as an ordinary church-bell, and to suspend the others stationarily from trusses in such positions as the capacity of the tower may require; the general plan of mounting, as also the arrangement of the chiming apparatus, being shown in the illustration. Should the bell room be limited in width, but have a fair height, the bells are placed in sections above each other, the position being a matter of indifference, provided the windows are of sufficient height to give egress to the sound.

"Chime-ringing levers enable the ringer to perform any music within the range of the bells the same as upon a musical instrument, the elasticity of touch and effect of the blow being greatly enhanced by our recently improved mode of connecting the levers with the clapper, by means of which the same facility of execution is secured as upon the pedals of an organ. It should be stated, both for the information of purchasers and in commendation of this mode of chime-ringing, that it does

not require the services of a professional musician, but may be performed acceptably, and with comparatively little practice, by almost any person having an ear for music."



As it is impracticable to play tunes upon peals (as distinguished from chimes), they are usually so mounted that each bell may be swung, thus allowing different bells to be rung for different church services, if desired, while their being rung together, either successively or simultaneously, produces a pleasing effect. A peal being usually considered as the nucleus of the future chime, the careful manufacturer bears this in mind in determining the weights and tones of the bells selected for peals, and retains a record of the key of the tenor bell as a needed help in selecting additional bells to complete the possible future chime.

As to the inquiry often made, how far a bell of given weight may be heard, it is impossible to give any satisfactory information. At least one-half depends upon the formation of the land surrounding the structure in which the bell is hung. Lengthwise of a valley the sound will often go more than twice as far as it does over an adjoining hill. So also it may be heard much farther over water than over a plain. So also the more open the space in which the bell is hung the freer will the sound be to reach long distances. In all cases the usual acoustic laws govern the "reaches" of the "ringing-bell." A small bell outside, or in a partially con-

finied room in a tower, may be heard twice or even several times as far as one shut in by obstructions of walls or partially open window-blinds. Referring to this question, a well-informed and well-known critic on towers says:

"Nine out of ten modern towers are built as if the architect supposed it was the bell founder's business not only to cast the bells but hang them, make the towers large enough to hold them, and to invent some way or other of making the sound find its way out of the windows wherever they are and however small they may be. Oddly enough, too, almost as I am writing this, I have received a letter from a London bell-ringer of twenty-six years' standing, complaining that, of all the churches built there within the last thirty years, there are only two which are properly adapted to the bells which they contain; the main faults being that the bell chambers are too low, and the windows so small that not half the sound of the bells can get out. In a tower which is nothing more than a base for a spire the bells have to hang so low that they are hardly above the roofs of the surrounding houses, and so are disagreeably noisy at a little distance and yet hardly to be heard a great way off, whereas, good bells properly placed always sound the best at a distance; and when they are clear of all these defects in the tower the architect or builder generally contrives to bottle up the sound as much as possible by filling the bell chamber windows with close louvers deeply overlapping each other, so that even the sound that does get out is, as it were, shot down onto the roof of the church instead of being allowed to spread freely. Mr. Ruskin also abuses close louvers on architectural grounds, and notices the grand effect of the large, wide ones in many foreign churches."

The largest bell made in the United States weighed 22,000 lbs., and before it was fractured hung in the City Hall, New York. On some occasions it was heard thirteen miles up the Hudson River; but that date was before the upper part of Manhattan Island was covered with structures varying from four to twenty stories in height. The largest bell in Canada is that of Notre Dame Cathedral, Montreal, weighing 29,400 lbs. The reference catalogues of American dealers would present extended lists showing a great number of large bells throughout the country ranging in weight from 8,000 lbs. to 17,000 lbs. As a list of the largest bells of the Old World is given in detail in Vol. III, it is omitted in these Additions and Revisions; but the reader will be gratified to find here



THE GREAT BELL OF MOSCOW.

a correct illustration of the bell of Moscow, the greatest ever constructed, and whose weight was such that it was never hung, digitized by Google

The bell bears an inscription stating that the first great bell was cast in 1553, and weighed 36,000 pounds; during the reign of the Tsar Alexis it was ruined by fire, and in 1654, with additional metal, was recast into the second great bell, the weight of which was 288,000 pounds; that this second bell was in 1706 also destroyed by fire, and in 1733, with still more metal, was recast by order of the Empress Anne, into the present great bell, which measures 22 feet, 8 inches across the mouth, 19 feet, 3 inches in height, and weighs (estimated) about 440,000 pounds.* It seems to have been cracked in cooling; a nearly triangular-shaped piece of about 6 feet in height and 7 feet at the base, and weighing about 11 tons, was broken out at the rim and now stands on the ground just below the opening thus formed. When the great bell was placed in its present position it was intended for service as a chapel, and for that purpose an opening was left through the pedestal wall which, with the opening in the bell above it, forms an imposing entrance.

To the list in *Britannica*, Vol. III, page 539, should be added the new bell of St. Paul's in London, commonly known as the "Great Paul." It was raised to its place May 31, 1882, and dedicated with imposing ceremonies three days later. It is 8 feet 10 inches in height, and 9 feet 6½ inches in diameter, and weighs 17½ tons. Its note is E flat; materials, copper and tin; and its cost about \$15,000.

BELLS, on shipboard, is a term having a peculiar meaning nearly equivalent to that of "time" or "o'clock" in ordinary land life. The time is divided into watches of four hours each, ending at 4, at 8 and at 12, and the stroke of a bell marks each half-hour. These strokes have no reference to the hour, but simply designate the number of half-hours that have passed in that particular watch. Thus, "three bells" is a phrase denoting that three half-hours have elapsed, but it does not in itself show to what watch it refers.

BELLUNO, a city of Venetia, Northern Italy, on the right bank of the Piave, and 51 miles north of the city of Venice. It is walled, is the seat of a bishop, has a handsome cathedral, hospital, public library, fine aqueduct, etc. It has a trade in timber, and manufactures of silks, hats, leather and earthenware. Population, 10,000.

BELMONT, a village of Missouri, on the Mississippi River, opposite Columbus, Ky., noted as the site of a severe battle fought Nov. 7, 1861, in which the Confederate works were stormed and taken by the Federal troops under General Grant, and retaken by the Confederate forces under Major-General Polk.

BELMONT, a village of New York, situated on the Genesee River, about midway between Dunkirk and Elmira. It is extensively engaged in the manufacture of barrels.

BELMONT, AUGUST, financier, born at Alzey, Germany, in 1816, died in New York city, Nov. 24, 1890. He was educated in Frankfort, entered the employ of the Rothschilds in 1830, and came to New York in 1837, where he settled as their agent. He soon began to prosper and at the age of forty was a millionaire. His office was on Wall street, but he was a banker, never a gambler in stocks. In 1844 Mr. Belmont was appointed consul-general by the Austrian government, and this office he held six years. He was a Democrat, was sent by President

Pierce as minister to the Hague, and from 1860 to 1872 was chairman of the national Democratic convention. He was of the opinion that the Southern States should be allowed to secede, thinking they would soon be glad to come back into the Union. The event of war proved Mr. Belmont in error, and caused him to change his views and advocate the prosecution of the war. He had such an influence abroad that he prevented the confederacy from obtaining credit in the foreign money market. While visiting Europe he was able to help the Union cause and furnished valuable information to Secretary Seward. Mr. Belmont was a lover of art, and made quite a collection of paintings. For years he was noted as a breeder of fine horses.

BELOIT, Kansas, a city and important business center, the county-seat of Mitchell county. The Solomon River furnishes excellent water power. White magnesian limestone, a good building stone, is here quarried.

BELOIT, a city of Wisconsin, situated on both sides of Rock River, immediately north of the boundary line of Illinois. It is the seat of Beloit College, the center of an extensive farming and dairying district, and the headquarters of important manufactures, including paper, reaping and mowing machines, water-wheels, plows and machinery.

BELOMANCY, a mode of divination by arrows, practiced among the Arabs and other nations of the East. A number of arrows being shot off with sentences written on labels attached to them, an indication of futurity is sought from the inscription on the first arrow found. This is only one of many ways of divining by arrows.

BELON, PIERRE (1517-64), a celebrated French naturalist, born in 1517, at Spouletière. He studied medicine at Paris, and traveled through Germany. Afterwards he visited Greece, Asia Minor, Egypt and Arabia. He returned in 1549 and published the results of his travels in a work entitled, *Observations on Several Singular and Memorable Things Discovered in Greece, Asia, Judea, Egypt, Arabia and Other Foreign Countries*. Charles IX gave him apartments in the Château of Madrid, a sumptuous edifice in the Bois de Boulogne, constructed by Francis I. Here he resided till his tragic death in 1564; he was killed by robbers while gathering herbs in the Bois de Boulogne. In 1551 he published, among other things, an exact description of the dolphin, and the earliest picture of a hippopotamus. He published the most important treatise on ornithology of the 16th century.

BELPER, an English market town, in Derby county, on the Derwent. It contains the remains of the mansion which was at one time the dwelling place of John of Gaunt.

BELTON, the county-seat of Bell county, Texas, on Leon River. It has a Masonic institute, the Chamberlain Institute, and Baylor Female College, the oldest in the State. Its educational institutions are excellent and numerous.

BELUGRA, or WHITE WHALE (*Delphinapterus leucas*), a cetacean mammal allied to the dolphins. Its form, which is remarkably characterized by the softness of all its curves, adapts it for rapid and graceful movements. See *Britannica*, Vol. XV, p. 398; Vol. XXIV, p. 525.

BELUR, a village of Mysore, situated 130 miles west of Bangalore. It is known in the Puranas as *Velapura*, and locally regarded as the Southern Benares. It is the site of a celebrated temple. Population, 3,000.

BELVEDERE, originally an erection on the top of a house for the purpose of looking out on the surrounding country and enjoying the air, in which

*This weight is just double that of the largest bell now in use in the world: viz, that suspended above the chapel of St. Nicholas, in the kremlin in Moscow, weighing 220,000 pounds. This was cast in 1817. It is said that the sound, when the bell is rung, which is only once a year, is "a deep, hollow murmur, vibrating all over Moscow like the rolling of distant thunder."

sense it is still understood in Italy. A part of the Vatican in Rome is known as the Belvedere, and gives name to the famous statue of Apollo. In France the word has come to signify any kind of summer-house or place of refreshment.

BELVEDERE, an annual plant of the natural order *Chenopodiaceæ*, a native of the Middle and South of Europe and of Asia, familiar in gardens as an ornamental annual, not on account of its flowers, which have no beauty, but of its close, pyramidal, rigid form, and numerous narrow leaves, which make it appear like a miniature cypress tree. It is sometimes called Summer Cypress.

BELVIDERE, an educational and manufacturing town of Illinois, on the Kishwaukee River and Chicago and Northwestern Railroad; it is the county-seat of Boone county.

BELVIDERE, the capital of Warren county, N. J., a flourishing town on the Delaware River and Pequest Creek. There is a bridge here across the Delaware. Abundant water power is furnished for cotton and flour mills and a carriage factory. The Pennsylvania Railroad passes through the town. The surrounding region furnishes iron ore, limestone, slate and magnesia.

BELVISIA (also called *Napolona*), a genus of exogenous plants, the type of the order *Belvisiaceæ*, of which order only a few species, natives of tropical Africa, have yet been discovered. They are large shrubs, with smooth, simple, leathery leaves, the beautiful and very curious flowers, growing in threes, being sessile in the axils of the leaves. The calyx is a thick leathery cup, divided into five ovate segments. The corolla is composed of three distinct rings, the outer one five-lobed, and furnished with ribs, by means of which it is strongly plaited, turning back and hiding the calyx when full blown; the second, a narrow membrane, divided into numerous regular segments like a fringe; the third, an erect cup-shaped membrane. The erect stamens resemble another cup. The ovary is five-celled, each cell containing two ovules; the short, thick style is five-angled, with a broad, flat stigma of as many angles. The fruit is a soft berry, crowned with the calyx, with large kidney-shaped seeds.

BEM, JOSEPH (1795-1850), commander of the army in Transylvania during the Hungarian revolution, born at Tarnov, in Galicia, in 1795. After a course of military adventure in Poland he went to France, where he resided for a considerable time. In 1848 he joined the Hungarians and was intrusted with the command of the army of Transylvania. He defeated the Austrian army and succeeded in driving their allies, the Russians, back to Wallachia. Having thus made himself master of Transylvania, at Kossuth's request he hastened into Hungary, where he took part in the unfortunate battle near Temesvar. He made his escape into Turkey, where he embraced, from political motives, the profession of Islam; he was raised to the dignity of a pasha and obtained a command in the Turkish army. In 1850 he was sent to Aleppo, where, after suppressing the sanguinary insurrection of the Arabs against the Christian population, he died of fever, Dec. 10, 1850. He was in private life characterized by his benevolent disposition, and as a military leader distinguished by courage, presence of mind in extreme danger, and remarkable rapidity of movement.

BEMBATOOKA, BAY OF, a safe and commodious bay on the northwest coast of Madagascar. Prime bullocks are sold here, and bought extensively by agents of the French government, who have them driven to Fort Dauphin on Antongil Bay, on the opposite side of the island, where they are killed and cured for the use of the French navy, and for

colonial consumption. Rice is also sold very cheap at Bembatooka. Majunga, on the north side of the bay, is an important town, Bembatooka being only a village.

BEMBECIDÆ, a family of hymenopterous insects of the division in which the females are furnished with stings. Along with *Sphagidæ*, and other nearly allied families, they receive the popular name of sand-wasp. They very much resemble bees or wasps in general appearance; they are natives of the warmer parts of the world. Some of them are remarkable for the odor of roses which they emit. The females make burrows in sandy banks, in each of which they deposit an egg, and along with it bodies of flies as food for the larva.

BEMBRIDGE BEDS, a division of the Upper Eocene strata, resting on the St. Helen's, and capped by the Hempstead series, the maximum thickness being 115 feet. Here have been found remains of the *Anoplotherium*.

BEMIS HEIGHTS, or **BEMUS HEIGHTS**, a small village of New York, in Saratoga county, famous for having been the place where occurred the first battle of Stillwater, Sept. 19, 1777. Generals Gates and Burgoyne were the opposing commanders.

BEN, a Hebrew word signifying "son," and forming the first syllable of many names, ancient and modern, as Benhadad, Benjamin, etc. The corresponding Arabic word *Ibn*, or *Ebn*, in like manner enters into composition of a great number of names, as Ibn Sina, Ibn-al-Faradhi, etc. Ibn in some of its constructive forms, drops the initial vowel, thus nearly corresponding to the Hebrew, as *Jusuf-ben-Yakub* (Joseph, the son of Jacob).

BEN, a term of Gaelic origin, prefixed to the names of the principal mountains of Scotland, as Ben Ledi, Ben Lomond, etc. It is essentially the same as the Welsh *Pen*, the primary signification of which is "head," and hence it may be considered as equivalent to "mountain head." The term *Pennine*, applied to a division of the Alps, is doubtless derived from the Celtic *Pen* or *Ben*, and even the name Apennines is in all probability from the same root.

BEN, OIL OF, a fluid fixed oil, obtained from the seeds of a tree found in India and Arabia, and known as the horse-radish tree. The seeds are called Ben-nuts, and are roundish, with three membranous wings. The oil is used by watch-makers, because it does not readily freeze; also by perfumers, as the basis of various scents, and other oils are often adulterated with it.

BENATEK, a small town of Bohemia, on the right bank of the Iser, a few miles distant from Prague. It is worthy of note as being for a time the residence of the celebrated astronomer, Tycho Brahe.

BENBECULA, one of the Hebrides or Western Isles of Scotland, between North and South Nith, 20 miles west of Skye, and belonging to Invernesshire. It is eight miles long, and eight miles broad, low and flat, and consists chiefly of bog, sand and lake, resting on a substratum of gneiss rock, with a very broken coast-line. Population, 1,700, consisting of fishermen and farmers, who fertilize the soil with the seaweed which is cast ashore on the island.

BENCH-WARRANT, a process issued by a judge or court against a person guilty of some contempt, or indicted for some crime.

BEND, the name for one among the many kinds of knot by which ropes are fastened on shipboard. Seamen imply this meaning when they speak of "bending the cable," the "fishermen's bend," the "sheet bend," etc.

BENDA, GEORGE, the most distinguished of a notable musical family, born at Jungbunzlau, in

Bohemia, in 1721, died at Kostritz in 1795. He excelled as a pianist, violinist, and composer, and was bandmaster to the Duke of Gotha (1748-87), and in this period produced several operas and cantatas, such as *Ariadne auf Naxos* and *Medea*.

BENDEMANN, EDWARD, a celebrated painter of the Düsseldorf school, born at Berlin in 1811. He received a careful scientific education, but devoted himself to art, became a pupil of Schadow's and soon proved that he was not mistaken in his vocation. When he was but 20 years of age, his picture of the *Captive Jews* was exhibited at Berlin, and at once acknowledged to be a masterpiece. His next important work in 1833 represented *Two Girls at a Fountain*, followed in 1837 by *Jeremiah at the Ruins of Jerusalem*, a picture for which he obtained a prize-medal at Paris. His pictures are distinguished by a grace and charm arising from symmetry in drawing and composition, *naieté* in conception, and a tender, harmonious, yet always truthful coloring. He was director of Düsseldorf Academy from 1859 to 1867.

BENDIGO, one of the most productive gold-fields in the colony of Victoria. It is about 25 miles to the north of Mount Alexander, which again is about 75 miles inland from Melbourne.

BENE, a town in the province of Mondovi, Piedmont, 18 miles from Coni. It occupies the site of the ancient *Augusta Bagiennorum* destroyed by Alaric. Many interesting vestiges are found in the neighborhood, and the ruins of an aqueduct, baths, and amphitheater are still visible. Population, 6,000.

BENEDEK, LUDWIG VON, an Austrian general, born at Odenburg, Hungary, in 1804, died at Gratz in 1881. He received a military education, entered the army as ensign in 1822, and became distinguished for gallantry and skill. He was governor of Hungary in 1860, and in 1866 was made commander-in-chief of the Austrian army. After the defeat at Sadowa he was brought before a court-martial, and although the proceedings were quashed by the emperor, Benedek never recovered from the savage criticisms of his mortified and defeated countrymen. See *Britannica*, Vol. III, p. 140.

BENEDETTI, VINCENT, a French diplomatist who held various important positions. When ambassador to Prussia, he urged offensively upon the king, in the public walks at Ems, in 1870, a measure distasteful to his majesty, through which he was denied all further interviews. Each government then claimed that it had been grievously insulted by the other, and when Benedetti returned to Paris, France declared war upon Prussia with a disastrous result to herself. See *Britannica*, Vol. IX, p. 626.

BENEDICITE, a hymn or song of the three children in the fiery furnace, sung in the Christian Church as early as the time of St. Chrysostom, and used in the Anglican Church in the morning service when the *Te Deum* is not sung.

BENEDICT, SIR JULIUS, born in Germany 1804, died in 1858. He was a musician and composer. In 1836 he took up his residence in England. He was musical director of the Kärnther Thor Theater, Vienna, in 1824; and, later on, occupied the same position at Naples. In Paris, and afterward in London, in 1835, he appeared with great success as a pianist. In 1850 he conducted at Jenny Lind's concerts in America.

BENEDICT, BISHOP, an ecclesiastic, born in England in 629. His influence upon Anglo-Saxon civilization and learning was most important. Until about the year 654 he served at the court of Oswin, king of Northumberland, after which he spent about ten years at Rome in study. In 665 he

returned to Rome on a mission for Alchfrid, king of Northumbria, and was made abbot of the monastery of St. Peter, at Canterbury, after his return to England (668). He purchased a valuable collection of books about five years later, and went to Northumbria, where he founded the famous monastery of Wearmouth on a piece of land near the mouth of the Wear, presented to him by King Ecgfrid. See *Britannica*, Vol. III, p. 481.

BENEDICTINES. See *Britannica*, Vol. III, p. 558, and Vol. XVI, pp. 704, *et seq.* An account of the Benedictines, as affecting the history of England, is given in Vol. VIII, pp. 372, *et seq.* Their historical monasteries are described in the article **ABBEY**, and their libraries in Vol. XIV, p. 513. The Benedictines in the United States are known as the American Cassinensian Congregation. The parent organization is the house at Latrobe, Pa., founded in 1846 as the Monastery of St. Vincent, and raised in 1855 to the dignity of Abbey of Saint Vincent. It is under the jurisdiction of a mitred abbot, appointed by the Pope, and under the same general supervision is a large and increasing number of monasteries. The abbey at Saint Meinard, Ind., which was founded in 1853, is a filiation of the celebrated Benedictine Abbey of Einsiedeln, in Switzerland. The first convent of Benedictine nuns in the United States was established at Saint Mary's, Pa., in 1853.

BENEDICTION (Lat., *benedicere*, to speak well), a solemn invocation of the Divine blessing upon men or things. The simplest form of this ceremony may be considered as almost coeval with the earliest expression of religious feeling. The Jewish patriarchs before they died invoked the blessing of God upon their children, and later on the priests were commanded to solicit Divine blessing upon the people. The custom, being sanctioned by Christ, was carried forward into the Primitive Church, where it gradually developed in different forms. In the Eastern as well as the Western Church it is regarded as an essential preliminary to almost all important acts.

BENEDICTUS, the so-called "canticle of Zachary" (Luke i, 68-79), which forms part of the office of the lands in the Roman breviary. It has been set to music by all the most eminent composers.

BENEDIX, JULIUS RODERICK, German actor, manager, and play-writer, born at Leipsig in 1811, died there Sept. 26, 1873. Of his numerous pieces the best are his comedies, most of which are popular in Germany. His dramatic works fill 27 volumes.

BENEFICIARY, a term in law sometimes applied to the holder of a benefice. It may also denote a person who is in the enjoyment of any interest or estate held in trust by others.

BENEFIT OF CLERGY. See *Britannica*, Vol. V, pp. 827-28, and Vol. VIII, p. 372. The *Privilegium Clericale* was abolished in England by the act of June 21, 1827, and in Ireland by that of July 15, 1828. All doubt as to the liability of peers to punishment for felony was removed by Parliament in 1841. In the United States this anomalous privilege has been made the subject of aversive legislation by many of the individual States, some denying that the right ever legally existed in this country, others recognizing it as a part of the common law, follow in effect the federal act of April 30, 1790, which denies benefit of clergy to any one convicted of a capital offense.

BENEFIT OF INVENTORY: in Scottish law, a legal privilege, whereby an heir secured himself against unlimited liability for his ancestor by giving up, within the *annus deliberandi*, an inventory of his heritage or real estate, to the extent of which and no farther, was the heir liable.

BENEVOLENCE, a name applied to a forced loan or contribution, levied by kings of England without legal authority. It was first so called in 1473, when asked from his subjects by Edward IV, as a mark of good-will towards his rule; but similar compulsory "free-will offerings" had not been uncommon in former reigns. Under Richard III, in 1484, an act of Parliament abolished benevolences as "new and unlawful inventions;" but, spite of this, they continued to be exacted by Richard himself and by Henry VII. In 1614 James I tried, but with little success, to raise money by this expedient, and it was never again attempted by the crown, Charles I expressly declining to have recourse to it. See *Britannica*, Vol. IX, p. 177.

BENEZET, ANTHONY, born at St. Quentin, France, Jan. 31, 1713, died at Philadelphia, Pa., May 8, 1784. He was a philanthropist, and devoted his attention to the abolition of the slave trade, to the education of the colored race and the alleviation of the condition of prisoners. He published a few works which are of a religious or historical nature.

BENFEY, ТНѢОДОР, the greatest orientalist and comparative philologist of modern times, born of Jewish parents, near Gottingen, January, 1809, died in 1881. He studied in Gottingen, Munich, Frankfurt, and Heidelberg, and in 1830 turned his attention to the study of Sanskrit. For an extended account of his career, see *Britannica*, Vol. XVIII, p. 781.

BENGAL, BAY OF, a portion of the Indian Ocean, into which flow the Ganges and the Bramahputra on the north, the Irrawaddy on the east, and the Mahanuddy, the Godavery, the Kistna or Krishna, and the Cavery on the west. The northern shore, measuring 250 miles, reaches from Balasore to Chittagong, and at the south the bay extends for 1,200 miles between Coromandel and Malacca.

BENGAL LIGHT, or **BLUE LIGHT**, a brilliant light used at sea for signaling, and in ordinary pyrotechny. It is prepared from nitre, sulphur and the tersulphuret of antimony, mixed in the following proportions by weight: Nitre 6, sulphur 2, tersulphuret of antimony 1. When ignited it bursts into rapid and vivid combustion, evolving a brilliant, penetrating, but mellow light. As the fumes evolved are poisonous, the light cannot be used in safety in inclosed spaces.

BENI, the name of a large river and also of a department of Bolivia. Chief towns of the province are Trinidad and Loreto.

BENICIA, a commercial and manufacturing city of California, and its former capital, is situated on the north side of Carquinez Strait, at the head of navigation for large sea-going vessels, about midway in a direct line between San Francisco and Sacramento. One of the principal objects of interest is the old capitol, a fine brick edifice overlooking the water-front from a commanding eminence. Benicia barracks and the United States arsenal for the Pacific coast are located here. Among the principal manufactories are flour, leather, and hydraulic cement;—large quantities of superior limestone being quarried in the vicinity. Benicia is the seat of St. Augustine College, and of a law school, a number of young ladies' seminaries, and a Dominican monastery.

BENI-HASSAN, a village of Upper Egypt, on the east bank of the Nile. The place is remarkable for the numerous grottoes in its vicinity, which are among the most interesting in Egypt. These catacombs, which are excavated in the calcareous bank, are about thirty in number, and are supposed to have been used as sepulchres by the principal inhabitants of Hermopolis, a city that stood on the opposite side of the river. The paintings, though not

so artistic as those in the Theban catacombs, are of earlier date, and throw much curious light on the manners and customs of the ancient Egyptians.

BENI-ISGUEN, a large town in the interior of Algeria, surrounded by a rampart flanked with towers, and said to be nearly as populous as Algiers. It has some trade in grains.

BENI-ISRAEL (SONS OF ISRAEL), a remarkable race in the west of India, who preserve a tradition of Jewish descent, and have from time immemorial acknowledged the law of Moses, although in many respects conforming to the idolatry of the Hindus, by whom they are surrounded. Their features exhibit a resemblance to those of the Arabian Jews. Until recently they were ignorant of many of the books of the Old Testament, and it was not without hesitation that they consented to receive those of the later prophets. They are supposed to be a remnant of the ten tribes, and to have settled in India long before the Jews of Cochin. They object to the name of Jew, and deem its application to them a reproach.

BENI-SOUEFF, a town of Egypt, capital of the *moudirieh* or province of the same name, situated on the left bank of the Nile, about sixty-five miles above Cairo, with which it is connected by railroad. It is a pretty and well-built town; contains a number of cotton-mills and alabaster quarries, and is the entrepot for the produce of the rich valley of Fayoom.

BENITIER, or **BENATURA**, the name of the vase or vessel in which "holy water" is held in Roman Catholic churches. Benitiers were either movable or fixed. Portable ones, commonly of silver, were used in processions. The benitiers belonging to the church of St. Sulpice in Paris are remarkable for their great beauty. They are formed of magnificent shells and bordered with gilt copper.

BENJAMIN, JUDAH PHILIP, born at St. Croix, West Indies, Aug. 11, 1811, died at Paris, May 8, 1884. His parents were English Jews, and his boyhood was spent in Wilmington, North Carolina. He studied at Yale, but did not complete the course. After reading law in New Orleans he was admitted to the bar in 1834. He rose to prominence in the profession, was U. S. commissioner in 1847 appointed to investigate Spanish land-titles, was admitted to practice in the U. S. Supreme Court, was presidential elector at large in 1848 from Louisiana, and elected to the United States Senate in 1852. He belonged to the Democratic party, and when the Southern confederacy was formed he held successively the offices of attorney-general, secretary of the war department, and then secretary of state till the overthrow of the confederacy. Jefferson Davis placed great confidence in Mr. Benjamin's ability, and the latter was called "the brains of the confederacy." On the downfall of the confederacy Mr. Benjamin made his escape from Richmond and sailed for Liverpool. Although fifty-four years old he began the study of English law, and in a few years his practice was both extensive and lucrative.

BENJAMIN, PARK, born at Demarara, British Guiana, Aug. 13, 1809, died at New York city, Sept. 12, 1864. His father was a native of Connecticut, but carried on business in Demarara. The son was very lame, and at an early age was sent to New England for education and medical treatment. He studied at Harvard and Trinity, and then read law, but his inclinations were in favor of literature. He went to New York and was associate editor of the "American Monthly Magazine" and afterwards of the "New Yorker." He was on the staff of several other publications, most of which were unsuccessful. He was a contributor to various periodicals

and the author of the poems: *The Meditation of Nature; Poetry; a Satire; Infatuation; The Nautilus; To One Beloved; The Departed, and The Old Seaton.*

BEN-LAWERS, a mountain in Perthshire, Scotland, about 32 miles from Perth, on the west side of Loch Tay. This mountain is easy of ascent and rich in specimens of alpine plants. A magnificent view is commanded from its summit, which has an elevation of 3,945 feet. Ore of titanium is found in the mountain.

BEN-LEDI, a mountain of Perthshire, 4 miles from Callander, with an elevation of 2,863 feet. It received its name from the Druids, who are supposed to have had a place of worship on its summit. This mountain is celebrated in *Scott's Lady of the Lake*.

BEN-LOMOND, a lofty mountain the northwest of Stirlingshire, Scotland, on the east side of Loch Lomond. This mountain, forming the southern extremity of the Grampians or Central Scottish Highlands, is 3,192 feet high, and consists of mica and slate, with veins of quartz, greenstone, and feldspar porphyry. The summit is steep on the north, with a gentle declivity on the southeast. It is covered with vegetation to the top. Though considerably surpassed in height by several other Scottish mountains, none are more imposing. Seen from Loch Lomond, it appears a truncated cone, and between Stirling and Aberfoyle a regular pyramid. It has been ascended by a greater number of tourists than any other of the Highland mountains. The magnificent view from the top in clear weather includes the whole length of Loch Lomond, which is 30 miles. The north semicircle of the horizon is bounded by Bens Lawers, Voirlach, Ledi, Cruachan and Nevis, while some of the beautiful Perthshire lochs are seen.

BEN-MACDHUI, a mountain of Aberdeenshire, belonging to the Grampian range. It has an elevation of about 4,296 feet.

BENNET, JAMES GORDON, JR., born in New York city, May 10, 1841. He is the only son of the founder of the "Herald." He became proprietor of this paper on the death of his father. He is very fond of yachting, and has taken part in two famous races with English yachts. His *Henrietta* won in 1866, but his *Dauntless* was beaten in 1870 by the English *Cambria*. He has acquired fame and advanced the interests of his paper by publishing in England storm-warnings from the United States signal service, by fitting out the *Jeannette* for a polar expedition, and by sending Henry M. Stanley to search for Livingstone. Mr. Bennett resides most of the time in Paris, where he attends to the foreign news department of his paper. In 1883 he and John W. Mackay formed the Commercial Cable Company, and laid a new line between America and Europe.

BEN-NEVIS, a lofty mountain in the county of Inverness, Scotland. It has a height of 4,406 feet, is exceedingly difficult of ascent, with a precipice of 1,500 feet in depth on the northeast side, where snow remains throughout the year. Granite and gneiss form the base of the mountain, which, in its upper part, is composed of porphyry.

BENNIGSEN, LEVIN AUGUST THEOPHILUS, count (1745-1826), a distinguished Russian general, born at Brunswick in 1745. He joined the Russian army in 1773, and in the Turkish war soon attracted the notice of the Empress Catharine, who employed him to carry out her designs against Poland. He was one of the leaders of the conspiracy against the Emperor Paul. He fought with success in the battle of Pultusk in 1806, and held the chief command in the obstinate and murderous struggle at Eylau in 1807. When Napoleon invaded

Russia in 1812, Bennigsen commanded the Russian center on the bloody field of Borodino, and gave orders for fighting a second battle before the walls of Moscow. Before the French began their retreat he gained a brilliant victory over Murat at Woronowa. In 1813 he fought victoriously in the battle of Leipsic, and was created count by the Emperor Alexander on the field. He retired to his estate in Hanover, where he died in 1826.

BENNINGTON, the largest manufacturing town of Vermont, in the southwestern part of the State, 36 miles from Troy, N. Y. It is the county-seat of the county of the same name. Noted for the battle of Bennington, Aug. 16, 1777, where General Stark, at the head of the "Green Mountain Boys," defeated a detachment of Burgoyne's army. Bennington, North Bennington and Bennington Center are the three villages of the town of Bennington. A soldiers' home and excellent schools are at Bennington. Some of the articles manufactured here are iron, woolen goods, pottery, chairs and lumber.

BENUÉ, an important river of Central Africa. It enters the Quorra or Niger from the east, about 230 miles above the mouth of the river in the Gulf of Guinea.

BEN-RHYDDING, a health resort in the West Riding of Yorkshire on the River Wharfe, 16 miles from Leeds.

BENSHIE, or **BANSHEE**, an imaginary being in the superstitions of the Irish—a female who is called the wife of the fairies, and who makes herself known by wailings and shrieks, premonitory to a death in the family over which she is presumed to exercise a kind of guardianship. A similar superstition prevailed, and is, perhaps, not yet extinct, in the Highlands of Scotland.

BENSON, EDWARD WHITE, an English divine, born at Birmingham in 1829. He became chancellor of Lincoln Cathedral in 1872; bishop of Truro in 1877; archbishop of Canterbury in 1883.

BENSON, EGBERT, jurist, born in New York city June 21, 1746, died in Jamaica, L. I., Aug. 24, 1833. He graduated at King's College; was first attorney-general of the State; was in the State legislature, and from 1784 to 1788 sat in Congress. He was judge of the Supreme Court, 1794-1802; was in Congress again from 1813-1815; was first president of the New York Historical Society, and enjoyed many other honors and offices.

BENSON, EUGENE, painter, born in Hyde Park, N. Y., in 1837. He studied art in New York, Paris, Venice and Rome, and traveled much in Europe and the East. In the list of his paintings are *Cloud Towers, Hay Boats, Bazaar at Cairo, Hashish Smokers, Fire-worshippers, State Secret in Venice, Art and Love, and Ariadne*.

BENSON, JOSEPH, an English divine and author, best known for his highly esteemed *Commentary on the Holy Scriptures*, and his *Apology for the Methodists*. He died in 1821.

BENT GRASS (*Agrostis*), a genus containing about sixty species of grasses, widely distributed through temperate and cold climates. All are of slender and delicate appearance. Some are very useful as pasture-grasses and for hay, on account of their adaptation to certain kinds of soil. The common bent grass, *Agrostis vulgaris*, abounds in dry, elevated pastures. *A. canina* is also very common. *A. dispar*, the American herds-grass, is cultivated in France. Most of the European species are North American also.

BENTHAM, GEORGE, an English botanist, born in 1800 at Stoke, a village since absorbed in Portsmouth, died Sept. 10, 1884. The son of an officer who had risen to high rank in the Russian and the English service, young Bentham's earlier years

were spent largely abroad, but from 1826 to 1832 he lived in London with his uncle, the jurist, and studied law. In 1827 he published *Outlines of a New System of Logic*, in which is set forth for the first time the doctrine of the quantification of the predicate. He was called to the bar, but soon abandoned the law for botany. He catalogued the plants of the Pyrenees (1824-26), and was elected in 1828 a Fellow of the Linnæan Society, and in 1829 secretary of the Horticultural Society. From this time he devoted himself entirely to his new study, and soon published his important *Labriatarum Genera et Species* (1832-36). In 1854 he presented his collections to the Royal Gardens at Kew, where he prosecuted his studies during the remainder of his life. *Genera Plantarum* (3 volumes, 1862-83), in the completion of which he was assisted by Sir Joseph Hooker, is exhaustive and valuable, and may be said to summarize our present knowledge of botany. He was president of the Linnæan Society from 1863 to 1874, and was a member of many other British and foreign learned bodies.

BENTHAMIA, a genus of plants of the natural order *Cornaceæ*, consisting of Asiatic trees or shrubs, of which the fruit is formed of many small drupes grown together. *B. frugifera*, a native of Nepal, is a small tree, with lanceolate leaves, and a reddish fruit, very much like a mulberry, only somewhat larger; it is quite pleasant to the taste. The flowers are fragrant.

BENTON, JAMES GILCHRIST, soldier and inventor, born at Lebanon, N. H., Sept. 19, 1820, died at Springfield, Mass., Aug. 23, 1881. He was a graduate of the military academy in 1842. He assisted in the preparation of the "System of Artillery for the Land Service," and the "Ordnance Manual" in 1847. He served the following year at Harper's Ferry armory, and afterwards in the San Antonio ordnance depot. From 1849 to 1861 he was assistant inspector of arsenals, engaged in making experiments which led to the adoption of Springfield rifles, and an instructor of ordnance and gunnery at the military academy. For most of the time during the civil war he was commander of the Washington arsenal. Twice he performed acts of great bravery in extinguishing fire which had begun to burn in the arsenal and in a magazine; for his hardihood he was made lieutenant-colonel and colonel. He invented several military appliances, but never took out a patent, as he believed the Government which had educated him was entitled to his services.

BENTON, THOMAS HART, born near Hillsborough, Orange county, N. C., March 14, 1782, died at Washington, D. C., April 10, 1858. On account of his father's death when he was but eight years old, Thomas had few educational advantages. He was able to attend a grammar school and to spend some little time at the University of North Carolina. He studied law and was elected to the legislature. At about this time he quarreled with Jackson, who had heretofore been his warm friend. The trouble was made up; but Mr. Benton, having started the "Missouri Inquirer," was a participant in several duels, in one of which he killed his antagonist. In after-life he deeply regretted the act. Mr. Benton was a leader in his party, and in 1820 was chosen United States Senator from the new State of Missouri. He was influential in passing laws in regard to unoccupied western land, which were of such a nature as to encourage settlers to take up claims. Another benevolent measure in which he was actively engaged was the throwing open to settlers the salt and mineral lands of Missouri; which be-
 1 public measures were fostered by him; he

advocated a railroad to the Pacific, encouraged exploration of the West, advocated a friendly policy with the Indians, and planned for the establishment of post-roads. When President Jackson, in his first annual address, advocated the withdrawal of public moneys from the national bank and placing it in State banks, a business panic was threatened. Col. Benton at this crisis made an exhaustive study of the financial question, and then advocated the adoption of gold and silver as a currency basis. His speeches on the money question were the most eloquent ever delivered by him. The sub-treasury system now in use is a development of Col. Benton's views put in practice. During the Mexican war his advice was largely followed by President Polk, who wished to put him in full command of the army. When the slavery question came up with regard to the newly-acquired Mexican States, there commenced a bitter hostility between Benton and Calhoun, which was intensified by the "nullification" measures. Through the influence of his enemies, Col. Benton lost party favor, and in a contest for senatorship, and subsequently for the office of Governor, he was defeated (1856). The last years of his life were devoted to literary work. *Thirty Years' View* is descriptive of the time in which he represented his State in the U. S. Senate. He wrote *An Abridgment of the Debates of Congress*, and *An Examination of the Dred Scott Case*. Col. Benton's wife had a paralytic stroke in 1844, and from that time he never went to a place of amusement. Although surrounded by many temptations, he never indulged in liquor, gaming or tobacco, saying simply that his mother had desired him not to form these habits. See *Britannica*, Vol. XXIII, p. 788.

BENTON, the county-seat of Franklin county, Ill., situated on a railroad, 77 miles northeast of Cairo and 90 miles southeast of St. Louis, Mo. It has churches, a high school, a bank, a jail and several manufactories.

BENTON HARBOR, an important trading and manufacturing town of Michigan, situated on St. Joseph's River, near its entrance into Lake Michigan. It is the commercial center of an extensive fruit-growing industry, and contains important manufactories of fruit-baskets, canned fruit, furniture, lumber and flour.

BENTONVILLE, a town of Arkansas, county-seat of Benton county. It contains a number of manufactories, and is extensively engaged in the tobacco trade.

BENTONSVILLE, a small village of Johnston county, N. C., famous for a battle between the armies of General Sherman and General Johnston, March 21, 1865.

BENYOWSKY, DE, MAURICE AUGUSTUS, count, born in Hungary in 1741, died in battle in 1786. He was a man of remarkable character and extraordinary fortunes. He took part in the Seven Years' War, and in 1767 joined the Polish confederation, taking a prominent part in the campaign against the Russians until May, 1769, when he was captured; about seven months later, after being confined in several Russian prisons, he was banished, first to Siberia, and then to Kamtchatka. He escaped from the latter place to France in May, 1771, and shortly after, by proposal of the French government, he established a colony at Madagascar, himself arriving on the island in February, 1774. He was proclaimed king by the chiefs in conclave in 1776, and adopted the costume of the natives, but he fell into contention with the French government of the Isle of France, and was at last slain.

BENZENE. See *Britannica*, Vol. V, pp. 560, et seq. Benzene is extensively employed in the arts

as a solvent for fats, gums and resins, and as the basis for the manufacture of aniline and the aniline colors. It is also the source of many medicinal compounds, especially of salicylic and benzoic acids.

BENZERTA, or BIZERTA, LAKES OF, the ancient *Hipponitis Palus* and *Sisara Palus*, two lakes within the dominions of Tunis, and about 30 miles from the coast. They are each about ten miles long, and the larger one, which is clear and salt, is six miles broad; the smaller, which is turbid and fresh, is three miles broad. They are two miles apart, but united by a channel. Tunis is supplied with fish mainly from these lakes.

BENZILE, or BENZOYLE, the radicle or root of the group of substances which comprehends as members the hydride of benzoyle, benzoic acid, benzoïn and benzole. It is prepared by passing a stream of chlorine gas through fused benzoïn, or by heating one part of benzoïn with two parts of concentrated nitric acid. Benzile floats to the upper part of the liquid mixture as a liquid oil, which solidifies on cooling. It is a tasteless solid, insoluble in water, but readily dissolved by ether and alcohol.

BEOWULF, an Anglo-Saxon epic poem, one of the greatest literary curiosities and most remarkable historical monuments in existence. The events narrated probably occurred in the middle of the 5th century; and, as the legends relate to the Teutonic peoples who afterwards inhabited England, it is supposed that the poem was brought by them from the continent. The only known copy is in the British Museum. See *Britannica*, Vol. VIII, pp. 403, 404.

BEQUEATH, to leave personal property by will or testament to another. In the case of real estate the correct term is devise. Neither of these words is essential to the validity of a will, although it is usual and safe so to use them; other words, showing clearly the intention of the testator, will suffice.

BERAT, a town of Albania, European Turkey, in the pashalic of Avlona, situated on the banks of the Tuberathi, about 30 miles northeast of the seaport of the same name. The valley in which Berat stands is very fertile, producing large quantities of grain, oil and wine. The population is about 10,000, two-thirds of whom are Greek, the remainder Turks. It has a citadel, and traces of ancient Greek buildings.

BERBERIDEÆ, a natural order of exogenous plants, of which the different species of Barberry are the best known examples. Many of the plants are spiny shrubs. This order, nearly allied to *Vitacæ*, contains more than 100 species.

BERCHTA, the name given, in the south of Germany and Switzerland, to a mythological being who was apparently the same as Hulda in Northern Germany. The being represented originally one of the kindly and benign aspects of the Unseen powers, but in the course of time she became rather an object of terror; the difference probably arising from the circumstance that the influence of Christianity was felt, and the pagan deities were converted into demons. Lady Berchta was supposed to have the oversight of spinners. The last day of the year was sacred to her, and any flax left on the distaff that day she spoiled. Her festival was kept with a kind of meager fare—oatmeal gruel and fish. In some places she was represented as having a long iron nose and an immensely large foot. That she was once an object of worship is shown by the numerous springs, etc., that bear her name in Salzburg and elsewhere. Many of the Sagas of Berchta were transferred to the famous Berthas of history and fable. The numerous stories of the "White

Lady" have doubtless their root in the ancient Berchta.

BERCK-SUR-MER, a harbor and bathing resort in the French department of Pas-de-Calais, 22 miles south of Boulogne, with some ship-building and sail-making. Population, 5,187.

BERCY, a town of France, in the department of the Seine, situated on the right bank of the river of the same name. It forms a suburb of Paris, and has a large business in wines and other liquors. Population, about 15,000.

BEREA, a village of Kentucky, about 100 miles south of Cincinnati, the seat of Berea College, founded in 1858, in the interests of abolition by Rev. John G. Fee, a zealous advocate of the anti-slavery cause.

BEREA, a town of Ohio, 13 miles southwest of Cleveland. Baldwin University and German Wallace College (both under the care of the Methodist church) are situated here. Large quantities of sandstone are quarried in the vicinity.

BEREANS, a sect of Christians who originated in Scotland in the 18th century, but are now almost extinct. Their name is derived from the circumstance that the inhabitants of Berea "received the Word with all readiness of mind, and searched the Scriptures daily" (Acts xvii, 2). They believe that the knowledge of God's existence and character is derived from the Bible alone, and not from reason or Nature; that the Psalms of David do not relate to David at all, but exclusively to Christ. That assurance is of the essence of faith, and that unbelief is the unpardonable sin. Ordinarily, in their points of doctrine, they are Calvinistic. The founder of the Bereans was the Rev. John Barclay, a native of Perthshire. From him they also received the name of Barclayans. See *Britannica*, Vol. III, p. 369.

BEREGH, a town and a county of Hungary. The county is 1440 square miles in extent, is quite mountainous, and the chief production is wine.

BEREGONIUM is a misprint in the Ulm edition of Ptolemy's Geography (1486) for *Kerigonium*, a town of Novantæ, now identified with the fort of Innermessan, on the east shore of the Loch Ryan.

BERENGAR I, king of Italy, the son of Eberhard, Duke of Friuli and of Gisela, daughter of the Emperor Louis the Pious. He was assassinated in 924.

BERENGAR II, son of Adalbert, Count of Ivrea, succeeded to his father's possessions in 925, and married Willa, niece of Hugo, King of Italy, in 934. Incited by his ambitious and unscrupulous wife, he conspired against Hugo, and in consequence was compelled to flee to Germany, where he was received in a friendly manner by the Emperor Otto I. In 945 he recrossed the Alps at the head of an army, but, instead of assuming the crown himself, he handed it over to Lothaire, the son of Hugo. On the death of Lothaire, who was probably poisoned by Willa, he allowed himself to be crowned, along with his son, Adalbert, in 950. Two years later he engaged in war with the Emperor Otto, who sent his son Ludolf against him. Ludolf was successful, but died of poison administered, as was believed, by Willa in 957. Berengar again mounted the throne, but behaved with such intolerable tyranny that his subjects called in the aid of the emperor, who took possession of the country in 961. Berengar was sent as a prisoner to Bamberg, in Bavaria, where he died in 966. His wife, Willa, retired into a convent, and his three sons died in exile.

BERESFORD, WILLIAM CARR, viscount (1768-1854), an eminent English military commander. He entered the army in 1785, and twenty-five years

later was made a knight of the bath in acknowledgment of his aid at the battle of Busaco. The year following (1811) he was placed in command during the battle of Albuera, which he won, receiving for this the thanks of Parliament. He became baron in May, 1814, and in 1823 he was created viscount.

BERESLAV, a thriving town in the Russian government of Kherson, on the Dneiper. Population, 11,000.

BERETTYO-UJFALU, a market town of Hungary, in the county of Bihar, with a population of 6,000.

BEREZNA, a town of Russia, in the government of Tchernigov, on the Desna. Population, 10,000.

BEREZOV, or **BERZOFF** ("The Town of Birch Trees"), an important town on the left bank of the Sosva, in the government of Tobolsk, Siberia. Although it is a small place it is the only fur and skin trading station throughout a large tract of country. Prince Menschikoff, the favorite of Peter the Great, having been banished to Siberia, died and was buried here. His grave being opened ninety years after, it was discovered that his body, clothed in the uniform of the time, was undecayed. A fair, which is largely attended, is held here annually. See *Britannica*, Vol. III, p. 587.

BEREZOVSK, a village in the Russian province of Perm, near Ekaterinburg, which gives name to a famous gold-field, worked since 1744. The mines are on the eastern slopes of the middle Ural chain, and the field is above five miles long. The washings on the Berezovka River are also very productive.

BERG, **BURG**, or **BURGH**, roots entering into composition of many names of places. *Berg* (in German) means "hill," and "mountain," and *burg* or *burgh* means "fort," "castle," "citadel," probably from being situated on a hill or eminence.

BERGA, a town of Catalonia, Spain, 52 miles northwest of Barcelona. Population, 5,000.

BERGAMOT, a name of various kinds of pear, to which, however, no common distinctive character can be assigned. The proper Bergamot pear is flattish, rough-skinned, with a long stalk, a very juicy pulp, as soft as butter, of an extremely pleasant flavor, and is esteemed one of the best dessert pears.

BERGEDORF ("Hill Village"), a manor and borough of Germany, belonging to Hamburg, since 1867. The people are well-conditioned and industrious, and engaged in agriculture, cultivating fruit and vegetables for the London as well as the Hamburg market. See *Britannica*, Vol. XI, p. 404.

BERGERAC, **SAVINIEN CYRANO**, born in France, about 1620, died in 1655, from a wound received in a duel. He was a poet, novelist, and dramatist, and also a notorious duelist. He was admired as a writer of romance, and his works of this character were much read in the 17th century. As a poet and dramatist, he ranks second only to his contemporaries, Molière and Racine.

BERGH, **HENRY**, born in New York city in 1823, died March 12, 1888. He was of German descent, and his father was a wealthy ship-builder for the government. Henry Bergh and his brother succeeded to the ship-building business at the father's death, but it was not to the taste of Henry Bergh, so he abandoned the business and entered Columbia College. Before completing the course he went to Europe, where he spent five years. In 1862 he was appointed secretary of legation at St. Petersburg. Ill-health compelled him to resign two years later and he went to London, where, among other

famous people, he met the Earl of Harrowby, President of the Royal Society for the prevention of cruelty to animals. Mr. Bergh was much interested in the welfare of dumb animals; possibly the sights witnessed in St. Petersburg first led him to a consideration of this subject. Returning to New York in 1864 he set about organizing a society for the prevention of cruelty to animals. The following year the society was formed with Mr. Bergh as president. The work done by this society has been a noble one. Mr. and Mrs. Bergh gave largely of their abundant means for the work, and in 1871 Louis Bunard, a Frenchman residing in New York, died leaving a legacy of \$150,000 to the society. Through Mr. Bergh's influence similar societies have been formed in several cities, while 39 States have adopted laws for the protection of animals. In 1874 his attention was called to the inhumanity sometimes practiced upon children, and he founded the Society for the Prevention of Cruelty to Children. Mr. Bergh wrote plays, some poetry and a few sketches; but the work for which he will always be remembered is that in regard to kind treatment of children and animals.

BERGHAUS, **HEINRICH**, born in Rhenish Prussia in 1797, died in 1884. He was one of the most active promoters of geographical knowledge. His *Physical Atlas* (90 plates, Gotha, 1838-48) is the most prominent of his cartographical works. He also edited several geographical periodicals.

BERGHAUS, **HERMANN**, a German cartographer, of rare ability, connected for more than forty years with the great map-making and publishing house which bears his name in Gotha, Germany. For many years and reaching to the date of his death, Dec. 3, 1890, he was regarded as the highest authority in every department of geography. He was not a traveler, but a recluse, devoting a powerful genius and an indefatigable application to the researches of traveling and other geographers, ancient and modern. He never wearied in enlarging his fund of knowledge concerning all localities, however humble, of all countries, and brought his information down to the latest dates. In his comfortable work-room in Gotha he could furnish, without delay and without mistake, exact information in response to all inquiries in his professional line. One of his earliest tasks was the collection of statistics with regard to the measurement of heights, and one of the best-known monuments of his genius is his hypsometric and orographic map of Central Europe, which he published in 1867, which marked an epoch in map-making. One of his greatest works was his eight-sheet map of the world on Mercator's projection, which, appearing in 1863, has been sold by thousands all over the world, eleven editions having been issued under his direction. Undoubtedly his greatest work was that which he had not quite completed at the time of his death. It was the new edition of the "Berghaus Physical Atlas," first produced by his great uncle Heinrich, Berghaus, in 1852.

BERGLER, **JOSEPH**, an historical painter of considerable note, born at Salzburg in 1753, died in 1829. He was appointed director of the Academy of Prague in 1800. The impetus which he gave to the fine arts in Bohemia was very marked, and his school furnished a goodly number of eminent artists.

BERGMANN, **FREDERICK WILLIAM**, an eminent German linguist, born in Strasburg in 1812. In connection with theology he studied philology, in his native city. He continued his linguistic studies in Gottingen, Berlin and Paris, and in 1838 he became professor of foreign literature in the University of Strasburg. He has written numer-

ous important works on the Semitic and other languages.

BERGMEHL, or **MOUNTAIN FLOUR**, a deposit of white or cream-colored powder of extreme fineness, composed almost entirely of the indestructible siliceous frustules, or cell-walls of *Diatomaceæ*. From its resemblance to flour it has been mixed with ordinary food and used by the inhabitants of Norway and Sweden, who suppose it to be nutritious. In Maryland and Eastern Virginia an extensive bed of this organic matter occurs nearly 100 miles long, and 30 feet thick.

BERGRÖE, **WILHELM**, a distinguished Danish writer, born in Copenhagen in 1835. In early life he became noted as a zoologist; but the use of the microscope induced temporary blindness, and he turned his attention to poetry, and afterwards to writing of novels. His productions were very popular.

BERGUES, a town of France, in the department of the Nord, five miles from Dunkirk. The canal of Bergues, which admits vessels of 300 tons burden, unites it with Dunkirk and the sea, and its favorable situation makes it the entrepot of the produce of the adjoining country. It has manufactories of soap, tobacco, earthenware, and also sugar and salt refineries. Population, 5,600.

BERGYLT, a fish of the Mailed Cheek family, or *Scelero-genidæ*, the family to which gurnards and sticklebacks belong, but so much resembling the perch that it was formerly called Sea-perch. It is an inhabitant of all the Northern seas, is of a red color; its gill-covers are armed with short spines. It attains a length of two feet and upwards. It is good for food, and the Greenlanders use it not only in a fresh but also in a dried state.

BERHAMPUR, the name of two towns in British India.—(1) Berhampur in Madras is a military station in the district of Ganjam, 18 miles southwest of the town of Ganjam, and but nine from the coast. The climate is very healthful, and there is some trade in sugar and in silk fabrics. Population, about 24,000.—(2) Berhampur in Bengal, situated on the left bank of the Bhagirathi, five miles below Murshidabad. It was long one of the principal military stations in British India, and the barracks, now largely devoted to other uses, still form the most important feature of the town. In 1857 Berhampur was the scene of the first open act of mutiny. Population, about 24,000.

BERI, a town of India, in the British district of Rohtak, Punjab, 36 miles northwest of Delhi. It is a considerable trade center with two large fairs, in February and October. Population, about 10,000.—The state of Beri, in Bundelkhand, has an area of about thirty square miles, and a population of 5,000.

BERING, **IVAN IVANOVICH**. See *Britannica*, Vol. XIX, p. 318; also Vol. III, pp. 509-10. "The term *Bering Sea* has been variously written Behring Sea, Bhering Sea, Beering Sea, Bering Sea, as well as Behring's Sea, Beering's Sea, etc. This name was given to the sea in honor of its first explorer. Similarly the strait which connects it with the Arctic Ocean, an island in the sea, and a bay on the northwest coast of America, have received the name Bering.

"When the Czar Peter the Great determined to send out an exploring expedition to ascertain whether Asia and America were united by land he selected to lead this expedition Captain Commander Ivan Ivanovich Bering. Bering was the son of Jonas Svendsen by his second wife, Anne Pedersdatter Bering, and was born at Horsens, in Jutland, in the summer of 1681. On his mother's side he was descended from the distinguished Be-

ring family, which during the 17th and 18th centuries flourished in various parts of Denmark, and included a number of ministers and judicial officers. Baptized on the 12th of August, 1681, he received the baptismal name Vitus Jonassen Bering. On entering the Russian navy, however, he took, as was the custom of the Danish and Norwegian officers serving in Russia, a new or Russianized form of name. This form is Ivan Ivanovich Bering. The name Ivanovich is an exact translation of Jonassen—in English, Johnson or John's son. All the Russian and Danish records agree as to the spelling of the family name; both in Danish and in Russian it is Bering. His autograph is always written Bering.

"The insertion of an *h* in the name, giving the form Behring, appears to have been made in Germany.

"In 1748 was published Harris's *Collection of Voyages*, in two folio volumes. In the second volume, pages 1016-41, is contained 'A distinct account of part of the northeast frontier of the Russian Empire, commonly called the country of Kamschatka or Kamschatska, including the voyages of Captain Behring for discovering toward the east, etc., collected from the best authorities, both printed and manuscript.' This account was prepared by Dr. Campbell, who made use of the form Behring. From this it may be inferred, as pointed out by Mr. Wm. H. Dall, that Dr. Campbell did not have access to original documents, but got his material from German sources or from German translations of the original. As Harris's *Voyages* is an elaborate work, long accepted as a standard, the use of the form Behring gained wide adoption among English-speaking people. That the form Bering should be adopted, however, appears—(1), because it is the form always used by Bering himself, by his ancestors for five generations at least, and by his descendants; (2), because it is the form almost, though not quite, universally adopted in all non-English works; and (3), because even in English works it is gradually superseding the form Behring."—[*Bulletin U. S. Board on Geographic Names*, Dec. 31, 1890.]

BERJA, a town of Spain, in the province of Andalusia, at the foot of the Sierra de Gador, 22 miles west of Almeira. It has manufactories of linen fabrics, hats, hardware and leather, and a trade in wine and oil. Population, about 8,000, chiefly engaged in mining lead, which is plentiful in the Sierra de Gador.

BERKELEY, an important educational town of California, beautifully situated near the Bay of San Francisco, about five miles north of Oakland. It is the seat of the University of California, the State Agricultural College, and the Institution for the Deaf, Dumb and Blind.

BERKELEY, a town five miles north of Oakland, in Alameda county, California. The University of California, the California Institution for the Deaf, Dumb and Blind, and the State Agricultural College are here located.

BERKELEY, **MILES JOSEPH** (1803-1889), a distinguished English botanist. He was educated for the church, and obtained a number of ecclesiastical preferments; but his fame rests upon his botanical researches and writings.

BERKELEY, **SIR WILLIAM**, colonial governor of Virginia, born near London, England, about 1610; died at Twickenham, July 13, 1677. He was highly connected, a graduate of Oxford, a traveler and accomplished courtier. The king honored him with a commission to Canada in 1632, and in 1641 appointed him governor of Virginia. During his first term of office he won the regard of the people and managed business with great shrewdness. When

Cromwell became Protector Berkeley influenced the people not to acknowledge his authority, and a fleet was sent from England to bring the colony and its governor to terms. Berkeley's diplomacy soon made matters smooth with the home government, but he had to resign his office. At the restoration Charles II reinstated Berkeley, but his second term of office was unsatisfactory. The so-called "Bacon rebellion" arose, provoked no doubt by Berkeley's infidelity to the Indians and his duplicity with regard to the patriot Bacon. The governor saw how unpopular he was making himself by his erratic conduct and he became bitter and inhuman. After Bacon's death he persecuted his followers and executed them with such indecent haste that the king said he had "taken more lives in that naked country than I have for the murder of my father." Berkeley was opposed to free schools, printing, and religious liberty. Charles II recalled him, intending to examine into the reports of his harsh measures, but Berkeley died soon after his return to Europe.

BERKELEY SOUND, the most frequented inlet of East Falkland Island, near its northeast extremity. It is in latitude $51^{\circ} 30'$ south, and longitude $57^{\circ} 58'$ west. Though it is difficult to enter, yet it contains several excellent harbors. Its shores yield ample supplies of water, cattle, and vegetables.

BERKOVITZA, the chief town of a district in western Bulgaria, 40 miles northwest of Sofia, situated on a small tributary of the Danube. Population, 5,500.

BERLAD, a town of Lower Moldavia, on the Burlad River, 40 miles above its junction with the Sereth. It is an important place, connected with Braila by rail, and has a brisk trade. Population, 27,000.

BERLENGAS, a group of rocky islands in the Atlantic off the west coast of the Portuguese province of Estremadura, 10 miles northwest of Peniche. The principal one, Berlenga, is fortified, and has been used as a state prison.

BERLICHINGEN, VON, GOETZ OR GOTTFRIED "of the Iron Hand," born in Wurtemberg in 1490, died in 1562. His career was varied, and with the exception of Ulrich von Hutten, he may be regarded as the last worthy representative of the chivalry of the Middle Ages, then expiring.

BERLIN, a town of Ontario, Canada, county-seat of Waterloo county, is situated on Grand River, about 60 miles west of Toronto. It contains a number of manufactories, the principal being buttons and malt liquors.

BERLIN, a city of Wisconsin, situated on Fox River, about a hundred miles northwest of Milwaukee. Here are extensive foundries and manufactories of turbine-wheels, woolen goods, flour, whips, boots and shoes and leather. Cranberries and dairy products are among the principal articles of trade.

BERLIN SPIRIT, a coarse whisky made chiefly from vegetables. Because of its cheapness it has been largely used in the making of brandy, and in mixing low wines.

BERM: in fortification, a pathway from three to eight feet in width, at the bottom of the outside of a rampart, where it joins the scarp or inner side of the ditch. It is almost on a level with the natural surface of the ground, and serves in part as a passage way for the troops of the garrison, and in part as a means of preventing the ditch from being filled with earth and rubbish.

BERMONDSEY, a southeast suburb of London, on the south bank of the Thames. It has extensive an-yards and wharfs. Population, about 80,000.

BERMUDA HUNDRED, a village of Virginia, situated on the right bank of the James River, above the mouth of the Appomattox. It became known as the headquarters of General Butler during the siege of Petersburg.

BERMUDAS, a British colonial possession consisting of 365 small islands in the Atlantic ocean, 568 miles east of North Carolina, and 677 miles from New York. Total area, 20 square miles (12,000 acres—4,000 under cultivation). Population in 1889, 15,534, including 6,155 whites. Capital, Hamilton, with a population of about 8,000. For early history and description, see *Britannica* Vol. III, pp. 599, 600.

The executive administration is in the hands of a governor, assisted by a council of six members also appointed by the Crown. There is also a legislative council of nine appointed by the Crown, and a representative house of assembly of 36 members.

There were, in 1890, 47 schools with about 1,400 students, 23 of these schools receiving government grants to the amount of \$8,250 annually. Average strength of imperial troops 1,500. In 1890 the revenues were estimated at \$145,025, and the expenditure at \$150,380. Public debt in 1889, \$43,070. The value of onions exported in 1888 was \$296,000; lily bulbs, \$21,645; and potatoes, \$135,000. The total exports in 1888 amounted to \$498,250.

In 1888 the total tonnage of vessels entered and cleared was 228,385, of which 199,199 were British. There are 32 miles of telegraph wire, and 15 of cable; in 1888 the number of messages sent was 22,467. There is also a private telephone company, which has over 120 subscribers and upwards of 300 miles of wire in line.

The Bermudas occupy areas of about 15 miles by 6, and are separated by very narrow channels. Only 18 or 20 are inhabited, and only five are considerable size. They are inclosed on three sides by coral reefs, nearly all under water, some of them extending 18 miles away.

Hamilton, Bermuda, has long been a place of pleasure and health resort by many persons from the United States and Canada. The climate is exceedingly attractive, especially in winter. Visitors find there ample hotel accommodations, and the voyage by steamer from New York generally free from peril by storm and helpful to health. Steamers ply regularly between Hamilton and New York, the voyage requiring about three days.

BERMUDEZ, a state in the northeast part of Venezuela, between the Orinoco and the Caribbean Sea formed in 1881 from the former states and present sections of Barcelona, Cumana, and Maturin. Area, 32,128 square miles; population, 55,677.

BERNALDA, a town in South Italy, in the province of Potenza. Population, 6,976.

BERNALILLO, a wealthy agricultural and commercial town of New Mexico, situated on the Rio Grande, about fifteen miles above Albuquerque. It is an old town, and the seat of a convent and a college. It is an important outfitting station for the adjacent mining regions, and is the commercial and manufacturing center of an extensive wine-producing and fruit-growing district.

BERNARD, ABBOT OF CLUNY, born in Morlaix, Brittany, about 1100. He was the author of *Jerusalem the Golden*, and other hymns, which Dr. Neale translated from the *De Contemptu Mundi*.

BERNARD, CLAUDE, born at Saint-Julien, in the department of the Rhone, died in 1878. He was an eminent physiologist, and held several high positions in the colleges of France, devoting himself to experimental researches in physiology. He discovered the glycogenic functions of the liver.

BERNARD DOG, GREAT ST. See *Britannica*, Vol. VII, p. 327.

BERNARD, GREAT ST., a noted pass of the Penine Alps, over 8,000 feet above sea level. Napoleon crossed the Alps at this point in 1800, at the head of an army of 30,000 men. At the summit is the celebrated St. Bernard hospice.

BERNARD, SIR FRANCIS, born in Nettleham, Lincoln, England, in 1714, died at Aylesbury, England, June 16, 1779. He graduated at Oxford, and served in different offices of importance until 1768, when he was appointed governor of New Jersey. He was appointed to the same office in Massachusetts Bay Colony. He administered the office satisfactorily in the former colony, and for the first nine years in the latter place. The library of Harvard College was burned in 1764; and the governor, who took quite an interest in the college (his third son graduated from the institution in 1767), assisted in procuring funds for its restoration. About that time two political parties arose—a royalist faction and a popular party. In trying to strengthen the former, Governor Bernard executed harsh measures and put down popular leaders, thereby rousing great indignation and precipitating the final struggle between the mother country and her colonies. It is affirmed that he did more to hasten the Revolution than any other man. He had a quick, ungovernable temper—the unhappy faculty of doing just those things which would harass a people already on the brink of mutiny. Conciliatory measures he never tried. The king recalled him, yet he remained nominal governor for two years after his return to England.

BERNAUER, AGNES, the daughter of a citizen of Augsburg, and the heroine of a sad romance of the 15th century. Duke Albrecht of Bavaria, only son of the reigning Duke Ernst, seeing her at a tournament, fell in love with her beauty, and they were secretly married. When it was proposed that he should marry Anna, daughter of Erich, duke of Brunswick, Albrecht declared his marriage with Agnes Bernauer, and brought her to the Castle of Straubing as duchess of Bavaria. Duke William, Albrecht's uncle, befriended the young people; but after his death, and during the absence of Albrecht, Agnes was arrested by order of her father-in-law, charged with sorcery, and drowned in the Danube. On his return her husband, maddened by the outrage, gathered the enemies of his father, and taking arms against Duke Ernst they devastated the country. See *Britannica*, Vol. XXII, p. 591.

BERNE-BELLECOUR, ERIENNE, a French artist, born at Boulogne-sur-mer in 1838. His earlier works were portraits and landscapes, but his fame rests upon his later *genre* and military paintings.

BERNHARD, DUKE OF WEIMAR (1604-1639), a celebrated German general, the youngest of eight sons of John, third duke of Saxe-Weimar. On the outbreak of the Thirty Years' War he took the side of Protestantism, and distinguished himself in 1622 at the battle of Wimpfen. He became colonel in the army of Christian IV, king of Denmark. He took part in the bold expedition of Mansfeld through Silesia to Hungary, and after the death of the latter he reunited himself with the Danes under the markgraf of Baden-Durlach. At the solicitation of his brothers he withdrew from the Danish service, and returned to Weimar in 1628. Three years later Gustavus Adolphus made his appearance in Germany, and Bernhard was one of the first who flew to his standard. After a brilliant career he became suddenly ill, and died at Neuburg on the Rhine in 1639. He was probably poisoned by his physician, who is supposed to have been in the pay of France.

BERNHARDT, ROSINE, called Sarah, a French actress, born of Jewish parents in Paris, Oct. 22, 1844. She was baptized into the Christian faith, and brought up in a convent at Versailles. Entering the Paris conservatoire in 1858, she gained second prizes for both tragedy and comedy, and in 1862 made her début as "Iphigenie" at the theater Français, but attracted so little notice that she soon left the theater, only to meet with still less success in burlesque at the Gymnase and Porte St. Martin. In 1867 she played minor parts at the Odeon, and became famous by her impersonation of the "Queen of Spain" in *Ruy Blas*, and of "Zanetto" in Coppée's *Passant*. She was called to the Theater Français in 1872, and after 1879 made annual appearances, with marked success in London. Her tours in North and South America, in Italy, Russia, etc., were also pecuniarily successful; but her essay at the management of a Paris theater involved her in heavy debt. In 1882 she was married to M. Jacques Daria, or d'Amala, a Greek actor, from whom she was divorced shortly afterwards. Her later successes as an actress have been in *La Tosca*, *Joan of Arc* and *Cleopatra*. She is now (1891) filling her second season of engagements in the United States. Madame Bernhardt is probably the greatest *tragedienne* since Rachel, and in comedy also she ranks as a finished actress. Her talent as an artist is considerable, and both paintings and statues from her studio have appeared in the Salon.

BERNHARDY, GOTTFRIED, a German scholar, born of Jewish parents near Frankfort in 1800, died at Halle, May 14, 1875. He was educated at Berlin, and in 1829 became director of the philological seminary at Halle. Of his numerous philological works may be mentioned his *Syntax der Griechischen Sprache* (1829); *Paralipomena Syntaxis Græcæ* (1854); and the critical edition of *Suidæ Lexicon* (4 volumes, 1834-53). His works on Roman and Greek literature, especially the history of the latter, are also of high value.

BERNICIA, a form of the word *Bryneich*, used to indicate the northern part of what became the kingdom of Northumbria, the part north of the Tees. The Anglian kingdom of Bernicia is said to have been founded by Ida, who made his capital at Bamborough about A. D. 550. See *Britannica*, Vol. VIII p. 270; Vol. XVII, p. 568.

BERNIER, FRANÇOIS, a French physician and traveler, born at Angers in France, died at Paris in 1688. Having taken his degree of doctor, he departed for the East in 1654, and visited Syria, Egypt, Arabia and India; in the last he resided for 12 years in the capacity of physician to Aurungzebe. He published an account of his travels in 1670. The work is delightful in style as well as in the description of places, and clear in exposition of the causes of those political events that carried Aurungzebe to the throne.

BERNINA, a mountain of the Rætian Alps, upwards of 13,000 feet high, in the Swiss canton of Grisons, with a remarkable and extensive glacier. Morteratsch. The Bernina Pass, which is 7,623 feet high, unites the valleys of the Engadine and Bregaglia on the north, with Valteline on the south, but is dangerous on account of avalanches. See *Britannica*, Vol. XXIV, p. 45.

BERNSTEIN, GEORGE HEINRICH, a distinguished orientalist, born at Kospeda, near Jena, in 1787, died in 1860. Bernstein devoted himself to the study of theology, philosophy, and Eastern languages, and his greatest achievements were in Syriac literature. He contemplated publishing a great Syriac lexicon, but did not live to complete the work.

BROË, one of the commonest representatives of the most intensely active sub-class of *Calenterates*—

the *Ctenophora*. It is the type of the small family *Beroidea*. These are free-swimming pelagic animals, of great delicacy and beauty, generally of more or less cylindrical form and without any trace of skeleton. They are transparent and often beautifully colored, and one of the most brilliant examples of phosphorescent marine animals. During the day they descend to deeper water, but come to the surface at night. The distribution of the genus, which includes three certain species, is very wide. See *Britannica*, Vol. I, p. 132.

BERRE, ETANG DE, an extensive lagoon of France, department Bouches-du-Rhône, with large salt-works and eel-fisheries. It discharges its surplus waters into the sea by the Port-du-Bouc.

BERRI, or **BERRY**, formerly a province of Central France, now forming the departments of Indre and Cher. Having come, in 1100, into the possession of the French crown, it was raised to a duchy in 1800, and gave title at various times to French princes, the younger son of Charles X being the last who held it.

BERRYVILLE, a small village in the Shenandoah Valley, the county-seat of Clarke county, Va. It is sometimes called Battletown on account of having been the scene of many Revolutionary contests of General Morgan.

BERSAGLIERI, the Italian name for riflemen and sharpshooters of the Sardinian army. During the Italian war of 1859 the *bersaglieri* were engaged in many operations requiring dash and brilliancy.

BERSERKER, or **BESERK**, derived from the Icelandic *berserkr*, meaning either "bare-sark," without a shirt, or, more probably, "bear-sark," having a bear's shirt or hide. Berserker, grandson of the eight-handed Starkader and the beautiful Alfhilde of Norse mythology, is represented as a hero who, despising mail and helmet, went always into battle unharnessed, his fury serving instead of defensive armor. The *berserkers* of later times were a class of warriors who are said to have performed extraordinary feats in battle under the influence of fits of fury called *berserksgang*, "Berserker's rage," which made them houl like wild beasts, foam at the mouth, and gnaw the rims of their shields, and was supposed to endue them with superhuman strength and to render them proof against fire and steel.

BERT, PAUL, a French statesman and physiologist, born at Auxerre in 1838, died in 1886. He studied law and medicine, and occupied successively the chairs of Physiology at Bordeaux and Paris. Entering political life in 1870, on the proclamation of the Republic, he was four times re-elected to the Chamber, and during the premiership of Gambetta held the post of minister of public instruction and worship. While engaged in public life, M. Bert still pursued with ardor his scientific investigations, attracting world-wide attention by his experiments in vivisection. He was appointed by the French ministry to the governorship of Tonquin and Anam in 1886, but held the position for a short time only, his death occurring in November of the same year.

BERTH: in nautical language, a term nearly equivalent to *room* or *space*; a ship's berth is the space which she occupies when at anchor, including a small breadth of sea all around her. The same name is also given to a messing or sleeping-room on board ship, in a sense not very different from that of the word *cabin*.

BERTHA, the name of several famous women of the Middle Ages, half-historical and half-fabulous. St. Bertha, whose day is kept on the 4th of July, was the beautiful and pious daughter of King Charibert, of the Franks, who, having married (A. D. 90) Ethelbert, king of Kent, became the means of

his conversion and of the spread of Christianity among the Anglo-Saxons.

BERTHIER, ALEXANDRE, Prince of Neuchatel and Wagram, and marshal of the French Empire, born at Versailles in 1758, died in 1815. He joined the army in 1770, and with LaFayette took part in the American Revolution. He accompanied Napoleon to Egypt as chief of staff. At the revolution of 18th Brumaire (1790), he became war minister. He was Napoleon's proxy in the marriage of Maria Louisa, at Vienna, in 1810. He held the rank of chief of the staff, and also that of quartermaster-general during the campaigns of 1812, 1813, and 1814, and was continually at the Emperor's side. When Napoleon returned from Elba, Berthier left the service of Louis XVIII, preferring neutrality, and retired to Bamberg, Bavaria.

BERTIN, LOUIS FRANÇOIS, an eminent French journalist, born in Paris in 1786, died in 1841. He began writing for the press in 1798, and in 1799 set on foot the "Journal des Débats." His royalist principles offended the government of Napoleon, and cost him imprisonment and banishment to Elba, but he escaped to Rome, where he formed a friendship with Chateaubriand. In 1804 he returned to Paris, and resumed the editorship of the "Débats."

BERTRAND, HENRI GRATIEN, COUNT, born in Chateauroux in 1778, died in 1844. He was one of Napoleon's generals, distinguished for his faithfulness to the Emperor through all his fortunes. He early entered the armies of the Revolution as engineer. When the body of Napoleon was carried back to France in 1840, he had a part in the expedition.

BERVIC, CHARLES CLEMENT BALVAY, born at Paris in 1756, died in 1822. He was a distinguished engraver, and executed a full-length engraving of Louis XVI in 1790, through which he became famous. Other of his works, the engravings of the Laocöon, Regnault's *Education of Achilles*, and Guido's *Rape of Deianira*, display equal beauty of manipulation and higher power.

BERWICK, a manufacturing town in Columbia county, Pa., on the north branch of the Susquehanna River and the Lackwanna and Bloomsburg Railroad. It has a graded school, several churches, two potteries, foundries, a machine shop and a rolling mill.

BERWICK, NORTH, a seaport town of Haddingtonshire, at the entrance of the Firth of Forth, 19 miles east-northeast of Edinburgh. Corn is exported from it, and it is frequented as a bathing place. It includes the Bass Rock, North Berwick Law, and the ruins of Tantallon Castle, which is graphically described in Scott's *Marmion*. North Berwick Law is a conical hill of an elevation of 840 feet on the south, close to the town. Population, 4,000.

BESANTS, or **BEZANTS**, circular pieces of bullion, usually gold, without any impression, supposed to represent the old coinage of Byzantium, brought home by the Crusaders, and therefore of frequent occurrence as heraldic charges.

BESIKA BAY, a bay on the northwest coast of Asia Minor, opposite Tenedos, to the south of the entrance of the Dardanelles.

BESSEMER, SIR HENRY, an English civil engineer and inventor, born at Chatham, in Hertfordshire, in 1813. He made numerous valuable improvements in machinery; and his name is well known in connection with his principal invention, the Bessemer process of refining steel. He was knighted by the Queen in 1879.

BESSIÈRES, JEAN BAPTISTE, Duke of Istria, and marshal of the French Empire, born at Preissac in

1768, died in 1818. He was promoted in succession to the ranks of general of brigade, general of division, and marshal of France, and in 1809 was created Duke of Istria for his services in Spain. He was mortally wounded on the morning of the battle of Lützen, while leading on foot the *travailleurs* to reconnoiter the field from the defile of Rippach, and in him Bonaparte lost one of his best officers and his most faithful friend. The news of his death was concealed from the army throughout the day.

BESTIARES, the name given to a class of written books of great popularity in the Middle Ages, describing all the animals of creation, real or fabled, and generally illustrated by drawings. They were most in fashion during the 11th, 12th and 13th centuries. They served as encyclopedias of the zoölogy of those ages, but they had also another use. The symbolism which was then so much in vogue fastened spiritual meanings upon the several animals until every quality of good or evil in the soul of man had its type in the brute world. To the Bestiars we must look for explanation of the strange creatures found sculptured on churches and buildings of the Middle Ages.

BETANZOS, a town of Spain, in the province of Corunna, 10 miles southeast of the city of the same name. Ancient granite gateways still defend its narrow streets; it has manufactories of linen, leather, and earthenware. Population, 5,000.

BETHANY, a small village of W. Va. in Brook county, on Buffalo Creek. Bethany College is located here; it was established in 1841 by Rev. Alexander Campbell, LL.D., founder of the "Disciples of Christ," otherwise known as the "Christians." See **COLLEGES**, in these Revisions and Additions.

BETHEEL, SIR RICHARD, an eminent lawyer born at Bradford, Wiltshire, in 1800, died in 1873. From Bristol grammar school he went, at the age of 14, to Wadham College, Oxford, where he took his degree of B.A. at the age of 18. After being private tutor at Oxford he studied law, and was called to the bar in 1823. From 1856 to 1858 he was attorney-general. In 1861 he was made lord chancellor; he resigned the great seal, however, in 1866. He was conspicuous for his exertions in the cause of law reform, in improving the system of education for the bar, etc.

BETHLEHEM, an educational and manufacturing town of Pennsylvania, the principal settlement in the United States of the Moravians, or "United Brethren," is pleasantly situated about 50 miles north of Philadelphia, on the left bank of the Lehigh River, across which a bridge connects it with South Bethlehem, the seat of Lehigh University. Bethlehem was founded in 1741. The first house, in which, in that year, Count Zinzendorf and his little band of Moravian brethren celebrated the festival of the Nativity was not taken down until 1823; and one of the first houses of the settlement is still standing. Besides containing a number of benevolent institutions conducted by the Moravians, Bethlehem is the seat of their theological seminary, boys' school, and young ladies' seminary. It was in the latter—used during the Revolution as a military hospital—that Lafayette was nursed after having been wounded at the battle of Brandywine. The principal manufactures of Bethlehem are flour, brass implements, boilers, shovels, and cigars.

BETHLEHEMITES, the name of an order of monks at Cambridge, England, in the 13th century; also of an order founded in Guatemala in 1673. The followers of Jerome Huss were styled Bethlehemites, from Bethlehem church, in Prague, where their leader preached.

BETHLEN GABOR (1580–1629), a descendant of an ancient and eminent Protestant family of Upper

Hungary. He became distinguished during the troubles which distracted the principality in the reigns of the two Bathories, Sigismund and Gabriel. When the latter died, Bethlen Gabor became sovereign prince of Transylvania.

BETHNAL GREEN, an eastern suburb of London, since 1885 a parliamentary borough. It is largely peopled by silk-weavers, an offshoot of the Huguenot settlement in Spitalfields. Its museum, opened by the Queen in 1872, is a branch of the one at South Kensington. Population, 127,000.

BETHSAIDA, on the lake of Galilee, mentioned in Scripture as the city of Peter and Andrew and Philip, now a heap of ruins almost overgrown with grass.

BETH-SHEMESH, an ancient city of the Holy Land, about 15 miles southwest of Jerusalem. Ruins at the present village of Ain-Shems lead scholars to believe this was the site of Beth-Shemesh. Samson's exploits were performed in this vicinity.

BETHUNE, GEORGE WASHINGTON, born in New York city, March, 1805, died in Florence, Italy, April 27, 1862. His parents were noted for their Christian charity. He graduated from Dickinson College, Carlisle, Pa., and from the department of theology at Princeton, after which he became a Presbyterian minister. In 1826 he was chaplain to the seamen of Savannah; from 1826 to 1830 pastor of the Reformed Dutch Church at Rhinebeck, N.Y.; from 1830 to 1834 pastor in Utica, N. Y.; from 1834 to 1848 pastor at Philadelphia, Pa.; from 1848 to 1859 pastor in Brooklyn. Failing health compelled him to visit Europe, where he sometimes preached in the only Protestant church of Rome. A short pastorate in New York was followed by a visit to Florence, Italy, where he died. Dr. Bethune was a well-read student of English literature, a writer of merit, and an orator and man of influence in his times.

BÉTON, or **BÉTON AGGLOMÉRÉ**, a kind of concrete used in the construction of submarine works and other buildings. See **BRITANNICA**, Vol. VI, p. 248; see also under **BUILDING**, **BRITANNICA**, Vol. IV, pp. 456–57; and under **BRIDGES**, Vol. IV, p. 324, *et seq.*

BETONY (*STACHYS BETONICA*), a common European labiate plant, growing in woods. It was of great repute in ancient and mediæval medicine; and is sometimes used to dye wool, producing a dark-yellow color.

BETTIA, a municipal town in the northwest of Behar, India, on the line of the Tirhut state railway. Population 21,263, of whom 13,943 are Hindus.

BETTING. See **BRITANNICA**, Vol. III, pp. 618–19. In the United States, the legislative enactments of the various individual States, proceeding upon the basis of the common law, declare betting to be an indictable offense. Gambling houses are held, on various grounds, to be illegal; and the collection of a bet cannot be enforced by law. A note payable upon receipt of election returns is void in Illinois, Indiana, Iowa, Connecticut, Delaware and Maryland. A bet on a horse race is void in Pennsylvania and New York. All bets are declared void by the laws of Texas and California. In many of the States a stakeholder may be compelled to refund money to the loser which he has already paid to the winner of a bet. Indorsements upon paper which has been given as payment of a bet, though the paper may have passed into the hands of an innocent party, are void in Illinois. Where no such laws exist, the decisions of the courts are, as a rule, averse to all forms of betting.

BETTOLA, a town of Italy, in the duchy of Parma, about 20 miles southeast of Piacenza. It is situated on the Nure, in a fertile but only partially cultivated district. Population, 6,000.

BETTS, SAMUEL ROSSITER, born at Richmond, Mass., June 8, 1787, died Nov. 2, 1868. He graduated at Williams College in 1806, and practiced law in Sullivan county, New York. He was called one of the ablest American jurists. He served in the war of 1812, became judge advocate, sat in Congress (1815-17), was judge of the circuit court of the State for three years, and from 1826 to 1867 was U. S. district judge. He was among the first to formulate maritime laws for the United States, and his decisions in this department and in that of patents, of national and international rights, have been uniformly upheld. He published a work on admiralty practice.

BETTYS-Y-COED, a village in Carnarvonshire, North Wales, situated at the point where the Conway receives the Llugwy, 15 miles south of Llandudno Junction, by rail. It is remarkable for the beauty of its location.

BEUGNOT, ARTHUR AUGUST, COUNT DE, a French statesman and author, born at Bar-sur-Aube in 1797, died in 1865. In 1841 he was made a peer of France, and was a member of the legislative assembly in 1849. His most important writings related to Judaism, to the overthrow of western paganism, and to the institutions of Saint Louis.

BEURMANN, FRIEDERICH, COUNT VON (1835-63), a German explorer. In 1861 he explored the country of the Bogos, and then set out in search of Vogel, who was supposed to have been murdered in Wadai. After many unsuccessful attempts he reached Wadai, where he was murdered by the natives.

BEUST, VON, FREDERICK FERDINAND FREIHERR, (1809-86), a German statesman, and one of the most distinguished modern politicians. He represented his government at Munich in 1838, and eight years later he went to London in the same character, whence he was removed to Berlin in 1848; the year following he was called to Dresden, where he received the portfolio of foreign affairs, and a few years later he became minister of the interior. See *Britannica*, Vol. XXI, p. 356. When Frederick VII of Denmark died (1863), Beust came forward prominently as the exponent of the German national feeling on the Schleswig-Holstein question. He was always the friend of Austria, and in the crisis of 1866 he supported her, joining in the declaration of war against Prussia, contrary to the wishes of at least the liberal party in Saxony. When the "six weeks' war" ended he resigned his office by demand of Prussia, and entering the service of Austria he rose to the head of affairs. See *Britannica*, Vol. III, p. 141. The chief result of his policy in the reorganization of the empire was the reconciliation of Hungary on the footing of its remaining a separate kingdom.

BEVEL, an instrument used by artisans for drawing angles and adjusting the inclination of abutting surfaces. It consists of a handle and blade jointed together and capable of being adjusted so as to include any desired angle.

BEVELAND, NORTH AND SOUTH, two islands in the estuary of the Scheldt, Holland, separated by a channel on the west from the island of Walcheren. The estimated area is about 120 square miles, with a population of about 23,000. Both islands have suffered dreadfully from inundations, but within recent years much good has been effected by drainage.

BEVEREN, a town of Belgium, in East Flanders. The principal industry is the making of point-lace. Population, 8,000.

BEVERIDGE, WILLIAM, bishop of St. Asaph, born in Barrow in 1638, died in 1708. He was ordained deacon and priest in 1660, after having ob-

tained the degree of M.A. He refused to accept the bishopric of Bath and Wells when Dr. Thomas Ken was deprived of it for his refusal to take the oaths to the government of William III, and was in 1704 appointed to that of St. Asaph. The greater portion of his property was bequeathed to the societies for the Promotion of Christian Knowledge and for the Propagation of the Gospel in Foreign Parts.

BEVERLAND, ADRIAN, born in Zeeland about the middle of the 17th century, died in England about 1712. He was a Dutch scholar, whose unorthodox writings on original sin and the fall of man caused much excitement in his day, but are now regarded as mere literary curiosities.

BEVERLOO, a village of Belgium in the province of Limbourg, 12 miles northwest of Hessel. On the extensive heaths surrounding it the Belgian army encamps yearly for exercise.

BEVERLY, a manufacturing town and summer resort of New Jersey, pleasantly situated on the Delaware River, fifteen miles above Philadelphia. The principal manufactures are woolens, oil-cloth and rope.

BEVERLY, a city of Essex county, Mass., in Beverly township, on a bay or inlet of the Atlantic and on the Boston and Maine (Eastern) Railroad, 18 miles northeast of Boston, two miles north-northeast of Salem, at the junction of the Gloucester Branch. (Cape Ann). It is separated from Salem by an inlet of the sea which is crossed by a bridge. It has a good harbor, fine streets and avenues lighted by gas and electricity, extensive shoe and leather manufactories, steam grain elevators, machine and wood-working shops, oil-cloth and enamel works, steam printing establishments, a national and a savings bank, the Beverly coöperative bank, excellent hotels, an efficient police, a well-organized fire department, the New England Institute for the Deaf and Dumb, graded schools, a high school, a public library of 10,000 volumes, and a board of trade composed of 100 business men. Many of the inhabitants are employed in navigation and the fisheries. Valuation of real and personal estate, \$15,000,000. Beverly was incorporated in 1668, and has recently become a city. Population in 1890, 10,795. See *Britannica*, Vol. III, p. 621.

BEVERWYK, a town of Netherlands, North Holland, seven miles north of Haarlem. It is situated in the midst of what might be described as a beautiful meadow and is quite a model of Dutch neatness and cleanliness. Population, 2,356.

BEVIS OF HAMPTON, the hero of a popular English mediæval romance edited by Dr. E. Kölbing for the Early English Text Society, in 1885. See *ROMANCE*, *Britannica*, Vol. XX, p. 653.

BEX, a village in the Swiss canton of Vaud, situated on the high road to the Simplon, about 26 miles southeast of Lausanne. It is remarkable for its extensive salt mines, salt works, and sulphur baths. The quantity of salt annually produced at Bex is between 2,000 and 3,000 tons. Population, 3,000.

BEYERLAND, an island of South Holland, formed by the junction of the Old Maas with Holland Diep on the one side, the river Spui uniting the Old Maas with the Haringvliet on the other. It is a thriving place, of nearly 4,000 inhabitants.

BEY, a Turkish title. See *BEG*, in these Revisions and Additions.

BEYPUR, a seaport of Western India, in Malabar district, Madras, situated near the mouth of the Beypur River, six miles south of Calicut. Iron ore and coal are found in the neighborhood, and iron works have been established here. Since 1858 Beypur has acquired importance as the terminus of

a railway across the peninsula of India from Madras by way of Coimbatour. Population, 7,000.

BEZANT, or BYSANT, properly the *solidus*, a coin of the Byzantine empire which had a wide circulation in Europe during the period from about A. D. 800 to the middle of the 13th century. The gold bezant varied in value at different periods from a sovereign to half a sovereign; the silver one from a florin to a shilling. In architecture, small round disks ornamenting a molding, and in heraldry "roundels" on a shield, showing descent from a crusader.

BEZDAU, a market town in the Hungarian province of Bacs, situated on the canal which joins the Theiss and the Danube. Population, 8,000.

BEZOAR, a concretion found in the stomachs of goats and antelopes, and formerly much valued on account of imaginary medicinal virtues, particularly as an antidote to poisons.

BHAGAVAD-GITA (that is, Revelations from the Deity), the title of a religious metaphysical poem, interwoven as an episode in the great Indian epic poem of the Mahābhārata.

BHAGIRATHI, the name of two rivers of India, one of which is a principal head-stream of the Ganges, and the other an affluent of the Ganges, known in its lower course as the Hoogly.

BHANPOORA, a walled town of Indore, Central India. It is situated on the Rewah, and contains a fort and a palace of the Mahratta ruler, known as the Holkar.

BHARTRIHARI, the name of a celebrated Indian writer of apothegms. Very little is known of his life. A legend makes him the brother of King Vikramāditya, who lived in the first century before Christ, and relates that after a wild, licentious youth he betook himself in later years to an ascetic life. Cheerful descriptions of Nature and charming pictures of love alternate in these apothegms, with wise remarks upon the relations of life, and profound thoughts upon the Deity and the immortality of the soul. Bhartrihari is the first Indian author known in Europe; two hundred of his apothegms were translated in 1653 by Abraham Roger, published under the quaint title, *Open Gates to Hidden Heathenism*. Bohlen published an excellent and successful metrical translation in German (Hamburg) in 1835.

BHAVANI-KUDAR, a town in the presidency of Madras in the district of Coimbatour, 58 miles from the city of that name, at the confluence of the Bhavani and the Cavery rivers.

BHOJ, the capital of Cutch, in India, situated at the foot of a fortified hill of the same name, where a temple has been erected to the Cobra da Capella. Its mosques and pagodas, interspersed with plantations of dates, give to the town an imposing appearance from a distance. In 1819 it suffered severely from an earthquake. It is celebrated for its manufactures in gold and silver. Population, 20,000.

BHOWAN, BHOWANJ, BHEWANNEE, or BHIWANI, a town in the district of Hissar, Punjab, British India.

BHUJI, or BIJI, a small hill state extending along the left bank of the Sutlej, in India, for about twenty miles. Its greatest breadth is about seven miles.

BHUTAN, an independent state in the Eastern Himalayas, on the northeast of Thibet. Area, 16,800 square miles. Population, 35,000. Capital, Punakha. For early history, see Britannica, Vol. III, p. 681.

Since 1865 the Indian government bestows on the Bhutan rulers an annual subsidy of 50,000 Rs., and in return is permitted to hold two strong fortresses (Buxa and Dewangiri) as a protection from warlike

incursions. The state is 160 miles in extreme length east and west and 90 miles in extreme breadth.

The government of Bhutan resembles that of Thibet, the chief authority being nominally divided between the *deb raja*, or secular head, on the one hand, and the *dharma raja* or spiritual head of the state on the other. Practically, the *deb raja* is a mere instrument in the hands of powerful barons. The *dharma raja* is supposed to be the incarnation of his predecessor, and is chosen in infancy. The chief towns of Bhutan are: Punakha, the capital, a place of great natural strength, Tashichhu Jong, Paro, Angduphorang, Tongsa, Tarka, and Biaka.

The people are nominally Buddhists, but their religious exercises consist chiefly in the propitiation of evil spirits and the recitation of sentences from the Thibetan Scriptures. Tashichhu Jong, the chief monastery in Bhutan, contains 300 priests.

The chief productions of Bhutan are rice, Indian corn, millet, two kinds of cloth, musk, ponies, chowries, and silk. Muzzle-loading guns and swords of highly-tempered steel are manufactured.

The trade between British India and Bhutan amounted in 1888-89 to 153,000 Rs. imports from and 252,000 Rs. exports to India. The chief imports are tobacco, European cotton goods, betel-nuts and rice; the chief exports, wool, musk, ponies, and caoutchouc.

BIALYSTOK, a fortified town in the government of Grodno, Russia. It carries on various manufactures, among them woollens, hats, leather, soap, and tallow.

BIANCAVILLA, a town of Sicily, 14 miles northwest of Catania, and 10 miles from Mount Ætna, with a trade in grain, cotton, and silk. Population, 9,000.

BIARD, AUGUSTE FRANÇOIS, a French painter, born at Lyons in 1800, died in 1882. He was at first destined for the church, but was educated at the school of art in his native city. He is distinguished for his animated and often comical representation of ordinary life and manners, but is known in almost every department of his art.

BIBERICH, a village in the duchy of Nassau, on the right bank of the Rhine, about four miles south from Wiesbaden. It is noted for its splendid palace. The views of the river scenery from Biberich are unrivaled. Population, including Mosbach, 6,700.

BIANCONI, CHARLES (1786-1875), inventor of the Irish car system, born in Lombardy in 1786, and came at the beginning of the century to Ireland as an itinerant vendor of cheap prints. He accumulated a small capital, and, recognizing the need of public conveyance in Ireland, he started the first car between Clonmel and Cahir in 1815, at a time when peace and the carriage-tax had filled the market with cheap horses and jaunting-cars. The enterprise proving a success, the system was extended, until, 40 years later, Bianconi's cars were working over 4,000 miles of road daily. Having realized a large fortune, he retired in 1865, and died in September, 1875, at his estate near Cashel.

BIBLICAL ARCHÆOLOGY. Early in 1890 Dr. John Fraser, of New South Wales, read before the Victoria Institute a highly interesting paper entitled *The Aborigines of Australia; Their Ethnic Position and Relations*. He presented a strong argument in refutation of the position taken up by Lenormant and others, who would cut off the Australians from the record in the tenth chapter of Genesis, and, by consequence, from all connections with the sons of Noah. Dr. Fraser identifies the dark race spoken of in the cuneiform inscriptions, as existing in the plains of Babylonia, with the Kushites; whose empire and whose people once

extended "from the Mediterranean to the Ganges, and from the Indian Ocean northwards to the plateau of Ararat. Other races, however, came down upon them from Central Asia, and, like a wedge, split them in two. Hence the position of this race is, in Genesis x. indicated ethnically by the names of Cush and Mizriam, and Phut and Canaan, which are the countries geographically called Ethiopia and Egypt and Nubia and Palestine. Their dominion had thus been thrown much to the west of their original seats, and had lodged itself in Africa, near the stronghold of the western Kushites," whose eastern brethren, after migrations and adventures which had led them "through the mountain passes into the tableland of the Punjab, and thence into the Gangetic plains," were "pushed," by Aryan invaders from the northwest, "down the Ganges into Farther India and the Malayan Peninsula; thence to pass at a later time into Borneo and the Sunda Islands and Papua; and afterwards across the Sea of Timor into Australia, or eastwards into Melanesia, driven onwards now by the Turanian tribes who had come down from Central Asia into China and the peninsula and the islands of the East Indies." Dr. Fraser fortifies his position with arguments and illustrations of various kinds—linguistic, ethnological, and religious.

Two other papers worthy of special note in this article were read before the same institution during the year 1890: One (Jan. 20, 1890) by James Neil, M.A., bearing the descriptive title of *Land Tenure in Ancient Times, as Preserved by the Present Village Communities in Palestine*; and the other, read by Mr. Hormuzd Rassam, June 23, discussed *The Garden of Eden and Biblical Sagas*. Mr. Rassam examined, to reject, the views of scholars who would localize the cradle of mankind in various places "from Scandinavia to the South Sea Islands, from China to the Canary Isles, and from the Mountains of the Moon to the coasts of the Baltic." He claimed that the arguments put forth in the brochure, *Wo lag das Paradies?* by Prof. Friedrich Delitzsch, the latest

supporter of the Babylonian theory, were "quite untenable when compared with the plain words of Holy Writ." Mr. Rassam's contention was "that the only part of the world that could be assigned for the ancient site of the Garden of Eden would be the country that surrounds Lake Wan (or Van) in Armenia." It should be noted, however, that Mr. Rassam probably had not read the books of President W. F. Warren, LL.D., of Boston University, entitled *Paradise Found; The Cradle of the Human Race at the North Pole*, as he makes no allusion to the ingeniously elaborated argument presented in that volume.

Dr. Edward Taylor, F.R.S., in discussing, at one of the society's meetings in 1890, *The Winged Figures of the Assyrian and Other Ancient Monuments*, is reported to have adopted and enforced with great emphasis the striking point of comparison, noticed many years ago by Sir H. Layard, of the Assyrian sculptures with the mystic vision of the prophet Ezekiel. The Chevalier Ernest de Bunsen, whose reputation is intimately connected with the subject of Biblical chronology, contributed a paper on *The Pharaohs of Moses According to Hebrew and Egyptian Chronology* to the February meeting of the society; to the June meeting of which a paper was submitted and read in abstract—appearing afterwards at length, and in the original French in the *Proceedings of the society—Sur les Dynasties Divines de l'Ancienne Egypte*, by Professor G. Maspero. It is conversant about the origin, the constitution, and the distribution of the divine dynasties, which, according to tradition, had preceded the human dynasties in Egypt, and whose record had furnished the basis of diverse hypotheses on the past on the part of students of Egyptian history and chronology. M. Maspero accepts the solution of the question proposed thirty years ago by Lepsius, in his *Mémoire sur le Premier Cycle des Dieux Égyptiens*, as being in the main true.

BIBLE CHRISTIANS. See RELIGIOUS DENOMINATIONS in the United States, in these Revisions and Additions.

BIBLE CIRCULATION. For the general discussion of questions relating to the Bible and its circulation by various organizations to the year 1875, see *Britannica*, Vol. III, 634-650. The annual report of the British and Foreign Bible Society for the year ending March 31, 1890, showed a total issue for that year, by that society, of 3,792,263 copies of Holy Scriptures. This was an increase over the issues of the preceding year of 115,059. The great increase of the work of the British and Foreign Bible Society during the last few years may be seen by the following tabular statement of its total issues by decades:

Total issues to March 31, 1830	2,843,291
For ten years to March 31, 1830	3,710,507
" " " 1840	5,768,673
" " " 1850	10,787,579
" " " 1860	14,417,778
" " " 1870	21,868,843
" " " 1880	28,771,748
" " " 1890	35,760,627
Grand total from date of organization	123,929,046

The receipts for the year ending March 31, 1891, aggregated \$1,060,387; total expenditures for the year, \$1,137,830. Total expenditures from the beginning of the society (86 years), \$54,969,407.

The American Bible Society issued during the year ending March 31, 1890, an aggregate number of 1,496,057 copies; increase over the preceding

year of 55,602. Its total issues from 1816, the date of its organization, to March 31, 1890, aggregated 52,736,075. The cash receipts for the year aggregated \$597,693.

The number of issues of the two societies (British and Foreign and American Bible Societies) during 1890 aggregated 5,288,317 copies, an average of about 17,000 copies of the Scriptures for every working-day of the year. For a full list of the parent Bible societies, with the latest total number of issues reported by each, see BIBLE SOCIETIES, in these Revisions and Additions. The grand total of issues to date circulated by all the societies was 217,828,118.

In not a few cases no written language or dialect was found, and the missionary teacher was required to give the people first a language and then the translation of the Bible into it.

The following are specimens of the languages and dialects into which the Bible, or portions of it, had been translated and printed up to the year 1890. The number of languages into which the Bible, or portions of it, were translated, printed, and circulated, directly or indirectly, by the British and Foreign Bible Society and the American Bible Society to that date, was 291. After making due allowance for repetitions, the specimens here given represent 213 languages and dialects. They are arranged very nearly according to the countries in which they originated. The reader begins with the languages of the British Isles, 1 to 6, and proceeds to the Continent of Europe, 7 to 68. The languages

of Asia come next, 69 to 162; then the islands, 163 to 185; then those of Africa, 186 to 217; and, finally, those which are peculiar to the American continent, 218 to 242.

In some cases, as will be noticed, the specimen is repeated to show the different alphabets or characters which the people use. The Turkish version, for example, is prepared for Moslems in the Arabic letter; but for Armenians an entirely different form is needed, and for Greeks yet another. Except where otherwise indicated, the Scripture verse here given is that of John iii: 16.

1. ENGLISH

For God so loved the world, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life.

2. GAELIC.

(Highlands of Scotland.)

Oir is ann mar sin a ghràdhach Dia an saoghal, gu'n d'thug e 'aon-ghin Mhic féin, chum as ge b'e neach a chreideas ann, nach aghiosar e, ach gu'm bi a'bheatha shiorruidh aige.

3. IRISH.

Óir is mar sin do dhéanadh, Dá an domhan, go dtug sé a éinídeán Mhic féin, ionnair go b'é creidear a'n nac nacad sé a mhúda, ach go mbeir an béta ríonny, do aise.

4. IRISH (Roman).

Oir is mar so do ghrádhugh Dia an domhan, go dtug sé a éingheir Meic féin, ionnus gidh bé chreideas ann, nach rachadh sé a mugh, achd go mbeith an bheatha shiorruidhe aige.

5. MANX.

(Isle of Man.)

Son lheid y ghralh shen hug Jee da'n theihll, dy dug eh e ynrycan Vao v'er ny gheddyn, nagh jinnagh quol-erbee chredjagh aynsyn cherraghtyn, agh yn vea ta dy bragh farraghtyn y chosney.

6. WELSH.

Cans felly y carodd Duw y byd, fel y rhoddodd efe ei unig-anedig Fab, fel na choller pwy bynnag a gredo ynddo ef, ond caffael o hono fywyd tragwyddol.

7. BRETON.

(Brittany.)

Rag evel-se eo eu deus Doue caret ar bed, ma en deus roed e Vab unik-ganet, evit na vezo ket collet pioubenag a gred ennau, mes ma en devezo ar vuez eternal.

8. FRENCH.

Car Dieu a tellement aimé le monde, qu'il a donné son Fils unique, afin que quiconque croit en lui ne périsse point, mais qu'il ait la vie éternelle.

9. FRENCH BASQUE. (Pyrrhenica.)

Jaincoac eoen hain maite iñan du mundua, non eman baitu bere Seme bakharra, amoreq gatic norcere sinhesten baitu hura baithan gal cz dadin, bainan çan deçan bethiereco bicia.

10. SPANISH.

Porque de tal manera amó Dios al mundo, que haya dado á su Hijo unigénito; para que todo aquel que en él creyere, no se pierda, mas tenga vida eterna.

11. CATALAN. (Eastern Spain.)

Puix Deu ha amat de tal modo al mon, que ha donat son unigenit Fill, á fi de que tot hom que creu en ell no peresca, ans be tinga la vida eterna.

12. SPANISH BASQUE.

Alchatuco naiz, eta Juango naiz nere aitagana, eta esango diot: Aita, pecatu eguin nuen ceruaren contra, eta zure aurrean.—(Luke xv. 18.)

13. SPANISH BASQUE. (Guipuscoan Dialect.)

Joaten ceratela bada eman zayozcatsute eracutslac jende guciai: batayutzen dituzutela Aitaren, eta Semearen, eta Espiritu santuaren icenean.—(Matt. xxviii. 19.)

14. GITANO. (Spanish Gipsies.)

Mangue ardifelaré, y chalaré al batusch, y le penaré: Batu, he querdí crejete contra o Tarpe y angial de tucue.—(Luke xv. 18.)

15. PORTUGUESE.

Porque de tal maneira amou Deos ao mundo, que deo a seu Filho unigenito; para que todo aquella que nelle creê, não pereça, mas tenha a vida eterna.

16. ICELANDIC.

Því svo elskaði Guð heiminn, að hann gaf sínn eingetna Son, til þess að hver, sem á hann trúir, ekki glatist, heldur hafi eilíft líf.

17. NORWEGIAN.

Þíi saa haber Gud eisset Verden, at han haver givet sin Een den eenbaarne, saa det at hver den, som tror paa ham, ikke skal fortabes, men have et evigt Liv.

18. SWEDISH.

Þíi så älskade Gud världen, att han utgaf sin ende Son, på det att hvar och en, som tror på honom, skall icke förgås, utan få evinnerligt lif.

19. NORWAY-LAPPONESE (or Quanian).

Dastgo nuft rakkasen ani Ibmel mailme, atte barnes sán addi, dam aino, amas juokkas, gutte su ala ássko, lapput, mutto val agalaš sellem sán ážuši.

20. LAPPONESE.

Jutte nån eſſi Zubmet máatleb, atte ſohn ulfoſwabbli ainarágatum ſkarnebb, waí ſart tutte, juſſo jalka ſo aal, i kálka tappot ainat ádtjot etewen etemeb.

21. RUSS LAPP.

Тэн гудык што Иннезь нят шабэши́й тап альне, што нажес Альге, эхтушэнтма эндий, тэн варас што юкьянь, Кіе Сонне впер, ій майкьяхъ, а лехт сонне агееалмуш.

22. FINNISH.

Siinä niin on Sumala maailmaa rakastanut, että hän antoi häncn aincaan ſolkansa, että ſolainen ſuin uſſoo hänen päällensä, ei pibä huttumaa, mutta iſantalkiſen ciämän ſaaman.

23. DUTCH.

Want alzoo lief heeft God de wereld gehad, dat hij zijnen eeniggeboren' Zoon gegeven heeft, opdat een legelijk, die in hem gelooff, niet verderve, maar het eeuwige leven hebbe.

24. FLEMISH.

Want alzoo lief heeft God de wereld gehad, dat hij zijnen eeniggeboren Zoon gaf; opdat allen, die in hem gelooven, niet verloren worden, maar het eeuwige leven hebben.

25. GERMAN.

Alſo hat Gott die Welt geliebet, daß er ſeinen eingebornen Sohn gab, auf daß Alle, die an ihn glauben, nicht verloren werden, ſondern das ewige Leben haben.

26. GERMAN (Hebrew).

דען אלף האט גאטט דיא וועלט געליעבעט, דאס ער זיינען איינגעזארגען זאהן גאט, איך דאס אללע, דיא אן איהן גלויבען, ניכט פערלירען ווערען, זארגען דא עוויגע לעבען האבען.

27. LITHUANIAN.

Talpo Dieus myliſo ſwelta, tad ſawo wiengimmaſ ſunu būwe, ſeis niſſi i Ji iſſi ne prapaltu, bet amjina gpmatq turrēta.

28. POLISH.

Albowiem tak Bóg umiłował świat, że Syna swego iednorodzonego dał, aby każdy, kto weń wierzy, nie zginał, ale miał żywot wieczny.

29. POLISH (Hebrew).

ווארין גאט האט דיא וועלט אוי גלייבט, דאס ער האט גיגעבן זיין אייגעניק זאך, אז איינליך וואש גלייבט אן איהם זאל ניש פערלירן ווערן, גייעט ער זאל האבן דאש אייגיך לעבן:

30. WENDISH (Upper). (Lusatia.)

ſchetoj taf je Boh ten Edmjet lubowal, ſo won ſwojeho lenkzjeho narodjencho Syna dal je, ſo byſen ſchly, ſij do njecho wjerja, ſhubeni nebbli, ale wjeclne jlmene mjeli.

31. WENDISH (Lower). (Lusatia.)

ſcheto taf jo Bohg ten ſmēt lubowal, aj won ſwojogo jednorodzonego ſynna dal jo, abū ſchfne do uogo wērege, ſgubone ſchūli, ale to ſlmerne jūwene mēli.

32. BOHEMIAN.

Rebo taf Būh milowal ſwēt, že Syna ſwocho gedurozencho dal, aby ſajdy, doj wēj to ncho, nezahnuł, ale mē jlmot wēny.

33. HUNGARIAN.

Mert úgy szereté Isten e' világot, hogy az ő egyetlenegy szülött Fiját adná, hogy minden, valaki hiszen ő benne, el ne vesszen, hanem ör k életet vegyen.

34. HUNGARIAN-WENDISH. (Wendish in Hungary.)

Ar je tak lūbo Bóg ete szvēt, da je Szinā szwojega jednorodjenoga dáó, dá vszákí, kí vu nyem verje, ase ne szkvari, nego má 'sitak vekivecani.

35. SLOVENIAN.

Kajti tako je Bog ljubil svet, da je sina svojega edinorojenega dal, da kdorkoli veruje vanj, ne pogine, nego da ima večno živiljenje.

36. LATIN.

Sic enim Deus dilexit mundum, ut Filium suum unigenitum daret, ut omnia qui credit in eum non pereat, sed habeat vitam eternam.

37. ITALIAN.

Perciocchè Iddio ha tanto amato il mondo, ch'egli ha dato il suo unigenito Figliuolo, acciocchè chiunque crede in lui non perisca, ma abbia vita eterna.

38. ROMANESE (Oberland). (Switzerland.)

Parehel Deus ha tenlu il mund aschi car, ca el ha dau siu parsulnaschlu figl, par ca scadin, ca creş en el, vomí buc á perder, mo hagi la vita perpetna.

39. ROMANESE (Enghadine). (Switzerland.)

Perche chia Deis ha taunt amá 'l muond, ch'el ha dat seis unigenit Filg, aciò chia scodiñ chi craja in el nun gíaja á perder, mo haja vita eterna.

40. PIEDMONTESE.

Pèrché Iddiou a l ha vòulsù tantou ben al mound, ch'a l ha dait so Fièul unic, pèr ché chionque a l prèsta fede a perissa nen, ma ch'a l abbia la vita eterna.

41. VAUDOIS.

(Waldenses, N. Italy.)

Perquè Diou ha tant vourgù ben ar mount, qu'a l ha dounà so Fill unic, perque quiounquès crès en el perissè pà, mà qu'a l abbia la vita èternella.

42. MALTESE.

Ghallex Alla hecca hab id dinia illi tá l'Iben tighu unigenitu, sablex collmin jemmen bih ma jintillifx, izda icollu il haja ta dejem.

43. GREEK (Ancient).

Οὕτω γὰρ ἠγάπησεν ὁ Θεὸς τὸν κόσμον, ὥστε τὸν υἱὸν αὐτοῦ τὸν μονογενῆ ἔδωκεν, ἵνα πᾶς ὁ πιστεύων εἰς αὐτὸν μὴ ἀπόληται, ἀλλ' ἔχη ζωὴν αἰώνιον.

44. GREEK (Modern).

Διότι τόσοι ἠγάπησεν ὁ Θεὸς τὸν κόσμον, ὥστε ἔδωκε τὸν Υἱὸν αὐτοῦ τὸν μονογενῆ, διὰ νὰ μὴ ἀπολεσθῆ πᾶς ὁ πιστεύων εἰς αὐτὸν, ἀλλὰ νὰ ἔχη ζωὴν αἰώνιον.

45. GREEK (Modern) (Roman).

Sicothis thelo ipaghi pros ton patera mu, ke thelo ipi pros aston, Pater, imarton is ton uranon ke enorpon su.—(Luke xv. 18.)

46. ALBANIAN (Gheg).

Besë Perëndia kaqi e deshti botëno, së da Biri'n e vet, vetëm-l'ëminë, për mos me uvdierë gëthë-kui t'i besoyë, por te ketë yetë t'ë pa-sëzëme.

47. ALBANIAN (Tosk).

Σὲ ψὲ Περντία κάκε εἰ δέσι πότενε, σα κὲ δὰ τὲ πέρβ ἐτίγ τὲ βέτεμνε, κὲ τζίλε δὸ κὲ τὲ πεσόγγε ντὲ ἀτ τὲ μὸς χουμπάσε, πὸ τὲ κέτε γέτεν' εἰ πὰ σόσουρε.

48. TURKISH (Arabic).

زیرا الله دنیائی بو قدر سودی که
کندی ابن وحیدینی ویدی تا که اکا
هر ایماز ایدن هلاک اولیوب انجق حیات
ابدیهیه مالک اوله.

49. TURKISH (Greek).

Ζήρα Ἄλλὰχ τὸν υἱοῦ γιὰ τὴν ποὺ κατὰρ αεβτὶ
ει, κερτὶ περιτζικ 'Ογλουνοῦ βερτὶ, τάκι χερ
δου ἱναδαν, ζάι δλμαγια, ἴλλα ἐπέτι χαιατὰ
μαλικ δλά.

50. TURKISH (Armenian).

Օրբա վըահ տիւնեայը որը դասար տեղիք քի
քնարի լարի է զահարիքի վերտի, Թա քի սնա հէր իսն
էտն հէլար սընայը, սնայը հայտիքը է եպտեհիլէ ճալիք
որ :

51. SPANISH (Hebrew).

(Spanish Jews in Turkey.)

כורקי אנכי אמו חיל דיוו חיה חיל מוכדו חסטה דאר
חיה סו חיוו רינגלחדו כחרה קי טודו חיל קי קריחי
חיו חיל נו סי דיכיידרה סינו קי טינגה נידה די
סיימכרי.

52. ROUMAN (Roman).

(Danubian Prov.)

Caci aza a iubit Dumneudeu lumea, incat a dat pre Fiulul seu cel unul-nascut, ca tot cel ce crede in el ai nu se pierde, ci si aiba vieța eterna.

53. ROUMAN (Cyril character).

Качи аза а иубит Думнеудеу lumea, ка а дат не Филул
сеу цел unul-nascut, ка тот цел че crede на ел че не
неаре, чи че аiba vieta eterna.

54. RUTHENIAN. (Little Russia.)

ВСТАВШИ НОУДА ДО ОУЦА МОУГО, І
ЗКАЖА ІЕМЪ: ОУЧЕ, ЗГРІШИВ ІЕМ ПРОТІВ
НЕБА І ПЕРЕД ТСОУВ.—(Luke xv. 18.)

55. SERVIAN.

Јер Богу тако омиле свијет да је и
сила својега јединороднога дао, да ни
један који га вјерује не погине, него
да има живот вјечни.

56. CROATIAN.

Јер Bogu tako omilje svijet da је i
svoja јединороднога дао, да ни један који
га вјерује не погине, него да има живот вјечни.

57. BULGARIAN.

Защото Богъ токозь възлюби свѣтъ-
тъ, щото даде Сына своего единородна-
го, за да не погине всякой който вѣру-
ва въ него, но да има животъ вѣченъ.

58. SLAVONIC.

Такоу бо возлюбѣ Бѣъ мѣръ, ѣкоу
и Сѣа своего ѣдинороднаго дааъ ѣсть,
да всакъ вѣрѣмаъ въ Сѣъ, не погнѣ-
нетъ, но имать животъ вѣчный.

59. RUSSIAN.

Ибо такъ возлюбилъ Богъ миръ, что отдалъ Сына своего единороднаго, дабы всякій, вѣрующій въ Него, не погибъ, но имѣлъ жизнь вѣчную.

60. ESTHONIAN (Reval). (Russia.)

Seft nenda on Jummal ma-ilma armaſtanud, et temma omma aino ſündinud Poia on annud, et äſſi, ſed temma ſiſſe üſſub, ei pea hulla ſama, waib, et iggawenne ello temmal peab ollaema.

61. ESTHONIAN (Dorpat).

Seft nida om Jummal ſebda ilma armaſtanu, et temma omma aino ſündinu Poiga om andnu, et ſiſ, ſea temma ſiſſe üſſwa, hulla ei ſa, enge iggawest ello ſawa.

62. LETTISH. (Livonia.)

Un ſiſ lohti Dievš to paſauli miſieſiš, ſa wiſiſ ſawu paſču weanpēdſinmuſču Dehlu ir dieviš, ſa wiſſem teem, ſaš ſiž eſſiſ wiinna ne buhš paſaſteš, bet to muſſiſgi diſiwoſſaunu dabuht.

63. KARELIAN. (Finland.)

Нійнъ ана валгуоѡвъ шійнъ валгіѡ инегмизіѡнъ іѡшша, ю ана няхшайсь шійнъ гювяшъ азіѡшъ: и кійшѡшшайсь шійнъ Туайшуб, кумбане онъ шайвага-шша.—(Matt. v. 16.)

64. ZIRIAN, or Siryenian. (Finns about Volodia.)

БЫДЗИ МЕДЪ ЮГЪЛААСЪ ТІАНЪ ЮГЪ-ДЪ МОРТЪАСЪ ВОДЗИНЪ, МЕДЪ АДЪАСНЫ ТІАНАЛЪСЪ БЪРЪ КЕРѡМЪАСЪ, И ОШКА-СНЫ БЪТЕСЪ ТІАНАЛЪСЪ, КОДЪ НЕБЕ-СААСЪ ВЫЛЫНЪ.—(Matt. v. 16.)

65. SAMOGITIAN. (Wina.)

Wesa talpo Dievas numilėjo swieta, jog Sunu ſawo wiengimusi dāve: idant ſiekwieneš, turš ing ji ſiſ, ne pražutu, bet turėtu amžina glwata.

66. MORDVIN.

Сѣксъ ишя вѣчкизе Пазъ машѡронъ ѡрицашъ, макъ максызе цѡранзо сонзѡ скѡмонъ шѡчшуманъ, шѡшѡбы эрѡвѡ кѡнница лѡнгозонзо авблѡ юма, но ѡлевель пѡн-гень эрѡмосѡ.

67. TCHEREMISSIAN. (Finns on the Volga.)

Теньгѡ ярашѡнъ Юма сандѡлникѡмъ, шшѡ якъ шкѡ ѡргажѡмъ пѡшъ, сѡкай нѡнѡнша шѡдалѡнъ инже-ѡмъ, а илеже варѡ мучѡшдѡма кѡружъ мѡчка.

68. TCHUWASH. (Volga.)

Сяшѡ іѡрѡдрѡ Тѡра Эдея, што барзѡ ху ѡвыне пѡрѡ сѡрѡдпыне, штобы порѡ нѡнѡнѡгѡнъ онѡ анъ пѡдтаръ, а ѡсрѡдаръ іѡжурѡгѡ бѡрназа.

69. WOTJAK. (W. Siberia.)

Озѡ медъ пиштѡзъ югѡтъ-тѡ тѡлѡдъ адѡнѡсѡзѡнъ, собѡ медъ адѡзѡнъ дзѡць уждѡсъ тѡлѡдъ, сѡ-но медъ сѡѡтозы Анѡлѡ, кудѡзъ нѡнъ вылѡнъ.—(Matt. v. 16.)

70. WOQUL. (Ural Mountains.)

Тѡ-саувт Тѡрим ѡрептѡстѡ мерѡа сто еле-мѡстѡ ѡкутѡли пувѡа, исто сокин-кар, кон агѡта тѡве, ат пи колни, а нѡра лѡлма конѡтѡ.

71. ORENBURG, or Kirghise Tartar.

چراکه خدا جانانی ایل قدر سہادی کہ بر دوشش اورطین ہرہدی کہ حرکتہ آنا لہاسا ہادی بولہایا لکن ابدی حیاتی بولا .

72. OSSETINIAN. (Caucasia.)

Цѡнѡдрѡртѡр Худѡ аѡзѡ баѡарѡта дѡнѡ, нѡнъ Јѡ јѡнѡгѡртѡ Фѡртѡдѡр радѡ унѡн, цѡнѡј ѡј ѡј урѡа, ѡј ма ѡсѡѡѡ, ѡѡнѡ иѡ уѡ ѡнѡсѡѡ царѡ.

73. HEBREW.

כי כה אהב אללהים אתהעלם כרתן את
בני דהידי . למען כל-דהאמן בו לא יאבד
כי אסדדי עלם יהוה לו :

102. SINDHI (Arabic). (Western India.)

جاکان ز خدا جهان کي اھڙو پيارو رکيو
 جو پھنجو ھڪڙوئي جھل پت ڏنا ۽ ز
 جيڪو تنھ تي وپساھ آڻي سو چت
 نہ ٿي و پتر ھميشه جھل لھي

103. SINDHI (Gurumukhi).

डाःधां उद्योसुत जगत्त धे एवमे पिआरे तधे जे परजे
 विविजे धी सखल पुट डिनाष्टो उ जेरे वे उति उ देमाव
 आटे मे नामु न धिष्टे देउरि मदा सिअलु लवे ॥

104. MOULTAN, or Wuch, or Ooch.

۲۴۲۴ ۴۳۵۳ ۲۲۵۲۸ ۴۶ ۳۶ ۴۳۵۳ ۲۳ ۲۶ ۴۵۲۷
 ۴۴۴ ۶۲ ۴۴۲ ۴۳۲۸ ۴۳ ۲۶ ۳۸ ۳۶۵۲ ۴۲ ۴۶ ۴۶
 ۵۳ ۴۶۳۶۳ ۲۳ ۲۳۸ ۴۳ ۲۳ ۲۳۸ ۴۳ ۲۳ ۲۳۸ ۴۶ ۲۶

105. PUNJABI, or Sikh.

ਕਿਉਂਕਿ ਪਰਮੇਸਰ ਨੈ ਜਗਤ ਨੂੰ ਅਜਿਹਾ
 ਪਿਆਰ ਕੀਤਾ, ਜੇਉਸ ਨੈ ਆਪਣੇ
 ਇਕਲੋਠਾ ਪੁਤ੍ਰ ਦਿੱਤਾ; ਤਾਂ ਤੇਰੇ ਜੇ ਉਸ
 ਪੁਰ ਪਹਿੰਚ, ਤਿਸ ਦਾ ਨਾਮ ਨਾ ਹੋਵੇ, ਸਗਲਾਂ
 ਸਦੀਪਕ ਜੀਉਣ ਪਾਵੇ ।

106. GONDI. (Central India.)

आइये नीचा उभाये आदमीकेना मुझे जन्मे नाई इदेन डिब
 डि बोके नीचा मुझे जानकन इकीकन नीयेर जगीराबी दादाना
 गुवानुवाद कीर ॥ (Matt. v. 18.)

107. NEPALESE, or Parbutti.

आहा ईश्वरले दुनियाताराह एकीं पिबाये गया डि इतल आइना
 इकवेदा होराहाराह दियो डि बो इदेन नाविस इनाबी विबाह
 गदेइन् बो नाइ न होवन इर जन्मविदगी पावन ।

108. TELUGU. (S. E. India.)

యెందుకంటే దేవుడు లోకము ప్రపంచముట
 యేరాగంటి-అయిన యందు ఏశ్వాసముంచే
 ప్రతివాడున్ను నశించక నిత్యజీవము పొందో
 రకు తన జన్మితక కుమారుని యిచ్చెను.

109. CANARESE. (Mysore.)

ಯೆಂಬಂತೆ ಅವನಲ್ಲಿ ಏಶ್ವಾಸವಿರುವವರೆಲ್ಲರೂ ನಾಶ
 ಸವಾಗರೆ, ನಿಶ್ಯ ಜೀವವನ್ನು ಕೊಂಡುವ ಬಗೆಯಿ,
 ದೇವರು ಬಿಟ್ಟನಾಗ ಕುಟ್ಟಿದ ಕೆಸು ಕುಸುಕು
 ರೆಂದುವೆ ಹಾಗೆ, ಶೀಲವನ್ನು ಅವು ಪ್ರೀತಿ ವರಾಂ
 ದನು.

110. SINGHALESE. (Ceylon.)

මක්කිසිදා දෙවියන්ගේ අදහස අනුව
 ලෝಕ විනාශ කොට සලකා විවිಧ
 විಧ දෙවියන්ගේ කමකරුවන්ගේ
 එක රාත්‍රියක දෙමස් ලොවට
 සලකා කරනා කළ
 යෙක.

111. PALI.

ကညာတံသဒ္ဓဟတ္ထိံ သဗ္ဗေ အဝိနာသေတ္တာ
 အနတ္တိန္ဒြိယံသိတံ အေဝါ သကောကဋ္ဌာထ
 ပုတ္တိံ ဒတ္တာ လောကယတ္တကာပေယေဝိ ॥

112. TAMIL.

தேவன். தம்முடைய ஒருபெருண
 குமாரனை விசுவாமிதிக்கிறவன்
 எவனோ அவன் கெட்
 டென்பாசாமல் நித்தியச்
 சீவனை அடைய
 முடியக்கூட, அவனாத்
 தந்தருளி, இவ்வள
 வாய் உகத்திவிட
 அன்புசுடர்ந்தார்.

113. DAKHANI, or Madras Hindustani.

اور خدا کہا کہ آسمان کی جوڑاں میں
 روشنیاں ہوں گی اور زمین
 کی میں کو رات سے خدا کریں اور
 زمین پر آئیں اور زمین
 (Gen. i. 14.) اور زمین کے باعث ہوں گی

114. MALAYALAM. (Travancore.)

മരണകൊണ്ടെന്നാൽ ദൈവം തന്റെ
 മകളായ പുത്രനെ, അവനിൽ
 വിശ്വസിക്കുന്ന വൻ
 ഒരുത്തനും നശിച്ചുപോകാതെ,
 നിത്യ ജീവൻ ഉണ്ടാക്കേണമെന്നതിന്ന,
 തരുവാൻ തക്ക
 വണ്ണം മരെയും
 ചെയ്തതെ

115. TULU. (W. of the Mysore.)

ರಾಯೆಗಂರಂರಾಚ್ಚಾ ಯೆಕೆ ನಂಬನಾಯೆ
 ಯೆತ್ತರ ನಾಶನಾರಮೋನಂದೆ
 ನಿಶ್ಯ ಜೀವನುಯೆ ಯೆಬಾರು
 ಮುಶ್ಯೆದೇಶಿಕನ ಸೋಯಂ
 ಕುಟುಮಗನ ಕಾಯೆ.
 ಶಿವಶಾಸ್ತ್ರಿಯಂಚ್ಚೆ ಪ್ರೀತಿಮುಕೆ.

116. MARATHI. (Western India.)

कां तर देवाने जगावर एवढी प्रीति केली
 कीं, त्याने आपला एकुलता पुत्र दिव्हा,
 यांसाठी कीं जो कोणी त्यावर विश्वास
 ठेवितो त्याचा नाश होऊं नये, तर त्याला
 सर्वकालचें जीवन व्हावें.

117. MARATHI (Modo).

मंत्राचेपुढे आणव ठेपटां मीनी म्हे मीं, एते
पुढास ठेपिअणा पुत्र चीह्या, मजगी मी म्हे
मोणी सुपण पीआठ ठेपको लस्य म्हा
येपं नथे, म्हा लस्य उपरिअठे मीपफ व्हाये.

118. GUJERATI.

કેમણે દેવે જન્મત પર એવડી પ્રીતિ ક્રિયા, કે
તેણે પોતાનો એકાકીજનિત પુત્ર એ સાહુ આપ્યો
કે, એ કોઈ તે પર વિદાય કરે તેનો નાશ ન
થાએ, પણ અનંત જીવન પામે.

119. PARSİ-GUJERATI.

કેમકે ખોદાએ દુનીઆ પર એવો પીઆર કીધો
કે તેણે પોતાનો એકાકીજનિત બેટો એ
વાસતે આપીઓ કે, એ કોઈ તેના ઉપર
એતકાદ લાવે તે હુલાક ન થાએ, પણ હુમેરાની
ઇશ્તી પામે.

120. INDO-PORTUGUESE. (Colombes in Ceylon.)

Parqui assi Deos ja ama o mundo, qui elle
ja da sua só gerado Filho, qui quemseja lo cré
ne elle nada ser perdido senão qui lo acha vida
eterno.

121. ASSAMESE.

বিদ্যে মনুহ পুত্ৰক বিম্বাস স্বর দেহে মিত্রিতাস্ সর্বসাম্ ন স্ব
কিঞ্চ অনন্ত জাপুহ স্ব এহে স্বকম কেপুহ জাশনি জাশিত্য
জাৎ স্বক্ মিত্র দেও এহে স্বক জগতক চেদেহ স্বকিয়।

122. KHASSL (Eastern India.)

Naba kumta U Blei u la feit ia ka pyrthel,
katba u la altf-noh ia la U Khün ia u ba-la-
kha-marwei, ba uel-uel-ruh u bangelt ha u, u'n
'nu'm jot shuh, hinrei u'n ioh ka jingim
b'ymjiukut.

123. SIAMESE.

ກັບ ວ່າ ພຣະອົງ ເກົ້າ ກະ ງັກ ໂຄກຍ໌, ຈົມ ດີ
ປະກາມ ມຸກ ອະ ກ໌ ເກົ້າ ອອ ອະ ພຣະອົງ, ເພື່ອ ກຸກ ກຸມ ທີ່ ໄກ້ ເໝືອ ດີ ອິນ ມຸກ
ນັ້ນ, ຈະ ມີ ໄກ້ ມິ ທາຍ, ແຕ່ ຈະ ມີ ສິ ວິ ກ ອຸ ມຸ ທີ່ ມີ ວິ ກ ັ້.

124. PEGUESE. (Burmah.)

ခရေ တံဝံလလ : ပိုည : တဲရ : ပွဲအ် ယလ : က်တန်
ခွင် ဝိုက်တဲ : ပွဲဂလေင် ဝိုက် လယဇင် စန်ခက် ပွဲဝါ
ပွဲအ်ဝံလညိ။ (Gal. v. 1.)

125. BURMAN.

တော်ကို ခုဖြည့်ထားသူအပေါင်းတို့သည် ဗုဒ္ဓကိမ်းခြင်းသို့ ဝေသာနီ
အစဉ်ထာဝရအသက်ရှင်ခြင်းကို ရသဖြမ်း၍ တရားသေခင်သင့်မီ
နှိတ်ပေးထည့်ထားသော တော်ကို ခုဖြည့်ထားသူသည် ထိုအောင်အောင်
သားတို့တို့နှင့် သဘာဝတော်ပင်။

126. KAREN. (Burmah.)

အ ဝု ဝ်ဒ် အံ၊ ယွာအဲပုယိဝ်ဒ်ဒိ တုအဟု
နုလီကွံင်အဗိဝါ အိဝ်တက ဝိ. ဒ်ဒိ ကလဲတ်
ပုလအာ ဝ်ကုနက်ကုအါ တကလတ်လတ်
နုနုဝ်တယး ကိတဂု၊ ဒီးကနု ဝ်တ နုတက်ပုလီ
ထုလီယိဝ်လီ။

127. BGHAI-KAREN.

တော်လာကစး ထး ဘဲရ်လဲး ကဆိန် ဘဲရ်ဘုက
ဒီးဘဲဘဲရ်သန် သကမာလိတ် လဲင်လစး လဲးကဲး
ယက, လဲး ကဲး တစိကမာလိတ်လဲင်လစး လဲး ပး
လဲး, အမားခာယုရ်ဂူဆရ်းလက. (1 John 1. 8.)

128. SGAU-KAREN.

တော်လာယထဲရ်ဘဲရ်, ဒီးပုနုဟုဘဲရ်ရ်. နုပံး ဘဲရ်
တဲဘဲရ် ဝဲးဝဲးဂုကလိတ်သးဒီးပုနုအံလီ. ဒီးပ
ထဲရ်အံပရ လိတ်ယးဒီးပု, ဒီးအဗိဝါယုရ် ဂူဆရ်း
လီ. (1 John 1. 8.)

129. PWO-KAREN.

ဘဲဒါနီအဗိဝါနုသုအဆယဟုနီ, ပွဲအဟုထုပု
လယပုဂုအမုယ, ဘဲအဗိဝါဘုသုယဟုဆယဟု
အဗိဝါထု, ထိဝုထုအုအုနုသုအမုအိပုလယအု
ဝိအမုဟုနီဆယ. Digitized by Google (Matt. v. 16.)

130. TIBETAN.

དགོན་མཚོ་གཡིས་ཀྱི་སྐྱེས་པ་གཅིག་
མོ་བྱེད་པ་ཅི་མ་དཔེ་གཏེན་ལ་བྱམས་
མ་མཛད་པས། དེ་ལོ་དང་པ་ཐམས་ཅད་
ལྷིག་པར་མི་གྲུབ་བྱུ། མཐའ་མེད་མི་
སྲིག་ཐོབ་པར་བྱེ།

131. MALAY.

كنا دميكين فرس الله سرده ماشيهي ايسي دنيا
سهيغت كرنياكن اتقن يخ توغكل سلفي بارغيت
بخ فرجلي اكن نبي تباد اكن بناس هلي مندات
كهدرنن يخ كل.

132. MALAY (Roman).

Kurna dümkiannah halnya Allah tüläh munga-
sibi orang isi dunia ini, sahingga dikurniakannya
Anaknya yang tunggal itu, supaya barang siapa
yang pürchaya akan dia tiada iya akan binasa,
mülainkan mündapat hidop yang kükal.

133. LOW MALAY, or Soerabayanr (Batavia.)

Karna sabagitoe sangat Allah soedah menga-
sehi isi doenia, sahingga ija soedah membri
Anaknja laki-laki jang toenggäl, soepaja sasa-
orang jang pertjaja akan dia, djangan binasa,
hanja beroleh kahidoepan kakal.

134. DAJAK. (Borneo.)

Krana kalotä kapaham Hatalla djari sinta
kalunen, campel iä djari menenga Anake idjä
tonggal, nakara gene-genep olo, idjä pertjaja
huang iä, äla binasa, baja mina pambelom
awang katatahi.

135. JAVANESE.

မာဏုဇ္ဈာန်တရားတရားတရားတရားတရား
တရားတရားတရားတရားတရားတရား
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136. BALINESE. (Dutch E. Indies.)

Mapan këto pitresnan Hida sanghyang Widi
tkèn djagaté makedjang, tka Hida nedoenang
hokané né sanoenggäl kahoetoes mahi, kna
Cilang hanaké né ngandelang hi hoka boe-
hoeng naraka, nanging kua hya nepoekin
kahidoepan tan pegat.

137. SUNDANESE.

Ajeuna mah dek indit ngadeuheusan ka bapa,
sarta rek oendjoekan kijeu: Noen ama, simkoe-
ring geus tarima mlgawe dosa ka sawarga saréng
di pajoeneum ama.—(Luke xv. 18.)

138. NIAS, (Island near Sumatra.)

Ando wa lawá'o ira ma'aféfu: Yu'ngö hulö
dá sogi O'no Löwaláni! Ba mañuá'o Ia hörä
ando: Iämi ande mañuá'o, mé Ia'ödö ande sö
Ia andó.—(Luke xxii. 70.)

139. BATTA (Toba). (Sumatra.)

Handwritten text in Batta script.

140. BATTA (Mandaheling).

Handwritten text in Batta script.

141-144. CHINESE.

141. Classical.

之、俾凡信之者、免沉淪而得永生。
蓋神愛世、甚至以其獨生之子賜

142. Mandarin.

天主憐愛世人、甚至將獨生子賜給他們、凡
信他的不至滅亡、必得永生。

143. Foochow (Colloquial).

伊其人都實沉淪去、是難得長長生活。
因為神學將欸愛世間、賜獨生其仔、以致大凡信

144. NINGPO (Colloquial) (Roman).

Ing-we Jing-ming se-sih shü-kæn-zông tao ka-go din-di, we s-lôh Gyi-zì-go doh-ylang ng-ta, s-teh væn-pah siang-sing Gyi cü-kwu feh-we mih-diao, tu hao teh-djôh üong-yün weh-ming.

145-148. CHINESE.

145. Swatow (Colloquial).

起頭的時候，耶華創造天地。

(Gen. 1. 1.)

146. Shanghai (Colloquial).

因爲神愛世界上人，造於實蓋，拿伊獨養兒子，賞撥伊拉，以致凡係相信兒子人，勿滅脫佬得着永生。

147. Soochow (Colloquial).

因爲神實蓋愛世界上人，至於拿俚獨養兒子，賞撥俚篤，以致凡係相信俚人，勿滅脫倒得着永生。

148. AMOY (Colloquial) (Roman).

Siông-tè chiong tók-si^a ê Kia^a siu^a sù sè-kan, hō sin i ê lâng m̄ sai tīm-lūn oē tit-tiōh eng-oāh; .I thia^a sè-kan ê lâng kàu án-ni.

151. SHANGHAI (Colloquial) (Roman).

Iung-wæ' Zung Juk se' s'-ka long' kuk niung lau, soong' pæh ye kuk dôk 'yang Nie-'ta, s' fæh kiú sa' niung, siang-sing' ye mæh, fæh mih-t'seh lau, tuk-dzak 'loong-'yô^a wzeh la'.

152. SWATOW (Colloquial) (Roman).

Uá ai^a khi-sin lái-khū uá-pē-kò, käng i tá^a, Pē a, uá tit-tsuē-tiéh thi^a kuá tō lú mìn-tsò^a.— (Luke xv. 18.)

153-154. CHINESE.

153. HAKKA (Colloquial) (Roman).

Thai -fam' yu, sin-khu', khai, tshun, -tam, kai' nyin, hau' loi, tshyu, nai, nai, pin, ni, phin, -on. — (Matt. xi. 28.)

154. CANTON (Colloquial) (Roman).

No^t tsuⁿ, fān, hu' to' no^t lo^t tau² ko' su², tu² khu^t wa²: a' pa, no^t tak, tsui² thin, kuⁿ a' pa, ni².— (Luke xv. 18.)

155. CALMUC, or Western Mongolian.

Vertical columns of Mongolian script representing the text of the previous section.

149-152. CHINESE.

149. NANKING (Colloq).

上帝把獨生的兒子，賜給世人，使那信他的人，免得永遠受苦，可以得着長久的生命，上帝愛惜世人如此。

150. CANTON (Colloq).

因爲上帝愛世界，甚至拔佢獨生之子賜過佢地，令但凡信佢嘅，免至滅亡，又得永生。

156. MANCHU.

ᠵᠣᠰᠢᠨ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
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157. MONGOLIAN Literary.

ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
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 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
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158. MONGOLIAN (Colloquial).

ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
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 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
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159. MONGOLIAN (Buriat Colloquial).

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 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ
 ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ ᠮᠣᠩᠭᠣᠯᠢ ᠨᠢᠭᠦᠨ

(See 160, 161, a161 on following page.)

162. JAPANESE (Roman).

Sore, Kami no seken wo itsukushimi-taman koto wa, subete kare wo shinzuru mono, wa horobidzu shite, kagiri naki inochi wo uken tame ni, sono hitori umareishi ko wo tanayeru hodo nari.

163. MALAGASY. (Madagascar.)

Fa izany no nitiavan' Andriamanitra izao tontolo izao, fa nomeny ny Zanani-lahi-tokana, mba tsy ho very izay rehetra mino Azy, fa hahazo fiainana mandrakizay.

164. NARRINYERI. (Australia.)

Lun eflin Jehovah an pornun an Narrinyeri : pempir ile ityan kinauwe Brauwarate, ungunuk korn wurruwarrin ityan, nowaly el itye moru hellangk, tumbewarrin itye kaldowamp.

165. MAORI. (New Zealand.)

Na, kola ano te aroha o te Atua ki te ao, homai ana e ia tana Tamaiti ko tahi, kia kahore ai e mate te tangata e whakapono ana ki a ia, engari kia whiwhi ai ki te oranga tonutanga.

166. NENGONE, or Mare. (Loyalty Isles.)

Wen' o re naeni Makaze hna raton' o re ten' o re aw, ca ile nubonengo me nunuone te o re Tei nubonengo sa so, thu deko di ma tango ko re ngome me sa ci une du nubon, roi di nubone co numu o re waruma tha thu ase ko.

167. LIFU.

Hna tune la hnimi Cahaze kowe la fene hnengödräl, mate nyidati a hamane la Nekö i nyidati ka casi, mate tha tro kö a meci la kete i angete lapaune koi nyida, ngo tro ha hetenyi la mele ka tha ase palua kö.

160. JAPANESE.

しめんが爲あり
 信る者よ亡ることを無して永生を受
 せよ世の人を受し給へり此ハ凡て彼を
 うれ神ハ子の生たまへる獅子を賜ふ

161. CHINO-JAPANESE.

凡信之者免沈淪而得永生
 蓋神愛世甚至以其獨生之子賜之俾

161. CHINO-COREAN.

虛心者福矣以天國乃其國也

Matt. v. 3.

168. IAIAN.

Helang ibetengla anyin Khong ka ang mele-dran, e ame ham Nokon a khaca thibi, me me ca he ka mok ke at ame labageju kau, kame he ka hu moat ame ca ba balua.

169. ANEITYUM. (New Hebrides.)

Is um ucce naiheuc vai iji pece asega o Atua is abraí Inhal o un is eti ache alen, va eri eti ememas a ilpu atimi asgelg iran asega, jam leh nital umoh iran ineig inyí tí lep tí.

170. EROMANCA.

Múve kîmi, mô mumpi òvun nûrië enyx, òvun numpûn lô sù, wumbaptisò iranda ra nin eni Itemen, Im ra nin eni Netni, Im ra nin eni Naviat Tumpora.—Matt. 28: 19.

171. FATE.

Leatu ki nrum emeromina nin, tewan kin ki tubulua Nain iskelmau i mai, nag sernatamol nag ru seralesok os ruk fo tu mat mou, me ruk fo blatlaka nagmollen nag i tok kai tok mou tok.

172. FIJI.

Ni sa lomani ira vaka ko na Kalou na kai vuravura, me solia kina na Luvona e dua bauga sa vakasikavi, me kakua ni rusa ko ira yadua sa vakabauti koya, me ra rawata ga na bula tawa mudu.

173. ROTUMAN.

Ne e fuamamau ne hanis on Oilitu se rantei, ia na on Lee escama, la se raksa teu ne lelea ne maa se ia, la iris po ma ke mauri seesgataaga.

174. TONGAN. (Friendly Islands.)

He nae ofa behe ae Otua ki mama ni, naa ne foaki hono Alo be taha nae fakatubu, koeuhi ko ia kotoabe e tui kiate ia ke oua naa auha. kae ma'u ae moui taegata.

175. NIEUÉ, or Savage Island.

Nukua pihia mai e fakaalofa he Atua mai ke he lalolagi, kus ta mai ai hana Tama fuataha, kia nakai mate taha ne tua kia ia, ka kia moua e ia e moui tukulagi.

176. SAMOAN. (Navigator's Island.)

Auâ ua faapea lava ona alofa mai o le Atua i le lalolagi, ua ia su mai ai lona Atalii e toataa, ina ia le fano se tasi e faatuatua ia te ia, a ia maua e ia le ola e faavavau.

177. RAROTONGAN. (Cook's Island.)

I aroa mai te Atua i to te ao nei, kua tae rava ki te oronga anga mai i tana Tamaiti anau tai, kia kore e mate te akarongo iaia, kia rauka ra te ora mutu kore.

178. TAHITIAN. (Society Islands.)

I aroha mai te Atua i to te ao, e ua tae roa i te horoa mai i ta'na Tamaiti fanau tahî, ia ore la pohe te faaroo la 'na ra, ia roaa râ te ora mure ore.

179. MARQUESAN.

Ua kaoha nui mai te Atua i to te aomaama nei, noeia, ua tuu mai oia i taia Tama fanautahi, ia mate koe te enata i haatia ia ia, atia, ia kooa ia ia te pohoe mau ana'tu.

180. EBON. (Marshall Islands.)

Bwe an Anij yokwe lol, einwot bwe E ar letok juon wot Nejin E ar keutak, bwe jabrewot eo ej tomak kin E e jamin joko, a e naj mour in dri.

181. KUSAIEN. (Strong's Island.)

Tu God el lunsel fwalu ou ini, tu el kitamu Mwen siewunu isusla natal, tu met e nu kemwu su lalalfuni k'el elos tiu mise, a mol lalos mapatpat.

182. GILBERT ISLANDS.

Ba e bati taviran te somata iroun te Atua, ma nala are e ana Natina ae te rikitemana, ba e aona n aki mate ane onimakina, ma e na malu n aki toki.

183. PONAPE. (*Ascension Island.*)

Pue Kot me kupura jappa ie me a ki to ki Na ieroj eu, pue me pojon la i, en ter me la, a en me maur jo tuk.

184. MORTLOCK.

Pue an Kot a tane fanufan mi rapur, ie mi a nanai na an Alaman, pue monison mi luku i ra te pait mual ia, pue ra pue ueral manau samur.

185. HAWAIIAN. (*Sandwich Islands.*)

No ka mea, ua aloha nui mai ke Akua i ko ke ao nei, nolaila, ua haawi mai ola i kana Keiki hiwahiwa, i ole e make ka mea manaolo ia ia, aka, e loaia ia ia ke ola mau loa.

186. ETHIOPIC.

አስዎ፡ ነዎዘ፡ ለፍቆር፡ አገዛድብሔር፡
ለዓለቆ፡ አስዘ፡ ወልቆ፡ ቀሕቆ፡ ወሀባ፡ ባዛ፡
ነዎ፡ ነሉ፡ ከገለቆን፡ ቦቶ፡ ኢየሱስ፡
አላ፡ ደረገብ፡ ሕይወት፡ ዘለዓለቆ፡

187. AMHARIC. (*Abyssinia.*)

አገዛድብሔር፡ አንድሁ፡ ዓለሙን፡ ወድቀል፡
አንድ፡ ልጁን፡ አስባለውቆ፡ ድረስ፡ በርሱ፡
ዎቶ፡ ሁሉ፡ አንደደገ፡ ያለለቆ፡
ሕይወት፡ ትሆንለት፡ ዘንድ፡ አንድ፡

188. TIGRE. (*Abyssinia.*)

ነዋዘው፡ ላትወ፡ አገዛድብሔር፡ ንዓ
ለቆ፡ ክሳብ፡ ከሀባ፡ ብሕቶ፡ ንከተወልቆ፡
ወደ፡ ከደገ፡ ነሉ፡ ዘለቆን፡
ብኣኡ፡ ክትቶቶ፡ አቆባር፡ ሕይወት፡
ዘለዓለቆ፡

189. COPTIC. (*Egypt.*)

Πατρις τας ἀφ᾽ ἡμερες πικροσμος
εωστε περσωνρι μελαγατq η̄τεqτην̄q
ε̄νια οτοπυβελ ε̄οναε̄q ἕροq η̄τεq-
ῡτεμτακο αλλα η̄τεqβι η̄οτωλ̄δ
η̄ε̄νεq.

190. GALLA. (*South of Abyssinia.*)

Waka akana tshalate tshira alami, Umasa tokitsha aka keñe, kan isati amāne aka hembāne, tshenan feia aka tauffe garra duri.

191. KINIKI.

Nāo oesi agomba, hikara uwe ni mana wa Mulungu? aka gomba, muimui munaamba, ni mimi endimi.—*Luke 22*: 70.

192. SWAHILI. (*E. Coast of Africa.*)

Kwani ndivyo Muungu alivyopenda ulimwengu, akatoa na Mwana wake wa pekee, illi wote wamwaminio waupate uzima wa millele wala wasipotee.

193. SECHUANA. (*South Africa.*)

Gone Morimo o lo oa rata lehatal yalo, ka o lo oa naea Moroa ona eo o tšecofi a le esi, gore moñue le moñue eo o rumelañi mo go èna, a si ka a hēla, mi a ne le botselo yo bo sa khutlefi.

194. SESUTO.

Gobane Molimo o ratile lefatše hakālo, o le nelle Mora oa oona a tsuetseng a 'notsi; gore e mong le e mong a lumelang go èna, a se ke a fēla, a mpe a be le bophēlo bo sa feleng.

195. ZULU. (*South Africa.*)

Ngokuba uTixo wa li tanda kangaka izwe, wa li nika inDodana yake ezelweyo yodwa, ukuba bonke aba kolwa kuyo ba nga bubli, kodwa ba be nobomi obungapeliyo.

196. OTIYEHHERERO. (*South Africa.*)

Me serekarere omuhingo: Yehova ua tyere ku ami; "Ove omuatye uandye, m'eyuva ndi mbe ku koatere."—*Psalms 2*: 7.

197. KAFIR. (*South Africa.*)

Ngokuba UTixo walltanda ilizwe kangaka, wada wanika unyana wake okupela kwozelweyo, ukuze osukuba ekolwa kuye angabubli, koko abe nobomi obungunapakade.

198. DAMARA. (*South Africa.*)

Omukuru oty'a suverere ouye, kutya e ua opere mukoateua ue erike, auhe ngu mu kampura mu ye, ope ha panyara, nokutya ga kare nomuinyo bu ha yanda.

199. NAMACQUA. (*South Africa.*)

||Natigoseb gum Eloba ihūb-ciba gye Inamo, ob gye llēib di lguise Inai hā lgōaba gye ma, llēib Ina ra tgomn hoan gā-llō tite se, χawen ni lamō ūiba ū-ha se. Digitized by Google

200. DUALLA. (West Africa.)

Loba lo bo wasi ndulo, na a boli mpom mau mo Muna, na motu na motu nyi dube tenge na mo, a si manyami, 'ndi a ma bene longe la bwindia.

201. IBO. (West Africa.)

Ma otukha Tidku hjaru Un'-wana na daga, ma ya nyere ota pli Oparaya, ma onye gwama kwereya, ogagi efu, ma ya ewete ndu ebigodi.

202. HAUSSA. (West Africa.)

Don Alla ya so dunia hakkaman ši ya bada Dansa nafari, en kowa ya yirda dāši, ba ši gbata ba, amma ši yi rai hal abbada.

203. NUPE. (West Africa.)

Lugo rbayetinye un nan atsi eye ezabo, a-a-le etun wangi 'yeye, a-fe dāzin yebo ndaye nam dan alidzana nan.—(Matt. v. 16.)

204. YORUBA. (West Africa.)

{Nitori ti Olorun fe araiye tobḡ gḡ, ti o fi Omḡ bibi re nikansoso fun ni pe, enikeni ti o bu gba a gbḡ ki yio segbḡ, sugbon yio ni lye ti ko nipḡkun.

205. ACCRA, or Ga. (West Africa.)

Si neke Nyongmo sumo dso le, ake e ngḡ o bi kome, ni a fo le, e ha, koni mofemo, ni leu e no yeḡ le, hie a ka kpata, si o na nanḡ wola.

206. TSCHI, or Twi. (West Africa.)

Na senea Onyankḡponḡ do wiase ni, se ḡ odo ne ba a ḡwoo no koro mac, na obiara a ogye no di no anyera, na wanyā dā ukwā.

207. MANDINGO. (West Africa.)

Katuko Alla ye dunya kaunu nyinuyama, an ading wulukilering di, mensating mo-omo men lata ala, ate tinyala, barri asi balu abadaring sotto.

208. MENDE. (West Africa.)

Gbamaili Nyhoo iye lpi lo al a ndsloi, ta lo i ngi lpi gabepi vni, iye jani; ta lo nūmai gbi lo ngi hua lo a tnya, ḡ lḡkū, kḡ kūnaso lḡon lo a ig.

209. TEMNE. (West Africa.)

Tis yo K'aru o pot. bilar ara-rū, hā o sūdā Ow'ān-ḡḡa ḡ kom gbo sdn, kama w'ani ḡ w'ani, sūdā lāng-kḡ, ḡ tē dinn; kḡḡ kama ḡ sūto a-nūḡḡam aladāna.

210. BENGA. (West Africa.)

Kakana ndi Anyambḡ a tādāki be, kḡ Mā-a vḡ Mwan'aju umbākā, na, ušhḡpi a ka kamidḡ Mā, a nyange, ndi a na emḡnā ya egombe yḡshḡpi.

211. GREBO. (West Africa.)

Kāre kro Nyesoa nuna konā āh nowānena, ā lnyina ā sḡyḡ āh kḡkā-yu donh, be nyā be ā po nā hanhte, ā neh te wanh, nḡma ā mu konā-se-honhnonh kḡ.

212. MPONGWE. (West Africa.)

Kānde Anyambiḡ arāndi ntye yinlā nli ntāndinli mḡ avenliḡ Oḡwanli yḡ wikika, inlḡ om' edu o beklḡḡ avere, ndo e be doanla n'efḡniā zakānlakā.

213. DIKELE. (West Africa.)

Nadiambillindī Anyambiḡ a midinh pḡnzhe nyi na thadinh thatī thḡ tha yḡ mivḡ Miana ngwḡl ngwadikika, na mutyi jḡshḡ ngwa yḡ bundliḡ a tyi magwa, nji a bḡ' na thaki' th' adukwa jeshḡ.

214. GALLA. (South of Abyssinia.)

ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ :: ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ :: ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ :: ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ : ḡḡḡḡ ::

215. BULLOM. (Near Sierra Leone.)

Ntunky kandirr no tre kḡ aniah ḡboll, leh ngha ngha keh mpant no nkeleng, nu kulluh papah no, wonno cheh ko kḡ foy.—(Matt. v. 16.)

216. EWE. (Gold Coast.)

Ke si ke nenḡm Mawu elḡa xexe la me, bena etso ye nḡto vidsidsi deka he na, ne amḡ sya amḡ, si exo edsi ese ko la, mele tḡotḡro ge wḡ, nekpe wḡakpo agbḡ mavḡ la.

217. BERBER. North Africa.

مَدَنِيَّ عَلَّمَ كُنُو ذِمَوْنِ اَللّٰهُمَّ عَسَمْتَ اَنْتَجَمَ اَرُو
اَنْوَنَ المَعَطِ الْعَالِ اَعْقَدَشِيْ اَمْبَابِعَوْنِ اَعْقَدْنَاوْ
(Luke xl. 18.) اَذِيْبِكَ الرَّحَّ الْعَالِ اَبَانَ اَعْتَسَفْسِنِ

218. GREENLAND.

Sillarsūb 'Innue Gudib talma assakigel, Ernetue tunnillugo taukkongung, tamarmak taursumunga opertut tammarkonnagit, naksau-ngitsomigle inunursutekarkollugit.

237. MEXICAN, or Aztec.

Ni mohuaz yhuan ni az campá cá in no tâtzin yhuan nic ilhuiz: No tâtzin é, oni tlâtlacô ihuicopa in ilhuicatl yhuan mixpan tûhuatl.—(Luke xv. 18.)

238. NEGRO-ENGLISH. (Surinam.)

Bikasi na so fasi Gado ben lobbi kôndre, va a gi da wan Pikien va hem, va dem allamal, dlesi briebl na hem, no sa go lasi, ma va dem habi da Liebi vo tehgo.

239. CREOLESE. (West Indies.)

Want soo Godt ka hab die Weereld lief, dat hem ka giev sie eenig gebooren Soon, dat selle almael die gloov na hem, no sal kom verlooren, maer sal hab die ewig Leven.

240. AYMARA. (Peru.)

Hucama Dlosaja mundo munana, sapa Yokapa quitani, taque haquenaca iau-airi ifiayan hacafia-pataqui.

241. ARRAWACK. (Guiana.)

Lui ké udufa abba Wadili uria karajakubá je namaqua Wunabu ubannamámutti, nassi-koattoanti tahu Wunabu ubaifamün. Lui ké-wal asikissia namün ikissihü, pattahü na kakünti, hallidi na kassikoanibia ba ukunnamün.—Acts 17: 23.

242. QUICHUAN. (Argentina.)

Pachacamackca chicutami runacunata munarca, chay Zapallay-Churinta kokcurca, tucuy paypi yfili, mana huafunanpac, ufiay causay-tari apinanpac.

BIBLE HOUSE, NEW YORK CITY. The noble edifice, shown in the accompanying illustration, stands by itself on an open square, bounded by Astor Place, Fourth Avenue, Ninth Street, and Third Avenue, New York city; it covers an area of about three-quarters of an acre, and has a circumference of over seven hundred feet. In the view here given, the shaded, or right front, is on Astor Place; the left, or light front, is on Fourth Avenue. The building is of brick, with freestone copings, and, without being in any way extravagant in



BIBLE HOUSE, NEW YORK.

architectural embellishment, it commands attention by its magnitude, its admirable proportions, and its chaste and attractive finish. No part of the money needed to meet the large cost of the site and of the edifice was drawn from the contributions made for the support of the general work of the society. Generous subscriptions were made to the building fund by friends of the cause, and the balance of indebtedness was early met by the receipts from the rent of such portions of the building as were not needed for the use of the business of the society. The entire edifice is a monument to the liberality of all who contributed toward its erection.

BIBLIA PAUPERUM, or BIBLE OF THE POOR, was a sort of picture book of the Middle Ages, giv-

ing the leading events of human salvation through Christ, each picture being accompanied by an illustrative text in Latin. See Britannica, Vol. III, p. 653. A similar work on a more extended scale, with the text in rhyme, was called *Speculum Humanæ Salvationis*, or *Mirror of Human Salvation*. Before the Reformation these two books were the chief text-books used, especially by monks, in preaching. Many manuscripts are preserved in different languages, several as old as the 13th century. The pictures were copied in sculptures, altar-pieces, etc. The chief proof for the invention of printing by Koster in Haarlem rests on the first impressions of the *Speculum Humanæ Salvationis*.

BIBLE SOCIETIES OF THE WORLD. The following is a compendium of different Bible Societies of the world, compiled from the lists reported to the American and British and Foreign Bible Societies to Jan. 1, 1891. It shows the dates of organization and the total number of copies of the Scriptures issued severally by the various societies so far as reported up to March 31, 1890. The circulation reported by the British and Foreign Bible Society includes the issues by the various Bible Societies of India, amounting to a total from those societies of 8,534,533 copies:

	Total Issues.
American Bible Society, 1816.....	52,736,075
American and Foreign Bible Society, 1837.....	2,298,665
American Bible Union, 1850.....	608,184
Bible Association of Friends in America, 1830.....	154,481
British and Foreign Bible Society, 1804.....	128,920,046
National Bible Society of Scotland, 1861.....	11,863,941
Hibernian Bible Society.....	4,968,450
Trinitarian Bible Society, in 1834-35.....	261,426
Basle Bible Society, 1804.....	812,567
Prussian Bible Society, at Berlin, 1814.....	5,269,261
Swedish Bible Society, 1809.....	1,056,577
Finnish Bible Society, at Abo, 1812.....	289,373
Russian Bible Society, St. Petersburg, 1812.....	861,105
Württemberg Bible Society, 1812.....	1,757,526
Zurich Bible Society, 1812.....	82,972
Berg Bible Society, at Elberfeld, 1812.....	847,249
Colre Bible Society, 1813.....	12,267
St. Gall Bible Society, 1813.....	77,669
Schaffhausen Bible Society, 1813.....	30,077
Danish Bible Society, 1814.....	404,728
Geneva Bible Society, 1814.....	147,323
Hamburg-Altona Bible Society, 1814.....	217,008
Hanover Bible Society, 1814.....	200,000
Lausanne Bible Society, 1814.....	227,667
Lubeck Bible Society, 1814.....	40,000
Saxon Bible Society, 1814, at Dresden.....	745,000
Argovian Bible Society, 1815.....	45,229

	Total Issues.
Bremen Bible Society, 1815	90,000
Brunswick Bible Society, 1815	6,812
Icelandic Bible Society, 1815	10,445
Netherlands Bible Society, 1815	1,678,688
Schleswick-Holstein Bible Society, 1815	196,450
Strasburg Bible Society, 1816	117,830
Frankfort Bible Society, 1816	75,000
Laenaburg-Ratzeburg Bible Society, 1816	82,567
Lippe-Deimold Bible Society, 1816	37,199
Neufchatel Bible Society, 1816	37,048
Norwegian Bible Society, 1816	440,075
Rostock Bible Society, 1816	19,408
Waldensian Bible Society, at La Tour, 1816	4,288
Berne Bible Society	267,650
Eutin Bible Society, for the Principality of Lubeck, 1817	15,000
Hesse-Darmstadt Bible Society, 1817	81,484
Waldeck and Fyrmont Bible Society, 1817	2,900
Kisenach Bible Society, 1818	15,000
Gottingen Bible Society, 1818	41,000
Mulhausen Bible Society, 1818	61,071
Hanau Bible Society, 1818	8,216
Hesse-Cassel Bible Society, 1818	30,000
Protestant Bible Society, at Paris, 1818	868,190
Leipzig Bible Society, 1818	85,000
Glarus Bible Society, 1819	5,000
Ionian Bible Society, at Corfu, 1819	7,377
Marburg Bible Society, 1819	22,450
Colmar Bible Society, 1820	97,741
Duchy of Baden Bible Society, 1820	90,320
Anhalt-Bernburg Bible Society, 1821	4,786
Weimar Bible Society, 1821	7,236
Bavarian Protestant Bible Institution, at Nuremberg, 1823	891,412
Stavanger Bible Society, 1823	7,017
French and Foreign Bible Society, at Paris, 1823	750,000
Antwerp Bible Society, 1824	439
Belgian and Foreign Bible Society	7,638
Ghent Bible Society, 1824	8,980
Anhalt-Desau Bible Society, 1826	31,008
Belgian Bible Associations, 1829	14,909
Altenberg Bible Society, 1834	24,100
Bible Society of France, 1834	558,149
Russian Evangelical Bible Society, at St. Petersburg, 1831	1,025,467
Imperial Russian Bible Society, at St. Petersburg, 1833	1,223,044

The British and Foreign Bible Society reported March 31, 1890, a list of 3,279 auxiliary and branch Bible societies; the American Bible Society at the same reported a list of 2,034, aggregating a total of 5,313 auxiliary and branch societies which are connected with those two parent societies, and whose names are not given in the foregoing list. The number of branch and auxiliary societies connected with other parent organizations cannot be given, as some of them have published no recent statistical reports. The Russian Bible Society, previous to its suspension by imperial ukase in 1826, had 289 auxiliaries. As most of the auxiliaries embraced in the figures given above report subordinate societies representing smaller territorial districts, it is estimated that the number of distinctive Bible organizations, including auxiliaries, in the world probably exceeds 10,000.

BIBLIOMANCY, a mode of divination much practiced during many ages by opening the Bible and observing the first passage that occurred, or by taking notice of the first words of the Bible heard after entering a place of worship. The application was often very fanciful. Prayer and fasting were sometimes used as a preparation for a mode of consulting the Divine oracles, than which nothing could be more contrary to their purpose and spirit, and which was in harmony only with the notions and practices of heathenism. It was prohibited under pain of excommunication by the Council of Vannes, A. D. 465, and by the Councils of Agde and Orleans in the next century. It continued, however, to prevail many centuries after, and was introduced into England at the Norman Conquest. It was essentially the same as the *Sortes Virgilianæ*, the only difference being the book employed.

BIBLIOMANIA (from Gr. *biblion*, "a book," and *mania*, "madness") may be defined as a passion for collecting and hoarding rare or curious books. The

last century and a half has witnessed a marked manifestation of this taste both in Europe and in the United States. The bibliomaniac values books, not alone for their intrinsic worth, but for their scarcity, their age, their binding, and even for some grave blemish. Even a very common book takes on a fictitious value in the collector's eyes if it be the only known copy in existence, or be printed in black letter, or have the stamp affixed of some long dead but famous binder. The formation of complete sets of such books, or of the works of a single author, provided they be rare, is a favorite pursuit with many. The editions of the classic writers most affected by collectors are the beautiful *Elzevirs* and the *Foulises*. Some of these have, at various times, brought fabulous prices. As much as £3,900 has been paid for a Mazarin Bible, and the first dated copy of Boccaccio's *Decamerone*, 1471, was sold for £2,280. A psalter, printed by Fust and Schöffer in 1459, fetched £4,950 at a sale in London in 1885. A copy of the Guttenberg Bible in two volumes, printed in 1455, the first book printed from movable type, was purchased at the Brayton Ives sale in New York, March 14, 1891, by J. W. Ellsworth, of Chicago, for \$14,800. Such books as these are valued solely on account of their antiquity; works of a later date are prized on account of their beauty or fine workmanship. See *Britannica*, Vol. III, pp. 654, 655.

BICARBONATES differ from carbonates in containing twice as much carbonic acid. Bicarburets, bisulphurets and bitartrates are words formed on the same plan; but in recent chemical nomenclature the prefix *bi-* has been superseded by *di-*.

BICE, the name of two pigments, of a blue and green color respectively, known to artists from the earliest times. Both are native carbonates of copper, but are also prepared artificially. In its native state, however, bice is more durable, and in the case of green is especially much more brilliant. Artificial blue bice is known as Hambro blue, mineral blue, etc.; artificial green bice, as mountain green, Paul Veronese green and emerald green.

BICEPS, the muscle which gives a full appearance to the front of the arm. Above it consists of two portions or heads—whence its name—one being attached to the coracoid process of the scapula, the other to the margin of the depression on that bone which lodges the head of the humerus. The former is the short, the latter the long, head of the biceps. They unite to form a fleshy belly, which terminates in a rounded tendon. The biceps tendon is inserted into the tubercle of the radius. Before passing to this insertion it gives off an expansion, which separates the medium basilic vein from the brachial artery in the situation generally selected for venesection. The action of the biceps is rapidly to bend the forearm and also to supinate the hand.

BICESTER, a market town of Oxfordshire, England, 12 miles northeast of Oxford. There are manufactories of rope, clothing, sacking and pale ale, and several important fairs are annually held here. The ruins of *Alia Castra*, or Alcester, lie $1\frac{1}{2}$ miles to the southwest, on the ancient Roman Ake-man Street. Population, 3,300.

BICETRE, originally the name of a very old castle, in the neighborhood of Paris, commanding one of the finest views of the city, the Seine, and the environs. It was destroyed in 1632, because it had become the hiding place of thieves. It was rebuilt by Louis XIII, and made a hospital for old soldiers. Afterwards it served as a prison for 2,000 culprits, mostly condemned to the galleys, as well as a hospital for incurable lunatics. Wool-spinning and glass-polishing are carried on in the building.

BICKERSTAFF, ISAAC, an author of numerous comedies and light musical pieces, which had at one time a great popularity. He was born in Ireland in 1735. He became page to Lord Chesterfield and was afterwards an officer of marines, but was dismissed. Nothing is certainly known regarding his after life. His best known pieces are *The Maid of the Mill*; *The Padlock*; *He Would if He Could*; *Love in a Village*; *The Hypocrite*, and *The Captive*.

BICYCLE. Besides the ordinary bicycle described in *Britannica*, Vol. III, p. 665, consisting of a large wheel followed by a small one, several varieties have been introduced, the general purpose of which is the rider's safety. In one of these the wheels are reversed, the motive power being transmitted to the large wheel by levers and the small front wheel being used for steering. Others have smaller driving-wheels than usual, and are therefore lower, and the motive power is transmitted from pedal-levers to the axle by endless chains or secondary cranks.

The introduction of the pneumatic tire in 1890 resulted in a marvelous improvement in speed at both short and long distances, whether on path, road or grass. This is a large, hollow, India-rubber tire filled with compressed air. A modification of this, known as the cushion, also adopted in 1890, is a strong, hollow, India-rubber tire several times larger in diameter than the usual solid tire.

The present record, 1891, for one hour, is 22 miles, 620 yards; for two hours, 41 miles, 1,180 yards; for three hours, 60 miles, 1,255 yards. The following are the present best records for given distances:

Miles $\frac{1}{4}$	Hr. 0	Min. 0	Sec. 31
Miles $\frac{1}{2}$	Hr. 0	Min. 1	Sec. 8
Miles 1	Hr. 0	Min. 2	Sec. 20
Miles 2	Hr. 0	Min. 4	Sec. 59
Miles 3	Hr. 0	Min. 7	Sec. 38
Miles 4	Hr. 0	Min. 10	Sec. 18
Miles 5	Hr. 0	Min. 12	Sec. 54
Miles 10	Hr. 0	Min. 26	Sec. 41
Miles 20	Hr. 0	Min. 53	Sec. 45
Miles 50	Hr. 2	Min. 25	Sec. 26
Miles 100	Hr. 5	Min. 50	Sec. 5

BIDA, ALEXANDRE, an eminent French artist, born at Toulouse in 1823. He was a pupil of Delacroix. He became a member of the Legion of Honor in 1855, and an officer of the Legion in 1870. Among his principal works are a series of designs, in two volumes, illustrating the Evangelists, and a water-color painting, *The Massacre of the Mamelukes*, the property of the Metropolitan Museum of Art, New York.

BIDAR, a town in the Nizam's dominions, situated near the right bank of the Manjera, a tributary of the Godavery, 75 miles northwest of Hyderabad. Formerly a place of importance, it is now remarkable chiefly for its manufactures in a compound metal made of tin, copper, lead and zinc, and called bidderyware. This industry has been of late declining. The district of Bidar has an area of 4,884 square miles, and a population of 80,000.

BIDASON, a river which, rising in Spain, forms the boundary between Spain and France and falls into the Bay of Biscay, at Fuenterrabia. The treaty of the Pyrenees was concluded on an island in its mouth in 1659.

BIDDEFORD, a city of Maine, in the county of York, situated at Saco Falls, on the Saco River, six miles from the ocean. The city has an abundant supply of pure water, is well lighted with gas and electricity, has an electric fire alarm and street railways, and excellent schools. The high school building, erected in 1888 at a cost of \$50,000, is one

of the best in the State. Superior granite is found in the vicinity in inexhaustible quantities. The Lincoln Monument, at Springfield, Ill., is built of this granite. Biddeford was first settled in 1616, incorporated as a town in 1718, and as a city in 1855. Population in 1890, 14,418.

BIDDING—PRAYER, a form of exhortation, always concluding with the Lord's Prayer, enjoined by the 55th canon of the Anglican church in 1603, to be used before all sermons and homilies. Except in cathedrals and the university churches, it is now seldom used. The term is from the Anglo-Saxon *biddan*, "to pray," so that bidding-prayer is really pleonastic; but after the 16th century the word *bidding* came to be popularly regarded as an adjective, or *bidding-prayer* as a compound; a prayer which directs what is to be prayed for. The form is of extreme antiquity, and was anciently used for the communicants or believers after the dismissal of the catechumens, and was pronounced by the deacon, each petition beginning with the words, "Let us pray for," etc.

BIDDLE, CLEMENT, "Quaker soldier," born in Philadelphia, May 10, 1740, died there July 14, 1814. His parents were Quakers, and he was brought up with much strictness. Mr. Biddle, at the head of a company of Quakers and others, repelled a force of desperadoes in 1764, and from that time was active in all military actions of the day. He was a soldier of the Revolutionary War, and present at the battles of Princeton, Germantown, Brandywine and Monmouth. After the war he held important public offices. He was a personal friend of General Washington.

BIDDLE, JAMES, born at Philadelphia in 1783, died there Oct. 1, 1848. He entered the navy and saw service on board the *Philadelphia* and *Wasp*, and was commander of the captured *Frolic*. He was made prisoner near Tripoli, while on board the wrecked *Philadelphia*, and just after receiving command of the *Frolic*, the ship and crew fell into British hands. On being exchanged Captain Biddle's rank was raised and he was given command of the *Hornet*. He captured the *Penquin*, and then sailed for the Cape of Good Hope. He had a narrow escape from a British ship of war, which followed so closely that he had to throw his guns overboard. On returning to New York many honors were bestowed on him for his fine seamanship and gallant conduct. Subsequently he saw much active service, commanding the Mediterranean squadron in 1831, and in 1845 the East India squadron, which sailed to China to make a treaty with that country.

BIDDLE, NICHOLAS, born at Philadelphia, Sept. 10, 1750, killed in action, March 7, 1778. At the age of thirteen he made a voyage to the West Indies. In 1770 he entered the British navy, but deserted his ship three years later to go with Captain Phipps on an Arctic expedition. On his return he had gained sufficient experience to fit him for the command of a vessel and he was placed in charge of the *Andrea Doria*. From this time to his death Captain Biddle was extremely fortunate in his engagements with British ships. He captured two cruisers off Montauk Point, two transports and several merchantmen near Newfoundland, and four ships near Charleston, South Carolina. On March 7, 1778, while cruising in this vicinity with a fleet of five vessels (his own being the *Randolph*), he fell in with the *Yarmouth*, a heavily armed British vessel. In the action which ensued the *Yarmouth* sustained severe injuries and the *Randolph* was blown up and most of the crew perished. Captain Biddle's death was a great loss to the navy of the young Republic.

BIDDLE, NICHOLAS, financier, and descendant of a famous family several of whose members took

part in the Revolutionary War. He was born at Philadelphia, Jan. 8, 1786, died there, Feb. 27, 1844. He was a precocious youth, and could have graduated at the University of Pennsylvania at the age of thirteen. He graduated from Princeton in 1801, standing at the head of his class. He went abroad as secretary to John Armstrong, minister to France; was directed to audit and pay claims against the nation, using the purchase-money of Louisiana; was secretary for Mr. Monroe when he went as minister to Great Britain. In 1807 he returned home and practiced law, giving his leisure to literary pursuits. He was assistant editor of the "Portfolio," and prepared the report of Lewis and Clark's expedition to the mouth of the Columbia River from their notes. In the legislature to which he was elected in 1810 he originated an educational bill which was so far in advance of the times that it could not be passed till 1836, when a bill similar to it was carried through the legislature. Mr. Biddle was largely influential in rechartering the United States bank. He was appointed a government director, and later president of the bank. In 1829 President Jackson's war on this institution undermined its credit, and a financial panic ensued, which all the efforts of Mr. Biddle were unavailing to ward off. He resigned the presidency in 1839, and the following year the bank failed. Mr. Biddle was a man of great and varied talents, and one who commanded the confidence of all who knew him.

BIEBRICH, a town on the right bank of the Rhine, $2\frac{1}{2}$ miles south of Wiesbaden. It has the castle of the dukes of Nassau, and several factories. Population, 10,000.

BIELA, **WILHELM**, **BARON VON**, a German astronomer, born at Rosla, Prussia, in 1782, died in 1856. He discovered the comet known as Biela's comet. See *Britannica*, Vol. VI, p. 192; Vol. XVI, p. 111.

BIELO-OZERO ("white-lake"), a lake in the government of Novgorod, Russia. It doubtless receives its name from the milky appearance given to its water in stormy weather by the white clay of which its bed is composed.

BIELSHÖHLE, a singular cavern in one of the Harz Mountains, called Bielstein, on the right bank of the Bode, in the duchy of Brunswick, Germany. It was discovered in 1768. The entrance to it is more than 100 feet above the bed of the stream. The cavern is divided into eleven main compartments, and contains a great deal of that curiously freakish work which Nature delights to execute, stalactites.

BIELSK, a town of Russian Poland, 25 miles south of Bialystok. It is situated in a very fertile district watered by the Narev and Nurzek. It is well built, and has a fine custom-house. Population, 10,000.

BIENNE LAKE, a body of water 10 miles long by from 1 to 3 wide, situated in Berne near the foot of the Jura Mountains. It is famous for inclosing the island St. Pierre, where J. J. Rousseau lived in 1765. In the southeastern part of the lake, the submerged, pre-historic remains of a village of lake-dwellers have been found.

BIELZY, a manufacturing town of Russia, about 150 miles northwest of Odessa. It is noted for an annual fair, which is held here.

BIENNIALS, plants which do not blossom the first season of their growth, but flower and bear fruit in the second season, and then die. Plants which in ordinary circumstances are biennials, often become annuals when early sowing, warm weather, or other causes promote the earlier development of a flowering stem. If, on the other hand, the flowering of the plant is prevented, or in many cases, if it is merely prevented from ripening its seed, it will continue to live for a much longer pe-

riod; as, for instance, a bed of parsley, if regularly cut, will remain productive for a number of years.

BIENVILLE, **JEAN BAPTISTE DE**, born in Montreal in 1680, died in 1768. With his brother, Lemoine d'Iberville, he undertook an expedition in 1699, to the mouth of the Mississippi. He was the founder of the city of New Orleans, and was three times appointed governor of Louisiana.

BIERSTADT, **ALBERT**, born in Düsseldorf, Germany, Jan. 7, 1830. His taste for art was early shown, as he made excellent crayon sketches in his youth, and at the age of 20 had begun work in oils. Three years later he went from New Bedford, Mass., where he had been brought up, to his birthplace, spending four years in the study of art, and then going to Rome to further prosecute his studies. In 1857 he returned to America, making an extensive tour through the West, where he obtained material for many subsequent paintings. He has three times visited Europe, and has had many honors conferred upon him both at home and abroad. Bierstadt is famous for his pictures of mountain scenery. *Laramie Peak, Looking Down the Yosemite, Valley of the Yosemite, In the Rocky Mountains, and California Oaks*, are among his best-known works.

BIERVLIET, a village of the Netherlands, province of Zeeland, 73 miles east-northeast of Sluis. It was the birthplace of William Beukels, who, in 1886, invented the method of curing herrings. In 1877 Biervliet was detached from the mainland by an inundation and still remains insular.

BIES-BOSCH, a marshy sheet of water of the Netherlands, between the provinces North Brabant and South Holland, formed in November, 1421, by an inundation which destroyed 72 villages and 100,000 people, and forming that part of the estuary of the Maas called Holland's Diep.

BIGA, a Roman term applied in ancient times to vehicles drawn by two horses abreast. In shape it resembled the Greek war-chariot—a short body on two wheels, low and open behind, where the charioteer entered, but higher and closed in front.

BIGAMY. See *Britannica*, Vol. III., pp. 668-69. In the United States, the principal points of difference between the laws of the various individual States are, as to whether the offense is indictable in the State in which the ceremony of marriage takes place or in that in which the bigamous parties actually cohabit, and, further, as to whether a ceremonial marriage must be established at all. Otherwise, the general principles of the common law holds good either by usage or by statutory enactment, in all the States alike.

BIG BETHEL, a locality in Virginia, about 10 miles northwest of Fortress Monroe. It was the scene of an engagement, June 10, 1861, in which a body of Union troops, being sent by General Butler to dislodge a detachment of Confederates commanded by General Magruder, were repulsed with considerable loss.

BIG BLACK RIVER, an affluent of the Mississippi, which it enters at Grand Gulf. It is about 200 miles in length, and is navigable for about 50 miles. Its banks were the scene of important military operations in connection with the taking of Vicksburg in 1863. At a bridge crossing the river about 15 miles east of that city, the Union forces under General Grant carried the works of the Confederates under General Pemberton, May 17, capturing all on the east side and driving those on the west bank to their final retreat within the defenses of Vicksburg.

BIG BONE LICK, a saline spring of Kentucky, about 12 miles south of Burlington. It is noted for the numerous bones found here of the mastodon and other extinct animals, which are believed to

have come to "lick" the salt and to have perished in the then marshy soil.

BIGELOW, ERASTUS BRIGHAM, born at West Boylston, Mass., April 2, 1814, died at Boston, Dec. 6, 1879. His father, a cotton weaver, intended he should study medicine, but Erastus turned his attention to invention. In this field, toward which he had a peculiar bent, he was successful. Some of his inventions were a hand-loom for suspender-webbing, an automatic loom for weaving fine counterpanes, a loom for weaving coach-lace, and power looms for the weaving of two-ply ingrain carpets, tapestry and tapestry velvet carpets. He did much to further the prosperity of Clinton, Mass., was a writer on the protective tariff, author of a work on stenography, and a member of the Boston Historical Society.

BIGELOW, JACOB, born at Sudbury, Mass., Feb. 27, 1787, died at Boston, Jan. 10, 1879. He was a Harvard graduate and a physician of Boston. Being a famous botanist, he was chosen as one of a committee of five to form the American Pharmacopœia. He had an extensive correspondence with scientific men of Europe, several of whom named plants for him. For 20 years he was physician of the Massachusetts General Hospital, for 40 years professor of *materia medica* in Harvard, and from 1816 to 1827 held the Rumford professorship in the college. For many years he was president of the Massachusetts Medical Society and of the American Academy of Arts and Sciences. Dr. Bigelow was interested in educational work, and labored for the establishment of technical schools. He contributed articles for magazines, and wrote several books, some of which were: *Florula Bostoniensis*, *Elements of Technology*, *History of Mount Auburn* (he was the founder of this cemetery), and *Nature in Disease*.

BIGELOW, JOHN, journalist, born at Malden, N. Y., Nov. 25, 1817. He was a graduate of Union College and practiced law in New York. He left the law and entered journalism. He edited "The Plebeian" and the "Democratic Review;" was inspector of Sing Sing prison; partner with William Cullen Bryant in the "Evening Post;" minister to France (1865-67); secretary of the State of New York (1867-68); made an honorary member of the New York Chamber of Commerce (1886); and trustee of Samuel J. Tilden's estate.

BIGG, or BIG BARLEY, a local name for a kind of winter barley grown in Northern Europe, especially in Scotland. It is the common bere, or four-rowed barley, *Hordeum vulgare*.

BIGGAR, a town of Lanarkshire, situated 28 miles southwest of Edinburgh, with which it has connection by rail. The Collegiate Church of St. Mary was founded in 1545; of Boghall Castle, the seat of the great Fleming family, hardly a vestige remains. Dr. John Brown, author of *Rab and His Friends*, was born in the United Presbyterian manse; and John Gladstones (1693-1756), great-grandfather of W. E. Gladstone, is buried in the churchyard. Population, 1,556.

BIGGLESWADE, a market-town at Bedfordshire, 41 miles northwest of London by rail. It is a great corn market. Population, 4,947.

BIG HORN, a navigable river of the United States, and the largest affluent of the Yellowstone, rises near Fremont's Peak in the Rocky Mountains, in the northwest of Wyoming, and has a course of about 350 miles.

BIGHT: in nautical language, the bent or doubled part of a rope. Thus one anchor may "hook the bight" of the cable of another, and thereby cause entanglement. In geography bight has much the same sense as "bay."

BIGNONIA, a genus of American tropical and sub-tropical plants, typifying the natural order

Bignoniaceæ. It includes many very handsome climbers which bear a beautiful bell-shaped flower—notably the gorgeous trumpet flower, *Tecoma radicans*, or *Bignonia radicans* of the United States.

BIGNONIACEÆ, a natural order of exogenous plants, generally with compound leaves. The flowers are showy, and are among the most striking ornaments of tropical forests. The corolla is of one petal more or less trumpet-shaped and irregular, the stamens are five in number and unequal, the ovary is free, seated on a disk, one to two-celled, the fruit sometimes capsular sometimes drupaceous. There are about 500 known species; in many cases noble trees, and some of them afford valuable timber. The fleshy sweet root of *Craniolaria annua* is preserved in sugar as a delicacy by the Creoles.

BIGORRE, a mountainous district in the southwestern part of France, formerly belonging to Gascony, but now for the most part embraced in the department of Hautes-Pyrenees. Tarbes has been the chief town since the days of the Romans.

BIG RAPIDS, a city of Mich., county-seat of Mecosta county. It is situated on the Muskegon River, about fifty-five miles north of Grand Rapids. It is a very important lumber market, and has an extensive water-power and numerous manufactories of shingles, lumber, and furniture, besides a number of mills, foundries, and machine-shops.

BIG SANDY RIVER, also called **CHATTERAWAH**, a navigable affluent of the Ohio, formed by the junction of two branches which rise in Virginia. The west fork traverses several counties of Kentucky, and the east fork is, during the latter part of its course, the boundary between the two States.

BIHACH, one of the strongest fortress towns of Croatia, European Turkey, situated on an island in the Una, near the frontier of Dalmatia. It has been the scene of frequent contests during the Turkish wars. Population, 3,000.

BIHAR, a county of Hungary, with an area of 4,279 square miles. It is mountainous in the east, and has barren heaths and marshes in the west. The western part has many small rivers. Wheat, wine and tobacco are largely produced.

BIHE, a fruitful district of South Africa, east of Benguela, and under Portuguese influence. The eastern part rises to a lofty plateau, where the climate is delightful. Bihe is an important caravan center, as the only route across the continent south of the Congo passes through it. The trade is chiefly in slaves and ivory. Area, 2,500 square miles. Population, 95,000.

BIJAWAR, a petty native state in the Bundelkhand Agency, with an area of 974 square miles. Diamonds and ironstone are found. The country is poor and hilly. Population, 113,285.

BIJBAHAR, next to the capital the largest town of Cashmere, situated on the banks of the Jailum, about 25 miles to the southeast of the metropolis, in latitude 33° 47' north and longitude 75° 13' east. A feature worthy of notice is a wooden bridge across the Jailum which, notwithstanding its simplicity and fragility, has endured for centuries.

BIJBHARU, or **BIJBAHAR**, a town in Kashmir state, India, on the Jhelum, 25 miles southeast of Serinagar. It is the second city in the state.

BIKH, the name given by the natives of India to a poison derived from the roots of *Aconitum ferox*, a species of aconite.

BILANDER, a small two-masted merchant vessel, distinguished from others chiefly by a peculiar shape and arrangement of the main-sail. Of these vessels, which were probably of French origin, there are few remaining.

BILBERRY, a shrub and its fruit, *Vaccinium myrtillus*, the European whortleberry. In Scotland

the bilberry is called *blaeberry*, from its *blae* or dark-blue color.

BILBILIS, an old Iberian city of Spain, two miles east from Calataynd, in the province of Saragossa, celebrated as the birthplace of the poet Martial; also famed for its highly-tempered steel blades. Under the Romans it was a municipal town with the surname Augusta.

BILBOES, long bars or bolts of iron with shackles sliding on them and a lock at one end. When an offender on ship board is "put in irons," it implies that bilboes are fastened to him more or less ponderous according to the degree of his offense. The bilboes clasp the ankles as the handcuffs clasp the wrists.

BILGE, the part of the bottom of a ship nearest the keel, and always more nearly horizontal than vertical. A ship usually rests on the keel and one bilge when aground. The name **BILGE-WATER** is given to rain or sea-water which trickles down to the bilge, and which, being difficult of access, becomes dirty and offensive.

BILHARZIA (*Distomum*), a parasitic flat worm in the fluke or Trematode order, and belonging either to the same genus as the common liver-fluke, *Distomum hepaticum*, or to one very closely related. In all other Trematodes the sexes are united, the animals are hermaphrodite, but here, the male being the larger, retains the female in a grooved canal, formed by an involution of the edges of the concave side of the body. Pairs thus united are found in the blood-vessels of man, especially in the urinary organs, the ova escaping through an ulceration caused by the presence of the parent. They occur from Egypt southwards to the Cape. It is said that about half of the Fellah and Copt population of Egypt suffer from this parasite. It was named after Theodore Bilharz, an old helminthologist. See *Britannica*, Vol. XXIII, p. 540.

BILIN, a town of Bohemia, beautifully situated in the valley of the Bila, and famous for its mineral springs, the waters of which it exports to the extent of 500,000 jars annually. It has two castles, and in its vicinity there is a remarkable isolated clinkstone rock, called Biliner Stein, and the Tripoli earth found at Bilin has been shown to be the remains of infusoria. It has manufactories of cotton-yarn. Population, 8,000.

BILL, or **GISARME**, a weapon of warfare used in England and on the Continent before the introduction of firearms. It was a kind of battle-axe having a blade shaped somewhat like a sickle, to which a drawing movement was given in striking.

BILL, or **BEAK**. See *Britannica*, Vol. III, pp. 699-717.

BILLARDIERA, or **Applebury**, a genus of shrubs of the natural order *Pittosporaceæ*. They have simple alternate evergreen leaves, and axillary pendulous flowers. The flowers have a calyx of five sepals, and a bell-shaped corolla of five petals. The fruit is a soft spongy pericarp with inflated cells. It is edible, although not destitute of a resinous character, which prevails in the order. It is a native of Australia.

BILLINGS, an important city of Montana, county-seat of Yellowstone county, situated on the north bank of the Yellowstone River, about sixty miles above the mouth of the Big Horn. It is an important wool-market, and the shipping-point for the stock-ranges of the surrounding country. Artificial irrigation is rapidly extending the area of cultivated land in the vicinity.

BILL-BROKERS, persons who, being skilled in matters pertaining to the money-market, engage, either on their own account or that of their employers, in the purchase and sale of foreign

and inland bills of exchange, and promissory notes.

BILL-CHAMBER, a department of the court of sessions in Scotland which deals with all matters of a summary nature, and generally all cases requiring the immediate interposition of judicial authority for arrestment of funds or inhabitation of heritable property, for stay or suspension of diligence or execution. Since 1813 the bill-chamber is presided over by a single judge, called the lord ordinary on the bills, and during the sittings of the court of sessions the position is occupied by the last-appointed judge of the court; but in vacation the bill-chamber exercises many of the powers of the court of sessions, and is presided over by a rotation of judges.

BILLET: in architecture, an ornament belonging to the Norman style, much used in early mediæval work, resembling a billet of wood, or a small section of round molding, of which a series were placed at regular intervals in or upon a molding. When used in several rows the billets were placed alternately.

BILLET: in heraldry, a bearing in the form of a small rectangle, represented flat without shadow or relief. A field or charge strewn with an indefinite number of billets is called *billey* or *billettee*.

BILL IN EQUITY, a statement of a plaintiff's case in a suit in equity. It is said to be an original bill if it initiates the suit, and a bill not original if used for the purpose of controverting, suspending, or revising a proceeding, or for cross-litigation.

BILLINGS, a small railroad town of Christian county, Mo., distant 261 miles from St. Louis. The Southwestern Christian College and the Christian Colony are located here. It has manufactories of flour, plows, and wagons.

BILLINGS, **JOSEPH**. See **SHAW**, **HENRY W.**

BILLINGSGATE, a wharf and fish market a little below London Bridge. It was opened in 1558 as a landing place for provisions, and in 1699 was made a free and open market for all sorts of fish. It is the only wholesale fish market in London. The fishermen consign their cargoes to the dealers, who occupy stalls in the market, and these supply the retail dealers. An officer has the general superintendence of the market, and the quality of all fish offered for sale is tested by inspectors. See *Britannica*, Vol. XIV, p. 829.

BILLINGTON, **ELIZABETH**, a celebrated English singer, born in London in 1769, died in 1818. She was the daughter of a German musician named Weichsel. She early came forward as a performer on the piano and as a composer, and having married her music teacher, Thomas Billington, she appeared with brilliant success on the opera stage in Dublin in 1786. She perfected her musical education under Sacchini in Paris, who wrote for her his opera, *Inez de Castro*, while she was singing in Naples in 1794. She appeared subsequently in Venice and Rome, retiring from the stage in 1809.

BILL OF ADVENTURE, a writing by a merchant ship-owner or master to show that goods shipped by him on board a certain vessel are the property of another, whose *adventure* or chance the transaction is, he himself being responsible only for their delivery. Generally, in commercial law, an *adventure* may be said to be a speculation in goods shipped under the care of a *supercargo*, to be disposed of by him to the best advantage, for the benefit of his employers.

BILL OF ATTAINDER. See *Britannica*, Vol. III, p. 52; Vol. VIII, p. 330. In the United States the passage of any bill of attainder, by Congress or

by an individual State, is prohibited by the Constitution.

BILL OF CREDIT, a letter authorizing a third party to give credit to a second on account of the first. It is known as a special bill of credit if the third party is specifically addressed, and as a general bill if addressed indefinitely to any who may see fit to give the bearer the credit proposed. The term, as used by the Constitution of the United States, which prohibits the emitting of bills of credit by any State, is construed to mean paper issued by a State on its mere faith and credit to be circulated as legal tender.

BILL OF EXCEPTIONS, a statement of objections, by way of appeal, against the decision of a judge who is trying a case with a jury in the court of sessions. The objection may be that the judge has misdirected the jury in point of law, or has improperly rejected or admitted evidence. The phrase was, prior to the judicature act, also used in England in the same sense, but is now merged in the "motion for a new trial."

BILL OF HEALTH, a certificate, signed by a consul or other authority, delivered to the master of a ship at the time of clearing from a port or place suspected of being subject to infectious disorders, certifying the state of health at the time that such ship sailed. A *clean* bill imports that at the time the ship sailed no infectious disorder was known to exist. A *suspected* bill, commonly called a *touched* patent or bill, imports that there were rumors of an infectious disorder, but it had not yet appeared. A *foul* bill, or the absence of a clean bill, imports that the place was infected when the vessel sailed.

BILL OF MORTALITY, a return of the deaths within a certain district, specifying the diseases, and giving a progressive view of the age at death.

BILL OF PAINS AND PENALTIES. See Britannica, Vol. VIII, p. 365. The provision of the Constitution of the United States that no bill of attainder, nor any *ex post facto* law, shall be passed by Congress or by a State is held to include bills of pains and penalties.

BILL OF RIGHTS. The history of the English bill of rights, and its effect upon the constitutional history of this country, are narrated in Britannica, Vol. XX, p. 555. Many of its provisions have been inserted literally in the amendments to the Constitution of the United States, and are found in our State constitutions.

BILL OF SIGHT, an entry of imported goods of which the merchant does not know the quantity or quality. This is permitted to save time by the customs authorities on sworn information. The bill must be made perfect in three days by indorsing the particulars required for warehousing, payment of duty, or delivery free of duty. If the entry is not completed within a month the goods are sold.

BILL OF STORES, a list of necessary stores and provisions carried by merchant ships. It is made out by the master and countersigned by the collector of customs, the object being to prevent frauds on the revenue.

BILLOM, a town of France, in the department of Puy-de-Dôme, situated on a hill 14 miles east southeast of Clermont. It is one of the most ancient towns of Auvergne, and was formerly surrounded by walls, which have now disappeared. In 1455 a university was founded at Billom, which passed into the hands of the Jesuits a century later, and was governed by them until the suppression of their order. It has manufactories of fine pottery. Population, 4,266.

BILLON, an alloy of copper and silver, in which the copper predominates, and which is used in some

countries for the smaller denominations of money. See Britannica, Vol. XVII, p. 630.

BILNEY, THOMAS (c. 1495-1531), an English martyr, born about 1495, probably at Norwich. He studied at Trinity Hall, Cambridge, and was ordained in 1519. He was opposed to the formality of the schoolmen, and denounced saint and relic worship, converting a number of young Cambridge men to his views. In 1527 he was arraigned before Woolsey, and, recanting, was absolved, but was nevertheless confined in the Tower of London for more than a year. Some time after his release, being overcome with remorse for his faithlessness, he began to preach in the fields of Norfolk, but was soon apprehended and condemned; and, although allowed to receive the sacraments of the church, from which he really differed but little, he was burned as a heretic at Norwich, Aug. 19, 1531.

BILOXI, a town of Mississippi, on the bay of the same name, situated in Harrison county. It has a railroad, a convent, an iron light-house, and is considered a pleasant summer resort.

BIMA, or **BODJO**, a seaport in Sumbawa, one of the Sunda Isles, in latitude 8° 30' south, and longitude 119° east. It is on a bay of the north coast, being 100 miles to the east of Sumbawa, a town feudally dependent on its sultan. Its chief exports are horses and timber.

BIMANA (Latin, "two-handed"), a term first employed by the Gottingen anatomist Blumenbach (1752-1840) to describe the human species alone. The separate order thus designated was recognized by Cuvier and by most of his contemporaries and immediate successors. It has since been shown, however, that man differs less from the anthropoid apes than these apes do from most monkeys, and the term *Bimana* is now rarely used, man being included with apes, monkeys, and lemurs in the old Linnean order, *Primates*. See Britannica, Vol. XV, p. 444.

BIMETALLISM, a term used to denote a double monetary standard of value as fixed by legislative enactment; specifically it is that system of coinage which recognizes either silver or gold coin as legal tender to any amount as a circulating medium and at a fixed relative value. It includes two essential features: (1) an open mint, ready to coin any quantity of either gold or silver which may be brought to it, and (2) the right on the part of the debtor to discharge his liabilities, at his option, in either of the two metals at the established legal ratio. It depends on the possibility of keeping the legal ratio between gold and silver in the bullion market the same. In the ancient world, the ratio of gold to silver in the bimetallic coinage established by Croesus, and existing down to the time of Alexander, was as 1 to 13.5. In modern times the market ratios have greatly changed in different countries and in different terms of years. In the year 1500 the relative market value of gold and silver was as 1 to 10.75; from 1621 to 1640 it changed to 1 to 14; then, until 1800, fluctuated between this latter value and 1 to 15.27; in 1876 it reached 1 to 17.77; in 1880 it was 1 to 18.06; in 1885 the ratio was 1 to 20.

An international monetary conference was held in Paris in 1878 for the purpose of establishing an international standard of value. A royal commission was appointed in 1886 in England to inquire into the "changes in the relative values of the precious metals," and this commission made its report in 1888. The report was reprinted by the United States Government in 1889. Another international monetary congress was held in Paris in 1889, and in 1890 the United States Congress passed an act empowering the United States Treasury to buy an aggregate amount of 4,500,000 oz. of silver a month, the

highest price paid to be not more than one dollar for 371.25 grains of pure silver, this being the American bimetallic par value at the time. In a few months the price rose 25 per cent. The United States had been hitherto steady exporters of the metal, but exportation received a check. It is possible, should the market value of silver reach the figure established by the above legislative action, that the United States may boldly adopt bimetalism in conjunction with the European nations that are members of the Latin Monetary Union.

BIMBIA, a district on the southern slope of the Cameroon Mountains in Africa, and on the northern bank of the river Bimbia. Since 1884 it has been part of the German protectorate.

BINAB, a town of Persia, in the province of Aserbajan, beautifully situated on the banks of the Sofi Chai, in the midst of orchards and vineyards, 55 miles south-southwest of Tabriz. The streets are very clean, many of them having a stream of pure water flowing down the center.

BINASCIO, a town of Lombardy, 11 miles northwest of Pavia. It is defended by a castle, where, in 1418, Beatrice di Tenda, wife of the Duke Filippo Maria, was beheaded by order of her husband.

BIN-BIR-KILISA, the name of extensive ruins in the pashalic of Karamania, Asia Minor, 20 miles north-northwest of Karama. The ruins consist chiefly of the remains of Byzantine churches, evidently of great antiquity, and some of considerable size. It is supposed to be the ancient Lystra, where the cripple was healed by St. Paul.

BINCHE, a town of Belgium, on the Haine, 10 miles from Mons. It is well built and walled, with a fine square, ornamented with a fountain. It has manufactories of leather, cutlery, glass, etc., and trade in lace, paper, marble and coal. Population, 5,500.

BINDRABAN, a town on the right bank of the Jumna, in the district of Muttra, 823 miles to the northwest of Calcutta, and 92 miles to the south of Delhi. Superstition seems to be the principal business of the place, crowds of pilgrims come from all parts of India, more particularly in honor of Krishna, and through the munificence of wealthy devotees sacred edifices are constantly becoming more numerous and costly. Here, as at Benares, the immediate margin of the river is occupied by flights of steps; these extend for about a mile along the bank, and are constructed of red stone brought from Jeypore, nearly 150 miles distant. Population, 21,550.

BINGHAMTON, a prosperous city of New York, county-seat of Broome county, situated on the north branch of the Susquehanna River, at the mouth of the Chenango River, on the Chenango canal, 215 miles northwest of New York. The city is supplied with water from the Susquehanna River by the Holley system. The court-house is a handsome edifice, modeled after St. Paul's in London, and contains a county law library. The New York State Asylum for Inebriates, having failed in the experiment of reforming inebriates, is now used as a State asylum for the chronic insane. The Binghamton Academy, a Roman Catholic academy, parochial school, the Susquehanna Valley Home, a refuge for orphan children, and St. Mary's Home for Indigent Children, are among the educational and charitable institutions. The city was founded by William Bingham in 1787, incorporated as a village in 1818, and became a city in 1867. Population in 1880, 17,817; in 1890, 35,093.

BINNACLE, a wooden box or case, containing a ship's compass together with other apparatus essential to its use. In large ships there are gen-

erally two binnacles, one for the steersman and one for the officer who superintends the steering.

BINNEY, HORACE, an eminent lawyer, born at Philadelphia, Pa., Jan. 4, 1780, died there Aug. 12, 1875. He was of English and Scotch descent, and his father had been an army surgeon. He was a Harvard graduate, who won high honors; studied law with Jared Ingersoll; was called to the bar at the age of twenty. In fifteen years he won all the fame and practice he could wish for. He had by this time prepared the volumes which contain the supreme court decisions of Pennsylvania. These volumes are highly esteemed. He was elected to the Twenty-third Congress, and there defended the United States bank. He declined reelection, and retired from active public life. He occasionally gave legal written opinions, and his last notable public services were in regard to the case between Bidal and Girard's executors. Mr. Binney was a famous student, remarkably fond of reading, while, as an orator, he was gifted with a melodious voice and dignified manners. He was a faultless logician, and a powerful advocate.

BINOCULAR, a field glass, opera glass, or microscope fitted for the simultaneous use of both eyes. See Britannica, Vol. XVI, p. 272.

BINTURONG, a genus of quadrupeds, nearly allied to raccoons, from which the chief distinction is in the smaller and less tuberculated back molar teeth. Only two species are known, natives of Malacca, Sumatra, Java, etc. See Britannica, Vol. XV, p. 436.

BIOBIO, the largest river of Chile. It has a west-northwest course from the Andes to Concepcion on the Pacific, being two miles wide at its mouth, and navigable for boats from the sea to the mountains. Its lower stream separates the province of Concepcion on the north from Independent Araucania on the south.

BIOGENESIS, the name used by Huxley for generation in an ordinary sense; the theory that living matter always arises by the agency of pre-existing living matter. Biogenesis is the converse of *abiogenesis*, spontaneous generation.

BIOGRAPHY, the representation in continuous narrative of the life and character of a particular individual. It may merely detail the historical sequence of the incidents of a man's life, or it may be an elaborate attempt at an analysis of his character, and at a complete reconstruction of the whole motives of his actions. To the former class mainly belong the ancient examples of biography, as the *Life of Agricola*, by his son-in-law, Tacitus, and the *Lives* ascribed to Cornelius Nepos; while modern biographers have mostly aimed at the latter method. But as the inward life is revealed in the outward, so the most dignified and reticent biography must give some real insight into the character of the man. No little of the interest in ancient and modern histories alike depends on the pictures of men and women with which their pages are lighted up, and when the hasty sketches are by analysts like Livy and Tacitus, we get from them a truer impression than from the most finished biography by a writer of less insight. A biographer may not have the ability to see under the surface the hidden springs of character, and thus understand the relative significance of things, and in proportion as he is wanting in this insight is he liable to give an untrue picture of his subject. Especially is this danger close to him who has to deal with a time or a society in which he himself has not lived; while, in writing modern biographies, he is apt to err by not selecting merely the significant. Of strictly biographical works, the most valuable that has come to us from the ancient Greeks is the

Lives of Plutarch, and from Roman literature the *Agricola* of Tacitus. Besides these we have the *Lives of Cornelius Nepos*, the writings of Suetonius, the *Life of Alexander the Great*, by Curtius; *Lives of the Sophists*, by Philostratus, and a *Life of Plato*, by Olympiodorus. Later we have, in ecclesiastical literature, the *Lives of the Fathers*, by Saint Jerome, and numerous biographies of saints, martyrs, etc. In the French and German languages there are many excellent examples of biography. Here it may be enough to mention the names of the authors of those which are among the most valuable: In France, Flechier, Fontenelle, Voltaire, Boissy d'Anglas, Villemain, Cousin; and, in Germany, Schröckh, Herder, Klein, Meissner, Heeren, Luden, Varnhagen von Ense, Barthold, Döring, Pertz, Haym, Arneth, Otto Jahn, Chrystander, Kapp, and Droysen. Some excellent biographies that have been translated into English are Köstlin's *Luther*, Zeller's *Strauss*, Lomenie's *Beaumarchais*, Duntzer's *Goethe*, *Schiller* and *Lessing*. Among English biographies may be especially mentioned Boswell's *Life of Johnson*; Lockhart's *Scott*; Moore's *Byron*; Morley's *Diderot* and *Rousseau*; Trevelyan's *Macaulay* and *Fox*; Sir Theodore Martin's *Life of the Prince Consort*; Carlyle's *Frederick the Great*, his *Schiller*, and his *Letters and Speeches of Oliver Cromwell*; Lewes's *Goethe*; Talfourd's *Lamb*; Washington Irving's *Columbus*; Sparks's *Washington*; Helps's *Cortez*, and his *Pizarro*, and Froude's *Cæsar*. There are also many excellent universal biographies, such as Chalmers's *Biographical Dictionary*, *Men of the Time*; *Celebrities of the Century*, etc. Other biographical works treat of the lives of certain classes of men, as Vasari's *Lives of Painters, Sculptors and Architects*, and Agnes Strickland's *Lives of the Queens of England*. Others again are for certain countries only, as *Biography Britannica*, Sparks's *American Biography*, and Appleton's *Encyclopædia of American Biography*.

BIOPLASM, a term introduced by Professor Beale, about 1872, for the germinal matter of living beings as distinguished from formed matter; the state or condition of protoplasm in which it is living and germinating.

BIPED (Latin, "two-footed"), a descriptive term, sometimes applied to man, but more frequently to birds. It may be used in reference to habit only, as when animals use only their two hind-limbs for moving along the ground—e. g., man, kangaroo, bird; or it may be used in reference to anatomy, when the typical number of four limbs is reduced to two. Thus among mammals the order of whales (*Cetacea*) is marked by the absence of hind-limbs; among reptiles, some serpents retain traces of hind-legs, and a few lizards have either only hind-feet, or only fore-feet, among amphibians, a few have only fore-feet; and the same is true of numerous fishes and especially of those which live to a large extent in mud.

BIPENNIS, a double-headed axe, the weapon which, according to ancient historians and artists, particularly distinguished those fabulous female warriors, the Amazons.

BIPINNARIA, the technical name of a starfish larva. It is a curiously-shaped free-swimming form, with two ciliated bands, and with a tendency to develop long, stilt-like arms or processes. It does not directly turn into the adult, but is only its "nurse." The adult is formed within the bipinnaria.

BIRCH, SAMUEL, LL.D., Egyptologist, born in London, Nov. 3, 1813, died there Dec. 27, 1885. He was educated at Merchant Tailors' in 1834, and entered the public service under the commissioners of public records, and in 1836 became assistant in the

archæological department of the British Museum. In this capacity he applied himself with untiring zeal to the study of Greek and Roman antiquities, including numismatics, and to Egyptian hieroglyphics. He assisted Baron Bunsen in the philological portion of *Egypt's Place in Universal History*, the last volume of which, after Bunsen's death, was admirably edited by him. In 1861 he was appointed keeper of the Egyptian and Oriental antiquities, and in 1874 was president of the London Congress of Orientalists. Besides three works connected with his Chinese studies, he was author of *Ancient History from the Monuments of Egypt* (1875), *Egyptian Texts* (1877), and was a contributor to various learned journals.

BIRD, FREDERICK MAYER, born in Philadelphia, Pa., June 28, 1838. He was a graduate of the University of Pennsylvania and Union Theological Seminary. He was ordained as Lutheran minister, served as an army chaplain, became a Protestant Episcopal clergyman, and was successively pastor at Spotswood, New Jersey, and South Bethlehem, Pa. He became professor of psychology, Christian evidence, and rhetoric in Lehigh University. He is a writer on hymnology, main editor of the "Lutheran Hymn Book," and possesses the finest library of hymnology in America.

BIRD, ISABELLA (Mrs. Bishop), an adventurous lady traveler, long resident in Edinburgh, visited Canada and the United States in 1854, subsequently visiting the Sandwich Islands and Japan. While on her travels, she from time to time sent home letters describing what she saw and did, and from such materials most of her books have been compiled. Her lively and picturesque narratives of journeys made to the Rocky Mountains, to the aborigines of Yezo, and the shrines of Nihko and Ise in Japan, and the Straits Settlements, have been very popular. Her books are *The Englishwoman in America* (1858), *Six Months Among the Palm Groves of the Sandwich Islands* (1875), *A Lady's Life in the Rocky Mountains* (1879), *Unbeaten Tracks in Japan* (1880), and *The Golden Chersonese* (1883).

BIRD-BOLT, a short thick arrow without a point, spreading at the extremity so much as to leave a broad flat surface. Such are to this day used for killing rooks, and are shot from a cross-bow.

BIRD-CATCHING SPIDER, a name originally given to a large spider, *Mygale avicularia*, a native of Cayenne and Surinam, but now more extensively applied, being equally appropriate, to a number of large species of *Mygale* and *Epeira*, perhaps also of other genera.

The *Mygale avicularia* is nearly two inches long, very hairy, and almost entirely black; its feet when stretched out, occupy a surface of nearly a foot in diameter. The hooks of its mandibles are strong, conical, and very black. This great spider forms a tube-shaped cell of a fine white semi-transparent tissue, like muslin, in clefts of trees or hollows among rocks; from this it issues only at night to prey upon insects and humming-birds. It is a native of the warm parts of America, the East Indies, and Africa.

BIRD-CHERRY (*Padus*), a subdivision of the genus *Cerasus*, a tree of 80 to 100 feet in height found from Tennessee to Upper Canada. The wood is compact, fine-grained, takes a fine polish, and is much used by cabinet-makers. The bark is used as a febrifuge, the fruit is not agreeable, but a cordial is made from it by infusion in spirits with sugar, and when dried and bruised it forms an esteemed addition to pemmican.

BIRD ISLAND, the northwest island of the Sandwich archipelago, in lat 22° 20' north, and long 160°

west. It is, as its name implies, a mere haunt of sea-fowl, the links of the chain increasing pretty regularly in size and elevations from Bird Island on the northwest to Hawaii on the southeast.

BIRD-LICE, a popular name for lice which infest the plumage of birds. These parasites are louse-like in form, with from three to five jointed antennæ, biting mouth organs, and more or less of a sucking mouth. The genera and species are numerous, constituting the greater part of the order *Mallophaga*.

BIRD-LIME, an adhesive substance placed on twigs of trees or wire netting for the purpose of catching small birds. A common practice is to place a decoy or tame bird in a cage near where the bird-lime is spread; the wild birds, attracted to the spot by the song of the tame bird, get entangled with the bird-lime.

BIRD'S-EYE LIMESTONE, a division of the Trenton group of the Lower Silurians of North America, apparently equivalent to the Llandeilo flags, and containing, besides the remains of brachiopods, many enormous orthoceratites.

BIRD'S-EYE VIEW, a term applied generally to modes of perspective, in which the eye is supposed to look down upon the objects from a considerable height. In sketching or drawing a locality, the great difficulty is to represent at the same time the relative heights of mountains and steepness of acclivities. In the 16th century the only kind of views known were of the nature of ground-plans, and the artists of the 17th century tried to combine this method with side views.

BIRD'S FOOT, a genus of plants of the natural order *Leguminosæ*, deriving both its popular and botanical name from the resemblance of the curved pods to birds' claws; the leaves are pinnate, with a terminal leaflet.

BIRD'S FOOT TREFOIL (*Lotus*), a genus of plants of the natural order *Leguminosæ*, sub-order *Papilionaceæ*. The pods are cylindrical, somewhat spongy within, and imperfectly divided into many cells. The name is derived from the resemblance of the cluster of pods to a bird's foot. The species are very numerous, and are natives of temperate and cold regions. The common bird's foot trefoil (*Lotus corniculatus*) has a stem from six to twelve inches in length, bearing umbellate heads of eight to ten yellow flowers, which have a rich honey-like smell. The leaves have three ovate leaflets like those of the clover, but at the base of each leafstock there are two large leaf-like ovate stipules. The plant is by some regarded as the shamrock of Ireland. It is eaten with great avidity by cattle, and its deeply penetrating roots adapt it well for very dry situations. A species called "winged pea," remarkable for four membranous wings, which run along its pods, a native of the south of Europe, is cultivated for its seeds, which are used as a substitute for coffee.

BIRD'S NEST, a name applied to two or more distinct plants, of similarly brownish color and leafless habit, which are root-parasites, and grow more or less concealed under other vegetation. *Neottia nidus-avis*, a British orchid, grows in dark woods, especially beech; *Monotropa hypopitys*, a rare ericaceous plant, grows on the roots of trees in beech or fir woods, the leafless stalks resembling a nest of sticks. There is also a bird's-nest fern, *Asplenium nidus*, so called from the manner in which the fronds grow, leaving a nest-like hollow in the center; and a group of gasteromycete, fungi, the *Nidulariæ*, from their cup-shape and egg-like spore-bearing masses, have also acquired the same popular name.

BIRDS OF NORTH AMERICA. See the article *BIRDS* Britannica, Vol. III, pp. 699-778. See also under *DISTRIBUTION*, Vol. VII, pp. 267-90.

BIRDS OF PREY, a common title of the order of birds called *Accipitres*. Some birds, however, which do not belong to this order frequently pursue and prey upon other birds. Birds of prey are divided into two sections, *Diurnal* and *Nocturnal*, the latter consisting exclusively of owls, and the former including vultures, falcons and secretary birds or serpent-eaters. See Britannica, Vol. XVIII, p. 47.



SECRETARY BIRD.

BIRETTA, a square cap worn by the clergy of the Roman Catholic Church, and by some ritualists in the Anglican Church. That of priests is black, of bishops purple, of cardinals red. Originally round, its present form, with straight erect edges, and a tuft or button on the crown, dates only from the seventeenth century; but the low head-covering of English bishops was known as the *birettum* as early as the thirteenth century.

BIRIOUTCHE, a town in the government of Voronej, Russia, on the left bank of the Sosua. It is surrounded with earthen ramparts and a ditch, and has four annual fairs. Population, about 4,000. A stream of the same name in its immediate vicinity is noted for its pearl-oysters, and the teeth of elephants are often found exposed on its banks.

BIRKENFELD, a German principality belonging to Oldenburg, with which it has been connected since 1817. It has an area of nearly 200 square miles, with a population of 38,685. The capital, Birkenfeld, has a population of 25,000.

BIRKET-EL-HADJI ("Lake of the Pilgrims"), a small lake ten miles northeast of Cairo, where the Mecca pilgrims assemble and disband.

BIRLEY-MAN, a person who acted as petty officer on an estate, or in a village in Scotland. The duty of this person was to keep order, and attend to the interests of the proprietor. The office is now nearly extinct.

BIRMINGHAM, a city of Alabama, and county-seat of Jefferson county, situated nearly in the center of the State, in a beautiful valley 600 feet above the level of the sea. The streets are broad, well paved, lined with shade trees, and well lighted. The court-house is a magnificent structure, and all the public buildings are erected in a substantial manner, as also are the churches, school-houses and hotels. Howard College (Baptist) is located at East Lake, near by. The United Charities have an infirmary costing \$100,000. Birmingham is located in the center of the richest coal and iron region in the State, and blast furnaces and rolling mills are numerous, some of them being large structures, and affording facilities for an immense and rapidly growing manufacturing business. The Henderson Steel Manufacturing Company is making good steel from the red ores found in the vicinity, and have recently completed a large blast furnace with a capacity of seventy tons daily. There were in 1890 three through lines of railway—three other railways having their termini in the city; while still three other roads were in process of construction, thus providing ample communication in all directions. In addition to the iron industry there are numerous manufactories, employing large mechanical force. The recent growth of city in population has been remarkable, the ce

of 1880 showing an enumeration of but 3,886, while in 1890 there were 26,241.

BIRMINGHAM, a borough of New Haven county, Conn., situated on the Housatonic River, at the mouth of the Naugatuck, about ten miles west of New Haven. The first pin manufactory established in America is located here, and there are extensive manufactories of chains, augers, axles, springs, corsets, skirts, stockings, paper, silver-plate, and a number of rolling-mills and foundries.

BIRNAM, a hill 1,580 feet high, in the east of Perthshire, Scotland, twelve miles northwest of Dunsinnan hill. It commands a fine view of the valley of the Tay. It was once covered by part of an ancient royal forest. Shakespeare has immortalized Birnam wood in his tragedy of *Macbeth*.

BIRNEE, Old and New, the name of two towns of Bornu, Central Africa. Old Birnee, which was formerly the chief city of the empire, walled and of vast extent, is situated on the banks of the Yeu, seventy miles northwest of the modern capital, Kuka, and seventy-five miles west of Lake Tsad. It is now greatly deserted and decayed, but has still a population of about 10,000. New Birnee, about twenty miles south of Kuka, is walled and has a large mud palace. Population, 10,000.

BIRNEY, DAVID BELL, son of James G., born at Huntsville, Ala., May 29, 1825, died at Philadelphia, Pa., Oct. 18, 1864. He studied law in Cincinnati, and practiced in Philadelphia; entered the Union army and rose to the rank of major-general.

BIRNEY, JAMES GILLESPIE, born at Danville, Ky., Feb. 4, 1792, died at Perth Amboy, N. J., Nov. 24, 1857. He graduated from Princeton in 1810. He served in the Kentucky and afterwards in the Alabama legislature; was repeatedly elected mayor of Huntsville, Ala.; was interested in all educational projects in his State; was long the adviser of the Cherokee Nation. Being opposed to slavery and a warm advocate of his views thereon, he emancipated his slaves, having previously removed to Kentucky. Mob violence necessitated his leaving here and going to Cincinnati, Ohio. He published the "Philanthropist," but in 1836 his office was entered by a mob and his presses thrown into the river. He went to live in New York city after this, and served the American Anti-Slavery Society as secretary. He was the presidential nominee of the Liberty Party in 1840, and again four years later. Mr. Birney was the author of many books on the subject of slavery.

BIRNEY, JAMES GILLESPIE, a grandson of James G., senior, was an officer in the civil war, and served under Sherman and Custer. He died soon after the war.

BIRSE, a small but famous affluent of the Rhine. It rises in Berne, Switzerland, flows through Münstenthal, and enters the Rhine near Basel. At St. Jacob, the "Swiss Thermopylæ," about two miles from that city, 1,500 Swiss died fighting the French in 1444, and in July, 1449, near the village of Dornbach about a mile and a half south of Basel, 6,000 Swiss gained a victory over 15,000 Austrians.

BIRN, BEROO, or BEEROO, a kingdom of Soudan, Western Africa, bounded on the north by the Sahara, on the east by the Niger, and having Bambarra on the south.

BIS, in music, denotes that the passage over which it is placed is to be played twice. Such passages generally have a slur over them and the "bis" written below it.

BISACQUINO, or BUSACCHINO, a town of Sicily, about twenty-seven miles south of Palermo. Population, 9,000.

BISALNAGAR, a town of India, in the Guicowar of Baroda's territories, 220 miles northwest of

Mhow. It has a large transit-trade, and manufactures cotton cloths. Population, 20,000.

BISALPUR, a town of India, in the North-west Provinces, twenty-four miles east of Bareilly. Population, 9,000.

BISCACHA. See VISCACHA, in these Revisions and Additions.

BISCAVNE, a village of Florida, on Biscayne Bay, in Dade county, overlooking the Atlantic. It is noted for its delightful climate and the healthfulness of its situation.

BISCHOFF, THEODOR LUDWIG WILHELM, anatomist and physiologist, born at Hanover, Oct. 28, 1807, died Dec. 5, 1882. He studied at Bonn and Heidelberg, becoming in 1836 extraordinary professor, and in 1843 ordinary professor of anatomy and physiology at Heidelberg. From 1844 to 1855 he filled the same chair at Giessen, where he founded a physiological institute and anatomical theater, and from 1855 to 1878 at Munich. Bischoff's studies were mainly in embryology and biology, and he left numerous treatises and papers of great value.

BISCUIT: in pottery, the term applied to porcelain and other earthenware after the first firing, and before it has received the glaze and embellishments. In this condition, the ware is very porous, adheres to the tongue when placed upon it, and allows water very slowly to percolate through its pores. The unglazed bottles employed in cooling water and the common flower-pot are examples of biscuit-ware. See Britannica, Vol. XIX, p. 601.

BISHOP, a beverage composed of red wine, poured warm or cold, over ripe bitter oranges, sugared and spiced to taste, the quality depending upon the excellence of the wine employed. If white wine is used the beverage is called *cardinal*, and with Tokay it becomes *pope*.

BISHOP-AUCKLAND, a small town in the middle of the county of Durham, England. It contains the abbey-like palace of the Bishop of Durham.

BISHOP, MADAM ANNA, a famous concert singer, born in London, England, in 1814, died in New York in 1884. She possessed a soprano voice of unusual power, and sang in nearly all the countries on the globe, retaining her voice until 1868, when she retired from the stage. Her first husband was Sir Henry Rowley Bishop, to whom she was married in 1831. Leaving him in 1835 she contracted an alliance with her Italian music teacher, named Boscha, and after his death in 1855, became the wife of an American merchant, Martin Schultz. Her father's name was Rivière.

BISHOP'S CASTLE, a town in the southwest of Shropshire, nineteen miles southwest of Shrewsbury. It is irregularly built on a hill slope. The bishops of Hereford had formerly a castle here, now destroyed. During the civil wars of the seventeenth century, the inhabitants took shelter in the church, which was demolished over their heads. Population, 2,200.

BISHOP-WEED (*Ægopodium podagraria*), an umbelliferous weed, exceedingly difficult of extirpation on account of its creeping rhizomes. It is eaten by cattle, and the leaf-stalks were formerly boiled and eaten as greens. In the United States the name is applied to a somewhat similar umbelliferous plant, *Discopleura capillacea*.

BISIGNANO, a town of Italy in the province of Cosenza. It has a cathedral, a castle and a trade in silk, and gives the title of prince to the existing branch of the Sanseverino family. Population, 4,097.

BISLEY, a town of Gloucestershire, eleven miles southeast of Gloucester. The church contains some interesting monuments, a cross-legged knight in

armor, and an ancient stone font. The canal uniting the Severn and the Thames passes through the town. The chief manufacture is coarse clothing. Population, 2,000.

BISMARCK, a city of North Dakota, capital of the State and county-seat of Burleigh county, situated on the Missouri River, about sixty miles north of the southern boundary of the State. The situation of the city is a delightful one, commanding charming views of the Missouri valley and the surrounding region. The principal buildings are the capitol, built upon an eminence in the northern part of the city, the penitentiary, the court-house, and a fine public school-house. A bridge which cost a million and a half of dollars here crosses the river, which is navigable for more than a thousand miles above Bismarck. The chief industries, besides the shipping of immense quantities of freight, are manufactures of flour and of malt-products. Bismarck is the center of trade of a region rich in wheat, oats and potatoes.

BISMARCK-SCHÖNHAUSEN, **OTTO EDWARD LEOPOLD**, PRINCE VON, ex-chancellor of the German empire, and foremost of statesmen, was born April 1, 1815, at Schönhausen in Brandenburg, of an old family, of which various members gained reputation both as soldiers and as statesmen. He received his University education at Gottingen, Berlin and Griefswald, where he studied law and agriculture, but became more distinguished as a swordsman than as a reading man. After finishing his studies he lived for a time on his estates. Before 1847 he was little heard of, but about that time he began to attract attention in the new Prussian parliament as an ultra-royalist.

Bismarck's diplomatic career commenced in 1851, when he was appointed Prussian member of the resuscitated German diet of Frankfort. Here he began to manifest that zeal for the interests and aggrandizement of Prussia which afterwards undeviatingly guided him, and openly expressed discontent with the predominance of Austria. He remained at Frankfort till 1859, when he was recalled from the diet and sent as minister to St. Petersburg. In the spring of 1862 he was transferred to Paris. During his short official stay there he visited London, and met the leading politicians of the time. In the autumn, when the king's government could not obtain the consent of the lower house to the new and expensive military organization, Bismarck was recalled to take the portfolio of the ministry for foreign affairs, and the presidency of the cabinet. Being unable to pass the reorganization bill and the budget, he closed the chambers, announcing that the government would do without the sanction of the deputies. See *Britannica*, Vol. XX, pp. 12, 13. The army reorganization went on; and the next four sessions of parliament, refusing their sanction, were dissolved in the same way.

At the death of the king of Denmark Bismarck was adroit enough to aggrandize Prussia by the acquisition of the Elbe duchies, and reconciled his opponents to his high-handed policy by pointing to this success of the newly-modeled army. Throughout the events which ended in the humiliation of Austria at the battle of Königgrätz (1866), and the reorganization of Germany under the leadership of Prussia, Bismarck was the guiding spirit, and through this success, from being universally disliked, he became the most popular man in Germany.

The action of France in regard to the candidature of Prince Leopold of Hohenzollern for the throne of Spain gave Bismarck the opportunity of carrying into action the intensified feeling of unity

among Germans. During the Franco-German war of 1870-71 he was the spokesman of Germany; he it was who, in February, 1871, dictated the terms of peace to France.

Having been made a count in 1866, Bismarck was now created prince and chancellor of the German empire. After the peace of Frankfort (May 10, 1871), the aim of his policy, domestic and foreign, was to consolidate the young empire of his own creating by rendering its institutions more beneficent, authoritative, homogenous and stable, and to secure it, through alliance and political combinations against attack from without. Thus, conceiving the authority of the government to be endangered by the Church of Rome and its doctrines, he embarked on a long and bitter struggle with the Vatican. But he had underrated the resisting power of the Romish Church, and motives of political expediency finally led him to modify his policy.

Among the more important measures by which Bismarck's domestic policy was marked are a reformed coinage, a codification of law, a nationalization of the Prussian railways, fiscal reform in the direction of making the empire self-supporting (independent of "matricular contributions" from its component states), repeated increase of the army and the regular voting of its estimates for seven years at a time, and the introduction of a protective tariff (1879). He attempted to combat social democracy by means of economic experiments, which caused him to be called the greatest state socialist of the age.

In 1884 Bismarck inaugurated the career of Germany as a colonizing power, which brought him into temporary conflict with the England of Mr. Gladstone. For the rest, his foreign policy was mainly aimed at isolating France and rendering her incapable of forming anti-German alliances, while, on the other hand, he gradually combined the central powers of Europe into a peace-league; aiming at counteracting the aggressiveness of Russia and France, separately or combined, on the Danube or the Rhine. In 1885 Bismarck's 70th birthday was celebrated as a great national event.

The resignation by Prince Bismarck of his office as Prussian Prime Minister as well as chancellor was announced in February, 1890, but did not actually occur till March 17, when divergences of opinion between him and the Emperor, William II led to his retirement. His departure from Berlin on the 29th was made the occasion of a great popular demonstration in his favor. The ex-chancellor has since resided chiefly at his country residence. It has recently been reported that he had been offered, and would probably accept, a seat in the Reichstag, but at the present writing (March, 1891) reports have not been confirmed.

BISON. (See *Britannica*, Vol. III, p. 792.) The name buffalo, which is incorrectly applied in the United States to the American bison, belongs properly to two species of ruminants of the family *Bovidae*, one of which is used as a beast of burden in India and Italy, the other being a dangerous, untamable native of South Africa. The *Bison Americanus* is a species of the ox family, and is indigenous to America. It differs from the buffalo in having a hump upon its back, in having no dewlap, in having its horns turned inward, and in having cavities in the horns communicating with the nasal passages.

BISSAGOS, or **BIJUGA ISLANDS**, a group of small volcanic islands off the west coast of Africa, opposite the mouth of the Rio Grande. Many of the islands appear to be thickly settled by a savage, thievish, negro race, who cultivate maize, bananas,

and palms, and feed cattle and goats, which constitute their chief wealth. Bassao, one of the group, on which there is a Portuguese settlement, has a population of 8,000. It carries on a large trade in slaves, also in rice, wax, hides, etc. See *Britannica*, Vol. XXI, p. 661.

BISSEN, WILHELM, a Danish sculptor, born near Schleswig in 1798, died in 1868. He studied for 10 years in Rome, 1823 to 1833, under Thorwaldsen, and in 1841 returned to that city to execute a government, commission, and produced a *Venus* and *Cupid Sharpening His Arrows*, that are among his masterpieces. By his will Thorwaldsen appointed Bissen to complete his unfinished works and have charge of his museum. In 1850 he became director of the Academy of Art in Copenhagen. See *Britannica*, Vol. XXI, p. 570.

BISTORT, a perennial herbaceous plant of the genus *Polygonium*, of the natural order *Polygonaceæ*. It is from one to two feet high, with a simple stem, ovate subcordate leaves, and one dense terminal cylindrical spiked raceme of flesh-colored flowers. The root is one of the strongest vegetable astringents.

BISTRE, a pigment of a warm brown color prepared from the soot of wood, especially beech. It is used in water-colors after the manner of India ink.

BISTRITZ, a fortified town of Northeast Transylvania, beautifully situated on the Bistritz River, in a fine valley. In its vicinity are the remains of an ancient castle, once the residence of the illustrious Hunyads. It has several large cattle fairs, but the extensive general trade it once carried on is now entirely gone. Forming, as it does, the last strong position in the northeast of Transylvania, it was repeatedly the scene of hot strife between the Hungarian and Austrian generals, in 1848 and 1849. Population, 7,312.

BIT, or **BITT**, in ship-building, a frame composed chiefly of two short, strong, vertical timbers, fixed into or upon the deck in the forepart of the vessel. Its main purpose is for fastening the cable when the ship rides at anchor, and for "leading" the principal ropes for the rigging. To "bit the cable" is to fasten it round the bit. There are various kinds of bits—"riding-bits" "jeer-bits," etc. Having to resist great strains, the bits are strongly bolted to the beams that support the deck.

BITHOOR, a town in India, in the district of Cawnpore, and sub-presidency of North-west Provinces, situated on the right bank of the Ganges. It is particularly devoted to the worship of Brahma; has numerous pagodas, and is, of course, a favorite resort for pilgrims, who here, as at Benares and Bindraban, have by means of elaborately constructed ghauts access to the sacred stream for purposes of ablution. During the mutiny of 1857 Bithoor acquired an unenviable notoriety as the stronghold of Nana Sahib. Population, 9,000.

BITTER KING, a small tree or shrub of the natural order *Simarubaceæ*, which has received its name from its intense bitterness. It is a native of the Indian archipelago, and is used as a febrifuge and tonic.

BITTERN, or **SALT OIL**, an oily liquid obtained during the preparation of common salt—the residue when salt water has been boiled and the salt precipitated—and from it Epsom salts and other compounds of magnesia are procured.

BITTER ROOT RIVER, a stream 110 miles long in Montana. It is a branch of Clarke's River. Gold is found near the Bitter Root.

BITTER SPAR, a name given to dolomite from the magnesia contained in it, which the Germans call bitter salt.

BITTER-SWEET, or **WOODY NIGHTSHADE**. See *NIGHTSHADE*, *Britannica*, Vol. XVII, p. 499.

BITTERWOOD, a tree of the natural order *Simarubaceæ*, a native of Jamaica. The wood is used in medicine for the same purpose as quassia. The name is also given to species of the genus *Xylopiæ*, remarkable for the bitterness of their wood.

BITUMINOUS COAL, a term applied to the varieties of coal which contain a large quantity of gas, and burn with a smoky flame.

BITUMINOUS LIMESTONES, limestones impregnated and sometimes deeply colored with bituminous matter, obtained from decaying vegetable matter, or from the decomposed remains of those animals whose hard parts form so large an amount of the rock.

BITUMINOUS SHALES, indurated beds of clay occurring in the coal measures and containing such an amount of carbon and volatile matter that they are able to keep up combustion when mixed with but a little coal. They are, indeed, impure coal, with a large percentage of ash or earthy matter, which after burning retains the original form.

BIVOUC, the encampment of soldiers in the open air, without tents where every one remains dressed, and with his weapons by him. Even during the Seven Years' War it was no uncommon thing for the whole army, when in the vicinity of the enemy, to pass the night in their ranks, each lying down in his place, in order to be ready to stand to their arms at a moment's notice; but the French revolutionary army introduced the practice of dispensing with tents altogether, and regularly passing the night *en bivouac*. From this source originated the rapidity in their motion, which made them successful for a long time, and the practice was afterwards initiated by other armies of Europe. Soldiers in bivouac light fires, and improvise, where it is possible, huts of straw, branches, etc. But this mode of encampment, though favorable to celerity of movement, is purchased at the expense of the soldiers' health, besides being destructive of discipline by leading to plundering houses, fruit trees, etc., in the vicinity, and is now almost wholly dispensed with; for permanent encampment regularly constructed wooden huts have been introduced.

BJELA, a town in the Russian-Polish government of Siedlce, on the Krzna River. It has considerable trade in corn. Population, 19,500.

BJÖRNSSON, BJÖRNSTJERNE, a Norwegian writer, born Dec. 8, 1832, at Kvikne, in Osterdalen, where his father was pastor. After studying at the University of Christiania from 1852, and then for a year at Copenhagen, he returned to Norway in 1857, and published his *Synnöve Solbakken*, which at once attracted great attention. Immediately afterwards he was appointed manager of the Bergen Theater by its proprietor, Ole Bull, and in 1858 he published the tale *Arne* and the drama *Halte-Hulda*. In 1859 he left Bergen to become editor of the *Aftenbladet* at Christiania, but becoming involved in violent controversies he withdrew the next year to Copenhagen, where he published a number of shorter tales and the drama, *Mellum Slagene*. From 1860 to 1862 he resided in Rome, continuing his literary work, and on his return to Norway he was awarded a yearly pension by the Storting. In the next two years he produced two plays, at the same time editing the *Norsk Folkeblad*. He again lived abroad from 1872 to 1876, when he returned to Norway and remained for some years. Holding the highest place in popular favor as a political orator, Björnsson took an active part in the movement which led to the victory of parliamentary government in Norway. Though

he settled in Paris in 1883, he still made his influence felt in Norwegian politics. A number of his tales have been translated into English and German, and several of his plays have secured a footing on the German stage. Both as poet and novelist Björnson stands in the first rank among living Scandinavian writers. He has written numerous pamphlets on political and religious questions of the day. See *Britannica*, Vol. XVII, pp. 591, 592.

BJÖRNSTJERNA (Magnus Friedrich Ferdinand), COUNT (1779–1847), a Swedish statesman and author, born at Dresden in 1779. He was educated in Germany, and entered Sweden for the first time in 1793, to join the army, and in 1813 he was appointed lieutenant. In 1826 he received the title of count, and in 1828 was appointed ambassador to the court of Great Britain, which office he held till 1846, when he returned to Stockholm, where he died in 1847. As a politician his opinions were liberal. In addition to some political writings he published in 1843 a work on the *Theogony, Philosophy and Cosmogony of the Hindus*.

BLACK, JAMES, born at Lewisburg, Pa., Sept. 23, 1823. He is a lawyer and an earnest laborer for temperance, and was the first presidential nominee of the prohibition party (1872).

BLACK, JEREMIAH SULLIVAN, born in the Glades, Somerset, county, Pa., Jan. 10, 1810, died at York, Pa., Aug. 19, 1883. He was not a college graduate, but after studying in the common schools he took up the profession of law, and after eleven years was made judge. He was a Jeffersonian Democrat, was president-judge of his district for nine years, and was elected one of the supreme court judges of Pennsylvania in 1851 and again in 1854. James Buchanan, when he became president, chose Judge Black as attorney-general. He performed important duties while holding this office; he protected the government from unjust claimants of land grants in California, and held the opinion (1860–61) that the government had the right to put down insurrection. As Buchanan believed the government had no coercive power, the attorney-general was placed in a trying situation, as he endeavored to save the government from the secessionists. During the latter part of Buchanan's administration, Judge Black was Secretary of State (filling the vacancy of Gen. Cass, resigned), and Edwin M. Stanton held Black's former office. In 1861 he retired from public life. He was engaged in several prominent lawsuits, such as the Vanderbilt will contest and the McGarrahan claim.

BLACK, JOHN, an eminent newspaper editor, and classical scholar of some reputation, born in Berwickshire in 1783, died in 1855. Left an orphan at the age of twelve, he commenced life in the office of a writer, but soon left that place for Edinburgh, where he became a writer's clerk. While in this capacity he was assiduous in the work of self-education; he acquired German from a German musician, and Italian from a refugee. In 1810 he went to London, and was engaged as a parliamentary reporter for the "Morning Chronicle," of which paper he afterwards became editor. He retired from the editorship in 1843.

BLACK, WILLIAM, a Scotch novelist, born in Glasgow in 1841. He began his career as a journalist. He was special correspondent of the "London Star" during the war between Prussia and Austria in 1866, and was subsequently assistant editor of the "London News." The work by which he became known as an author of established reputation was *A Daughter of Heth*, published in 1871. *A Princess of Thule* (1873) is perhaps the best of his numerous works. In 1874 he abandoned journalism, and in 1876 he visited America. During 1888 he wrote for

"Harper's Magazine." At the present writing, 1891, his most recent work is *The New Prince Fortunatus*.

BLACK ACTS, the acts of the Scottish parliament of the first five Jameses, those of Queen Mary's reign, and of James VI down to 1587. They were called the black acts because they were all printed in the black or Saxon characters.

BLACK ASSIZE, the common name of an extraordinary and fatal pestilence which broke out at Oxford at the close of the assizes 1577, immediately after the passing of sentence on Richard Jencks, condemned to lose his ears. It was supposed to be a Divine judgment on the cruelty of the sentence; but it is satisfactorily explained by the pestilential atmosphere of the adjoining jail, then, as it was long after, a place of misery, filth, and disease. From July 6 to Aug. 12, 510 persons died in Oxford and the neighborhood of this dreadful malady, among whom were the chief officials who sat on the assize, most of the jury, and many members of the University. Women, children, physicians, poor people, and visitors are said to have escaped the infection.

BLACK, ADAM, publisher, born in Edinburgh, Feb. 20, 1784, died Jan. 24, 1874. He was trained as a bookseller in his native city and in London. Forming a partnership with a nephew, he established the Edinburgh business of Adam and Charles Black. The firm gained position and fortune chiefly through the purchase of the copyright of the *Encyclopædia Britannica* in 1827, after Constable's failure; and that of Scott's novels from Cadell's representatives in 1851. A seventh and eighth edition of the *Britannica* was issued during Black's business connection with the firm, while Scott's novels had a large and steady sale. Black was a prominent and useful citizen of Edinburgh; was twice lord-provost, and was Liberal M. P. for Edinburgh (1856–65). A statute was erected at Edinburgh in 1877, in recognition of his services.

BLACK-BAND IRONSTONE, an ore of iron found very extensively in Scotland and elsewhere. It occurs in the Carboniferous system in regular bands, layers, or strata, and generally associated with coal and limestone. It is mainly a carbonate of iron, accompanied by much coaly matter, and can be easily reduced. See *Britannica*, Vol. XIII, p. 285.

BLACK BEETLE, a popular name for the common cockroach of Great Britain. The term is also applied to a great family of beetles known as *Melanommatina* in the heteromorous suborder of *Coleoptera*.

BLACKBERRY, a name common to several roseaceous plants of the genus *Rubus*, and to their fruit which consists of many small juicy drupelets, which unlike those of the raspberry, fall off with their receptacle. Several varieties of blackberry are extensively cultivated in the United States. The roots of the high-blackberry, *Rubus villosus*, and of the low-blackberry or dewberry, *Rubus canadensis*, are much used in medicine as a tonic astringent.

BLACK BOOK, a collection of English admiralty law in the 14th century, first edited by Sir Travers Twiss (four volumes, 1871–76). It indicates the pretensions of the civil law as regards trial without jury, torture, etc., which afterwards led to legislation in vindication of the position of the common-law courts. *Black Book* is also a usual term for the reports presented to parliament in 1536, on which the legislation for the dissolution of the monasteries and the secularizing of their revenues proceeded. These reports probably never existed as a book. A list of habitual criminals, first published in 1877, has been also so called. See *Britannica*, Vol. I, p. 157; Vol. XXI, p. 584.

BLACK-BULLY, or **SAPODILLA**, **ACHRAS SAPOTA**, a large South American tree, belonging to the *Sapotaceæ*. It is cultivated for its fruit, the *sapodilla* or *sapodilla-plum*. Its wood, which is of a reddish-brown color, and very durable, is used for ship-building.

BLACKBÜRNE, **FRANCIS**, Lord Chancellor of Ireland, born at Great Footstown, County Meath, Nov. 11, 1782, died Sept. 17, 1867. In 1798 he entered Trinity College, Dublin. Called to the English bar in 1805, and to that of Ireland in 1822, he was appointed attorney-general for Ireland in 1830, and again in 1841, master of the rolls in 1842, chief justice of the Queen's Bench in 1846, and lord chancellor of Ireland in 1852 and 1866. He thus served under both Whig and Tory governments, and was brought into close connection with the leading politicians on either side; while at different times he had the duties imposed on him of prosecuting O'Connell, and judging Smith O'Brien. In 1867 he declined an offer of a baronetcy.

BLACK CAP, the cap worn by English judges as a part of full dress, and so put on by them when a prisoner is condemned to death.

BLACKCAP, **BLACKCAP WABBLER**, or **BLACKCAP FAUVETTE** (*Sylvia atricapilla*), a bird of the great family of the *Sylviadæ*, or *Warblers*. It is regarded as the sweetest song-bird in Britain, or indeed in Europe, except the nightingale; it is a rather smaller bird than the nightingale; the general color is gray, with an olive tinge above and becoming white below; the upper part of the head is black, and the feathers somewhat erected, giving the bird a hooded appearance. In Britain the blackcap is only a bird of passage, though it extends its migrations as far north as Lapland. In the South of Europe it is found both in summer and winter. See *Britannica*, Vol. XXIV, p. 553.

BLACK CHALK, various kinds of clay-slate, containing a considerable proportion of carbon. It is used for drawing, and is also ground down to form a black paint. It is found as a rock of slaty texture and bluish-black color in the island of Islay and in Caernarvonshire; also in Spain.

BLACK DEATH. See **PLAGUE**, *Britannica*, Vol. XIX, p. 164.

BLACK DRAUGHT, a popular purgative medicine, consisting of an infusion of senna with sulphate of magnesia.

BLACK EARTH (*Tchernozem* of Russian geologists), the name given to a deposit which covers vast areas in southern Russia. It closely resembles the löss of Central Europe in texture and structure, and bears the same relation to the glacial accumulations of Russia that the löss of the Rhine, the Danube, etc. does to those of Central Europe. It is probably the fine-grained silt derived from the torrents that escaped from the melting snows and glaciers of the Glacial period. It varies in color from dark brown to black, and in thickness from a foot or two up to six or seven yards, occasionally reaching, it is said, even to 60 feet.

BLACKFEET INDIANS, a tribe of North American Indians, the most western division of the Algonquin stock. See **INDIANS, AMERICAN**, in these *Revisions and Additions*.

BLACKFISH, a fish of the family of the *SCOMBERIDÆ*, very nearly allied to the beautiful *Coryphænes*, so frequently called dolphins. It is found in the Mediterranean Sea and on the western coasts of Europe. It is 30 inches in length, weighs about 14 pounds and has a single elongated dorsal fin with short rays rising from a thin elevated ridge; the skin is tough and can be stripped off like that of an eel. The blackfish, or the *Tautogaonitis*, found along the American coast, is highly esteemed

for the table. A species of whale is also called blackfish. See *Britannica* Vol. XXIV, p. 686.

BLACK FLUX is prepared by heating in a covered crucible ordinary or crude cream of tartar, or the bitartrate of potash, when the tartaric acid is decomposed and charred, forming carbonic acid, which remains in combination with the potash as carbonate of potash, accompanied by much free carbon. This very intimate mixture of carbonate of potash and carbon is a fine black powder of great service in the fluxing of metallic ores, as of lead, and the separation of the metal therefrom. The black flux is likewise employed as the raw material from which, on the application of heat in iron vessels, the metal potassium can be obtained.

BLACK FRIARS, friars of the Dominican order. The old Dominican monastery in London, dating from 1276, stood near the north end of Blackfriars Bridge.

BLACK FRIDAY, any Friday marked by a great calamity. In England it has especial reference to Dec. 6, 1745, as being the day on which news was received in London that the young pretender, Charles Edward, had reached Derby; or to May 11, 1866, from a commercial panic then at its height, caused by the stoppage of Overend, Gurney & Co., London. In the United States it has reference to the financial panic caused by speculation in gold in the city of New York, Sept. 24, 1869; or to a similar panic, which began Sept. 18, 1873.

BLACKGUARD, a term used in the 16th century for the lowest menials of a noble house—the scullions who cleaned pots and pans. It was also used of the hangers-on of an army, camp-followers, then a rabble, and now used of vagabonds in general.

BLACK HAWK, a noted chief of the Sac and Fox Indian tribes, born in 1767 at Kaskaskia, Ill., died at his camp on the Des Moines River, Oct. 8, 1838. Black Hawk and 500 warriors joined the British in the war of 1812. When the main body of the two tribes removed to the western bank of the Mississippi, Black Hawk and his followers refused to go, although their lands had been given to the whites by treaty. After considerable trouble the Indians began to massacre the settlers, and a United States force was sent out to conquer them. On Aug. 2, 1832, Black Hawk was obliged to surrender.

BLACK HILLS, a group of mountains in South Dakota and Wyoming Territory. Laramie Peak, the highest in the range, rises 8,000 feet above sea level. This region being fertile, well wooded and watered, is adapted to dairying, but the mountains are most noted for their gold, limestone, lead and tin.

BLACKHEATH, an open common in the county of Kent, five miles southeast of London. It commands a fine view of great extent, and being a healthy tract many villas have been built on its margin. It is a favorite holiday resort for Londoners. It is one of the few places where the ancient Scottish game of golf is practiced. Here the Danes encamped in 1011, and the Londoners welcomed Henry V from Agincourt.

BLACK HOLE, a name given to a dungeon or dark cell in a prison, but especially associated with an apartment known as the "Black Hole of Calcutta," where, in 1756, a party of English were confined in the most cruel manner. The garrison of the fort connected with the English factory at Calcutta having been captured by the Nabob Suraja Dowlah, this barbarian caused the prisoners, 146 in number, to be confined in a cell 20 feet square, which had only two small windows, and these were obstructed by a veranda. The crush of the sufferers was dreadful, and after a night of agony from pressure, heat, thirst, and want of air,

there were in the morning only 23 survivors. See *Britannica*, Vol. IV, p. 656; Vol. XII, p. 801.

BLACKIE, JOHN STUART, a Scottish writer, born in Glasgow in 1809. He was educated at Aberdeen and Edinburgh, and in 1829 went to the Continent, where he continued his studies at Göttingen and Berlin, and afterwards at Rome. In 1834 he published a good metrical translation of Goethe's *Faust*, and in the same year passed as advocate at the Edinburgh bar. But he was more interested in literary pursuits than in the practice of his profession, and soon became known by his articles on German subjects contributed to the magazines of the time. In 1841 he was appointed to the chair of Humanity in Marischal College, Aberdeen, which he held until 1852, when he was elected to the Greek chair in the University of Edinburgh. After he became professor he took an active part in promoting educational reform, and in the movement that led in 1859 to the remodeling of the Scottish Universities. He always figured as a patriotic champion of Scottish nationality and its characteristic features. During the years of 1874-76 he advocated throughout the country with great enthusiasm the foundation of a Celtic chair in Edinburgh University, and was successful in raising a large sum for its endowment. He resigned his chair in 1882. He published a fine verse translation of Æschylus in 1850, another of the *Illiad* in ballad meter in 1866, as well as several volumes of verse. His prose works embrace moral and religious philosophy, the method of history, the land laws and a short life of Burns (1888). His principal philological papers were collected in *Horæ Hellenicæ* (1874). In the same year he published *Self-Culture*.

BLACKING, the material employed for producing a black, glazed, shining surface on leather. The main ingredient in various kinds of blacking is bone-black, which is mixed with oil, raw sugar or molasses, and a little sulphuric acid.

BLACK ISLE is a common name for the peninsula, in Easter Ross, lying between the Beauly and Moray Firths and Cromarty Firth. See Ross, *Britannica*, Vol. XX, p. 854.

BLACK JACK, a name given by miners to blende. It was also in former times the name applied to a kind of drinking flagon.

BLACK LEAD, the popular name of graphite, or plumbago, a mineral consisting chiefly of carbon. See CARBON, *Britannica*, Vol. V, pp. 86, 87.

BLACK LETTER, a name now commonly applied to the Gothic or Old English letter, which was introduced into England about the middle of the 14th century. See TYPOGRAPHY, *GOthic*, *Britannica*, Vol. XXIII, p. 694.

BLACK LIST, a name applied to printed lists connected with insolvency, bankruptcy, and other matters affecting the credit of firms and individuals, and which are circulated for the private guidance of the mercantile community, with a view of affording protection against bad debts, frauds, etc. The term is also frequently used of any list of persons who are deemed objectionable by the makers or users of the list.

BLACKMAIL, a rent or tribute formerly exacted by freebooting, chiefs from the people in the Border counties of England and Scotland, and along the Highland border. It was a kind of compromise with robbers, and bought immunity from the attacks not only of those to whom it was paid, but also of others. It continued to be exacted along the Highland border until about the middle of the 18th century. The term is now applied to extortion of any kind by intimidation. It usually implies involuntary payment of money through fear of threatened injury to reputation.

BLACK MONDAY, Easter Monday, April 14, 1360, so called from the extraordinary darkness and the fatally bitter cold. Stow, in his *Annals* says: "The 14 day of April and the morrow after Easter day, King Edward (III) with his host lay before the city of Paris, which day was full darke of mist and haile and so bitter cold that many men dyed on their horses with cold; wherefore unto this day it hath beene called the *Blacke Munday*."

BLACKMORE, RICHARD DODDRIEGE, an English novelist, born at Longworth, Berkshire, in 1825. Educated at Blundell's School (Tiverton), and Exeter College, Oxford, he subsequently studied law, was called to the bar in 1852, and practiced for a time as a conveyancer. His first publications were *Poems by Melanter* (1854), *Epullia* (1855), *The Bugle of the Black Sea* (1855), followed by *The Fate of Franklin* (1860), and a translation of the first and second books of Virgil's *Georgics* (1862). Other volumes of verse have followed these, as well as a complete translation of the *Georgics* in 1871. His first novels were: *Clara Vaughn* (1864) and *Cradock Nowell* (1866), but his first distinct success was *Lorna Doone, a Romance of Exmoor* (1869), which reached a 22d edition in 1884, and has remained the favorite of his works. His other novels are: *The Maid of Sker* (1872) perhaps his second best story; *Alice Lorraine* (1875), *Cripps the Carrier* (1876), *Erema* (1877), *Mary Anerley* (1880), *Christowell, a Dartmoor Tale* (1882), *Tommy Upmore* (1884), and *Springhaven* (1887).

BLACK MOUNTAINS, a group in Yancey county, N. C., a short distance west of the Blue Ridge, so called from the balsamic firs which grow on the crests of the mountains. Black Dome, or Mitchell's High Peak, is 6,707 feet, the highest peak east of the Rockies, and is named for Dr. Mitchell, of North Carolina, who died while exploring the region, and who is here buried.

BLACK OAK, a handsome large tree of the United States, constituting the genus *Quercus tinctoria*, or, according to some botanists, a variety of *Quercus coccinea*. It yields a thick bark much used for tanning and from which the yellow dye known as quercitron is obtained.

BLACK PRINCE, the popular title conferred upon Edward (1330-76), eldest son of Edward III. It is said, but not proven, that the name was given from the color of the armor worn by him. See *Britannica*, Vol. VII, p. 686; Vol. VIII, p. 319.

BLACK QUARTER, an infectious disease of cattle. See MURRAIN, *Britannica*, Vol. XVII, p. 58.

BLACK RIVER, or **BIG BLACK RIVER**, a stream 350 miles long which rises in Iron county, Mo., flows southwestward into the White River at Jacksonport in Arkansas, and is navigable, when the water is high, for about 100 miles, by small river steamboats.

BLACK RIVER, of New York, about 125 miles long, rises in Herkimer county, flows in a northwesterly direction and empties into Lake Ontario near Watertown. The Black River Canal, between Lyon's Falls and Rome, allows boats to pass from the river into Erie canal.

BLACK RIVER FALLS, a town of Wisconsin, county-seat of Jackson county, situated on Black River, about fifty miles north of La Crosse. The river furnishes a valuable water-power; and there are many flour mills, lumber mills, and other manufacturing factories.

BLACK ROD, GENTLEMAN USHER OF THE. In England, an officer of the House of Lords, appointed by letters-patent. He is chief gentleman-usher to the sovereign, and usher of the Garter, at the chapter-meetings, of which he keeps the door. He has charge of all arrangements for keeping order in

the House; takes into custody any peer guilty of breach of privilege; and (himself, or by his deputy the yeoman-usher) summons the House of Commons to the peers when the royal assent is given to bills, or when royal speeches are read. The appointment of messengers, door-keepers, etc., rests with Black Rod. His title is derived from the black rod which he carries. The name is also given to similar functionaries in the legislatures of the Dominion of Canada and other British colonies.

BLACKSBURG, a village of Virginia, about seventy-five miles west of Lynchburg. It is the seat of the Virginia Agricultural and Mechanical College.

BLACK SNAKE, a species of snake common in the United States from Louisiana to Connecticut; is of an almost uniform leaden color, is one of the largest serpents in North America, and is remarkable for its agility. It moves along the ground with a swiftness equal to that of a horse, glides over bushes, and climbs trees. It feeds on small quadrupeds, birds, frogs, etc.; frequently plunders poultry yards of eggs, and enters dairies to drink milk and cream, of which it is very fond, but compensates for these depredations by killing rats and mice. It has no poison fangs, but is not slow to bite.

BLACKSTONE RIVER, of Massachusetts, rises in Worcester county and empties into Providence River after having followed a southeasterly course. It measures about 75 miles, and furnishes water-power to several manufacturing villages.

BLACKWALL, a town of Middlesex, England, at the junction of the Lee with the Thames, four miles southeast of London; has foundries, ship building-yards, and the East and West India Docks. A railroad connects Blackwall with London, and, to avoid the dangers and delay of the "pool," many passengers proceed by this railway to embark in steamers at Blackwall instead of going on board at London Bridge.

BLACK WALNUT, the *Juglans nigra* of the United States. It is a handsome tree, which produces an edible nut, and is much prized for its valuable timber.

BLACK WATCH, the name given to the first of the Scottish Highland regiments which had its origin in a commission granted to John, second Earl of Athole, in 1668, to raise and keep a sufficient guard for securing peace in the Highlands. The term *black* arose from the dark color of their tartan uniform, which distinguished them from the regular troops, called the *Saighdean Dearg*, or "red soldiers." Originally three companies, in 1729 the number was increased to six, and these formed into the 42d Regiment under the command of the Earl of Crawford, in 1739. In 1743 the regiment joined the troops in Flanders and first went into action at Fontenoy, since which it has been one of the most distinguished corps in the British army. In 1872 the officers of the corps erected a monument in Dunkeld Cathedral in memory of those who had fallen in battle from the creation of the regiment till the close of the Indian mutiny in 1859; and a memorial cairn, raised by public subscription, was unveiled Nov. 13, 1887, in the field near Aberfeldy, where the regiment first assembled in 1739.

BLACK WATER, a name of five Irish rivers, one of which deserves notice—the Blackwater of Cork, which runs across Cork county in a carboniferous limestone basin. High mountains bound it on the south, and its chief feeders come from the north. It is 100 miles in length, the seventh in size of the Irish rivers. The scenery along its banks is extremely beautiful and picturesque, with ruins, mansions, and woods. It abounds in salmon.

BLACKWELL, ANTOINETTE LOUISA BROWN, born at Henrietta, New York, May 20, 1825, graduated at Oberlin in 1847, completed a theological course in 1850, and afterwards preached and delivered lectures on literature, temperance, slavery and woman suffrage. She has been a Congregational minister but is now connected with the Unitarian denomination and preaches occasionally. She is the mother of six children and lives in Elizabeth, N. J. She is the author of several books.

BLACKWELL, ELIZABETH, born in Bristol, England, in 1821. Her family emigrated to America, and, after settling in Cincinnati, Ohio, the father died, leaving his wife and nine children in great poverty. Elizabeth contributed toward the family support by teaching school. She resolved to become a physician and prosecuted her studies under many difficulties. The medical colleges of New York, Philadelphia and Boston refused to receive her, but she was at last admitted to the Geneva school in New York, from which she graduated with honor in 1849, being the first woman in America to obtain the degree of M. D. She went to Paris, where she studied midwifery. After this she was admitted to the hospital of St. Bartholomew, in London, where she studied and practiced medicine. In 1851, on her return to America, she settled in New York, and began the practice of medicine. She met with some opposition from the members of the profession, but was able to overcome it. In 1854, with the aid of her sister, Dr. Emily Blackwell, she started an infirmary for women and children. A few years later the sisters established a woman's medical college in connection with the infirmary. Dr. Elizabeth, in 1869, went to London, where she practiced medicine for several years, lectured, and assisted in forming a woman's medical college. She has written health tracts and books on hygiene.

BLACKWELL, LUCY STONE. See **STONE**, LUCY.

BLACKWELL'S ISLAND, a part of New York city; it lies in the East River, and has an area of 120 acres. On this island are charity and fever hospitals, a penitentiary, alms and workhouses, and a light-house.

BLACKWOOD, WILLIAM (1776-1834), a distinguished publisher, born at Edinburgh in 1776, at which place he settled as a bookseller in 1804. In 1817 he became a publisher on his own account and issued the first number of "Blackwood's Magazine." The literary ability displayed in this periodical was so much in advance of the monthly magazines then existing that from the first it was a great success, and it secured for itself a wonderful reputation. He was himself chief manager of the magazine, and conducted the whole of the correspondence connected with it until his death, in 1834. Under his sons, the Messrs. Blackwood, who succeeded him in the business, "Maga" has not only sustained but increased its reputation.

BLACKWOOD RIVER, in West Australia, enters the Hardy Inlet six miles northeast of Augusta. It flows through the counties of Durham and Nelson first to the west then to the south, traversing a district of wood and pasturage. It is navigable for boats to a distance of 20 miles.

BLADDER GREEN, AND **SAP GREEN** are colors derived from the buckthorn, a genus of *Rhamnaceæ*, and in use by dyers and painters.

BLADDER-NUT, a genus of plants, *Staphylea*, the type of a small natural order, *Staphyleaceæ*. They are mostly trees or shrubs of elegant appearance, and the two species, *S. trifolia* and *S. pinnata*, are much used for ornamental planting. Inflated membranous capsules inclose the seeds and give the popular name to the trees. See *Britannica*, Vol. II, p. 320.

BLADDER-SEED (*Physospermum cornubiense*), an umbelliferous weed noted for its inflated fruit.

BLADDER-SENNA (*Colutea arborescens*), a leguminous tree of Southern Europe, frequently cultivated. It owes its name partly to the dry inflated pod, partly to its popular use as a purgative.

BLADDER-WORM, the asexual stage of a tape worm or cestode. The stage owes its name to the bladder-like form resulting from the encysted embryo. See TAPEWORMS, *Britannica*, Vol. XXIII, pp. 52, 53.

BLADDERWORT, a genus of plants of the natural order *Lentibulaceæ*, containing numerous species. Their bright blossoms, with those of the water lilies, etc., adorn the surface of lakes, ditches, and marshes in almost all parts of the world; they are particularly abundant within the tropics. The roots, stems, and even leaves are furnished with numerous little bladders, which are filled with water, till it is necessary that the plant should rise for the expansion of the flowers, when they become filled with air; and this again gives place to water after flowering is over, so that the seeds are ripened at the bottom. The bladders of some species have an orifice closed by a very thin elastic valve opening inwards; aquatic insects sometimes enter them and are imprisoned.

BLADENSBURG, a village of Prince George's county, Maryland, situated on the eastern branch of the Potomac, about six miles northeast of Washington. It was the scene of a battle fought Aug. 24, 1814, which resulted in the defeat of the Americans, and the capture and destruction of the city of Washington by the British.

BLADEN SPRINGS, a village of Choctaw county, Alabama, situated near the Tombigbee River, about eighty-five miles north of Mobile. It is noted for its copious medicinal springs. These are six in number, saline-chalybeate, and are highly valued for their curative effects in cases of dyspepsia, chronic rheumatism, and kidney and bowel complaints.

BLAES, a Scottish collier's name for the shale of the coal-measure, originating apparently from the "blae" or bluish color sometimes noticed in the shale. The term is occasionally used by geologists.

BLAEU, WILLIAM JANSSON, Dutch mathematician, map-drawer and publisher, born at Alkmaar, Holland, in 1571, died in 1638. His terrestrial and celestial globes excelled in beauty and accuracy everything that had preceded them. For description of his work, see *GLOBE*, *Britannica*, Vol. X, p. 683. His son, Jan, commenced business on his own account at Amsterdam in 1637, but afterwards entered into company with his brother Cornelius (died 1650). He edited the well-known *Atlas-Major* in eleven volumes. This is a remarkable work, with many curious plates; and the maps are extremely valuable from the light they throw on local history. He further published a series of topographical plates and views of towns. Jan left three sons, two of whom carried on the business with success until about 1700. Some of their classical publications, especially Cicero's *Orationes* (1699), are highly prized.

BLAGOVIESHTSCHENSK, a town of the Amur province of Russian Asia, at the confluence of the Amur and Seja rivers. Till 1882 it was the capital of the province. Population, 7,975.

BLAINE, JAMES GILLESPIE, an American statesman, born of Scotch-Irish parentage at West Brownsville, Pa., Jan. 31, 1830. As a boy at school he excelled in literature and mathematics, and at the early age of thirteen entered Washington College in his native county, graduating in 1847. Sub-

sequently he became a teacher in the military institute at Blue Lick Springs, Ky., where he married Miss Harriet Stanhope, a teacher in a neighboring seminary. Soon after his marriage he removed to Pennsylvania, and after studying law for a short time became a teacher in the Institution for the Blind at Philadelphia. In 1854 he removed to Augusta, Me., entering the journalistic ranks, first as editor of the "Kennebec Journal," and later as editor of the "Portland Advertiser." In 1858 he was elected to the State legislature, and served two terms, officiating as speaker during the last two years. During the same year (1858), he was made chairman of the Republican State Committee, which office he held for a score of years. In 1862 the Republicans elected him to the House of Representatives, and for 20 years he served in one or the other of the two Houses of Congress. During the war he favored all judicious and practical resolutions for its vigorous prosecution, and at its close he bore an active part in the reconstruction measures of the country. The 14th Constitutional Amendment was called the "Blaine Amendment," as it was formulated and earnestly advocated by him. He was largely instrumental in the negotiation of a treaty with England, in which the doctrine of perpetual allegiance was abandoned, and Great Britain accepted the American principle of equal rights and protection for adopted as well as for native citizens. From 1869 to 1875 Mr. Blaine was speaker of the House of Representatives, and his record in this capacity is generally conceded to have been a brilliant one. As presiding officer he was distinguished for his knowledge of parliamentary law, his impartiality in administration, and his physical endurance. His course in connection with the general amnesty bill, which provoked stormy discussion in 1876, strengthened his influence in the Republican party.

In 1876 Mr. Blaine was elected to the United States Senate, and at once became a most prominent and efficient member of that body. In the Republican national convention of that year he was a prominent candidate for nomination to the presidency of the United States, and lacked only 28 votes out of a total of 754 of receiving the nomination. At the Republican national convention in 1880 his friends again presented his name for nomination, and on the first ballot the vote stood: Grant 304, Blaine 284, Sherman 93, Edmunds 34, Washburn 30, Windom 10, Garfield 1. On the election of Mr. Garfield, Mr. Blaine accepted the appointment of Secretary of State, filling the office with rare ability and success, until the death of the president, when he retired from active public work, and began to write his famous historical work, entitled *Twenty Years of Congress*. In 1884 Mr. Blaine received the Republican nomination for President, but after a vigorous contest, failing to secure the electoral vote of the State of New York by the narrow margin of 1,047 votes out of a total of over 1,200,000, he was defeated in the general election. He spent the ensuing four years at work on his book and in foreign travel.

At the time of the nominating convention in 1888, Mr. Blaine was in Europe, and by formal letter declined to permit his friends to present his name as a candidate for the presidency. He returned, however, in time to aid efficiently in the canvass for Mr. Harrison, and on the election of the latter again accepted the appointment as Secretary of State. Among the important services since rendered in this office he took a leading part in settling the Samoan difficulties in the treaty between Germany, England, and the United States, and successfully invited and most efficiently presided over the Pan-American Congress held in Washington. At this

writing (1891), he is actively conducting on the part of the United States the discussion with England on the Bering Sea Seal-fishery question.

BLAIR, FRANCIS PRESTON, born in Abingdon, Va., April 12, 1791, died at Silver Spring, Md., Oct. 18, 1876. He early entered political life, and in 1829 was requested by the President to establish a Democratic newspaper in Washington which should be the organ of the party. In response Mr. Blair started the "Globe," and conducted it till 1845. In 1854 he assisted in organizing the Republican party; in 1860 was a member of the Chicago convention which nominated Mr. Lincoln, and after his election had considerable influence in the administration. He went South in 1864, and through personal influence tried to effect a peace with Jefferson Davis and other Southern leaders. The "peace conference," of Feb. 3, 1865, was a result of his labors. After Lincoln's death he opposed reconstruction measures and gave his support to the Democratic party.

BLAIR, FRANCIS PRESTON, son of Francis P. Blair, born at Lexington, Ky., Feb. 19, 1821, died at St. Louis, Mo., July 8, 1875. He was a Princeton graduate and began the practice of law in St. Louis in 1843. He served in the Mexican war, was editor of the "Missouri Democrat" and from 1852 to 1856 was in the Missouri Legislature. He joined the new Republican party in 1856 and was sent to Congress. In 1862 he was reelected. In 1861 he commanded an unauthorized force which guarded the St. Louis arsenal and took the State forces under General Frost, thus saving Missouri and Kentucky from the Confederates. He fought in the civil war, and was raised to the rank of major-general. He was at Lookout Mountain, Missionary Ridge and marched with Sherman to the sea. After the war he left the Republican party, being dissatisfied with its policy, was elected to his State legislature and in the same month was elected by the Democrats to the United States Senate.

BLAIR, HENRY WILLIAM, born at Campton, N. H., Dec. 6, 1834. His parents died before he reached the age of 13, and his early educational advantages were very limited on this account, and also because of his own ill-health. He studied law and in 1860 was elected prosecuting attorney of Grafton county. He enlisted in the civil war, but at the siege of Fort Hudson was so severely wounded that he was unable to engage in any further military service. He was from 1866 to 1869 in the New Hampshire legislature, and since 1875 has served in Congress. He is a reformer and introduced the important "Blair Common-School Bill." He gives his support to all such social questions as temperance and woman suffrage.

BLAIR, JAMES, educator, born in Scotland in 1656, died in Williamsburg, Va., Aug. 1, 1743. He was a clergyman of the Episcopal church and spent most of his life in the colony of Virginia. He established the William and Mary College, having gathered funds for it and secured the charter from the king. He was appointed its first president.

BLAIR, JOHN INSBLEY, capitalist, born in Warren county, N. J., Aug. 22, 1802. He has been an active business man, assisting in developing coal mines in Pennsylvania, building the railroad between Owego and Ithaca, N. Y., building the Delaware, Lackawanna and Western Railroad, and also assisting in laying roads in Iowa, Wisconsin, Kansas, Nebraska, Missouri and Texas. He was one of the original directors of the Union Pacific Railroad. He is a Republican, a member of the Presbyterian church, and a liberal benefactor of educational and religious objects, having given over \$500,000 for benevolent purposes.

BLAIR, MONTGOMERY, born in Franklin county, Ky., May 10, 1813, died at Silver Spring, Md., July 27, 1883. He served in the Seminole war, held several judicial positions in Missouri and Maryland, and being appointed by Lincoln to the Cabinet as Postmaster-General, he instituted various improvements in his department—notably money orders and postal railroad cars. He is said to have been the only one of the Cabinet who opposed the surrender of Ft. Sumter. After 1867 he lent his influence to the Democratic party.

BLAIR-ATHOL, a village in the county of Perth, Scotland, situated at the confluence of the Tilt and Garry. Blair Castle, the seat of the duke of Athol, is situated here. The larch-trees surrounding it are remarkable alike for their enormous size and for the fact of their being among the first planted in Scotland. See Britannica, Vol. XIV, p. 311.

BLAIR, a city of Nebraska, county-seat of Washington county, and an important railroad center. It is situated about three miles west of the Missouri River and thirty miles above Omaha. It has a large local trade and various important industries. It contains a number of elevators, mills, and wagon-factories.

BLAIR-GOWRIE, a village of Perthshire, very beautifully situated on the east side of a range of hills, on the right bank of the Erich, 16 miles north-east of Perth. It consists chiefly of one winding street. It has flax-spinning and weaving factories, driven by the Erich, employing 700 to 800 hands. Pure white marble is found in the vicinity. Population, 4,833.

BLAIRSVILLE, a village of Georgia, county-seat of Union county. It is noted for the marble and gold found in its vicinity.

BLAIRSVILLE, an important shipping center of Pennsylvania, situated on the Conemaugh River, about 55 miles east of Pittsburgh. Coal, lumber, grain, and pork are here shipped in large quantities.

BLAKE, EDWARD, son of William Hume Blake, born in Adelaide, Middlesex county, Ontario, Can., Oct. 13, 1833. He graduated with honors from the University College of Toronto in 1857, and two years later was called to the bar. He was simultaneously a candidate for election to the House of Commons of the Dominion and the Legislative Assembly of Ontario. To the latter body he was elected, and soon became (1867) leader of the opposition. In 1871 he became premier of the Ontario legislature, holding office for one session and then resigning. Under the Mackenzie administration Mr. Blake held successively two important cabinet positions.

BLAKE, LILLIE DEVEREUX, born at Raleigh, N. C., Aug. 12, 1835. She received her education at Miss Apthorp's school in New Haven, Conn., and afterwards took the Yale course with tutors at home. She is a prominent advocate of woman suffrage, and has frequently lectured on this subject. She takes an active part in political campaigns, and is a writer of several sketches and stories. The law giving school suffrage to the women of New York was largely due to her efforts. She was the first to ask that women be admitted to Columbia College.

BLAKE WILLIAM PHIPPS, born in New York city, June 1, 1826. He was a scientific student at Yale, and in 1853 went on a U. S. Pacific railroad expedition as geologist and mineralogist. He has edited the "Mining Magazine" (1859-60), and has been connected with explorations in Alaska, China, and Japan. In 1864 he was called to the chair of mineralogy and geology in the California College.

BLANC, ANTHONY, born in Surry, France, Oct. 11, 1792, died at New Orleans, June 20, 1860. He was a Roman Catholic archbishop. He left his native country in 1817, a year after his ordination to the priesthood, and came to the United States; was created bishop of New Orleans in 1835, and archbishop in 1850. He founded a theological seminary, introduced several religious orders into his diocese, visited Rome, founded colleges, academies for young ladies, free schools, convents and orphan asylums.

BLANC, AUGUSTE, a French art critic, brother of Jean Joseph Louis, born at Castres in 1813, died in 1882. His contributions to various French periodicals, on matters connected with art, were numerous. He was the editor and principal writer of the very complete and extensive *History of the Painters of all the Schools*. His *Works of Rembrandt* has passed through many editions. He was director of Fine Arts in 1848 and in 1871.

BLANC, JEAN JOSEPH LOUIS (1811-82), French Socialist and historian, born Oct. 29, 1811, at Madrid, where his father was inspector-general of finance under King Joseph. After finishing his school education he went to study in Paris. For two years he was a private tutor at Arras, and in 1834 returned to Paris, where he contributed to various political papers, and where in 1839 he founded the *Revue du Progrès*, in which he first brought out his chief work on Socialism, the *Organisation du Travail*, which in 1840 appeared in a separate form. The book asserts that in the existing order of society the spread of education among the masses would be dangerous—would, in fact, be impossible. It denounces the principle of competitive industry, and proposes the establishment of social workshops, composed of workmen of good character, and subsidized by the state. The book obtained for its author a wide, enthusiastic popularity among French workmen. Next, in 1841-44, Blanc published an historical work, entitled *Histoire de Dix Ans* (1830-40), which produced a deadly effect on the Orleans dynasty. It owed its success partly to the exposure it made of the immorality of the crown and its advisers, partly to that passionate ardor which changed the tranquillity of history into the vehemence of a pamphlet. This was followed by the first volume of a *Histoire de la Révolution Française*. On the breaking out of the revolution of February, 1848, his popularity with the working classes led to his appointment as a member of the Provisional Government, and he was placed at the head of the great commission for discussing the problem of labor, which had its sittings in the palace of the Luxembourg. He was accused of a share in the disturbances of the summer of 1848, and made his escape to London, where he spent many years. During his exile he devoted himself to political and historical literature. He completed his *Histoire de la Révolution Française*, and carried on a large correspondence for the French journals. On the fall of the Empire Blanc returned to France, and was elected to the National Assembly in 1871. After 1876 he was member of the chamber of deputies. He died at Cannes, Dec. 6, 1882.

BLANC, LE, a thriving town of France, in the department of the Indre, situated on the Creuse. Above Le Blanc the river expands so as to form a lake, but at the town it contracts, and breaks into cascades with sufficient fall to turn the machinery of several manufactories. It has linen-yarn and cloth-mills, potteries, tanneries, vinegar-works, forges, etc. It is very ancient, having been frequented by the Romans. Population, 6,000.

BLANCH, or BLENCH-HOLDING, one of the ancient feudal tenures in the law of Scotland relat-

ing to land, the duty payable to the superior or lord being in general a trifling sum, as a penny Scots, or merely illusory, as a pepper-corn, 'if asked only.' Anciently many estates in Scotland were held, both by the crown and other superiors by this tenure. It is now seldom adopted in the constitution of an original right of property.

BLANCHARD, THOMAS, born at Sutton, Mass., June 24, 1788, died at Boston, April 16, 1864. He was an inventor, and some of his inventions were a new method of making tacks by machinery, a machine for turning and finishing gun-barrels, and an improved form of steamboat to be used for ascending rivers which have a rapid current. He also invented a steam wagon (before any railroad had been built), a method for bending heavy timber, and a machine for cutting and folding envelopes.

BLANCHING, a process resorted to by gardeners to avoid certain secretions which in ordinary circumstances take place in the leaves of plants, and to render them more wholesome for food. Blanching is accomplished in various ways, as by drawing up earth to the plants when the lower part of the leaf or leaf-stalks alone is to be blanched; tying the leaves together, by which the inner ones are blanched, as is commonly done in lettuce, etc. Blanching, although so simple and easy, is of great importance in the art of gardening, and the usefulness of many plants very much depends upon it. In cabbage and some other plants, the leaves form themselves into compact heads, and there is a natural blanching or etiolation.

BLANC-MANGE (Old French, *blanc manger*, "white food"), a dish formerly made of fowl, meat, eggs, etc.; now a name of different preparations composed of dissolved isinglass, arrow-root, corn-starch, etc., with milk and flavoring extracts.

BLANCO, CAPE, a remarkable headland on the west coast of Africa, the extremity of a rocky ridge, (called Jebel-el-Bied), which projects from the Sahara in a westerly direction, and then bending southward forms a commodious harbor, called the Great Bay. Southward to the mouth of the Rio Grande the shores are of a sandy character, with a current tending southwest, and prevalent northeast trade-winds. On account of the deficiency of good harbors, the prevalence of west winds, and other causes, the casualties to shipping are very numerous. The natives of the Canary Islands carry on a pretty lucrative fishery in the bay in boats of from 100 to 150 tons burden. Cape Blanco, which is composed of mixed calcareous and siliceous sandstone, was first discovered by the Portuguese in 1441.

BLAND, a beverage which is a common drink among the inhabitants of the Shetland Islands during the summer months. It has been described as being perfectly good and transparent when a year old, its flavor then bearing a strong resemblance to that of lemon-juice.

BLANDFORD-FORUM, a town in Dorsetshire, England, on the right bank of the Stour, sixteen miles northeast of Dorchester. It lies on a fine tract of pasture-land, famed for its multitude of cows. It is built of brick, and is neat and regular. It has manufactories of shirt buttons, and was formerly famed for its manufactures of band-strings, and point-lace. Population, 4,110.

BLANDRATA, GIORGIO, founder of Unitarianism in Poland and Transylvania, born in Saluzzo, Italy. He established himself as a physician at Pavia, but, on account of his heretical opinions, he was compelled to fly to Geneva in 1556; He went to Poland in 1558, hoping to find a greater freedom for thought and speech. In 1563 he

became the favorite physician of John Sigismund, prince of Transylvania. Here he spread his doctrine, and formed a considerable party. He was murdered in 1590 by his nephew, whom he had threatened to disinherit for his attachment to the Roman Catholic Church.

BLANKENBERGHE, a village on the coast of West Flanders, nine miles north of Bruges by rail. It has a harbor and a light-house, and the place is a popular summer resort. Population, 3,328.

BLANKENBURG, a town in the duchy of Brunswick, situated on the Harz mountains. It is walled, has a gymnasium and several charitable and educational institutions. Mining is the chief industry, iron, marble and dye-earths being abundant in the surrounding districts. Population, 3,600. On the lofty summit of Regenstein, half a mile distant, are the remains of a large castle, hewn out of the rock by Henry the Fowler in 919. Louis XVIII resided at Blakenburg, as Comte de Lille, from 1796 to 1798.

BLANKETEERS, the name applied to a body of Manchester operatives, who on March 10, 1817, met in St. Peter's Field, intending to march thence to London with a petition for parliamentary reform. Each man of the company had a rug or blanket strapped on his shoulders, so that he might bivouac on the road if necessary.

BLANK VERSE, a verse without rhyme and depending on meter alone. The classical productions of the Greek and Roman poets are composed on this principle. When the passion for imitating classical models set in, rhyme came to be looked upon as an invention of Gothic barbarism, and attempts were made in most countries to shake it off. The Italian and Spanish writers used blank verse as early as the beginning of the sixteenth century. The first blank verse in English is a translation of the second and fourth books of Virgil's *Aeneid*, by the Earl of Surrey, who was executed in 1547. Its adaptation to the drama was at once felt, and it soon became and has continued dominant in that department; but in other kinds of poetry it was not till the appearance of *Paradise Lost* (1667) that it could be said to have taken root, and even then the want of rhymes was felt, as the poet expected it would be. Many poets have since followed Milton's example. Some would restrict the name to lines of ten syllables, not considering it applicable to such metres as Southey's *Thalatala* and Longfellow's *Hiwatha*. In Italian and Spanish it never became popular, still less in French. The German language seems to admit every variety of blank metre.

BLANQUI, JEROME ADOLPHE, one of the first French economists, born at Nice in 1798, died at Paris in 1854. He was educated at the Lyceum of Nice, which city his family quitted in 1814, and he went to Paris to complete his studies. In 1825 he was appointed Professor of History and of Industrial Economy in the Commercial School at Paris. In 1838 he became a member of the Academy of Moral and Political Science. The Academy sent him to Corsica to study the condition of that country, and afterwards to Algiers and Turkey. He was requested to furnish a complete account of London in its financial and other aspects. This task he executed to the satisfaction of the savans who employed him. The Academy highly valued his abilities. In method he was ingenious, in style transparent, and even dry. Discussions became interesting from his lively mode of treating them. As a national economist he was somewhat inclined to Socialism; he was also in favor of free-trade. He wrote some excellent works on Political Economy.

BLANQUI, LOUIS AUGUSTE, brother of the preceding, born at Nice in 1805, died in 1880. He made himself conspicuous chiefly by his rabid advocacy of most extreme political opinions, which eventually led to his being condemned to ten years' imprisonment in Belleisle.

BLAPS, a genus of insects of the order *Coleoptera*, the type of a tribe called *Blapsides*. The species are numerous, of a dark color, destitute of wings, and have the elytra or wing case united. They inhabit dark and damp places, and feed chiefly on dead vegetable matter. They have the power of secreting and emitting a brownish acrid, irritating fluid of a peculiar and penetrating odor, with which they appear to be furnished for the purpose of self-defense.

BLÄSER, GUSTAV, a German sculptor, born at Dusseldorf in 1813. He is best known in this country by his bust of Humboldt in Central Park, New York. Other principal works are his colossal statue of Prussia, in Berlin, and his equestrian statues of Frederick William III and Frederick William IV.

BLASPHEMY. See *Britannica*, Vol. III, p. 807. In the United States, blasphemy has been made the subject of statutory enactments by several of the individual States. These enactments, however, are little more than confirmations of the common law and the older statutory laws of England. Profanity is generally classed by these State laws with blasphemy as an indictable offense.

BLASTING. See *Britannica*, Vol. III, pp. 808-11. See also *EXPLOSIVES*, in these Revisions and Additions.

BLASTODERM, an embryological term applied to the layer or layers of cells arising from the germinal disc, or the portion of a partially segmenting egg which undergoes division. In ova where there is a large quantity of nutritive material or yolk, as in fish or bird, the whole ovum cannot divide, and only a small (germinal) disc of "formative protoplasm" does so. The cells resulting from the division of this area become afterwards disposed in the ordinary germinal layers, and are in their earlier stages, as they grow round the yolk and become in their area of origin the seat of embryonic development, called the blastoderm.

BLAVATSKY, HELENE PETROVNA, theosophist, born in Russia about 1831. Col. Peter Hahn is her father, and Gen. Nicephore V. Blavatsky, deceased, a former governor of Armenia, was her husband. She has studied the mysteries of Buddhism in a Himalayan retreat, has published *Isis Unveiled*, and has founded the Theosophical Society, of which Col. F. P. Olcott is president, and Madame Blavatsky the secretary.

BLAYE, a fortified seaport of France, in the department of the Gironde, twenty miles from Bordeaux. It is defended by two forts. The port of Blaye is a very busy one, all inward bound vessels being required to anchor and deliver the manifests of their cargoes, and many outward bound lay in their provisions here. It has manufactories of linen and woolen, glass and earthenware, a considerable export trade in corn, wine, brandy, oil, fruits, soap, etc., and tribunals of jurisdiction and of commerce. It has a strong modern citadel, theater, hospital, agricultural society, etc. Population, 4,765.

BLAZON, BLAZONRY, heraldic terms originated in the custom of blowing a trumpet to announce the arrival of a knight, or his entrance into the lists at a tournament. The blast was answered by the heralds, who described aloud and explained the arms borne by the knight. It thus came to signify the art of describing the objects, their

positions, gestures, tinctures, etc., and the manner of arranging them on the shield.

BLEACHING. See *Britannica*, Vol. III, pp. 811-23.

BLEAK, a small fresh-water fish of the family of *Cyprinidæ*, of the same genus with the Dace, Minnow, etc. It is six or seven inches long, the nose is pointed, and the under jaw is longer than the upper; the scales are beautifully striated, the back an olivaceous green, and the sides, cheeks, and gill-covers silvery white. The tail is forked for half its length. On the inner surface of the scales a silvery substance is found in such abundance as to be much used for making artificial pearls, the white beads so common in many ornaments. It is not only a pretty fish, but is also much prized for the table.

BLED SOE, ALBERT TAYLOR, born in Frankfort, Ky., Nov. 9, 1809, died in Alexandria, Va., Dec. 8, 1877. He graduated at West Point, served on military duty in the Indian Territory, followed the teaching profession at Kenyon and subsequently at Miami, studied theology and preached for various churches (1835-38), studied and practiced law (1838-48), taught mathematics in the University of Virginia (1854-61), entered the Confederate army, and was made chief of the war bureau. In 1866 he began the publication of the "Southern Review," the organ of the Methodist Episcopal Church in the South. He wrote for various publications and published several books.

BLEIBACH, a town of Austria, in the province of Carinthia, pleasantly situated in the valley of the Drave, near the celebrated Bleiberg (Lead Mountain). The inhabitants are chiefly engaged in mining, and in washing and smelting the ore, of which from 1,500 to 1,800 tons are annually obtained. Population, 5,600.

BLLENDE, a name applied to a number of minerals composed chiefly of sulphur and certain metals, almost all of splendid lustre, but more exclusively to garnet or zinc blende. It is abundant in primitive and secondary rocks in many parts of the world, and is often associated with galena or lead-glance. It contains about sixty-six parts of zinc and thirty-three of sulphur. See *Britannica*, Vol. XVI, p. 392; Vol. XXIV, p. 785.

BLLENEAU, a village in the French department of Yonne, situated twenty-nine miles southwest of Auxerre. Here Turenne gained a victory over the Prince de Condé in 1662.

BLLENHEIM, capital of Marlborough district, New Zealand situated on the Wairau River, near the coast, twenty miles south of Pictou by rail. Population, 3,094.

BLLENHEIM DOG, or Marlborough Dog, a small spaniel, much resembling the King Charles breed in form and general appearance, but differing in the color, which is white, with orange or flamed-colored markings. In weight it should not

exceed five pounds. The Blenheim spaniel is the *Pyrame* of Buffon. It derives its English name from Blenheim Park, in Oxfordshire, where the breed was a favorite one from the beginning of the eighteenth century.

BLLENNY, a genus of acanthopterygious fishes, the type of a family, *Blennidæ*, of which the sea-wolf is the largest example. See *Britannica*, Vol. XXI, p. 614. The blenny is remarkable for the abundance of slimy matter which covers the skin. Many are destitute of scales. They have only one dorsal fin. Living in shoals which do not consist of great numbers, and frequenting rocky coasts, they are often found in pools left dry by the tide, or even among sea-weeds. They possess the power of using their ventral fins to aid them in moving about. Many of them retain their eggs within the oviduct until they are hatched, so that the young may be capable of seeking food for themselves. See *Britannica*, Vol. XII, p. 690.

BLLENNORRHEA: in pathology, a term applicable to a copious discharge from any mucous surface, but usually restricted to discharges from the genito-urinary mucous membrane.

BLLERE, a town of France, in the department of Indre-et-Loire, situated on the left bank of the Cher, which is crossed by a bridge, said to owe its origin to Henry II, of England. In its vicinity is the castle of Chenonceaux, the residence purchased by Henry II, of France, for the celebrated Diana of Poitiers. The castle escaped the fury of the Revolution, and is still in a good state of preservation. Among the curiosities shown to the visitor is the mirror used by Mary Stuart (Queen of Scots) on her marriage with the Dauphin. Population, 3,561.

BLLECHINGLEY, a town of Surrey, 20 miles south of London. From 2,000 to 3,000 tons of Fuller's earth are raised annually near Bletchingley. In cutting the railway tunnel the fossil bones of the iguanodon, an extinct reptile, were found here; also many Roman coins have been found in the vicinity. Population about 2,000, chiefly agriculturists.

BLLETS, decayed spots in apples, pears and other fruits. This decaying is often called *bletting*. It takes place chiefly by the decomposition of the protein compounds which the fruits contain, and the fermentation of the sugar; carbonic acid is formed, and by the microscope there may be discovered the fibers of a fungus pervading the bletted part.

BLLEIGH ISLANDS, that portion of the Feejee archipelago originally discovered by Tasman in 1643, and seen by Captain Bleigh, of the *Bounty*, during his wonderful voyage in an open boat. The group lies in nearly 180° of longitude, and 15° 30' south latitude.

BLLEIGHT. See *Fungus*, *Britannica*, Vol. IX, pp. 827-36. See also *MILDEW*, Vol. XVI, pp. 293-94.

BLIND, Books for the. For general article on the **BLIND**, see *Britannica*, Vol. III, pp. 826-33. The first printed book for the blind was brought out in 1784 by M. Valentine Haüy, of Paris, the founder of the *Institut des Jeunes Aveugles*, the institution for blind children. The book was printed in raised type, the italic letter or written form of Roman letter being used. Haüy cast fonts of types, which were approved by the French Academy of Sciences, and exhibited them to the royal family at Versailles, the new art producing a great sensation.

Mr. James Gall, of Edinburgh, saw specimens of Parisian type in 1826, and resolved to print a Bible for the blind. Being a printer and publisher, he

endeavored to improve the type. His first "book" was brought out in 1827 in a triangular modification of the common alphabet, of which the following is a specimen:

BEKOLD THE LAMB OF GOD

Later, Gall brought out other volumes in serrated letters, of which the following is a specimen:

BEKOLD THE LAMB OF GOD

The following is a specimen of the type used in 1834 by Dr. Samuel G. Howe, of Boston, and this was the style of letter used later by the American

Bible Society in printing its copies of the Scriptures for the blind:

BEHOLD THE LAMB OF GOD

In 1837 Mr. John Alston, of Glasgow, began the printing of the Bible in the following letter:

BEHOLD THE LAMB OF GOD

Nearly simultaneously with the above, Mr. Lucas, of Bristol, England, brought out a book for the blind, using an ingenious system of stenographic letter, of which the following (the words are, "Behold the Lamb of God") is a specimen:

• 310/c | 1. ~ 3 01 ~

Soon after the above, which was received by many of the blind with great favor, Mr. Frere, of London, an instructor of the blind, devised another character system, which he described as "a scientific representation of speech, the alphabet containing only one character for each of the simple sounds in the English language." It was also received with much favor, and in 1839 the Bible was printed in that new letter. The following is a specimen:

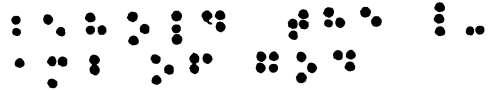
L - 0 U \ . 4 U 3 V 2

Mr. Frere's phonetic system included the plan of return alternate lines; that is, reading every second line from right to left and using reversed characters for the alternate lines. Dr. Moon, of the blind asylum at Brighton, England, modified the Frere system, introducing radical changes. Some of his characters resemble the letters for which they are designed to represent. The return alternate lines are retained, but the characters are not reversed. The characters are also considerably larger than those of Frere—a great convenience to the learner. The following is a sample:

L Γ 0 0 L 3 - 0 Γ L Λ)
 7 Γ 0 L 7)

Another system, invented in 1834 by M. Braille, formerly a pupil, now a teacher in the Institute of Paris, is now largely in use in France, Switzerland, Belgium and Holland. It consists of the sixty-two

combinations of form which six dots, ∴, can be made to assume. The following is a specimen representing the phrase (selected for each of the illustrations given above), "Behold the Lamb of God."



This method had two special advantages to commend it: 1st, it can easily be written by the blind themselves, by the use of a simple apparatus since invented; and, 2d, it presents a good method of writing and printing music for the blind. The complete alphabet of this system is shown in the following illustration, in which the large dots only represent the raised characters used, the small points being inserted merely to show the correct position of the others in the line:

A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	X	Y	Z	and	for	of	the	with
ch	gh	sh	th	wh	ed	er	ou	ow	will

It will be noted that the varying possible combinations of the six dots, or points, are not only sufficient to cover the alphabet proper, but also to provide for diphthongal and other sound representatives.

Another system, possibly suggested by that of Mr. Braille, but differing from it in several very important particulars, was invented in ——— by Mr. W. B. Wait, superintendent of the New York Institution for the Blind. Relief or raised dots are used, but they are in two lines instead of three, and the combination letters are grouped in a much simpler form than in the Braille system. The full alphabet ("lower case") is shown in the subjoined table of arbitrary sign alphabets, where it appears under the name of the New York system, a name modestly given to it by Mr. Wait:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
LUCAS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
FRERE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
MOON	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
NEW YORK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

In the first three alphabets shown above no distinction is made between small (lower case) and capital letters; but the New York, or Wait system provides not only for the small letters (shown above), but has also a distinct and complete alphabet of capitals for those who desire to use them. The capital letters are derived from the small

letters by suffixing to each of them as many points as will form a new character four points in length, in the following manner: 1. When the small letter ends with a point (or dot) in the upper of the two rows, as in the letter "a," add the suffix in the lower row; and 2, When the small letter ends with a point in the lower row, as in "c," or in both upper and

lower rows, as in "d," add the suffix in the upper row. The following is the complete alphabet of capitals, as given by Mr. Wait in his "New York" system:

A • ..	B •••	C •••	D ••••	E ••••	F ••••
G ••••	H ••••	I ••••	J ••••	K ••••	L ••••
M ••••	N ••••	O ••••	P ••••	Q ••••	R ••••
S ••••	T ••••	U ••••	V ••••	W ••••	X ••••
	Y ••••	Z ••••			

Mr. Wait's system furnishes a list of word and part-word signs, and also signs for numerals and punctuation marks, as follows:

WORD AND PART-WORD SIGNS.						
the ••	and ••	of ••	that ••	ing ••	ch ••	ou ••
		sh ••	th ••	wh ••		

NUMERALS.									
1 ••	2 ••	3 ••	4 ••	5 ••	6 ••	7 ••	8 ••	9 ••	0 ••

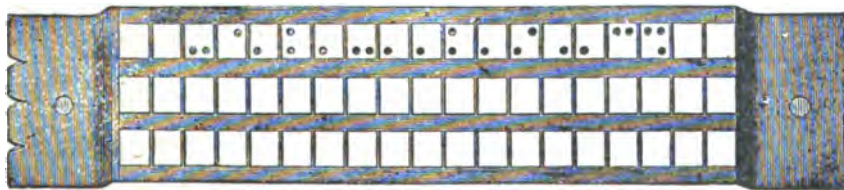
Prefix, indicating that the characters which follow are numerals. ••• The Decimal point is ••

PUNCTUATION MARKS.

- Period, •• , or a blank space equal to five points in length.
- Comma, • , preceded and followed by a blank space equal to two points.
- Semi-colon, •• , preceded and followed by a blank space equal to two points.
- Colon ••
- Apostrophe..... ••••
- Hyphen..... ••••
- Interrogation..... ••
- Parenthesis..... ••
- Exclamation..... ••
- Asterisk..... ••••
- Quotation..... ••••
- Dash..... ••••

Writing for the blind is done by means of a style which, being pressed vertically on prepared paper laid over "dot grooves" in a tablet, thus forming on the under surface of the paper the desired raised signs. In order to secure neatness, exactness, and despatch in writing a piece of apparatus was invented by Mr. Wait called a "guide," and partially shown in the accompanying cut. It consists of two metallic tablets fastened together with hinges at one end. The upper one, fully illustrated in the cut, is substantially a frame with three rows of rectangular openings, each sufficiently wide to include two rows of dot signs, or one full line of sign letters. The under tablet, not shown in the cut, contains six parallel rows of dot grooves so arranged that all the grooves, when the upper frame is shut down, will be directly under the corners of the rectangular open spaces. The paper being placed between the tablets and the latter closed, the writer, with the style in hand, presses the prepared paper into the grooves so as to make the raised letters beneath.

n o i t u t i t s n i



The writing is executed from right to left; so that the "raised" letters, which at first are on the under side, may read correctly from left to right. Thus in the cut the word "Institution" appears as written backward; but when completed, and the paper turned for the reader, it appears thus:

I n s t i t u t i o n
•••• •• •• •• •• •• •• •• ••

This New York system of writing and reading for the blind is rapidly winning its way in many sections of the United States, and has also been successfully introduced into several other countries. Its principal publishing house is in Louisville, Ky., from which numerous publications for the blind have issued—books for schools (primary and graded, including those for academic classes); books for home miscellaneous reading, and books for students in music. The writer of these paragraphs has now on his table a volume entitled *A Practicable System of Tangible Musical Notation and Point Writing and*

Reading for the Use of the Blind, by William B. Wait, and also a copy of the current series of *International Sunday-School Lessons for the Blind*, sent out monthly by the publishing house in Louisville, for the supply of the blind pupils in Sunday Schools.

Experienced teachers report that nearly all pupils, older or younger, learn to read the point system with remarkable facility. A single illustration is here given: A gentleman in middle life, blind from early childhood, while making a recent call at the New York Institution for the Blind, expressed with a sigh his regret that he had not been able to learn to read with any satisfactory facility. On learning that he had not tried the point system, the superintendent asked leave to give him a brief lesson. This was done, and in fifteen minutes the blind gentleman (40 years of age) had not only learned the alphabet but how to use it, and with joyous gratitude received a book for his own instructive reading on the journey which he was making to a distant town.

BLIND, KARL, an eminent German politician, born at Mannheim in 1820. He was prominent as an agitator in connection with the revolutionary movements of 1848 and 1849, and in 1852 he fled to England. He was pardoned by the government, and in 1867 he returned to Germany. He is known in this country as a contributor to magazines and reviews, and as a zealous opposer, for many years, of the policy of Bismarck.

BLINDAGE: in military language, a screen made of trees or earth and timber used to protect from the enemy's fire men at work in a trench.

BLIND-STORY: in mediæval church architecture the triforium, a term properly restricted to examples having no exterior windows, as opposed to the clerestory of a church, which supplied the light for the interior.

BLIND-WORM, or **SLOW-WORM** (*Anguis fragilis*), a limble lizard in the skink family. See **LIZARD**, Britannica, Vol. XIV, p. 735.

BLISS, PHILIP PAUL, singing evangelist, born in Clearfield county, Pa., July 9, 1838; killed in the railroad disaster at Ashtabula, Ohio, Dec. 29, 1876. He had but little education, but his fondness for music led him to gain what knowledge he could of this art by attending conventions and the Academy of Music at Geneseo, N. Y. After the war, to which he was drafted in 1864, he held musical conventions and composed numerous songs. He became acquainted with D. L. Moody and was persuaded to devote his life to evangelical work. His labors were in constant demand throughout the United States and Canada. He was a man of considerable personal magnetism, was a ready speaker and possessed a sweet sympathetic voice in singing. His singing was not scientific, but exerted a powerful influence on a miscellaneous audience. He published several collections of songs. Among his most famous songs are *Hold the Fort*, *Pull for the Shore*, and *Down Life's Dark Vale We Wander*.

BLIZZARD, a fierce storm of bitter frosty wind, with fine blinding snow, in which, especially in the Western States of the American Union, man and beast often perish. In one which visited Dakota and the States of Montana, Minnesota, Nebraska, Kansas and Texas in January, 1888, the mercury fell within twenty-four hours from 74° above zero to 28° below it in some places, and in Dakota went down to 40° below zero. In fine clear weather, with little or no warning, the sky darkened and the air was filled with snow, or ice-dust, as fine as flour, driven before a wind so furious and roaring that men's voices were inaudible at a distance of six feet. Men in the fields and children on their way from school died ere they could reach shelter; some of them having been not frozen, but suffocated from the impossibility of breathing the blizzard. Some 235 persons lost their lives. This was the worst storm since 1864; the Colorado River in Texas was frozen with ice a foot thick, for the first time in the memory of man. Really disastrous blizzards are rare, those of 1836, of December, 1863, January, 1866, January, 1873, being, till that of 1888, the severest on record. The word is a popular formation, originating in the United States, and seemingly akin to *blast*, *bluster*. The term was in colloquial use in the West early in the century, but first became usual throughout the United States during the severe winter of 1880-81.

BLOCK, MAURICE, statistician, born at Berlin, of Jewish family, Feb. 18, 1816, and studied at Bonn and Giessen. He settled at Paris, where for a time (1852-62) he held a post in the statistical bureau. He has published many works on the statistics of France and Europe, including the *Annuaire de l'Économie Politique et de Statistique*.

BLOCK-HOUSE, an edifice constructed of hewn timber sufficiently thick to be bullet-proof, and provided with loopholes for musketry. A block-house may be of one or more stories and of any size and shape. When of more than one story, the upper is made to project over the lower to enable the occupants to fire through loop-holes in the floor. In localities where timber is plentiful, and an artillery attack not to be feared, it forms a useful defensive work, and under these conditions it is often used in a rough country. When a block-house stands alone it constitutes an independent fort, and forms a barrack for its garrison.

BLOCK ISLAND, formerly called Manisees, situated in the Atlantic about nine miles south of Rhode Island, to which it belongs. It is about eight miles in length, has a light-house at its north end, and contains New Shoreham, a summer resort.

BLOCKSBERG, the name given to various mountains and hills in Germany, but preëminently to the Brocken, the highest of the Harz mountains. According to the popular belief, it is the favorite haunt of the witches, where they celebrate *Walpurgisnacht* on the 1st of May. Almost all mountains thus haunted are known to have been famous places of sacrifice in the ages of paganism.

BLOCK-SHIP, a ship of war too old or too slow in sailing to render efficient service in action out at sea, but useful as a defense in great ports and naval arsenals. Now as war steamers have come more into use, some of the old sailing men-of-war are nearly valueless except as block-ships. There are at present a great number of English block-ships.

BLOCK TIN is an inferior variety of tin. When the metal is reduced from its ores it is first poured into moulds, and the ingots thus procured are heated to incipient fusion in a reverberatory furnace. The pure tin first fuses, and is withdrawn; and the less pure tin, which is left behind, being melted at a higher temperature, is poured into moulds and is known as block tin.

BLOEMFONTEIN, the capital of Orange Free State, South Africa, situated on the Modder, 200 miles northwest of Durban. It is connected by telegraph with the Cape and Natal.

BLOMMAERT, PHILIP, a prominent Flemish author, born in Ghent about 1809, died there Aug. 14, 1871. In 1834 he published a volume of verse, characterized by much simplicity and earnestness, but so inartistic in form that it met with little success. He rendered better service to literature and to the patriotic cause by the publication (1836-41) of several old Flemish poems of the 12th, 13th and 14th centuries. His most important work is a *History of the Belgians* (1849), in which he attempts to show that the political destiny of the Low Countries has ever been identical with that of Germany, and that it is with the latter country and not with France that Belgium should seek to ally herself.

BLONDEL, a celebrated French minstrel of the 12th century, and the favorite of Richard the Lion-heart, king of England. A few of Blondel's poems are preserved in the Library of the Arsenal of Paris.

BLONDIN, EMILE GRAVELET, born in France about 1830. He is a famous tight-rope walker. He crossed the Niagara River below the falls on a rope 1,300 feet long, which was stretched 150 feet above the water, and has performed other similar feats.

BLOOD, AVENGER OF. In the early ages of society it was almost universally looked upon as the duty of the next of kin to avenge the death of a murdered relative; but among some primitive peoples, for example, the modern Bedouins, as among the ancient Anglo-Saxons, the right is an-

nulled by compensation. The Mosaic law did not set aside this universal institution of primitive society, but placed it under regulations, prohibiting the commutation of the penalty of death for money, and appointing cities of refuge for the involuntary manslayer. The nearest relative, whose duty it was to hunt down the murderer, was called *Goël*, the "redeemer" or "avenger."

BLOOD-BIRD, or **SOLDIER-BIRD** (*Myzomela sanguinolenta*), a beautiful little species of honey-sucker. The head, breast and back of the male are of a beautiful scarlet color. It inhabits the thickest of New South Wales and also of Bengal. See *Britannica*, Vol. XII, p. 139.

BLOOD, EATING OF. The eating of blood was prohibited under the Old Testament dispensation, obviously for reasons connected with the use of animals for sacrifice.

BLOOD-FLOWER (*Hæmanthus*), a genus of bulbous-rooted plants of the natural order *Amaryllidæ*, mostly natives of South America. The beautiful red flowers form a fine cluster. The fruit is a berry, usually with three seeds; the leaves are almost linear in some and round or erect in others. The species of blood-flower generally possess poisonous properties. The inspissated juice is used by the natives of South America for poisoning their arrows.

BLOOD-MONEY, a reward for bringing about the death of another, as by giving evidence leading to a conviction in a capital charge. The name is also applied to the compensation formerly, and still in some countries, paid to the next of kin for the slaughter of a relative.

BLOOD OF OUR SAVIOUR, an order of knighthood in Mantua, instituted by Duke Vincent Gonzaga in 1608. It consisted of 20 knights. The collar had threads of gold laid on fire, and interwoven with the words *Domine probasti*. To the collar were pendent two angels, supporting three drops of blood, and circumscribed with the motto, *Nihil isto triste recepto*. The name originated in the belief that in St. Andrew's Church, in Mantua, certain drops of our Saviour's blood are kept as a relic.

BLOOD-WORM, a name given to the abundant aquatic larva of a gnat-like dipterous insect known as *Chironomus plumosus*. It has a worm-like appearance, a blood-red color, and is found in stagnant water.

BLOOM, an appearance on paintings resembling in some measure the bloom on fruit, such as peaches, plums, etc., produced, in all probability, by the presence of moisture in the varnish, or on the surface of the painting when the varnish is laid on. The bloom often destroys the transparency, and is consequently injurious to the general effect of the picture.

BLOOMER, AMELIA JENKS, born in Homer, N. Y., May 27, 1818. She was the wife of Dexter C. Bloomer, a lawyer of Seneca Falls, N. Y. She has been a writer on enfranchisement of women, and lectured on this subject and on temperance. She published a paper, "The Lily," in 1849, which advocated her views, and in 1853, she continued its publication in Mt. Vernon, Ohio, whither she and her husband had removed. They went to live at Council Bluffs, Iowa, and she sold the paper to Mary B. Birdsall. She adopted and advocated the

Bloomer costume (consisting of a skirt reaching to the knees, and Turkish drawers), which was originated by Gerrit Smith's daughter, Mrs. Elizabeth Smith Miller. She formerly took an active part in the woman suffrage movement in Iowa and Nebraska, but has entirely withdrawn from public life of late years.

BLOOMER COSTUME, a dress or costume for women which arose out of an agitation for the reform of female attire. In 1849 Mrs. Bloomer adopted the costume to which she has given her name, and lectured in New York and elsewhere on its advantages. The Bloomer dress consisted of a jacket with close sleeves, a skirt falling a little below the knee, and a pair of loose trousers buttoned round the ankle. Though a few ladies followed the example of Mrs. Bloomer, the dress was never popular. Dress reform societies and private persons have from time to time advocated changes in the costume of women less radical than Mrs. Bloomer's, and the "divided skirt" has still its supporters.

BLOOMFIELD, a city of Iowa, county-seat of Davis county, beautifully situated on an elevated prairie about 85 miles west of Burlington. It is the trade center of a fertile agricultural district, enjoys excellent educational facilities, and contains important manufactures of furniture, plows and wagons.

BLOOMFIELD, a manufacturing town of New Jersey, situated on the Morris Canal, about five miles northwest of Newark. It contains a cabinet-organ factory, an iron foundry and manufactures of paper and woolen goods.

BLOOMINGTON, a city of Illinois, capital of McLean county, situated nearly in the geographical center of the State and surrounded by one of the richest agricultural regions in the world. Four great trunk lines of railway furnish an outlet in every direction. The city is located on the highest land in the State, and its systems of sewerage, gas and water-mains are very extensive. The streets are wide, lined with trees, and well lighted with gas and electricity. Electric street cars radiate from a central point to all parts of the city. The water supply is from subterranean sources, which furnish daily 2,500,000 gallons. The water is strongly impregnated with iron, and high claims are made for its healthfulness.

Bloomington carries on a large wholesale trade, and its manufacturing industries are numerous. The Chicago & Alton Railroad shops are located here, and employ over 2,000 men. The city is handsomely laid out, and has two well-kept parks. The means of education are ample, there being numerous public and private schools, and a large public library. The Illinois Wesleyan University was founded here in 1857. The Major Female College and the Roman Catholic Academy are also located in the city, while at Normal, two miles distant, is the State Normal University, organized in 1857, with an edifice costing \$200,000. The State Soldiers' Home is also located at Normal. The population of Bloomington was, in 1880, 17,180; in 1890, 22,242.

BLOOMINGTON, a city of Indiana, county-seat of Monroe county, situated about 55 miles southwest of Indianapolis. It is the seat of the Indiana State University, and contains extensive manufactories of woolen goods, staves and leather. There are also important manufactories of hard wood, and in the vicinity are extensive quarries of limestone.

BLOOMSBURG, a flourishing railroad town of Pennsylvania, 56 miles southwest of Scranton, situated on Fishing Creek. It contains 10 churches, three banks, iron furnaces and foundries; it is the



HONEY-EATER.

seat of a State normal school, and the county-seat of Columbia county.

BLOUSE, a name borrowed from the French for a loose, sack-like over-garment. In England it is worn by wagoners and farm-laborers, and is called smock-frock. In the south of Scotland it is sometimes worn by butchers, and is then blue, as in Germany and France. In Germany it is frequently tightened to the body by a belt, and sometimes made of coarse woolen. France is preëminently the country of blouses. There they are worn universally, not only by the country people, but also by the laboring classes in towns, not excepting Paris; and so characteristic is this garment that the French populace are often called the "blouses." The white blouse is Sunday dress with the working class in France. In America it is a coat made of any material, as for instance the undress uniform of the United States army.

BLOW-FLY, a two-winged insect, of the order *Diptera*, and of the large family *Muscides*. Its body is hairy, the face silky and yellow, the thorax gray with three black stripes, the abdomen brown with glittering yellow spots. The eyes are widely separate in both sexes. The eggs are often hatched within the body of the parent, and its larvæ are found feeding upon meat, sometimes upon live worms, and too often upon sheep.

BLOW-PIPE AND ARROW, a kind of weapon much used by the Indians of South America, both in war and for killing game. It consists of a long straight tube, in which a small poisoned arrow is placed, and forcibly expelled by the breath. The tube or blow-pipe is eight to 12 feet long, made of reed, or the stem of a small palm. In the hand of a practiced Indian it is a deadly weapon, especially when directed against birds in the tops of high trees. As the weapon makes no noise, the hunter often empties his quiver before he gathers his game.

BLUEBEARD, the name given to the hero of a well-known tale of fiction, which is of French origin. According to this romance the chevalier Raoul has a blue beard, from which he gets his designation. The historic original of Chevalier Raoul appears to be Giles de Laval, Lord of Raiz, who was marshal of France in 1429, and fought valiantly in defense of his country when invaded by the English; but his cruelty and wickedness seem to have eclipsed even his bravery, as he is remembered chiefly for his crimes, which tradition has painted in the blackest and most fearful colors. Laval was burned alive in a field near Nantes in 1440.

BLUE BIRD (*SIALIA*, OR *SYLVIA SIALIS*), a favorite American bird, displaying great confidence and familiarity in approaching the habitation of men, and in its general manner resembling the robin. The upper parts of the blue-bird are of a beautiful sky-blue color, the throat and breast are a reddish chestnut and the belly white. Its song is "a soft agreeable warble." It lays five or six pale blue eggs, and has two or three broods in the season.

BLUEBELL, the popular name of several different plants. In England the name is given to the common wild hyacinth, *Scilla nutans*. The Scottish bluebells are flowers of *Campanula rotundifolia*, commonly called harebell elsewhere. The term is also occasionally applied to other plants having blue bell-shaped flowers.

BLUE-BOOKS, the name popularly applied to the reports and other papers printed by order of the British Parliament, because they are usually stitched up in blue covers. The practice of printing and to some extent publishing, the proceedings of the House of Commons, began in the year 1681,

when disputes ran high on the question of excluding the Duke of York from the succession to the throne. It was stated that false accounts of the transactions were circulated, and it was decided as a remedy that the proceedings of the House be printed. The documents printed by the House of Commons accumulated gradually in bulk and variety until now the blue-books of a session, when collected and bound up, fill many thick folio volumes. The corresponding official books are yellow in France, white in Germany and Portugal, green in Italy, and red in Spain. In the United States the term is applied to a book containing the names and salaries of all the persons in the employ of the Government.

BLUE-BOTTLE FLY (*Musca vomitoria*), an insect of the same genus with the common house-fly. The head is black, with rust-colored cheeks, the thorax grayish, the abdomen blue, with a whitish shimmer, and with three black bands. The expanse of wings is nearly one inch, and it flies with a loud buzz. It is abundant throughout Britain and Europe. *M. erythrocephala* is also called blue-bottle.

BLUE-COAT SCHOOL, the name usually given to Christ's Hospital—a school in London founded by Edward VI—where the boys wear the ancient costume, of which a blue coat or gown forms a part.

BLUE-EYE (*Entomyza cyanotis*), a beautiful little bird of New South Wales. A species of honey-sucker, it seeks its food among the blossom: and small leafy branches of the eucalypti. Numbers are often seen hanging in clusters at the extreme ends of the branches, bending them down with their weight.

BLUEFISH (*Pomatomus saltatrix*), a fish of the family *Pomatomidae*, also called *Blue-snapper* and *Skipjack*. It is of compressed subfusiform shape, having two dorsal fins, the first of which is small, and two deeply-hidden spines in front of the anal fin. The upper parts are of a bluish color, the lower parts whitish. It sometimes attains a length of three feet, though it is usually much smaller. It is very swift, strong and voracious, preying on other fishes, of which it destroys many more than it really needs for food. Though found in many seas, it is best known along the Atlantic coast of the United States. Its flesh is much esteemed for the table. See *Britannica*, Vol. IX, p. 267.

BLUE-GOWNS, a name commonly given to a privileged class of mendicants in Scotland, whose proper designation was the king's beadsmen—the persons employed to pray for the king having gradually degenerated into a class of authorized paupers. Each beadsman on the king's birthday received a gown of blue cloth, with a loaf of bread, a bottle of ale, and a leathern purse containing a penny for every year of the king's life. The most important part of the privilege was a pewter badge, attached to the breast of the gown, with the bearer's name and an inscription, *Pass and Repass*. This conferred the privilege of begging, and bespoke the kindly consideration of all to whom the beadsman appealed for alms or a night's lodging. The practice of appointing beadsmen was discontinued in 1833; at that time there were 60 on the roll.

BLUE GRASS, the name of several species of *Poa*, a permanent grass found in Europe and North America. The blue grass of Kentucky, *P. pratensis*, is highly valued for pasturage and hay. It is also called June grass. The blue grass of England is *P. compressa*.

BLUE-JAY (*Cyanocitta cristata*), a common North American bird of the crow family. It is about 12 inches long, with a fine crest; the color is purplish-blue above, black on the neck and purplish-gray

below, the tail and wings blue spotted with black and white. It is a mischievous bird, but devours large numbers of injurious caterpillars. The common blue-jay has a wide distribution, and there are several other North American species. The long-tailed blue-jays belong to a rarer genus (*Xanthura*), found in Central and in South America. See *Britannica*, Vol. XIII, p. 611.

BLUE LAWS, once commonly believed to have been made by the colonial legislature of New Haven, were supposed to have prescribed unwarrantable rules for the dress, the private life, and the religious conduct of the colonists. It is certain, however, that no legal code of this description ever existed. The term itself, which is of uncertain origin, probably represented, in the minds of the people of various parts of colonial New England, the undue interference of the judges in the private affairs of citizens. It is said that Samuel Peters, D.D., in his *General History of Connecticut*, published in England in 1781, originated the story of the so-called blue laws of the New Haven colony.

BLUE LICK SPRINGS, a village and watering place of Kentucky, situated on Licking River, about 50 miles northeast of Lexington. It is noted for the medicinal virtues of its saline mineral springs.

BLUE MOUNTAINS, the name of a branch of the dividing range, New South Wales, which runs very nearly parallel with the coast, about 80 miles inland. It was not till 1813 that a practicable passage was found over them into the Bathurst plains. The highest point of the Blue mountains, Mount Beemarang, is 4,100 feet high, and some parts of the road which crosses them are 3,400 feet above the sea.

BLUE PILL, the most simple form in which mercury can be administered internally. It consists merely of two parts of mercury rubbed up with three parts of conserve of roses, till globules of mercury can no longer be detected. To this is added powdered licorice-root, so that a pill of five grains contains one grain of mercury. When taking blue pills all sudden changes of temperature should be avoided; and neither they nor any other form of mercury should be given without good cause, and without the greatest caution.

BLUE RAPIDS, a city of Kansas, situated on the Big Blue River, at the mouth of the Little Blue, about a hundred miles west of Atchison. A developed water-power of nearly two thousand horsepower drives extensive manufactories of flour, woolen goods, oil, and paper; and in the vicinity are valuable beds of water-lime and gypsum.

BLUE RIBBON, a term applied to any great prize—as the "Derby" stakes—from the blue ribbon worn by knights of the garter. *Blue Ribbon Army* was the name adopted, from the badge, by the association of total abstainers known as the Gospel Temperance Union.

BLUE RIDGE, the most easterly range of the Alleghenies, U. S. It forms the continuation of the chain called South Mountain in Pennsylvania and Maryland. It is known as the Blue Ridge till it crosses the James River; thence to North Carolina as Allegheny Mountain; and in North Carolina again as Blue Ridge.

BLUE STOCKING, a name given to learned and literary ladies. The name is derived from a literary society formed in London about 1780, which included both men and women. A gentleman named Stillfleet, who was in the habit of wearing blue stockings, was a distinguished member of the society. The name has also been adopted in Germany and France.

BLUE SULPHUR SPRINGS, village and health resort of West Virginia, situated in Greenbrier

county. It is celebrated for the curative properties of its saline chalybeate waters.

BLUE-THROAT, or SYLVIA SUBCICA, a handsome bird, somewhat larger than the robin. The upper part of its neck is of a brilliant blue, with a pure white spot in the center; below the blue is a black bar, then a line of white, and then a broad band of bright chestnut. In Lorraine and Alsace great numbers are caught for the table, and esteemed a delicacy. It has a very sweet song, and because it imitates to an unusual degree the notes of other birds the Laplanders gave it a name signifying the bird of a hundred tongues.

BLUE-WING, the blue-winged teal of North America, *Querquedula discors*, a small duck with blue wing-coverts. No member of the duck tribe is in higher esteem for the table.

BLUFFTON, a village of Indiana, county-seat of Wells county, situated on the south bank of the Wabash, about 25 miles south of Fort Wayne. It contains important manufactories of flour, woolen goods, barrels, barrel staves and heads, lumber, corn-planters and other machines, and a number of planing-mills and foundries. Bluffton enjoys excellent educational facilities, and is extensively engaged in trade in lumber, stock and grain.

BLUM, ROBERT, a German journalist and political agitator, born at Cologne in 1830, shot at Vienna, Nov. 9, 1849, for assisting in the uprising of the people in October. He was a man of strong character and his execution caused much indignation among the democrats in Germany.

BLUNDERBUSS, a kind of short musket with a very wide bore, sufficient to take in several shot or bullets at once. It has a limited range, but is very destructive at close quarters. As a military weapon it is chiefly of service in defending passages door-ways, etc. Some of the English and German troopers of the 17th century were armed with the blunderbuss.

BLUNTSCHLI, JOHANN KASPAR (1808-81), Swiss jurist, born March 7, 1808, at Zurich, where in 1833 he became professor in the newly-founded University. He took an active part in the political struggles of his country, and in 1839 joined the Conservatives, of whom he was for a time an active leader. He was a councilor of state and became a member of the government and of the federal directory, and afterwards worked for the formation of a moderate Liberal-Conservative party in Switzerland. In 1848 he went to Munich as professor of civil and international law. There he published his *Algemeines Staatsrecht* (5th ed., 1876), on which his reputation as a juriconsult chiefly rests; *Deutsches Privatrecht* (3d ed., 1864); and, in conjunction with Arndts and Pözl, *Kritische Ueberschau der Deutschen Gesetzgebung und Rechtswissenschaft* (6 vols., 1853-58). In 1861 he removed to Heidelberg University, and became a privy councilor of Baden, actively forwarding all liberal measures in the state. Liberty in ecclesiastical matters he had equally at heart; he acted several times as president of the *Protestantenverein*, and it was after delivering a closing speech at the general synod of Baden that he died suddenly at Karlsruhe, Oct. 21, 1881. He was the author of valuable histories of Zurich and of the Swiss Confederation, and of a number of works on law, being especially an authority on international law.

BOARDMAN, GEORGE DANA, born in Livermore, Me., Feb. 8, 1801, died in Burmah, Feb. 11, 1831. He was a clergyman's son, was a graduate of Waterville College, Me., and Andover Seminary, became a Baptist missionary and labored from 1825 to 1831 in Burmah. He overtaxed his strength and died fr

consumption. His widow, Sarah Hall, married Dr. Adoniram Judson.

BOARDMAN, GEORGE DANA, son of the foregoing, born in Burmah, Aug. 8, 1828, graduated at Brown and then at the Newton Theological Institution. He became pastor of a Baptist church at Barnwell, S. C. His views on slavery led him to come North, where he became pastor of the Second Baptist church in Rochester, N. Y., and afterwards pastor of the First Church in Philadelphia. He has published books, sermons and addresses.

BOARDMAN, HENRY AUGUSTUS, born at Troy, N. Y., Jan. 9, 1808, died in Philadelphia, Pa., June 15, 1880. He graduated at Yale with highest honors, and in 1830 completed the course at Princeton Theological Seminary. He became pastor of the Tenth Presbyterian church in Philadelphia, and held the office from 1833 to 1876, when he was made pastor emeritus. He was the author of a large number of books.

BOBCAYGEON, an important lumbering town of Ontario, situated on an island which divides Sturgeon Lake from Pigeon Lake, about eighteen miles north of Lindsay. A canal passing through the village connects the lakes, and steamers ply regularly between Bobcaygeon and Lindsay.

BOBOLINK. See *Britannica*, Vol. XVIII, p. 53.

BOB-WHITE. See under *QUAIL*, *Britannica*, Vol. XX, pp. 146, 147.

BOCCARDO, GIROLAMO, born at Genoa, Italy, in 1829. He is one of the most voluminous and versatile writers of his age and nation. His writings include important works on political economy, geography, statistics, and history. See *POLITICAL ECONOMY*, *Britannica*, Vol. XLIX, p. 387.

BODIE, a village of California, situated at an altitude of 8,320 feet, on a spur of the Sierra Nevada mountains, about a hundred miles south of Carson City. It was named from William Bodey, who discovered gold here in 1859. It is one of the most important gold-mining towns of the West.

BODLE, an ancient Scotch copper coin first issued under Charles II, and worth at that time two pennies Scotch, or one-sixth of an English penny; said to have been so called from the name of a mint-master of the name of Bothwell.

BODMER, KARL, an artist, born in Zurich, Switzerland, in 1805. He resides in Paris and Germany, where he paints landscapes and animal life. He spent two years in America, 1833-35, in the company of Prince Maximilian of Wied, and made sketches of Indians and forest scenes, which he has since utilized, and which have become exceedingly valuable; no artist of equal skill having up to that period visited the country west of the Mississippi.

BODY-CAVITY: in zoology, the general or common cavity of the body; the space enclosed by the body-walls of an animal. Special cavities, or those of particular organs, acquire special names.

BODY-COLOR, a term applied to such pigments as have body enough to be opaque, as distinguished from those which are transparent. As a general rule, pigments have more body the nearer they approach to white; consequently, the light parts of pictures in oil are in body color to give them brightness and strength, while the dark parts are transparent to give them depth. In water-color painting, works are said to be executed in body-colors when, instead of proceeding by transparent tints and washes, the pigments are mixed with white and thus rendered opaque.

BODY'S ISLAND, a long, narrow strip of sand, off North Carolina, with a light-house (156 feet), the highest in the United States.

BOECKH, AUGUST, a German antiquarian, born at Karlsruhe in 1785, died in 1867. He became professor of oratory and ancient literature at Berlin in 1810. He was one of the founders of the modern school of Greek historians, and his works are a vast storehouse of information concerning the industrial, social and domestic life of the ancient Greeks.

BOEHLER, PETER, a Moravian bishop, born at Frankfort-on-the-Main in 1712, died in London in 1775. He was the founder of Nazareth, a Moravian village of Pennsylvania. He is also well known in Methodist history for the decisive impulse given by him to the career of John Wesley.

BOEHM, THEOBALD (1802-81), a Bavarian musician, known as the inventor of important improvements in musical instruments, especially the flute. The Boehm flute is recognized as the best model for orchestral use, being more easily fingered and more even and accurate in tone than the common flute.

BOEHMERIA, a genus of the natural order *Urticaceæ*, of which the most important species, *B. nivea*, a shrubby plant of China and the East Indies, affords the valuable rhea-fiber or grass-cloth fiber. It has been successfully cultivated in the United States. The puya fiber of the Himalayas is derived from *B. puya*, now referred to the genus *Maoutia*.

BOERNE, a village and health resort of Texas, county-seat of Kendall county. It is pleasantly situated on the Rio Cibolo, about 30 miles northwest of San Antonio. The climate is genial, and the surrounding country is fertile and very picturesque.

BOGARDUS, JAMES, an American inventor, born in Catskill, N. Y., March 14, 1800, died in New York city, April 13, 1874. He was apprenticed to a watch-maker, and early showed the bent of his mind by improvements in the construction of eighth-day clocks, and by the invention of a delicate engraving machine. The dry gas-meter is his invention, as is also the transfer machine to produce bank-note plates from separate dies; and in 1839 his plan for manufacturing postage stamps was accepted by the British government. He subsequently introduced improvements in the manufacture of India-rubber goods, tools, and machinery, and invented a pyrometer, a deep-sea sounding machine, and a dynamometer. In 1847 he erected a factory in New York entirely of cast-iron, five stories high, which was the first of the kind ever built, and his success led him to engage in the erection of similar structures in other places.

BOGERMANN, JOHANN (1576-1633), the president of the famous Synod of Dort, born in 1576 at the Frisian village of Oplewert. After studying at Heidelberg and Geneva, he became pastor at Leeuwarden, and soon distinguished himself by the active part he took in the religious controversies of his time, especially that against Arminius. In 1618 he was elected president of the Synod of Dort, but his name is now remembered for the translation of the Bible into the vernacular, mainly by him, which soon became the standard Dutch version. He died in 1633, at Franeker, where he was primarius professor of divinity.

BOGGS, CHARLES STUART, a rear-admiral of the United States navy, born in New Brunswick, N. J., in 1811, died in 1888. He is distinguished as the commander of the *Varuna* during the passage of Forts Jackson and St. Philip and the taking of New Orleans in 1862.

BOGLIPOOR, or **BHAGULPORE**, a populous trading city in Bengal, India, situated on the right bank of the Ganges and distant by rail 265 miles from Calcutta. The city has an English seminary, silk

manufactories, several mosques and two unique circular towers of unknown origin.

BOGENHAUSEN, the site of the Royal Observatory of Munich. It is a village situated on the Iser, about two miles from that city.

BOGOS, a tribe of negroes who inhabit the highlands north of Abyssinia. They are estimated to number about 10,000. They are nominal Christians and are tributary to Abyssinia.

BOHTLINGK, Orto, Sanskrit scholar, born of German ancestry at St. Petersburg. From 1835 to 1842 he studied oriental languages, especially Sanskrit, at Berlin and Bonn, and, after 28 years in his native city, settled in 1868 at Jena. Among his valuable works are the first European edition of the Indian grammarian Panini (1839), a Sanskrit chrestomathy (1845; 2d ed. 1877), and a great Sanskrit dictionary (7 vols., 1855-75).

BOISDE BOULOGNE, a celebrated park, situated on the right bank of the Seine, about three miles west of Paris. It is the favorite rendezvous of the *élite* of that city and of its devotees of fashion and splendor. It suffered serious mutilation by fire and the axe during the siege of Paris in 1870.

BOISE CITY, the principal commercial city of Idaho, capital of the State, and county-seat of Ada county, beautifully situated on the Boise River, at the head of the fertile valley of the Snake River, about 50 miles above the confluence of those streams. It is the trade center of an important mining region, and of a rich agricultural and grazing country. It contains a United States assay office, and gold is the chief article of export. There is also a penitentiary, and several manufactories, principally for flour and lumber. The altitude of Boise City is nearly 8,000 feet, and its climate is mild. The town was settled in 1863. It was incorporated as a city in 1865. In the latter year it became the capital of Idaho, which was admitted as a State in 1890.

BOISE-DUVAL, JEAN, an eminent French physician and naturalist, born at Ticheville in 1801. He has published many valuable works on botany and entomology, and was noted for his valuable professional services during the cholera epidemic of 1835.

BOISSY D'ANGLAS, FRANCOIS ANTOINE, COUNT, French statesman, born at St. Jean Chambre, in Ardèche, in 1756, died in Paris, Oct. 20, 1826. He was for some time major-domo to the Count of Provence (Louis XVIII), and a member of the States-general. During the Reign of Terror, fear of the "Mountain" kept him quiet; but, yielding to the solicitations of Tallien and Barère, he joined the conspiracy against Robespierre. Two months after the execution of the tyrant he was elected secretary of the Convention, and shortly afterward a member of the Committee of Public Safety, in which capacity he displayed remarkable talent and discretion. He was subsequently president of the Council of Five Hundred; was called into the Senate by Napoleon, and was made a peer by Louis XVIII.

BOIVIN, MARIE (1778-1841), French midwife. She became a nun, but after the destruction of the nunnery at the Revolution, she devoted herself to midwifery. So distinguished was she as superintendent of the Maternity at Paris, that the king of Prussia conferred an order on her, and Marburg University the degree of M. D.

BOJADOR, CAPE, a headland on the west coast of Africa, in 26° 7' north latitude, 14° 29' west longitude. The Portuguese doubled this cape in 1432.

BOJANO, an ancient Italian town with a cathedral, situated on the Biferno, 18 miles southwest of Campobasso. Population, 8,506.

BOKER, GEORGE HENRY, author and diplomatist, born in Philadelphia Oct. 6, 1823, died there Jan. 2, 1890. After graduating at Princeton, he studied law and traveled in Europe; on his return wrote poems and plays, several of the latter being brought out successfully. Under Grant he served as minister to Turkey and also to Russia, and, returning in 1878, was elected president of the Union League, which, in 1862, he had helped to form. This position he occupied until his death.

BOKHARA, a Russian vassal state adjoining Turkestan and Afghanistan. Area, about 92,000 square miles; population, about 2,500,000; capital, Bokhara, with a population of 70,000.

The reigning sovereign is the Ameer Sayid Abdul Ahad, fourth son of the late Ameer, by a slave girl; born about 1860; educated in Russia; succeeded his father in 1885.

The modern state of Bokhara was founded by the Usbegs in the fifteenth century, after the power of the Golden Horde had been crushed by Tamurlane. The dynasty of Manguts, to which the present ruler belongs, dates from the end of the last century. In 1873 a treaty was signed, in virtue of which no foreigner was to be admitted to Bokhara without a Russian passport, and the state became practically a Russian dependency.

Ameers of Bokhara.—Sayid Ameer Hyder, 1799-1826; Mir Hussein, 1826; Mir Omar, 1826-27; Mir Nasrulla, 1827-60; Muzaffar-ed-Din, 1860-85.

Karshi has a population of 25,000, and Hissar 10,000. The religion is Mohammedan.

The Ameer has 25,000 troops, of which 4,000 are quartered in the city. A proportion of the troops are armed with Russian rifles and have been taught the Russian drill.

Bokhara produces corn, fruit, silk, tobacco, and hemp; and breeds goats, sheep horses, and camels. The yearly produce of cotton is said to be about 32,000 tons; of silk 967 tons. Gold, salt, alum, and sulphur are the chief minerals found in the country. The exports of raw silk to India in one year are estimated at 34 tons. The exports of cotton in 1888 were 122,000 bales. By the treaty of 1873 all merchandise belonging to Russian traders, whether imported or exported, pays a duty of 2½ per cent. *ad valorem*. No other tax or import duty can be levied on Russian goods, which are also exempt from all transit duty. The Ameer has forbidden the import of spirituous liquors, except for the use of the Russian embassy.

The Russian Trans-Caspian Railway now runs through Bokhara from Charjui, on the Oxus, to a station within a few miles of the capital, and thence to Samarkand; the distance from Charjui to the Russian frontier station of Katti Kurghan being about 186 miles.

There is a telegraph line from Samarkand to Bokhara, the capital.

Russian paper roubles are current everywhere.

BOLAS (Spanish, "balls"), missiles used by the natives and *gauchos* of southern South America, and consisting of two heavy balls, generally of stone covered with leather, connected by a plaited thong 6 to 8 feet long. One bola is held in the right hand, while the other is swung rapidly round the head, at the full extent of the thong, and both are discharged at the animal to be captured, so as to wind round its feet and bring it to the ground. In another form of bolas there are three balls, differing in size, connected at the common center by three short thongs or ropes.

BOLERO, a Spanish national dance, invented in 1780 by the dancer Sebastian Zerezo. It is danced in moderately quick three-quarter time by two persons to the accompaniment of the castanets and

the guitar. The name is also applied to the air to which it is danced. Like the *fandango*, it is said to be originally a refinement of an African dance still performed by the Congos under the name of *chika*.

BOLETUS, a genus of hymenomycetous fungi. Most of the species resemble the common mushroom and other species of *Agaricus* in general form, but are distinguishable by the pore-like surface occupying the place of gills. It is generally found growing on the ground in woods and meadows, especially in pine woods, and in moist, warm seasons it sometimes appears in prodigious quantities. Some of the species are edible.

BOLGRAD, a town in the Russian province of Bessarabia, 28 miles northwest of Ismail, at the head of Lake Yapuch. It is well built, and has some trade and manufactures of soap, candles, pottery, etc. Population, 7,530.

BOLIVAR, a village of Missouri, county-seat of Polk county, about 30 miles north of Springfield. It contains important manufactories, principally of cotton, wool and flour.

BOLIVAR, a village of Tennessee, capital of Hardeman county. It is situated on Hatchee River, at the head of navigation, about 30 miles south of Jackson. It is the seat of St. James Female College and of a number of academies, and the center of trade of a rich cotton and lumber region. It has an extensive water-power, and contains various prosperous manufactories.

BOLIVIA, a South American republic. Area, about 770,000 square miles; population, 2,191,891; capital La Paz, with a population of about 26,000. For history and productions, see *Britannica*, Vol. IV, pp. 10-18. Bolivia has no sea-port; its former port, Antofogasta was ceded to Chili in 1884. It was formerly comprised in the Spanish viceroyalty of Colombia under the name of Peru, and derives its name from its great liberator, Simon Bolivar. In the war against Chili in 1879 it equipped an army of about 6,000 men.

The mineral productions of Bolivia are very valuable; the silver mines of Potosi are believed to be almost inexhaustible, while gold, partly dug and partly washed, is obtained on the Eastern Cordillera of the Andes; copper, lead, tin, salt, and sulphur are also found. Its agricultural produce consists chiefly of rice, barley, oats, maize, cotton, cocoa, indigo, india-rubber, coca, potatoes, the choicest fruits, cinchona bark, medicinal herbs, etc., which are also its principal exports; its chief imports being iron, hardware, and silks.

Public revenue, 1887-88.....	\$ 3,766,425
Public expenditure, 1887-88.....	4,477,115
Debt (1886), interior, \$8,833,140; foreign, \$3,173,750.....	12,006,890

The constitution of Bolivia was adopted in 1826, but has received various amendments. Its chief executive (President) is elected in the same years and for the same term as the President of the United States, and by universal suffrage. Two vice-presidents are elected with him, and he is assisted by a council or cabinet of five ministers. The congress consists of a senate and house of representatives, elected by universal suffrage. There are nine departments, each having a governor nominated by the President.

BOLKHOV, a cathedral city of Russia, on the River Nugra, 37 miles north of Orel. It manufactures leather, gloves, hosiery, and soap, and has an active trade in tallow, hemp, oil, fruit, and vegetables. Population, 26,395.

BOLL, a measure for grain, etc., used in Scotland and the North of England. In Scotland it is equivalent to six imperial bushels, but in England it varies from that to two bushels—the "new boll." It

is also a measure of weight, containing, for flour, 10 stone (equal to 140 pounds).

BOLOGNA STONE, or **BONONIAN STONE**. In the end of the 16th or beginning of the 17th century, Vincent Casciorolo, a shoemaker of Bologna, made the discovery that the mineral now known as heavy spar (barium sulphate), when reduced to a fine powder, mixed with gum, dried, and strongly heated in a covered crucible, is converted into a substance having the property of shining in the dark. Casciorolo communicated his discovery to the alchemist Scipio Bagatello and the mathematician Maginus, and the latter made the substance famous by the specimens which he sent about. Peter Potier, a French chemist, resident in Bologna, first published a recipe for making it. It was called by its discoverer "capis solaris," but was soon generally called Bologna stone, from the place where it was prepared. Its phosphorescent character depends very much upon its preparation. It shines in the dark only after absorbing light. The now well-known "luminous paint" is composed of this or of similarly prepared sulphides. See *LIGHT*, *Britannica* Vol. XIV, p. 603.

BOLMETER, an instrument invented (1881) by Professor Langley, of the United States, for the measurement of the intensity of radiant heat. Its action is based upon the variation of electrical resistance produced by changes of temperature in a metallic conductor. The instrument may be made much more sensitive than a thermopile. It indicates accurately changes of temperature of much less than .0001° F. The bolometer (also called *thermic balance* and *actinic balance*) has been used in the study of the distribution of heat-energy in the solar, lunar, and other spectra.

BOLSWARD, an old town of Friesland, 15 miles southwest of Leeuwarden. It has a fine Gothic church. Population, 5,939.

BOLTON, SARAH KNOWLES, born in Farmington, Conn., about 1840. She married Charles E. Bolton. She has written much for the press; has been connected with the Boston "Congregationalist;" has been one of the corresponding secretaries of the Woman's National Temperance Union, and has traveled in Europe and studied social questions. Of her books, the *Poor Boys Who Became Famous* and *Girls Who Became Famous* are the best known. She and her son, Charles Knowles Bolton, have published a joint collection of poems.

BOLUS, a soft mass of any kind of medicine intended to be swallowed at once. It differs from a pill in being larger. Also used figuratively of an unpalatable doctrine or argument that has to be tolerated.

BOMBA, an opprobrious epithet bestowed in Italy on Ferdinand II. of Naples (1810-59), in consequence of his cruel bombardment of Naples, Messina, and other cities of his realm during the revolutionary troubles of 1849.

BOMBARDIER, the lowest non-commissioned officer in the British artillery, ranking with corporals in the infantry and cavalry. The name was applied in the 17th and 18th centuries to a man employed about the mortars and howitzers—pieces of ordnance employed in bombarding.

BOMBARDIER BEETLE, a name given to several species of beetles, of the genera *Brachinus* and *Aptinus*, in the sub-family *Carabidae*. The name refers to their offensive and defensive habit of discharging an acrid volatile fluid with explosive force from the abdomen. Some ants and other insects exhibit the same curious protective device. These beetles are usually found under stones or at tree roots, often in great companies. The larger and more brilliant species are tropical.

BOMBARDMENT, a continuous attack upon a fortress or fortified town by means of shot and shell to destroy the fortifications or buildings. It is an especially cruel operation when, as is often the case, it is directed against the civilians and their buildings, as a means of inducing the officer in charge to surrender the place and terminate their miseries. In modern times a bombardment is generally adopted as an adjunct to a siege, and is more frequently a naval than a military operation.

BOMBAY DUCK, or **BUMMALOTI** (*Saurus ophiodon*), a fish of the family *Scopelidae*, nearly allied to the salmon and trout family. It is small but voracious, with very large fins, and a mouth the gape of which extends far behind the eyes, and which is furnished with a great number of long slender teeth barbed at the points. It is a native of the coasts of India, particularly of the Bombay and Malabar regions, from which it is exported in large quantities, salted and dried. It is highly esteemed for its rich flavor, and is often used as a relish.

BOMBAZINE, a fabric of which the distinguishing characteristic is that the warp is silk and the weft worsted. It is rather fine and light in make, and may be of any color. It was manufactured in England as early as the reign of Elizabeth. The fabric is now little used.

BOMB LANCE, a lance-like missile used in whale fishing. It has an explosive head, and is so arranged as to be shot from a musket and to explode within the body of the whale.

BOMB-PROOFS, military structures of such immense thickness and strength as to resist the penetration and shattering force of shells. In every fort the barracks, hospital, stores and magazines are covered with masonry and earth, or with thick armor-plates, so as to be impervious to the fire of the most powerful siege-guns and mortars. The most effective shield against modern projectiles is constructed of timber covered and faced with massive embankments of earth.

BOM JARDIM, a town of Brazil, beautifully situated in a fertile valley, about 20 miles south of Crato, in the province of Bahia. It contains important manufactories of millstones.

BOMMEL, a town in the Dutch province of Gelderland, on the Waal, 20 miles southeast of Utrecht. Population, 4,000.

BONA DEA, the good goddess, a Roman divinity who is variously described as the wife, sister, or daughter of Faunus. She was worshiped by the women of Rome from the most ancient times. Her sanctuary was a grotto on Mons Aventinus; but her festival (the 1st of May) was celebrated in the house of the consul. At this celebration no males were allowed to be present; even portraits of men were veiled. The solemnities were generally performed by high-born vestals.

BONA FIDES, a Latin expression signifying good faith; without fraud or deception. It enters largely into the consideration of matters of agreement, contract, damage, trusts, and other departments of the law, and in all of them it requires the absence of fraud or unfair dealing. The term is frequently used as a compound adjective in the sense of honest, genuine. *Bona fide* possessor, in law, is a person who not only possesses, but who honestly believes his title good, and is unaware that any person claims a better right. *Bona fide* purchaser, in law, is one who has bought property and paid for it before receiving any notice of adverse claim, and who has seen no reason to suspect that such claim existed. As a general rule people are supposed to contract with caution, and therefore there is not much room for the doctrine of *bona fides* in consid-

ering business agreements, which depend in the true construction of the documents exchanged. Positive misrepresentation or fraud will, of course, upset a contract if it lead to error; but it is only in certain classes of contracts, such as partnership, suretyship, insurance, etc., that the plea of undue concealment has much force. The amount of damages recovered is sometimes affected by the good or bad faith of the wrong-doer, as in the case of willful trespass of mining boundaries, where the nature of the subject renders a severe check necessary. In trust administrations the beneficiaries are entitled to place much confidence in the trustees, and bad faith on their part is severely dealt with.

BONANZA (Spanish, "prosperity"), a term originally applied in the mining territories of the United States to the discovery of a rich vein or "pocket." A mine was said to be *in bonanza* when producing profitable ore. It has since been used of successful enterprises generally, in the sense of a "mine of wealth."

BONAPARTE, a village of Iowa, situated on the Des Moines River, about thirty-five miles northwest of Keokuk. It contains an academy, flouring mills, sash, door and blind factories, and one of the largest woolen factories west of the Mississippi.

BONAPARTE, ELIZABETH PATTERSON, born in Baltimore, Md., Feb. 6, 1785, died there, April 4, 1879. Her father was a ship-owner, and, next to the Carrolls, the wealthiest man in the State. Miss Patterson and Captain Jerome Bonaparte met at a ball, and their engagement soon followed. Fearing trouble might arise from such an alliance, Mr. Patterson carefully complied with all legal formalities; the contract was drawn up by Alexander Dallas, the ceremony performed by Archbishop Carroll, and witnessed by many distinguished persons. The young couple sailed for Europe in one of Mr. Patterson's ships (March, 1805), and tried to land at Lisbon, but Napoleon I was greatly displeased, and had sent a French frigate to hinder Madame Bonaparte from coming ashore. She was obliged to go to England, where she found a home. Here her son was born. Napoleon I asked Pius VII to dissolve the marriage, but he refused. The imperial council of state granted a divorce, and Jerome gave up his American wife to marry the daughter of the King of Würtemberg. By her he had three children. Madame Bonaparte sought by every means to defend her marriage and establish the legitimacy of her son. Her life was very unhappy, as both her son and husband were alienated from her. She spent much of her time in Europe, where her misfortunes attracted sympathy and attention.

BONAPARTE, JEROME, King of Westphalia. See Britannica, Vol. IV, p. 30.

BONAPARTE, JEROME NAPOLEON, son of Jerome and Madame Bonaparte, was born in Camberwell, England, July 7, 1805, died in Baltimore, June 17, 1870. He was a Harvard graduate; a student of law, but never a practitioner. He married a Miss Williams, of Roxbury, Mass. He never became an American citizen, but cultivated an intimacy with his father and the French court. He left two sons.

BONAPARTE, JEROME NAPOLEON, son of Jerome Napoleon, born in Baltimore, in 1832, graduated at the United States Military Academy; served for a short time on the Texas frontier, and in the French army in the Crimean war and the Italian campaign. He was a gallant soldier, and many honors were conferred upon him. His brother, Charles Joseph (born in 1851) graduated at Harvard University and the law school, and practiced law in Baltimore.

BONAPARTE, NAPOLEON JOSEPH CHARLES PAUL, Prince de Montfort, generally known as Prince Napoleon (Jerome), and commonly as Plon-Plon, was the son of Jerome Bonaparte, sometime King of Westphalia and younger brother of the great Napoleon. His mother was the Princess Catharine of Württemberg, whom Jerome Bonaparte was forced to marry after the romantic affair with Miss Patterson, of Baltimore, had come to an end. Prince Napoleon was born in exile at Trieste, on the Adriatic, on September 9, 1822, and died at Rome, March 17, 1891.

BONAR, REV. DR. HOBATIUS, Free Church minister and popular hymn writer, born in Edinburgh, Dec. 19, 1808, died there July 31, 1889. Educated at the High School and University there, he was ordained to the ministry at Kelso in 1837, where he remained for nearly 30 years. He afterward took charge of Chalmers's Memorial Free Church, Edinburgh. For a time editor of the "Christian Treasury," "Prosbyterian Review," and "Quarterly Journal of Prophecy," he has published besides more than 20 volumes of a religious character; but is best known as the author of *Hymns of Faith and Hope* (three series, 1857-66), selections from which have found their way into all collections for church use.

BONARD, LOUIS, born in Rouen, France, in 1809, died in New York city, Feb. 20, 1871. He came to New York in 1851, and lived a secluded life, in apparent poverty, but at his death willed to Henry Bergh \$150,000 worth of property for the use of the Society for the Prevention of Cruelty to Animals.

BONASIA, a genus or sub-genus of gallinaceous birds of the grouse family, comprising the hazel grouse of Northern Europe, and the ruffed grouse of North America.

BONAVISTA, a bay, a cape and town on the east coast of Newfoundland. The town is a port of entry, and one of the oldest settlements in the island. Its people are mostly fishermen, but agriculture is also carried on. Population, 2,600.

BOND, EDWARD AUGUSTUS, LL.D., born at Hanwell, England, Dec. 31, 1815. In 1838 he became keeper of the MSS. in the British Museum, and in 1878 was appointed principal librarian. He has published catalogues of MSS. and fac-similes of Anglo-Saxon charters in the museum, and among other works, he has edited the *Statutes of Oxford University* (1853), Fletcher's *Russe Commonwealth* and Horsey's *Travels in Russia in the Sixteenth Century* (1856), for the Hakluyt Society, *Speeches in the Trial of Warren Hastings* (4 vols., 1859-61), and *Chronica Monasterii de Melsa*. He has also helped to edit the *Fac-similes* published by the Paleographic Society, of which he is a founder and president.

BOND. See Britannica, Vol. XVII, pp. 704-5.

BONDAGER, the term applied in the south of Scotland and in Northumberland to a female laborer whom a "hired" or married farm-worker undertakes to supply for the regular field-work on a farm as a condition of his tenancy of his house. She is frequently a member of his own family, or she may be merely engaged and boarded by him. The origin of the bondager system is the want of a sufficient rural population for the field-work of the neighborhood.

BONDED WAREHOUSES. The warehousing system lessens the pressure of customs duties by postponing payment of them until the goods on which they are levied are required by the importer, when he pays the duties and the goods are released. Until that time the taxable property is under the supervision of the revenue officers, but no compensation will be made for damage sustained by fire or other accident occurring in the

warehouse. The system in the United States dates from 1846.

BONDI, CLEMENTE, an Italian poet, born at Mezzano, in Parma, June 27, 1742, died at Vienna, June 20, 1821. He was educated by the Jesuits, and when still very young was appointed to deliver lectures on rhetoric in the Royal Convent at Parma. Here he produced his first work, *Giornata Villerocca* (1773). For having celebrated in verse the abolition of the Jesuit order he was compelled to fly to the Tyrol. He found a patron in the Austrian Archduke Ferdinand, who appointed him his librarian at Brunn. Later he lived at Vienna. His poems are lyrical, descriptive, satirical, and elegiac, written in pure style and graceful verse.

BONDS, interest-bearing of the United States. The public debt of the United States reached its maximum Aug. 31, 1865, and amounted to \$2,844,649,826.56. The non-interest bearing obligations amounted to \$461,616,311, leaving the interest-bearing debt at \$2,383,038,315. On Oct. 31, 1890, the interest-bearing debt had been reduced to \$696,906,902. For full description of the bonds, see DEBT OF THE UNITED STATES in these Revisions and Additions; also Britannica, Vol. XXIII, pp. 780, 784, 828.

BONE-ASH, or **BONE-EARTH**, is obtained by the complete combustion of bones in an open furnace, when the oxygen of the air burns away the organic matter or gelatine, and leaves the earthy constituents as a white friable mass, having the semblance of the original bone, but readily reducible to the condition of coarse powder, which is bone-ash. Bone-ash of good quality contains about 80 per cent. of phosphate of lime, and 20 per cent. of carbonate of lime, phosphate of magnesia, soda, and chloride of sodium. Bone-ash is employed to some extent as a source of phosphorus, and in the making of cupels for the process of assaying; but the most extensive use is in the manufacture of artificial manures. See Britannica, Vol. XVIII, p. 815. Many thousands of tons of bones are annually exported from South America to Europe for this purpose; India also contributes a large amount, the Hindoos being prejudiced against the use of bones as manure.

BONE-BEDS, the name given by geologists to thin beds or layers which are largely made up of the fragments of bones, or in which bones and teeth occur in conspicuous quantities. One of the best known is the Ludlow bone-bed, in England, near the top of the Upper Silurian. This bed, only a few inches in thickness extends continuously over an area of not less than a thousand square miles and is full of fragments of bones of reptiles, fish, crustaceans, etc. Others are the Bettes bone-bed of the Bradford Coal Measure, the Rhaetic bone-bed, and the Tilgate stone of the Wealden series. In the bone-beds of the more recent geological age mammalian remains abound, as in the Suffolk bone-bed of the Coralline eras.

BONER, ULRICH, one of the oldest German fabulists, was a preaching friar of Berne, and is frequently mentioned in documents of the years 1324-49. His collection of a hundred fables was entitled *Der Edelstein*, and was first printed, with wood-cuts, at Bamberg in 1461. Only two copies now exist. Breiting published a complete edition of the work at Zurich in 1757, under the title *Fabeln aus den Zeiten der Minnesinger*, which supplied materials to Lessing for his studies on the philosophy of fable. A more complete edition was published in 1844 by Franz Pfeiffer as volume IV of *Dichtungen des Deutschen Mittelalters*.

BONESET, the popular name of *Eupatorium perfoliatum*, so called because of its supposed properties.

BONESETTERS, a class of persons who often possess considerable local reputation for success in the treatment of injuries to the limbs. The name is usually applied to those who have a knack at setting bones, but are not regularly qualified surgeons. As they are ignorant of anatomy and of the signs of disease, they sometimes do immense harm by applying their methods to unsuitable cases; but, without doubt, they have sometimes effected a cure where regular practitioners have failed.

BONFIRE, a fire kindled in celebration of some event of public interest, or as a beacon; applied also to any great blazing fire of whatever material. It is usually kindled in some open and conspicuous place, such as a hill-top or public square, or the center of a village green. Such fires were formerly lighted on certain anniversaries, as the eves of St. John and St. Peter, and their origin in the old countries can be traced to pre-Christian times.

BONGAR, or **ROCK-SNAKE** (*Bungarus*), a genus of venomous serpents allied to the genera *Elaps* and *Naja*. The species, which appear to be few—only two being certainly known—are natives of the East Indies. *Bongar cœruleus* (paraguda) is very poisonous, and has a dark-blue ground color, with narrow white lines in front and cross-rows of spots behind. *Bongar annularis* (pamah), also very poisonous, has black rings on a yellow ground, may be over six feet in length, and is found in Ceylon and China as well as in India.

BONGARDIA, a genus of herbaceous plants of the natural order *Berberidæ*, natives of the East Indies. One species (*Bongardi Rauwolfii*) produces tubers which are eaten, boiled or roasted, in Persia; and the leaves of another (*chrysogonum*) have an acid taste, and are eaten as a salad.

BONHAM, a city of Texas, county-seat of Fannin county, situated on Bois d'Arc Creek, about 30 miles east of Sherman. It is the trade center of a fertile prairie district, in which great quantities of wheat, oats, corn and other cereals, and more than 25,000 bales of cotton annually, with large amounts of broom-corn and tobacco, are raised. The manufactories include flour, machinery, carriages and wagons, brooms, mattresses and tobacco. Bonham is the seat of Bonham Masonic Female Institute and Carlton and Fannin Colleges.

BONHEUR, ROSA, a French artist, born at Bordeaux, March 22, 1822. She received her first instruction from her father, Raymond Bonheur, an artist of merit, who died in 1853. In 1841 she figured for the first time in the Salon, showing a couple of small works—*Two Rabbits* and *Goats and Sheep*—that indicated the department in which she was to attain future eminence. These were followed by a number of finely finished compositions; and in the year 1849 she produced what some consider her masterpiece, *Ploughing with Oxen*, now in the Luxembourg. Her famous *Horse Fair* was the chief attraction of the Salon in 1853. It was purchased in 1887 from the Stewart collection by Mr. Cornelius Vanderbilt for \$53,500, and by him presented to the Metropolitan Museum of Art, of New York. In 1865 she exhibited a large landscape, *Haymaking in Auvergne*. In 1853 she became entitled to the Cross of the Legion of Honor, but because of her sex the decoration was withheld until 1865. During the siege of Paris (1870-71), her studio and residence at Fontainebleau were spared by special order of the then Crown Prince of Prussia. Her success in painting animals has been largely due to her conscientious study of living subjects.

BONIN, or (Japanese) **OGASAWARA ISLANDS**, a volcanic group in the Pacific Ocean, 700 miles

southeast of Japan, having an area of 32 square miles. They were discovered by Quast and Tasman in 1639, and were taken possession of for Britain in 1827 by Captain Beechey; but in 1878 the Japanese reasserted their sovereignty, with the view of making them a penal settlement.

BONINGTON, RICHARD PARKES (1801-28), painter in oil and water-colors, born at Arnold, near Nottingham, England, Oct. 25, 1801. His father, after many vicissitudes, settled at Calais, and placed his son under the instruction of Louis Francia, the water-color painter. He afterwards studied in Paris—in the Louvre, at the Institute, and under Baron Gros. His water-colors sold rapidly. In 1822 he began to exhibit in the Salon, and received a premium from the *Société des Amis des Arts* for his views of Havre and Lillebonne; and two years later he was awarded a medal at the Salon, when Constable and Copley Fielding were similarly decorated. About this time he began to occupy himself with lithography. A fine collection of his work of this kind is preserved in the printroom of the British Museum.

In 1825 he took up oil-painting, and in that year visited England and Italy, subsequently producing his splendid Venice views of the *Ducal Palace* and the *Grand Canal*, which figured in the Salon of 1827, with his *Francis I and the Queen of Navarre* and his *Henry III Receiving the Spanish Ambassador*. He also exhibited in the royal Academy and the British Institution. His position was at this time fully assured, and commissions came to him in abundance; but having contracted an attack of brain fever from exposure while sketching in the sun, his health failed. He visited London for medical advice, and died there Sept. 23, 1828. Of late years the fame of Bonington has been rapidly increasing, and he is recognized as a most accomplished and original painter of landscape and architectural subjects, as well as of scenes of historical genre. He is especially admired for the purity and brilliancy of his coloring. The Louvre contains several of his studies and an admirable example of his figure-pieces in oil, *Francis I, Charles V and the Duchess d'Etampes*. The National Gallery has the *Piazzetta, St. Mark's, Venice, Sunset*, and three water-colors by the artist.

BONITO, a name common to several fishes of the mackerel family (*Scomberidæ*), and to others related to them or supposed to resemble them. The *Euthynnus pelamys*, sometimes called the stripe-bellied tunny, and of the same genus as the tunny, is well known to sailors as an inhabitant of the tropical parts of the Atlantic and Indian Oceans, and as one of the fishes most frequently seen pursuing the flying-fish. It is steel-blue in color, darker on the back, and whitish below; and is marked with four dark longitudinal lines on the belly. Its flesh is not considered wholesome. The *Sarda mediterranea* is the bonito of American fishermen and markets, and the "belted bonito" of books. It is of the same color, but is distinguished by oblique stripes. It is plentiful in the Black Sea, and has been found in the North Sea. Its flesh is esteemed. *Sarda Chilensis*, closely related to *S. mediterranea*, occurs in the Pacific Ocean. It is known as "bonito" along the California coast, but also miscalled "Spanish mackerel." *Auxis thazard* is of a more uniform blue color, without stripes or bands, and having widely separated dorsal fins. It is the plain bonito of the English, but along the New England coast is called "frigate mackerel." Its flesh is little esteemed when fresh.

BONNAT, LÉON JOSEPH FLORENTINE, a French artist, born at Bayonne in 1833. He studied at

Madrid under Frederic Madrazo, and in Paris under Léon Cognét. He gained the second *Grand Prix de Rome*, and, aided by his friends, went to Italy to study art in 1858, where he remained for four years. He was first brought into notice by his *Adam and Eve Finding the Body of Abel* (1860), now in the gallery at Lille; and his *Pasqua Maria* (1863) was much praised. He devoted himself to Italian *genre* pictures of moderate size, varied by such religious subjects as *The Assumption* (1869), and the realistic *Christ on the Cross* (1874), commissioned for the Palais de Justice, Paris. More recently his works have dealt with Eastern life, and he has produced several remarkable portraits, among others those of M. Thiers and Victor Hugo.

BONNER, ROBERT, an American publisher, born near Londonderry, Ireland, April 28, 1824, of Scotch-Irish parentage. He came to the United States in early youth and learned the trade of a printer; and in 1851 he became proprietor of the "New York Ledger," the subsequent phenomenal success of which is wholly due to his business tact and energy. He has made liberal donations to educational and other institutions, principally to the College of New Jersey at Princeton. He is known as an admirer of fine horses, and as the owner of the celebrated Maud S. and Dexter.

BONNET-PIECE, a Scotch gold coin, so called on account of the king's head being decorated with a bonnet instead of a crown, as was usual. It was first issued in 1539 by James V of Scotland, and worth at the time of issue forty shillings Scotch. James V was the first Scottish sovereign to place dates on his money, and to diminish the size of coins by increasing their thickness. His bonnet-pieces were struck of native gold, and are now much prized by collectors.

BONNEVILLE, NICHOLAS DE, one of the earliest French students of German literature, born at Evreux, March 13, 1760, died Nov. 9, 1828. Among his earlier works are *Nouveau Théâtre Allemand* (12 vols., 1782-85), a collection of German tales, and a translation of Shakespeare. After the Revolution he edited several newspapers, but his moderation and liberality rendered him obnoxious to the ruling party, and he was thrown into prison. His *Histoire de l'Europe Moderne* (3 vols. 1789-92), and his *De l'Esprit des Religions* (1791) are still read.

BONNY, or BONI, a town and river of Guinea, now in the British Niger protectorate. The river forms an eastern debouchure of the Niger, and falls into the Bight of Biafra. It is accessible at all times of the tide to vessels drawing as much as eighteen feet of water, and safe anchorage at all seasons of the year is found within its bar. Its banks are low, swampy, and uncultivated. On the east side near its mouth, is the town of Bonny, notorious from the 16th to the 19th century as the rendezvous of slave-trading ships. The houses forming the town stand in a swamp, where fever prevails; European traders generally take up their quarters on river-boats moored in the current of the Bonny. It exports considerable quantities of palm-oil.

BONOMI, JOSEPH, born in Rome, Oct. 9, 1796, died March 3, 1878. He studied art in London, and became famous as a draughtsman, especially of Egyptian remains. He repeatedly visited Egypt and the Holy Land, and illustrated important works by Wilkinson, Birch, Sharpe, Lepsius, and other Egyptologists. He also published a work of his own on Nineveh.

BONUS, erroneously put for *bonum*, a good thing. It is generally used if an extra dividend given to shareholders of a company from surplus profits; a

portion of the profits of an insurance company distributed among policy-holders. A premium given for a loan, or for a charter or other privilege granted to a company, is also called a bonus.

BONYHAD, or BONHARD, a market town of Hungary, in the county of Tolna, about 150 miles south of Buda-Pesth. It has some trade in corn, wine, and tobacco. Population, 5,970.

BONZE, a modified Japanese word applied by Europeans to the Buddhist priests of Japan and China.

BOOBY (*Sula leucogastra*, see Britannica, Vol. X, p. 71, a species of gannet, which has received this name from its apparent stupidity. Accounts vary very much, however, as to this characteristic of the booby, some representing it as singular in not taking alarm nor becoming more wary even when it has had reason to apprehend danger from man; while others, as Audubon, assert that it does learn to be upon its guard, and even becomes difficult to approach. The booby is not quite so large as the common gannet; is of a blackish-brown color beneath, and the sexes differ very little, except that the female is not quite so large as the male. It feeds upon fish, and the expansibility of the gullet enables it to swallow those of considerable size. The booby is found on almost all tropical and sub-tropical shores, and sometimes even 200 miles from land. On the east coast of North America, it reaches as far north as Cape Hatteras, but is much more abundant farther south. The flesh of the booby, although sometimes eaten by sailors, is dark colored, and not very agreeable.

BOOBY ISLAND, a level rock in Torres Strait, in 10° 36' south latitude, and 141° 53' east longitude, 3 feet above high water, and $\frac{1}{4}$ mile in diameter. Being dangerous to navigators, and destitute of resources of its own, it is pretty regularly supplied with provisions and water by passing vessels, for the benefit of shipwrecked sailors.

BOOK-LICE, various small insects which damage books. In the family *Psocidae*, in the order *Orthoptera*, there are numerous minute wingless insects which shelter in books and among papers, and do especial damage to collections of insects. One of them (*Atropus pulsatorius*), long credited with being the *Death-watch*, is very destructive to old books, especially in damp places, and to collections of dried plants, etc. The closely allied *Troctes divinatorius* is a yet commoner pest of entomological cabinets. Among beetles, too, in the wood-boring family (*Xylophaga*), *Ptilinus pectinicornuis* is known to attack books with wood in the binding.

BOOK-PLATES, the English name for a label bearing a name, crest, monogram, or other design, placed in a book to indicate its ownership, place in a library, etc. The use of book-plates is of some antiquity, and mention has been made of one dated in the middle of the 15th century, but at present the fine book-plates of Bilibaldus Pirckheimer (1470-30), designed by Albert Dürer, hold the foremost place in point of time. The earliest English engraved book-plate known is that of Sir Nicholas Bacon, father of Lord Chancellor Bacon, which is dated 1574. Many distinguished artists have condescended to produce book-plates. The name of Albert Dürer has already been mentioned as the designer of Pirckheimer's two plates; and Hogarth engraved a book-plate for John Holland, heraldic artist, and another for George Lambert, the scene painter. Of English engravers, William Marshall and Robert White may be especially mentioned.

BOOK-SCORPION (*Chelifer cancrivorus*), a small arachnid, in appearance between scorpion and mite. The front of the body is scorpion-like, and

bears a transverse dorsal groove; the posterior body is flat, with ten or eleven rings; there are two eyes; the respiration is by means of air-tubes. Spinning-glands are present, and the body is sometimes covered by the secretion. The size is about one-eighth of an inch, the color brownish. The book-scorpion lurks among old books and papers, and probably helps their preservation by killing book-lice, mites, and other small insects.

BOOKWORM, any grub which feeds on the paper of books. The name more especially belongs to the larva of two species of small beetles, *Anobium panicum* and *Plinus brunneus*; belonging to the family *Ptinidæ*. In America, books in libraries are free from the ravages of the bookworm; the creatures are extremely rare in Britain, especially since so many chemical substances have been introduced into the manufacture of paper, but in Southern Europe the book-eating anobium is still common enough.

BOOM, in a ship, is a general name for the long spars which jut out from certain supports or uprights, to stretch or extend the bottom edge of sails. According to their connections, they receive the names of jib-boom, flying jib-boom, main-boom, square-sail boom, etc. The term boom is also applied to a strong barrier, as an iron chain or cable, beams, or a combination of spars, etc., lashed together with chains, and employed in barring the navigable passage of the mouth of a river or harbor. The wooden boom across the harbor was an important feature in the famous defense of Londonderry in 1689. In the United States a chain of floating logs fastened together and stretched across a creek or river to stop floating timber is termed a boom.

BOOM, a word frequently used for a start or rapid development of commercial activity or speculation, as when shares go off, or prices go up "with a boom." It is a recent American use, originating in the West, and first made familiar in 1878. The word is assumed to be suggested less by *boom* in the sense of noise, rather than by the sudden activity, the rush, which the noise often accompanies.

BOONE, DANIEL, born in Bucks county, Pa., Feb. 11, 1735, died in Missouri, Sept. 26, 1820. He was a pioneer of Kentucky and a famous hunter. After his marriage to Rebecca Bryan he set out (1769) with a party of six men to explore the wilds of Kentucky. They met with various adventures and succeeded in building a fort on the Kentucky River, which he called Boonesborough. Returning to his old home he organized a company of thirty persons, including his wife and daughters, and safely conducted them to his fort. Boone had many encounters with the Indians, and once was captured and adopted into the family of a chief, but he made his escape. Boone had considerable trouble in getting the government to acknowledge his title to land. He was obliged to give up his claim at Boonesborough, and eventually settle in Missouri. His grave is near Frankfort, Ky., a few miles from the site of Fort Boonesborough.

BOONE, a city of Iowa, about forty miles north of Des Moines, an important shipping station for coal, immense quantities of which are mined in the vicinity. It contains also extensive manufactories of flower, iron, carriages, woolen goods, and gloves.

BOONESBOROUGH, a village of Kentucky, situated on the Kentucky River, about twenty miles southeast of Lexington. Daniel Boone here erected and successfully defended, in 1775, the first fort built in Kentucky.

BOONESBOROUGH, a village of Iowa, county-seat of Boone county, situated near the Des Moines River, about two miles west of Boone. It contains

manufactories of agricultural implements and of carriages, and in the vicinity are extensive mines of bituminous coal.

BOONEVILLE, a city of Missouri, county-seat of Cooper county, and a river port, situated on the right bank of the Missouri River, about 200 miles west of St. Louis. It stands on a bluff about 100 feet above the river. Coal, iron, lead, marble and lime are found in the vicinity. The city contains important manufactories of iron, earthenware, wine and textile fabrics, and is the seat of the Cooper Institute for ladies. It was the scene of a battle fought June 17, 1861, in which a Confederate force under Colonel Marmeduke was routed by the Union troops under General Lyon.

BOONTON, an important manufacturing town of New Jersey, situated on the Rockaway River, about fifteen miles west of Paterson. Its iron-works are among the most extensive in America. Besides blast-furnaces, rolling-mills, plate-mills, nail-mills and nut-mills, there are manufactories of hats and of flour, and a thriving trade in general merchandise.

BOONVILLE, a village of New York, about 25 miles north of Rome. It contains manufactories of lumber, leather, cheese, churns, gloves and chairs.

BOORDE, ANDREW (1490-1549), born about 1490, near Cuckfield, in Sussex, England, and brought up under the stern discipline of the Carthusian order. About 1528 he succeeded in getting a dispensation from his vow, and subsequently studied medicine at Orleans, Toulouse and Wittenberg. On his return to England he was patronized by Cromwell, and afterward traveled in his service on a confidential mission through parts of France and Spain. The year 1536 was spent in the study and practice of medicine at Glasgow. He returned to London, and thereafter crossed the seas and traveled by Antwerp, Cologne, Venice and Rhodes to Jerusalem. After his return he lived in London and Winchester, where his flagrant immoralities brought him into serious trouble. In the spring of 1549 he was committed to the Fleet prison in London, and soon after died. Boorde's chief works are his *Dietary* and the *Fyrst Boke of the Introduction of Knowledge*, edited by Dr. Furnival for the Early English Text Society in 1870. His *Itinerary of Europe* has perished, but the *Hand-book of Europe* survives, and the *Itinerary of England or Peregrination of Doctor Boorde* was printed by Hearne in 1735. The earliest known specimen of the Gypsy language occurs in the *Introduction*. It has been asserted by some that Boorde, who was a fantastic reprobate, was the original "Merryandrew." See *Britannica*, Vol. IX, p. 366.

BOORHANPOOR, or **BURHANPOOR**, the ancient capital of Candeish, Hindostan. The streets and houses are well built. The Great Indian Peninsular Railroad has a station here. A mosque built by Arungzebe is one of the remarkable buildings. Flowered silks, brocades and muslin, as well as gold and silver thread, are manufactured.

BOOS, MARTIN (1762-1825), a Catholic priest, born at Huttenried, in Bavaria, Dec. 25, 1762. He was from about 1790 the originator of a religious movement closely akin to those of the Protestant Pietists. From 1806, when he settled at Gallneukirchen, his influence spread widely among the Catholic laity, and extended to about sixty of their priests. Himself a staunch Catholic, he was often bitterly persecuted, till, in 1817, the Prussian government appointed him a professor of theology and teacher of religion at Düsseldorf. In 1819 he removed to Sayn, near Neuwied, and died there Aug. 29, 1825.

BOOT, JOHN FLETCHER, a Cherokee warrior and member of the executive council of the Cherokee Nation, who was converted to Christianity in 1825, and became an eloquent and powerful Methodist preacher. He preached to his people in their native language, and was the first of that nation to administer the sacrament of the Lord's Supper. He died in 1853, being about sixty years old.

BOOTES: in Greek mythology, the son of Demeter and Iasion, who, being plundered of all his possessions by his brother, invented the plow, and cultivated the soil. He was translated to heaven under the name of Boötés ("ox-driver"), which is still borne by a constellation beside the Great Bear. It is supposed to represent a man holding a crook and driving the bear. The bright star *Arcturus* is in Boötés.

BOOTH, a covered stall or hut at a market or fair, from which goods are sold, still much used in the east of Europe and in Asia, and in England at Weyhill Fair (see *Britannica*, Vol. VIII, p. 848), near Andover. As towns sprang up, the yearly fair was more or less supplanted by the weekly market, and the slight booth had a tendency to become permanent.

The records of the 12th and some following centuries are full of complaints against the encroachments which were in this way made upon the market-places and streets. Stow relates that the houses in Old Fish Street in London, "were at the first but movable boards set out on market days to show their fish there to be sold; but, procuring license to set up sheds, they grew to shops, and by little and little to tall houses." So in Edinburgh the range called at first "The Boothraw," and afterwards "the Lucken-booths," arose in the very center of High Street. Traces of the Middle Age booth still remain in England, and in France there are many perfect examples, some believed to be of the 12th century.

BOOTH, EDWIN THOMAS, named for Edwin Forrest and Thomas Flynn, born in Bel Air, Md., Nov. 3, 1833. His education was desultory, and at an early age his father, Junius Brutus Booth, took him on his professional trips as dresser and attendant. During one of these Edwin made his first regular appearance on the stage. This was at Boston in 1849. His father did not approve of the son's choice of profession, but did not oppose him. In 1851 his father was ill in New York city, and the son took his part as Richard III. The elder Booth one night observed his son dressed for the part of Jaffier in *Venice Preserved*, and said, "You look like Hamlet; why don't you play it?"

Edwin Booth left his father and traveled about, going to Australia and the Sandwich Islands, and experienced many privations. Returning through California to the Eastern States he played as a star in many cities. He had now acquired experience and considerable fame, which latter was greatly increased in the years that followed. He performed the then great feat of playing Hamlet for one hundred consecutive nights (Nov. 21, 1864, to March 24, 1865). He became manager of the Winter Garden Theater, New York (1862-67), and brought out magnificent productions of Shakespeare's greatest works.

In 1869 Booth's Theater was dedicated; it was run by him for thirteen years, but did not prove a financial success, and after it was torn down he was obliged to earn another fortune to pay off the debts it left on his hands. Lawrence Barrett, Edwin L. Davenport, J. W. Wallack, Jr., Joseph Jefferson, Charlotte Cushman and Modjeska were among the stars that appeared in Booth's theater.

Edwin Booth has made trips to Germany and England, and within the last few years has made starring tours in company with Lawrence Barrett through the principal cities of the United States. He was married July 7, 1860, to Miss Mary Devlin, of Troy, who died in Dorchester, Mass., Feb. 21, 1863, leaving a daughter, Edwina, a year old. In 1869 Booth was again married, the lady being Miss Mary Runnion McVicker. She died in 1881 and left no children. Booth's favorite and best impersonation is in the character of Hamlet.

BOOTH, JOHN WILKES, actor, born in 1839, was shot by Sergeant Corbett, April 26, 1865. He was a son of Junius Brutus Booth. His name has been rendered infamous by his assassination of President Lincoln. See *Britannica*, Vol. XIV, p. 661.

BOOTH, JUNIUS BRUTUS, born in London, May 1, 1796, died Nov. 3, 1852. He received an excellent education and was undecided what profession to enter. After trying painting, poetry, law and other occupations he entered the dramatic profession, contrary to his father's wishes. After trips in Holland and Belgium he went to London, and within four years had become a great success.

In 1821 Booth arrived in America, where his dramatic career was most brilliant. At one time he seriously contemplated leaving the stage and becoming a light-house keeper. He purchased a sylvan retreat twenty-five miles from Baltimore, where he occasionally retired for recreation. On this little farm he found pleasure in rural pursuits, and it was to this place that he brought his old father, who had always been a great admirer of America. Mr. Booth acted in New York, Baltimore, New Orleans (here he gave French plays with great success), Richmond, Philadelphia and San Francisco. His son Edwin traveled with him through the West, playing companion characters.

Booth died on a trip up the Mississippi River from New Orleans. His life was made unhappy by the death of three children, by attacks of insanity, to which he was subject, and by his own habits of intemperance. He appeared with such actors as Kean, Forrest and Hamblin in many of Shakespeare's plays, and also the dramas entitled *The Iron Chest*, *Bride of Abydos*, *The Apostate*, *Andromaque*, *The Rivals* and *Riches*. His best impersonation was the character of Richard III.

BOOTH, MARY LOUISE, born at Millville (Yaphank), N. Y., April 19, 1831, died in New York city, March 5, 1889. She was of French descent, and as a child displayed talent. She taught school with her father in Williamsburg, L. I., but gave it up on account of ill-health, and adopted literary work, sending sketches to the newspapers and translating French stories. During the late war she engaged in translating works of famous Frenchmen who were in favor of the Union cause. De Gasparin, Laboulaye and Cochin were among the authors whose works she translated and with whom she corresponded. Her patriotic work received the praise of President Lincoln and other statesmen. She translated the *History of France*, by Henri Martin. She was author of the *History of the City of New York*, which was brought down to the date 1880. In 1867 "Harper's Bazar" was established, and Miss Booth was its editor until her death.

BOOTH, REV. WILLIAM, founder and "general" of the Salvation Army, born at Nottingham, England, in 1829. He was educated there, and from 1850 to 1861 acted as a minister of the Methodist New Connection. From the first he was a zealous evangelist, but the new departure which led to the creation of the Salvation Army on military lines began in 1865, with mission work among the lower classes in the East End of London.

Since 1878 Booth's organization has been known as the Salvation Army, of which he has continued to be the main spring and controlling power, directing its movements at home and abroad from his headquarters in London. His enthusiasm and wonderful organizing power have given life to the religious military system, of which he is truly "general." Booth has written several hymns and religious works dealing with the movement.

BOOTHBAY, a village of Maine, situated on the Atlantic Ocean at the mouth of the Damariscotta River. Its harbor is an excellent one, and is open during the winter. The chief industry is fishing. The town is a prosperous trade-center and a popular summer resort.

BOOTLE-CUM-LINACRE, a northern suburb of Liverpool, including a large portion of the Liverpool docks, but since 1868 forming a separate municipal borough. Population, 27,112.

BOOTON, an island of the Malay Archipelago, separated by a narrow strait from the southeastern bay of Celebes, and from the island of Muna. It is high, but not mountainous, and thickly wooded; produces fine timber, rice, maize, sage, etc. The people are Malays. The Sultan, who resides at Bolio, is in allegiance to the Dutch, an under-resident being stationed on the island. Area, 1,700 miles; population, 17,000.

BOOTY, the victor's share in property captured from the vanquished; plunder; pillage. It is generally a military term, the word prize being more frequently used in the navy.

BOPPARD, a town of Rhenish Prussia, on the left bank of the Rhine, 10 miles south of Coblenz. The *Bandobriga* of the Romans, it was afterwards an imperial city till 1312, and the seat of a diet in 1234. Population, 5,594.

BORA, *KATHARINA VON*, the wife of Luther, born of an old family in the district of Meissen, Jan. 29, 1499, died at Torgau, Dec. 20, 1552. At a very early age she entered a Cistercian convent of Nimptschen, near Grimma. Becoming acquainted with Luther's doctrines, she found herself very unhappy in her monastic life; and, finally, with eight other nuns, whose relatives, like her own, refused to listen to them, she applied for assistance to Luther. Luther obtained the services of Leonhard Koppe, a citizen of Torgau, and by him and a few associates the nine nuns were liberated from the convent in April, 1523. They were brought to Wittenberg, and Katharina became an inmate in the house of the burgo-master Reichenbach. Luther, through a friend, Amsdorf, offered her the hand of Dr. Kaspar Glaz. She declined this proposal, but declared herself ready to marry Amsdorf, or Luther himself. Her marriage with Luther took place June 13, 1525. See LUTHER, *Britannica* Vol. XV, p. 79. She bore her husband three sons and three daughters, and is best described in Luther's own words as "a pious, faithful wife, on whom a husband's heart could rely."

BORAGE (*Borago*), a genus of plants of the natural order *Boraginaceæ*, of which genus there are few species. A European plant, *Borago officinalis*, the principal representative of the genus, is an herb of somewhat stout and coarse appearance, but with beautiful blue flowers. Borage was formerly much cultivated and highly esteemed, being classed among the *cordial* flowers, and supposed to possess exhilarating qualities for which it no longer receives credit. It was frequently put in wine, and, although it has no sensible properties, its traditional virtues still retain for its leaves a place in the preparation of claret-cup. The young leaves and tender tops are pickled, and occasionally boiled for the table, and are still used in salads in Germany.

BORAGINEÆ, or *BORAGINACEÆ*, a large chiefly herbaceous order of cordifloral dicotyledons, the alternate exstipulate leaves generally rough with hairs which proceed from a thick, hard base, the flowers regular, and the fruit consisting of four distinct nutlets or of a drupe containing four nutlets. The order includes the forget-me-not, the heliotrope, borage, alkanet, comfrey, etc.

BORAX LAKE, a small body of water situated in Lake county, California, and separated from Clear Lake, on the west, by a dike of obsidian. It is remarkable as the source of supply of immense quantities of borax, which is found in the form of crystals in the mud at the bottom of the lake. The water is a strong solution of borax, and in the vicinity of the lake are numerous mineral springs.

BORDEN, GAIL, inventor, born at Norwich, N. Y., Nov. 6, 1801, died at Borden, Texas, Jan. 24, 1874. While on a surveying expedition his attention was called to the need of suitable foods for emigrants, and he began a series of experiments. He produced "pemmican," a kind of meat biscuit which was carried by Dr. Kane in his Arctic expeditions. In 1856 he secured a patent for his method of condensing milk, and afterward produced beef extract, condensed tea, coffee, and cocoa, as well as condensed fruit juices. His patents brought him much wealth.

BORDENTOWN, a city of New Jersey, situated on the Delaware River, about six miles below Trenton. It was founded in 1717, and is noted as having been the residence of Francis Hopkinson, Joseph Hopkinson, Admiral Charles Stewart, Joseph Bonaparte, and Prince Murat. The Bonaparte mansion is still standing. Bordentown is the seat of Bordentown Female College and of a military institute, and contains a number of important manufactories, including iron, machinery, shirts, and ship-building.

BORDERS, *THE*, as a term denoting the tract of country lying immediately on both sides of the frontier line between England and Scotland, it is somewhat elastic in its signification. *Geographically*, the frontier line runs diagonally northeast or southwest, between the head of the Solway Firth at the latter extremity, and a point a little north of the mouth of the Tweed at the other extremity; the counties touching upon this line being Cumberland and Northumberland on the English side, and Dumfriesshire, Roxburgh, and Berwick on the Scottish side. The distance between the two extremities is nearly 70 miles as the crow flies, but following the frontier line in its irregularities about 110 miles.

While the above may be taken as defining the Border in a geographical sense, the word has for *historical* purposes a wider signification, especially on the Scottish side. The territory thus indicated on the Scottish Border includes the whole of the counties of Berwick, Roxburgh, Selkirk, and Peebles, a considerable portion of Dumfriesshire, and part of Galloway. Although the name of the Border, or Borders, is not perhaps older than the 13th century, it is of interest to note that from the very dawn of British history the district so called has exhibited in its annals the characteristics of a frontier, in that it has almost constantly formed the point of contact between contending races and nations.

The Borders have been the scene of some great historical battles. To narrate all the invasions that took place on either side of the Border would be to repeat great part of the general history of England and Scotland.

There is yet a third and more popular sense in which the word Border is used. This, which may be called the *literary* sense of the term, arises out of the prominence which has been given to the vale of the Tweed, including its tributaries the Yarrow

the Ettrick, and the Teviot, by the romances and poems of Sir Walter Scott, by the poetry of Leyden and of the Ettrick Shepherd, by the ancient and traditional ballads relating to the district, and by the pathetic songs and legends more immediately connected with the Yarrow, and glorified by the genius of Wordsworth. Hence, when Border tales or Border ballads or Border traditions are spoken of, it is the Scottish rather than the English side of the frontier that is referred to.

BORDER-WARRANT, an obsolete form of diligence used in the border counties of Scotland for detaining the person of an English debtor. It was more rigorous than the general *meditatio fugæ* warrant.

BORDIGHERA, a winter resort in the Riviera, North Italy, on a hill overlooking the Mediterranean, seven miles southwest of San Remo by rail. It was founded in 1470, but its modern progress dates from the opening of the Cornice road in 1823, and of railway communication. Bordighera suffered in the earthquakes of February, 1887. Population, 2,556.

BORDONE, Paris, a painter of the Venetian school, born of noble parentage at Treviso, Italy, in 1500, died at Venice in 1570. He studied under Titian and under Giorgione, and much of his earlier work was done in his native town, in Vicenza, and in Venice. In 1538 he was invited to France by Francis I, who employed him to paint portraits of himself and of leading members of his court. He was knighted by Francis II. He painted at Augsburg in the Fugger Palace, and at Milan in the chapel of St. Jerome. His most important monumental work in painting was the six sacred subjects with which he decorated the dome of San Vincenzo, Treviso; and his *Fisherman Presenting the Ring of St. Mark to the Doge*, now in the Academy, Venice, is ranked as masterpiece among his easel pictures. He is represented in the National Gallery, London, by *Daphnis and Chloe*, and *A Portrait of a Genoese Lady*.

BORE, a tidal phenomenon at the estuaries of certain rivers, also called *Eagre*. When a river expands gradually towards a very wide mouth, and is subject to high tides, the spring flood-tide drives an immense volume of water from the sea into the river; the water accumulates in the estuary more rapidly than it can flow up into the river, and thus there is gradually formed a watery ridge stretching across the estuary and rushing up towards the river and over the level sands with great velocity and much noise.

The most celebrated bores are those of the Ganges, Indus, and Brahmaputra. The last is said to rise to a height of 12 feet. In the Hoogly branch of the Ganges, the bore travels 70 miles in four hours, and often appears suddenly as a liquid wall over seven feet high. In the Amazon and other rivers in Brazil the bore reaches a height of from 12 to 16 feet. In England the phenomenon is most noticeable in the Severn, Trent, and the Wye, and in the Solway Frith. The bores in the Bay of Fundy are very remarkable. On the Amazon this phenomenon is called the *prororoca*; on the Seine, the *barre*, and on the Garonne and Dordogne, in France, the *mascaret*.

BORE, the internal cavity of any kind of fire arm. It is in most cases cylindrical, but in the Lancaster gun it is oval, and in the Whitworth hexagonal, both being also spiral, while in all rifled firearms it is furrowed with spiral grooves, and for the same reason: to give that rotation which enables an elongated projectile to be used. The diameter of the bore is called the "caliber." In rifled guns the bore is measured, not from the bottom of the grooves, but from the smooth surfaces between them, called the "lands."

Heavy iron guns were formerly cast solid and then bored out, but as it is essential that the surface of the bore should be extremely hard to prevent its being "scored" by the shot, endeavors were made in America to attain this object by casting them hollow, and cooling the inner surface more rapidly than the rest of the metal. Large guns of modern construction are, however, either made entirely of steel, as in the "Krupp" process, or, as in the Woolwich and Armstrong systems, have a steel tube, toughened in oil, for the bore, and strengthened outside by coils of wrought iron shrunk on over it, so that the hardness of the bore is assured.

BORERS, a name applicable to many beetle-like or coleopterous insects in the family of wood-eaters or *Xylophaga*, but peculiarly applicable to the genera *Pinus* and *Anobium*. They are mostly inconspicuous insects, resting during the day in the larval tunnels, active and roving at night. *Pinus fur* is common all the world over, and is very destructive to herbariums, collections of insects, stuffed birds, etc. The larva of *Anobium striatum* does great damage to furniture made of soft wood. Its little round tunnels, looking as if made by a drill, and full of the finest powder formed from the devoured wood, are familiar enough. The species *Anobium tessellatum* and *Anobium pertinax* are also found in furniture, but more usually on trees. There are many other genera of borers, *Lymexylon navale* on ship-timber, *Ptilinus* on books, and *Apate* on oak furniture. The Clover-root borer, a small scolytid beetle, *Hylesinus trifolii*, imported from Europe into America, is very injurious to clover. The perfect beetle is a little over two millimeters in length, oval in form, and of a dark-brown color. The Grape-root borer, the larva of *Ageria polistiformis*, a moth of the *Ageriidae* family, is a white fleshy grub which eats the bark and sap-wood of the grape-root.

BORGNE, commonly called Lake Borgne, a bay of the Gulf of Mexico, about twenty miles wide, extending from Mississippi Sound sixty miles westward to within twelve miles of New Orleans, and communicating by Rigolet's Pass with Lake Pontchartrain on the north. It is a part of the route of steamers running between New Orleans and Mobile. Its shores are a narrow and almost continuous ridge of shells, which separate it from numerous surrounding marshes and cane-brakes.

BORISSOV, a town in the Russian government of Minsk, on the Beresina, 418 miles southwest of Moscow by rail. Population, 14,235.

BORKUM, one of the East Frisian Islands, at the mouth of the Ems, 25 miles northwest of Emden. Population 684, increased in the summer by over 2,000 visitors.

BORMIO, a town of Italy in the province of Sondrio, 27 miles northeast of Tirano. It has a number of hot sulphur baths. Population, 1,744.

BORN, BERTRAND DE, a famous troubadour, born about 1140 in Perigord. He played a conspicuous part in the struggles of the English king Henry II, and his sons, during the latter part of the 12th century. He died before 1215. More than 40 of his poems are extant.

BORNA, a town of Saxony, on the Wyhra, 17 miles southeast of Leipzig by rail. Population, 7,350.

BORNEO CAMPHOR, a variety of camphor produced in Sumatra and Borneo. It is obtained from the tree *Dryobalanops camphora*, and is highly prized by the Chinese, who give for it a much higher price than for ordinary camphor.

BORNING, a process of judging of the straightness or level of a surface or line by the eye, which looks along two or more *borning* or *boning rods* or *pieces* set up for the purpose. The term is used by masons, surveyors, and gardeners.

BORNU (*Bornoa*, or "Land of Noah"), a Mohammedan state in the Central Sudan. Area, about 56,000 square miles. Population, over 5,000,000. Capital, Kuk, or Kukawa, lying on the west side of Lake Chad. See *Britannica*, Vol. IV, pp. 60, 62.

The Sultan, whose official title is Mai, is an absolute monarch. He is assisted by a council comprising the Kokenawa, or military chiefs, the official delegates of the various subject races, and several members of the reigning family. The standing army of about 30,000 men is partly armed with rifles, and the cavalry still wear armor, either imported from Eastern Sudan or manufactured in the country. There is also some artillery, and a few companies even wear European uniforms. In lieu of pay the men receive allotments of land.

Most of the people, who call themselves Ka-nuri, that is, "People of Light," are of mixed Negro and Dasa (southern Tibu) descent, and speak a Tibu dialect that has been reduced to written form by the Protestant missionaries. The other chief elements of the population are the Tuareg Berbers in the north; the Arabs mainly in the southeast; the Makari and Marghi Negroes in the south; the Wanga, Beddé, and other pagan tribes in the east; and in the center the Magomi, who claim kinship with the royal dynasty which for many centuries ruled over the united Bornu and Kanem states. These and the Kanuri are regarded as the most cultured people in Central Africa, and their woven fabrics, pottery, and metal-ware are highly prized throughout the Sudan.

BORODINO, a village of Russia, 70 miles west of Moscow. It is situated on the Kaluga, an affluent of the Moskwa, and gave name to the great battle fought between the French army under Napoleon and the Russian under Kutusoff, Sept. 7, 1812. The battle of Borodino was one of the most obstinately disputed in history, and the loss on both sides was almost equally great. Out of 257,000 men engaged, between 70,000 and 80,000 were killed or wounded. The Russians retreated on the following day, but in the most perfect order, and therefore claim this battle as a victory. The honor is also claimed by the French, who name the battle from Moskwa.

BORGLYCERIDE, a compound composed of about 25 per cent. of glyceryl borate, or propenyl borate, and 75 per cent. of free boric acid and glycerine in equal proportions. It is extensively used as a preservative of food, and also in antiseptic surgery, combining, as it does, the valuable properties of the above-mentioned substances.

BOROUGH, or, in Scotland, **BURGH**. See *Britannica*, Vol. IV, pp. 62-64. In Connecticut, New Jersey, Pennsylvania and Minnesota the borough corresponds in general to the town in other States.

BORROW, **GEORGE HENRY** (1803-81), born at East Dereham, Norfolk, England, July 17, 1803. His father, a captain of militia, moved about with his regiment to Scotland, Ireland, and many parts of England, finally settling at Norwich, where young Borrow attended the grammar school (1815-18), and for the next five years was articled to a firm of solicitors. He already deserved his gypsy title, *Lavengro* ("word-master"), having picked up a knowledge of Irish, French, German and Danish (these two under Taylor of Norwich), Welsh, Latin, Greek, even of Romany, the language of that strange gypsy race of which he was almost an adopted member. On his father's death in 1823 he went to London to seek his fortune, and for a time made a precarious living by writing. Tiring of this he yielded to his love of Nature and love of adventure and spent considerable time in rambling about England gypsy-wise. Subsequently as agent of the Bible Society he visited St. Petersburg (1833),

and Portugal, Spain, Morocco (1835-39). In 1840 he married and settled down on a small estate at Oulton, near Lowestoft, where, after travels in Southeastern Europe (1844), a tour in Wales (1854), and a residence of some years in London, he ended his days, July 30, 1881. The chief of his fourteen published works are: *The Zincali, or Gypsies of Spain* (1840); *The Bible in Spain* (1843); *Lavengro* (1851), its sequel *The Romany Rye* (1857); *Wild Wales* (1862); and *Romano Lavo-Lil, or Word-book of the English-Gypsy Language* (1874). He has been likened to Cervantes, Defoe, and Lesage. In truth all three were in some ways his literary progenitors; none the less he is always original, always George Borrow. His rare mastery of good, strong English, his rarer power of depicting mankind and Nature, are, however, often marred by mannerisms, transparent mystifications, and unreasoning crotchets.

BORROWDALE, a beautiful valley of West Cumberland, England, ascending from the Derwent-water towards the Honister Pass. In this valley is the Bowder Stone, 89 feet in circumference, and 1,971 tons in weight. The famous plumbago mine at Seathwaite in Borrowdale, which long yielded enormous profits, was closed in 1850.

BORROWING DAYS, the last three days of March (old style), supposed in Scotch folklore to have been borrowed by March from April, and to be especially stormy. In Cheshire, the first eleven days of May are called "borrowed days," because in old style they belonged to April.

BORSAD, a town in the northern division of the province of Bombay, 24 miles northeast of the port of Cambay. Population, 12,228.

BORSOD, a Hungarian county 1,370 square miles in area. It produces coal, copper, iron, fruit, hemp, wine and tobacco; is a fertile province and lies on both sides the Sajó River.

BORTHWICK CASTLE, a splendid ruined tower, 13½ miles southeast of Edinburgh. It is 110 feet high, and measures 74 by 69 feet. It was founded in 1430. In June 1567 Queen Mary and Bothwell spent four days here. Erichton Castle, whose beautiful court-yard is so finely described in *Marmion*, stands 1¼ miles to the east.

BOSIO, **FRANÇOIS JOSEPH**, **BARON**, an eminent sculptor, born at Monaco, March 19, 1769, died July 29, 1845. He studied art first at Paris, afterwards in Italy, and first became famous by the figures which, at the request of Napoleon, he executed for the column in the Place Vendôme. Louis XVIII and Charles X also patronized Bosio; the former made him royal sculptor, the latter a baron. At the time of his death he was director of the Academy of Fine Arts in Paris.

BOSNIA and HERZEGOVINA, provinces of Austria-Hungary. Total area, 23,262 square miles. Population (1888), 1,404,000. For early history, see *Britannica*, Vol. IV, p. 68.

By the treaty of Berlin, July 13, 1878, these provinces were transferred from Ottoman control to that of the Austro-Hungarian government. The present governmental administration is conducted by a Bosnian bureau at Vienna in the name of the Emperor-King. The chief authority in the province itself, with its seat in Sarajevo, is the provincial government (*Landesregierung*), in three departments for internal affairs, finance, and justice. For administrative purposes there are 6 districts (*Kreis*) and 48 county (*Bezirk*) authorities. The provincial government is provided with an advising body, composed of the ecclesiastical dignitaries of Sarajevo and 12 representatives of the populace. Similar councils are also provided for the district and county authorities. Bosnia and Herzegovina contain six districts (*Kreise*). The Sanjak of Novi-

Bazar is occupied by an Austrian military force, though administered civilly by Turkey. In 1885 the population (without military) numbered 1,336,091 (705,025 males and 631,066 females); with military, 1,360,000. Greek Oriental Christians, 571,250; Mohammedans, 492,710; Roman Catholics, 265,788; Jews, 5,805; others, 538. The nationality is Servian; only in the southern districts are Arnauts, and here and there gypsies. The most populous towns are the capital, Sarajevo, with (in 1885) 26,286; Mostar, 12,665; and Banjaluka, 11,357. There is one higher gymnasium, two gymnasia, four commercial schools, 943 elementary schools, with one Greek-Oriental and one Roman Catholic seminary for priests, and one training college for teachers. There is an upper court of justice in Sarajevo, the six district (Kreis) courts and the county (Bezirk) authorities as courts of first instance. Agriculture is in a very low state of development, though the soil is very fertile. Maize, wheat, barley, oats, rye, millet and buckwheat, potatoes, flax, hemp, and tobacco are cultivated. Both provinces have a superabundance of fruit, principally plums. Dried plums are the chief article of export. In 1887 over 400,000 boxes (39,368 tons) were exported, valued at 200,000*l*. Cattle-grazing is important. In 1879 there were, it is estimated, 158,084 horses, 3,134 asses and mules, 761,302 head of cattle, 775 buffaloes, 839,988 sheep, 522,123 goats, and 430,354 swine. Forest-land occupies 45 per cent. of the whole area. Minerals are abundant; mining is now carried on for iron and copper, manganese, chromium, antimony. There are salt-pits at Dolnja-Tuzla. There were, in 1890, 342 miles of railway, and 1,743 miles of telegraph lines. Military service is compulsory over 20 years of age. The native troops comprise four infantry battalions (each seven companies), with a total of 2,484 men on peace footing. The Austro-Hungarian troops of occupation have at present a strength of 23,860 men.

BOSPHORUS, CIMMERIAN, an ancient name for the Strait of Yenikale, or Kaffa. It connects the Sea of Azov with the Black Sea.

BOSQUET, PIERRE FRANÇOIS JOSEPH, French marshal, born Nov. 8, 1810, at Mont-de-Marsan, in Landes, died Feb. 5, 1861. He entered the Algerian army in 1834, and reached the rank of general of brigade in 1848. During the Crimean war he contributed greatly to the victories of Alma and Inkermann, and took a leading part in the capture of the Malakoff, where he was severely wounded. In 1856 he was made field-marshal of France.

BOSS, a term applied in America to one who employs or superintends; a head man or manager. It is a modified form of the Dutch *baas*, "master," a term used literally and figuratively like *boss* in American use. In United States politics, a boss is an influential politician who uses the machinery of a party either for private ends or for the benefit of a clique or ring. To "boss" is to play the master.

BOSSUT, CHARLES, mathematician, born at Tartaras, near Lyons, France, Aug. 11, 1730, died at Paris, Jan. 14, 1814. He was assisted in his early studies by Clairant and d'Alembert. From 1752 until the Revolution he was professor at Mezieres, and under the Empire in the Polytechnic Schools at Paris. In the compulsory retirement that followed the Revolution he wrote his famous *Essai sur l'Histoire Générale des Mathématiques*.

BOSTAN (El), "the garden," a town of Asiatic Turkey, situated in a plain on the Sihun, on the north side of Mount Taurus, 40 miles northwest of Marash. Population, 8,500.

BOSTON, the chief city and capital of Massachusetts. For its history, see *Britannica*, Vol. IV,

pp. 72-77. Boston now includes the Island of East Boston (Noddle's Island), originally containing 660 acres, the suburbs of South Boston, Charlestown, Dorchester, Roxbury, West Roxbury and Brighton, with their minor villages. Cambridge, Newton, Somerville and Chelsea are suburban cities. Many of the streets of Boston, once so crooked and irregular, have been straightened at public expense, since the great fire of 1872. Horse railways traverse the principal streets, running out several miles into suburban towns. The old South Church, in which Franklin was baptized, Whitefield preached, and the election sermons were delivered for 160 years, still stands on Washington street. It was sold in 1876 to a patriotic association, and fitted up as a museum.

Boston stands high among American cities in the number and extent of her libraries and schools of learning. The Boston Public Library, on Boylston street, including its branches, is the largest library in this country, and is free to all. Some of the other principal libraries are the Boston Athenæum, Massachusetts Historical Society, State, Social, Law, Boston Medical Association, New England Historic Genealogical Society, Congregational, General Theological, besides many smaller ones. Here also are many art and scientific institutions, and as a corporation Boston supports several schools of industrial and mechanical drawing. The Boston Museum of Fine Arts is an immense building, occupying 97,000 square feet. There is also the Boston Art Club, Boston Society of Decorative Art, American Academy of Arts and Sciences, Boston Society of Natural History, and the Warren Museum of Natural History. Music is also extensively cultivated, as indicated by such institutions as the Handel and Haydn Society, the oldest musical organization in America, founded in 1815; the Harvard Musical Association, Apollo Club, Boylston Club, Cecilia Club, Orpheus Musical Society.

The first free schools in America were established in Boston about 250 years ago, and now the system of public schools is very elaborate and complete, embracing every grade from the primary to the high Normal and Latin schools. The Boston Latin School, preparatory for college, was founded in 1635. The building for the New English High and Latin School is said to be the largest in America devoted to educational purposes, and the largest in the world used as a free public school. Boston University (Methodist), founded in 1869, includes three colleges, four professional schools, and a post-graduate department of Universal science. There is also the Boston University School of Medicine, open for both sexes; Boston College (Roman Catholic); Tuft's College (Universalist); Massachusetts Institute of Technology, and Lowell Institute, which provides for annual courses of free lectures upon the most important branches of natural and moral science. Here is also the Perkins Institution and Massachusetts school for the blind, founded in 1829; the first institution in the world where a systematic education of the blind was attempted, and which has been a model for others of the kind. Here also is the Horace Mann School for the Deaf, Boston Asylum and Town School for Indigent Boys, and Massachusetts School for Idiotic and Feeble-minded Youth, the first in America. Hospitals, asylums, homes and dispensaries abound.

Boston Common, in the center of the city, is a handsome natural park of fifty acres, shaded by about a thousand stately elms, with broad walks, a beautiful sheet of water, the original "Frog Pond," and many objects of special historic interest. Adjoining this on the west is the Public Garden, containing 24½ acres, one of the most attractive spots

in the city. The population has increased from 250,523 in 1870, to 362,839 in 1880, and to 446,507 in 1890.

BOSTON UNIVERSITY. See COLLEGES, in these Revisions and Additions.

BOSWELLIA, a genus of balsamic plants, natural order *Burseraceae*, of which the species are still very imperfectly known, although the product of some of them—olibanum, generally believed to have been the frankincense of antiquity—(see *Britannica*, Vol. IX, p. 708) has long been of considerable commercial importance for the preparation of incense. The most important species appears to be *Boswellia Carterii*, though several other varieties from the hot and dry regions of Eastern Africa and Southern Arabia have been described. *Boswellia thurifera* or *serrata* of Coromandel yields a resin which is used in that country as incense. *Boswellia Frereana* yields the primitive gum elemi, a highly fragrant resin largely used in the East as a masticatory. The Abyssinian *Boswellia papyrifera* (so called from its laminated paper-yielding bast) also yields an olibanum, but it is not collected.

BOSWORTH, or **MARKET BOSWORTH**, a small English market town in Leicestershire, southwest of Leicester. It was on a moor two miles south of Bosworth that the battle was fought (1485) in which Richard III was slain, and which terminated the Wars of the Roses. On an elevation called Crown Hill, Lord Stanley placed the crown on the head of the Earl of Richmond, Henry VII. Simpson the mathematician was a native of Bosworth, and Dr. Johnson served there as an usher in the grammar school. Population of parish, 3,978.

BOSWORTH, JOSEPH, D. D., an Anglo-Saxon scholar, born in Derbyshire in 1789, died May 27, 1876. He was educated at Repton, Aberdeen, and Trinity College, Cambridge. Presented in 1817 to the vicarage of Little Horwood, Buckinghamshire, he devoted all his spare time to literature, and especially to researches in Anglo-Saxon. The result of his labors appeared in his *Elements of Anglo-Saxon Language* (1838), a new edition of which, by Professor Toller, has been issued from the Clarendon Press since 1882. Bosworth resided as British chaplain in Holland from 1829 to 1840, when he obtained the vicarage of Watite, in Lincolnshire, in 1857 becoming rector of Water Shelford, Buckinghamshire, and in 1858 professor of Anglo-Saxon at the University of Oxford.

BÖSZÖRMENY, a town of Hungary, situated 10 miles northwest of Debreczin. Population, 19,035.

BOTALLACH is the name of a famous mine on the west coast of Cornwall, 8 miles north of Land's End. The works are on the edge of the cliff; part of the underground workings (abandoned in 1875), extended 2,448 feet beneath the sea. The mine was worked as a tin mine in 1721, and in 1841 was famous as a very rich copper mine. It has subsequently been wrought for one or both of those metals.

BOTANIC GARDEN, a garden devoted to the culture of plants for the promotion of botanical science. Like the science itself, the botanic garden owes its birth to the needs of pharmacy; thus at the earliest European school of medicine, that of Salerno, there is record in 1309 of the medical garden of Mattheus Sylvaticus; while in 1333 a similar garden was established by the Republic of Venice.

The botanic garden in the modern sense is usually dated from a private one founded at Padua (between 1525 and 1533), from the public one of Pisa, established by Cosmo de Medici in 1544, or from that of Padua, which dates from the following year. The other great Italian cities soon followed this example, and a botanic garden was also founded at the University of Leyden in 1577. At Paris a royal garden was founded in 1597, but it

was not until 1626 that its scientific purposes were defined. In 1635 chairs of botany and pharmacology were founded, and it soon became famous as the *Jardin des Plantes*. The establishment of gardens continued during the 17th century and those of Oxford (1632), Chelsea (1677), and Edinburgh (1680) may be particularly noted.

A further impetus was given by the popularization of botany in the last century by Linnæus, and by the consequently increased importance of the subject as a branch of academic education; most European universities, including all German ones, have now their botanic gardens, as well as many purely commercial cities. The leading American universities and cities have followed suit, the gardens of Washington, St. Louis and Cambridge being especially well known.

The mode of arrangement of botanic gardens varies infinitely in detail. The Linnæan system has been replaced by the natural, but in their mode of expressing this no two gardens agree; in some the principle of arranging plants according to their geographical distribution is also largely followed, while economic or medical interests have had a variable share.

BOTANY OF NORTH AMERICA. See *Britannica*, Vol. IV, pp. 79-163.

BOTETOURT SPRINGS, a village of Virginia, about eight miles from Salem, the seat of Hollins Institute for Girls, and the site of Johnson's Spring, noted for its mild and pleasant medicinal waters.

BOTHIE, originally a humble cottage or hut of Scotland, but the term has of late years been popularly applied to a barely furnished and uncomfortable habitation for farm servants, and confined to the eastern and northeastern counties. The bothie of modern times is situated either under the same roof as the stable, or at a short distance from the steading, and the furnishings are of an uninviting, sometimes actually repulsive character. The occupants are usually unmarried men, who frequently have their own food to prepare. Some of the larger farmers, however, provide a woman to do the cooking and cleaning.

BOTHRIÓCEPHALUS, a flat parasitic worm allied to the tape worm (*Tenia*), in the class *Cestodæ*, of which the broad tape worm, *Bothriocephalus latus*, is the type. See TAPEWORMS, *Britannica*, Vol. XXIII, pp. 49-56.

BOTHWELL, a village of Canada, situated on the Thames, about 25 miles southwest of Chatham. It is the center of industry of the petroleum region, and has also extensive manufactories of lumber and a large trade in lumber, cattle, grain, and woolen goods.

BOTOCUDOS, the most barbarous of the Indian tribes of Brazil, inhabiting the east coast range, between the Rio Pardo and the Rio Doce. Their name is derived from the Portuguese *botoque* "bung-hole," with reference to their under lip, pierced to hold a disc of wood. They are of middle height, sturdily built, and have small hands and feet; their features are strongly marked with broad cheek-bones and repulsively thick lips and nose, redeemed by white, regular teeth, and sparkling black eyes. They generally go quite naked, have no fixed settlements, and their food includes anything not absolutely poisonous. Their speech is entirely distinct from that of the other Indian nations; they have no religion, properly speaking, but are abjectly afraid of spirits, and pay a certain worship to the moon as creator of the world. Through systematically cruel treatment they have been almost annihilated, and now number not more than 4,000.

BOTOSHANI, a town of Moldavia, on the Shiska, 62 miles northwest of Jassy, at the terminus of a

branch railway; has an active trade in country produce. Population 39,941, 63 per cent. of whom are Jews.

BO-TREE, the *Ficus religiosa*, or pippul-tree of India. It is held sacred by the Buddhists as the tree under which Sakyamuni, the founder of their religion, is said to have become "enlightened," and to have evolved the four noble truths by which mankind may be delivered from the miseries attendant upon birth, life, and death. The particular bo-tree under which this occurred is said to have been produced at the date of his birth. The bo-tree of the sacred but ruined city Anuradhapura, 80 miles north of Kandy, is in all probability the oldest tree in the world. It is said to have been planted B. C. 288, as a branch of the tree under which Sakyamuni sat when he became Buddha. The main stem of this tree was broken off by a storm in October, 1887. The severed portion was solemnly cremated with religious rites.

BOTRYTIS, a large genus of hyphomycete fungi, containing many of the plants commonly called mold and mildew, and usually growing upon dead wood and leaves. The silkworm disease known as muscardine is caused by *Botrytis bassiana*. A large number of species which occur on living plants were formerly included in this genus, but are now referred to *Peronospora*.

BOTTA, PAUL ÉMILE (1805-70), a distinguished archaeologist and traveler, was born at Turin in 1805. After extensive travels in the New World and in Egypt, he became in 1833 French consul in Alexandria, and thence undertaking a journey to Arabia, published the results in his *Relation d'un Voyage dans l'Yemen* (1841). He was soon after appointed consular agent at Mosul, and commenced a series of discoveries which form an epoch in archaeological science. Early in the spring of 1843 Botta began his search in the heaps of ruins near the Tigris for monuments of Assyrian antiquity (see Britannica, Vol. IV, p. 165), and the "Journal Asiatique" soon contained accounts of his enterprise, and disquisitions on the cuneiform writing, which afterward appeared as a separate publication under the title *Mémoires de l'Écriture Cuneiforme Assyrienne* (1848). The French government took up the matter warmly, and a commission of learned men was appointed to conduct the publication of the magnificent archaeological work, *Monuments de Ninive* (1847-50). In 1848 he published *Inscriptions découvertes à Khorsabad*. In 1846 Botta was appointed consul-general at Jerusalem, and in 1857 at Tripoli. He returned to France in 1868, and died at Achères, near Poissy, April 18, 1870.

BOTTESINI, GIOVANNI, contrabassist, was born at Crema, in Lombardy, Dec. 24, 1823. A concert tour, begun in 1840, and extending to America, established his fame as the greatest master of the double-bass fiddle. From 1846 he was director of Italian opera in Havana, Paris, Palermo, and Barcelona, and in 1864 began a series of compositions which ultimately included four operas and an oratorio. His best work, however, is his standard *Méthode Complète de Contre-basse*.

BÖTTGER, JOHANN FRIEDRICH, improver of porcelain manufacture, was born in Reuss-Schleiz in 1682 or 1685, died March 13, 1719. He became an enthusiast in the search for the philosopher's stone, and found patrons at the court of Saxony. The king, dissatisfied with his gold-making, sought to avail himself of the skill which Böttger really possessed, and the latter was compelled to enter upon those experiments of which the celebrated Meissen porcelain was the result.

BOTTLE-BRUSH PLANTS, a name applied to species of *Metrosideros*, *Callistemon*, and other

genera of *Myrtaceæ*, which agree in having sessile crowded flowers with reduced floral envelopes, but large conspicuous compound stamens; the whole inflorescence thus suggesting a bottle-brush. Also applied to the field-horsetail, *Equisetum arvense* and the mare's-tail, *Hippuris vulgaris*.

BOTTLE CHART, a marine chart which purports to show the track of sealed bottles thrown from ships into the sea, during long voyages, and washed upon the beach or picked up by other ships. Lieutenant Becher, an English naval officer, constructed in 1843 a chart of bottle voyages in the Atlantic, so as to illustrate the currents. The time which elapses between the launching of the bottle from the ship and the finding of it on shore or at sea has varied from a few days to sixteen years; while the straight-line distance between the two points has varied from a few miles to 5,000 miles. The Bottle Chart has from time to time been re-edited and republished.

BOTTLE-GOURD, *Lagenaria vulgaris*, natural order *Cucurbitaceæ*, a native of India, but now common almost everywhere in warm climates. It is a climbing musky-scented annual, having its flowers in clusters and a large fruit, from one to even six feet in length, which is usually shaped somewhat like a bottle. The fruit has a hard rind, and when the pulp is removed and the rind dried it is used in many countries for holding water, and is called a *calabash*. The bottle gourd is grown in some parts of the United States. Another species, *Lagenaria idololatrica*, is a sacred plant of the Hindoos, much employed in their religious ceremonies.

BOTTLEHEAD (*Hyperoodon*) one of the toothed whales in the same family as the sperm *Physeteridae*, less correctly but more popularly known as *bottlenose*. See Britannica, Vol. XXIV, p. 528.

BOTTS, JOHN MINOR, statesman, born in Dumfries, Prince William county, Va., Sept. 16, 1802, died in Culpeper, Va., Jan. 7, 1869. He was early left an orphan, but received a good education, and was admitted to the bar at the age of 18. He was sent to the State legislature and then to Congress (1839). He continued in the latter for most of the time up to 1849. He was an earnest supporter of Henry Clay, and a personal friend of John Tyler up to the time of his becoming president. Learning that he was about to secede from his party, Botts ceased to be friendly with him. He opposed the repeal of the Missouri compromise, and was generally in sympathy with the Southern representatives in Congress. He used his utmost efforts to keep Virginia from seceding, but, on his failure, retired to his farm near Culpeper Court-house, where he remained during the war. One night a party of men came to his house and arrested and carried him to jail, where he was confined for eight weeks; he was suspected of writing a secret history of the war, and the midnight raid was for the purpose of finding it. In their search they were unsuccessful. After the war Mr. Botts published a volume entitled, *The Great Rebellion: Its Secret History, Rise, Progress, and Disastrous Failure*. His farm was overrun by both armies, and he was subject to many inconveniences; yet after the war he was a delegate to the Philadelphia national convention of Southern loyalists, and later on signed his name to the bail-bond of Jefferson Davis.

BOUCHER, FRANÇOIS, (1703-70), a French painter, born at Paris in 1703; studied at Rome, and became a member of the Academy (1734), and painter to Louis XV (1765). He was an artist of much ability, and equally facile in the production of figure or landscape pictures. The number of his pictures and drawings is said to have exceeded 10,000; he also executed engravings. At his death, which

occurred May 30, 1770, he was director of the French Academy.

BOUCHER DE CRÉVECEUR DE PERTHES, JACQUES (1788-1868), anthropologist and writer, was born at Réthel, France, Sept. 10, 1788. Through his father, an active botanist, he came under the notice of Napoleon, and was employed in numerous missions to Italy, Germany, Austria, and Hungary. From the Restoration he lived at Abbeville, where he died Aug. 5, 1868. He was a writer on various subjects, but only his works on the archæology of man (see *Britannica*, Vol. II, p. 115) are of consequence now. The first, *De la Création* (five volumes, 1839-41), brought him some reputation, but his long investigations on stone weapons and other remains of early human civilization in the Tertiary and older Quaternary diluvial strata made him famous. His most striking discovery was that of a fossil human jawbone in the quarries of Moulin-Quignon, near Abbeville, in 1863.

BOUCICAULT, DRON, a British dramatist, born in Dublin, Ireland, Dec. 26, 1822, died in New York

BOUCICAULT DEAD.

The Actor and Play Writer Passed Away in New York City Last Evening.

NEW YORK, September 18.—Dion Boucicault, the play writer and actor, died after a lingering illness at 9:15 o'clock this evening.

Mr. Boucicault had caught a cold, which developed into pneumonia on Tuesday afternoon. He rapidly became worse. He was conscious up to the time of his death. The only persons with him when he died were his wife and nurse.

pathos, and dramatic action.

BOUGAINVILLE (named after Louis Antoine de Bougainville, French navigator. See *Britannica*, Vol. IV, p. 169), a neotropical genus of the order *Nyctaginaceæ*, frequently trained over trellises or under the roofs of greenhouses, on account of the beauty of its peculiar inflorescence; the small flowers, which grow in threes, being almost concealed by as many membranous bracts of rosy or purple color.

BOUGH, SAMUEL, R. S. A. (1822-78), landscape painter, born at Carlisle, England, Jan. 8, 1822. He received some assistance from various painters, but never obtained any systematic art instruction. In 1845 he was a scene-painter in Manchester, and later in Glasgow, where Daniel Macnee, afterward P. R. S. A., encouraged him to become a landscape painter. Among the more important of his oil pictures are: *Edinburgh from the Canal* (1862); *Holy Island* (1863); *In the Trossachs* (1865); *The Vale of Leith* (1866); *Kirkwall Harbor* (1867); *Borrowdale*; *St. Monance*, and *Royal Volunteer Review* (1860). Bough settled in Edinburgh in 1855, where he died Nov. 19, 1878.

BOUGHTON, GEORGE HENRY, artist, born in Norfolk, England, in 1836. Three years later the family came to the United States, and the boy passed his youth in Albany, N. Y. He early began to sketch with pen and ink and to paint in oils. With money earned from the sale of his pictures he went to London for study. On his return he settled in New York, where he soon became known as a landscape painter. After a time he went to France, where he spent two years in study and then moved to London. Mr. Boughton depicts Puritan life with much felicity and delicacy. Among his pictures are *The Scarlet Letter*, *Return of the Mayflower*, *Puritans Going to Church*, *Rose Standish*, *The Testy Governor*, *Waning of the Honeymoon* and *Canterbury Pilgrims*.

BOUGIES, slender cylinders, smooth and flexible, used for distending mucous canals, as the gullet, bowels, or urethra, in cases of stricture or diseases of those parts. For the urethra, they are frequently of German silver or pewter, and vary from one-sixteenth to one-fourth of an inch in diameter, though even larger sizes are sometimes used by surgeons. For the other canals, they are usually made of plaited thread, impregnated with a substance called gum elastic, of which the chief constituent is India-rubber. The name is also applied to rods of similar shade made of gelatin, cacao-butter, or some such substance, which melts at the temperature of the body, and charged with medicaments, which it is desired to apply to the mucous membrane of the urethra or the nasal cavities.

BOUGUEREAU, WILLIAM ADOLPHE, French artist, born at La Rochelle, France, Nov. 30, 1825. He received instruction in art while engaged in business at Bordeaux and proceeding to Paris worked under Picot and in the *École des Beaux-Arts*, where in 1850 he gained the *Grand Prix de Rome*, which entitled him to study in Italy. He first attracted attention by *The Body of St. Cecilia Borne to the Catacombs* (1854), which with his *Phylomela and Procne* (1861) is now in the Luxembourg. *Maria Consolatrice* (1877) was also a government commission. Among his other works may be named *The Bather and Vow of St. Anne* (1870); *Harvest Time* and *The Mower* (1872); *Nymphs and Satyrs* (1873); *Holy Family* (1875); *Triumph of Venus* (1879); and *Alma Parens* (1883). He has painted occasional portraits, and among his decorative works are subjects in the *Hôtel Péreire*, Paris, a ceiling in the theater, Bordeaux, and paintings in the churches of St. Clotilde and St. Augustin, Paris.

BOUILLÉ, FRANÇOIS CLAUDE AMOUR MARQUIS DE, a distinguished French general, born at the castle of Cluzel, in Auvergne in 1739, died in London, Nov. 14, 1800. At the age of 14 he entered the army, and served with distinction in Germany during the Seven Years' War. In 1768 he was appointed governor of the Island of Guadeloupe, and afterwards commander-in-chief of all the French forces in the West Indies. When war broke out in 1778, he took successively from the British Dominica, Tobago, St. Eustache, Saba, St. Martin, St. Christopher's, and Nevis. He was nominated by Louis XVI in 1787-88 as a member of the Assembly of Notables, and in 1790 he was made commander-in-chief of the army of the Meuse, the Saar, and the Moselle. His decision of character prevented the dissolution of the army and the outbreak of civil war. For his share in the attempted escape of Louis XVI he was obliged to flee from France, and in 1791 he entered the service of Gustavus III of Sweden, and afterwards served in the corps of the Prince of Condé. He subsequently went to England, where his advice in West Indian affairs was useful to the government, and where he wrote his *Mémoires sur la Révolution Française*.

BOUILLON, a duchy, originally German, now included in the Belgian province of Luxemburg, consisting of a wooded and hilly district in the Ardennes about 145 sq. miles in extent. This duchy was the possession of the famous crusader, Godfrey of Bouillon, who, in order to raise money for the crusade, pledged it in 1095 to the Bishop of Liège. It was conquered by France in the war of 1672. By the peace of 1814 the greater part of it was included in the grand-duchy of Luxemburg, and the sovereignty passed to the king of the Netherlands. By the revolution of 1830, Bouillon, with Luxemburg, was separated from the Netherlands, and in 1837 united to Belgium. The principal town is

Bouillon, situated between the steep hills on the Semoy, near the French frontier. Population, 2,765.

BOUILLY, JEAN NICHOLAS, French dramatist, born at La Coudraye, near Tours, Jan. 24, 1763, died at Paris, April 14, 1842. He was possessed of rare elevation and sincerity of character, and during the period of the Revolution filled with prudence several important public offices. His writings are somewhat marred by prolixity and over-sentimentality. Of his plays the following are most deserving of mention: The comic opera *Pierre le Grand* (1790); *L'Abbé de l'Épée* (1795); *Les Deux Journées* (1800) for cherubim's music; *Fanchon and Nue Folie* (1803); *Madame de Sévigné* (1805).

BOULAC, BOULAK, BOULAQUE, or BULAK, the port of Cairo, situated on the Nile about one mile northwest from that city, of which it forms a suburb. It contains the custom-house and warehouses of Cairo, a school of engineering, cotton, sugar, and paper factories, the government printing press, and the splendid and famous national museum of Egyptian antiquities. In the latter are stored the results of extensive and systematic excavations, including also many of the historical relics brought to light by the agency of the Egyptian Exploration Fund. Population, 20,000.

BOULANGER, GEORGE ERNEST JEAN MARIE, French general, born at Rennes in 1837. He was educated at St. Cyr, and served in Algeria, Italy, and Cochinchina; he was with Bazaine at Metz, but escaped to Paris, and held a lieutenant-colonelcy under the Government of National Defense. In 1876 he headed the deputation of French officers at the celebration of the centenary of American independence; he became brigadier-general in 1880, through the influence of the Duc d'Aumale; and in 1884-85 commanded the army of occupation in Tunis, till an arbitrary attempt to exalt the military over the civil authority led to his recall. He was wounded in action in Italy and during the Commune.

Boulanger was minister of war from January, 1886, to May, 1887, and urged forward the expulsion of the Duc d'Aumale and the other princes from France, and, through the introduction of some desirable army reforms and the appearance of a fortunate music-hall song in his praise, he was adopted as the embodiment of the "revenge" policy by the Parisians, who for some months suffered from what was termed the Boulanger fever. In 1887, while commanding an army corps at Clermont-Ferrand, he was, for his remarks on the then war minister, ordered under arrest for 30 days; and in the same year he challenged Jules Ferry for publicly referring to him as a café-concert hero.

In March, 1888, for disobedience to orders he was deprived of his command, and placed on the retired list, and in April he was elected deputy for Dordogne. When he appeared in the Chamber of Deputies (July, 1888) a stormy scene arose, upon his calling for a dissolution of the chamber. M. Floquet began an altercation with M. Boulanger, and the latter replied in such language that M. Floquet challenged him to fight a duel. It was fought, and the general was wounded in the neck. The following year he was the successful candidate for a seat in the Chamber of Deputies. He was tried by the Senate on the charge of having appropriated a large amount of public money for his own purposes while minister of war. Being convicted, he fled to escape arrest to Belgium and then to England. In September, 1889, he was again successful in a general election, but the election was annulled.

BOULAY, DE LA MEURTHE ANTOINE (1761-1840), count, French statesman, born at Chaumouzey, in

the Vosges, in 1761. He favored the Revolution, but held moderate principles, and in the Council of the Five Hundred he became the opponent both of Jacobinism and of the despotism of the Directory. Under the Empire he assisted in the preparation of the *Code Civil*, and afterward labored with zeal in the administration of the national domains. He adhered to the cause of Napoleon, who had created him count in 1818, and was conveyed by the Russians, after the second restoration, into Germany. Returning to France in 1819, he lived in retirement at Paris, where he died Feb. 2, 1840. He published an essay on the *Commonwealth in England* (1799), an *Bourrienne et ses Erreurs* (1830).

BOULDER, an important city of Colorado, county-seat of Boulder county, situated on both sides of Boulder Creek, near the east base of the Rocky Mountains, about 25 miles northwest of Denver. It represents interests of immense wealth in gold and silver mines, in coal mines, and in agriculture and stock-raising. Iron, lime and building-stone are also abundant. The orchards in the vicinity are among the largest and most fruitful in the State. Among the principal manufactories of the city are flouring-mills, iron foundries, and smelting and sampling works. The altitude of Boulder is 5,184 feet; its climate is delightful, and its proximity to the famous Boulder Cañon and to numerous medicinal springs has made it an attractive resort for tourists and invalids. It is the seat of the University of Colorado.

BOULDER-CLAY, a stiff, tenacious clay, which has a very wide geographical distribution. It has been traced over vast regions in British America and the Northern States of the Union, and over-spreads extensive areas of Europe. It varies in thickness from a few feet up to 20 or 30 yards—being generally thickest upon low-lying regions, and thinning away as it is followed up towards the mountains. It is unstratified, and contains stones scattered confusedly through its mass. The included stones are more or less local in character, as is also the color of the clay. Fossils have been met with at rare intervals in boulder-clay; but these are always derivative, and not unfrequently they are smoothed and striated as are the stones.

The origin of boulder-clay, which was formerly the subject of much discussion, is now hardly in dispute. It is unquestionably the product of glaciation; and from phenomena observed it is believed that this stony clay is simply the bottom-moraine or ground-moraine of extinct glaciers, which formerly had a most extensive development in the northern and temperate latitudes of the globe. Boulder-clay is known in Scotland as *till*—a term which many geologists prefer, inasmuch as boulder-clay is often rather a stony earth than a clay. It was also formerly designated as *diluvium* and *drift*, but these terms are now seldom or never used.

BOULDERS, ERRATIC, large masses of rock found at a distance from the formations to which they belong. The term is generally applied to detached masses found lying on the surface. These boulders or fragments of rocks appear to have been transported from their original sites by ice in the Pleistocene period. Large blocks of Scandinavian rocks are scattered over the plains of Denmark, Prussia, and Northern Germany, and from their magnitude and number frequently form a striking feature in the landscape. They also abound on the shores of the Firth of Forth.

The pedestal of the statue of Peter the Great, in St. Petersburg, was hewn out of a large erratic boulder 1,500 tons in weight, that lay on a marshy plain near that city. The boulder called *Pierre de Marmettes* at Mouthet, in the canton of Valais, con-

tains 70,630 cubic feet, and is large enough to have a chalet built on it. From the nature of the stone it is believed to have been carried by glacier action a distance of 35 miles down the valley. The well-known "Boulder Stone" of Borrowdale is not a true boulder, being simply a detached block, which has fallen from the adjacent crags. The *erratics* of America extend as far south as 40 degrees, but on the old continent do not occur much beyond latitude 50 degrees.

BOULEVARD, the name given in France to a broad street or promenade planted with rows of trees. Originally it was applied to the bulwarks portion of a rampart, then to the promenade laid out on a demolished fortification. The boulevards of Paris are the most famous. The line from the Madeleine to the Bastille became a walk in the days of Louis XIV, and then a street. The so-called outer boulevards date from 1786, and were also old fortifications, leveled and planted. The name is now sometimes extended to any street or walk encircling a town, and also to a wide shaded street of park-like appearance, which is not used for heavy teaming.

BOULOGNE, a town of France, in the department of Seine, situated on the right bank of the river of that name, about five miles southwest of Paris, from which it is separated by the Bois de Boulogne. The river is here crossed by a fine stone bridge of 12 arches. Population, 30,064. The Bois de Boulogne is traversed by many walks. During the Revolution the trees of the older ones were mostly cut down. But when Napoleon chose St. Cloud, in the immediate neighborhood, for his summer residence, new walks were planted and laid off, and the inclosing walls were restored. All traces of the injuries inflicted during the siege of 1870-71 have now disappeared.

BOUND, or **BOUNDARY**, the utmost limits of land by which the same is known and can be described. These are recognized in various ways—for example, by a line of stones, a hedge, a ditch, by reference to possession of tenants, by reference to a plan, and by measurement. The plan is the safest, because least ambiguous, boundary. A boundary fence generally belongs equally to the two neighbors.

BOUND BROOK, a village of New Jersey, pleasantly situated on the Raritan River, about 30 miles west of New York. It is an important railroad and manufacturing center, and the headquarters of an extensive trade in lumber.

BOUNDING CHARTER: in the Scotch law, a charter which describes the lands by their boundaries. It gives right to everything within the bounds, but it prevents the acquisition by possession of any piece of property outside the bounds, even although the charter contains a clause of parts and pertinents. This rule, however, does not apply to servitudes which can be acquired beyond the limits of a bounding charter, nor to such an incorporeal right as salmon-fishing. When the grant is described both by measurements and boundaries, the boundaries determine its extent, although containing a larger quantity of ground than the measurement.

BOUNTY, a term applied to any sum offered by a government to induce men to enlist in the public service, or towards creating or encouraging some branch of industry. It is also applied to sums of money appropriated by different State legislatures for the destruction of wild beasts and destructive birds in sparsely settled sections of country.

BOURBAKI, **CHARLES DENIS SAUTER**, a French general, born at Pau, France, April 22, 1816. He entered the army in 1836, and fought in the Crimea and Italy. In 1870 he commanded the Imperial

Guard at Metz, whence he was sent to England on a secret mission to the empress. Under Gambetta he organized the Army of the North, and commanded the Army of the Loire. From 1873 to 1879 he commanded the 14th Army Corps at Lyons, and in 1881 retired from active service.

BOURBON, an educational and manufacturing town of Indiana, pleasantly situated in a fertile agricultural region, about fifty miles west of Fort Wayne. It is the seat of Salem College. It contains important manufactories of flour, boots and shoes, carriages, and furniture. The surrounding country is rich in oak, maple, poplar, beech, walnut, and other valuable timber,

BOURBONNAISE, a gently undulating, terrace-formed district in the center of France, northward of the highlands of Auvergne, abounding in grain, fruit, wine, iron, marble, and mineral springs. From 1327 to 1523 it formed the duchy of Bourbon, and afterwards, becoming a dominion of the crown, it formed a separate province of France. It now constitutes the department of Allier and part of the department of Cher.

BOURBOULE, a bathing resort in the French department of Puy-de-Dome, on the Dordogne. It has mineral springs of 88°-129° F., recommended in scrofulous, nervous, and rheumatic affections. Population, 1,127.

BOURDON DE L'OISE, **FRANÇOIS LOUIS**, born in the middle of the last century at St. Remy, near Compiègne. He was a fanatical revolutionist, took an active part in the storming of the Tuileries on Aug. 10, 1792, and under a false name obtained a seat in the Convention. Bourdon contributed to bring about the execution of Louis XVI, and the destruction of the Girondists. In La Vendée, however, he objected to the cruelties of the extreme party, and thus became suspected by the followers of Robespierre, whom he helped to overthrow in 1794. From that time he inclined more and more to the moderate or even royalist party, till in 1797 the Directory had him proscribed and transported to Cayenne, where he died soon afterward.

BOURGEOISIE, a French term denoting the middle classes of society as distinguished from the nobility and the working classes proper. It is often applied to the middle classes of any country, more particularly those engaged in trade.

BOURGET, LE, a village six miles northeast of Paris by rail, during the siege of the capital in 1870 the scene of a series of bloody struggles disastrous to the French, of which the most important were those of Oct. 30th and Dec. 21st. The Lac-du-Bourget, the largest wholly French lake in the department of Savoie and the basin of the Rhone, lies 780 feet above sea level. It has an area of 16 square miles.

BOURGET, PAUL, an eminent French novelist, born at Amiens, France, Sept. 2, 1852. He was educated at the Lyceum of Clermont-Ferrand, where his father was professor of mathematics, and at the College of Sainte Barbe. He began to write in 1873, but it was not until ten years later that he found his true work. During this time he contributed numerous articles to the magazines, and published three volumes of verse. His *Essais* (1883) gave the first indication of marked ability. The second series, *Nouveaux Essais de Psychologie Contemporaine* (1886), was a subtle and searching inquiry into the causes of pessimism in contemporary France. Bourget's first novel, *L'Irréparable* (1884), was followed by *Cruelle Enigme* (1885), *Un Crime d'Amour* (1886), *André Cornelis* (1887), and *Mensonges* (1887). These works have placed Bourget in the front rank of contemporary French novelists.

BOURMONT, LOUIS DE GHAISNES, COMTE DE (1773-1846), French marshal, the conqueror of Algiers, born in 1773, at his paternal castle of Bourmont, in Anjou. He went into exile during the Revolution, and from 1793 to 1799 was actively engaged in the anti-revolutionary struggle in Vendée. Subsequently he obtained the favor of Napoleon, and for his brilliant services in the campaigns of 1813-14 was promoted to the rank of general. In March, 1814, he declared for the Bourbons; yet on Napoleon's return from Elba he went over to him, only once more to desert, on the eve of the battle of Ligny, and to betake himself to Louis XVIII at Ghent. His evidence went far to bring about Ney's execution. He was appointed minister of war in 1829, and in 1830 received the command of the expedition against Algiers, the rapid success of which was ascribed to his prudence and energy. For this he received the marshal's baton, but on the July revolution he was superseded, and went to England to share the exile of Charles X. Refusing to take the legal oath, he was struck off the lists of the French army and peerage in 1832. In 1833 Dom Miguel of Portugal placed him at the head of his troops, but the campaign was brief and unsuccessful. Bourmont finally settled on his estate in Anjou, and died there Oct. 27, 1846.

BOURNE, HUGH, the founder of the sect of Primitive Methodists, born at Fordhays, parish of Stoke-upon-Trent, Staffordshire, England, April 3, 1772, died at Bemersley, Oct. 11, 1852. At first an assistant to his father, who was a farmer and wheelwright, he afterwards became a preacher among the Wesleyan Methodists. His method of conducting services, and his zeal for open-air meetings, were not approved by the leaders of the denomination, and in 1808 he was cut off from the Wesleyan connection. His preaching was, however, wonderfully acceptable to the public, and he soon gathered round him a large number of devoted adherents. In March, 1810, a committee of ten members was formed at Standley, near Bemersley. This is regarded as the first move toward official organization of the body, which in 1812 adopted the name Primitive Methodists. The first chapel of the body was founded at Tunstall in 1811, by Bourne and his brother. For the greater part of his life he worked as a carpenter and builder, but found time to visit Scotland, Ireland, and the United States. Among his writings was a *History of the Primitive Methodists* (1823). See *Britannica*, Vol. XVI, p. 192.

BOURONDJIRD, a town in the province of Irak-Ajemi, Persia, situated in a fertile valley 190 miles northwest of Ispahan. Population, 12,000.

BOUSSINGAULT, JEAN BAPTISTE, a French agricultural chemist, born at Paris in 1802. He visited South America, where he served as a colonel under Bolivar. On his return he became professor of chemistry at Lyons, was admitted into the institute in 1839, and in 1857 was made commander of the Legion of Honor. He embodied the results of his investigations in *Economie Rurale* (1844, English translation 1845), which won for him a European reputation. Of his other works the most important is *Agronomie, Chimie Agricole et Physiologie* (7 vols., 1860-84).

BOUTS-RIMÉS (French, "rhymed endings"), a kind of verse, the making of which forms a social amusement. The rhymes or endings of a stanza are given out by one of a party, and the lines are filled up by others. It was at one time a very popular amusement, especially in France.

BOUTWELL, GEORGE SEWALL, statesman, born in Brookline, Mass., Jan. 23, 1818. After spending his youth on his father's farm he became a merchant in Groton, where he remained till 1855.

He studied law and pursued a course of reading to make up for lack of college training. In 1840 he entered politics. He was sent seven times to the legislature, was thrice defeated as candidate for Congress, and once for governor. In 1851 and 1852 he was elected to the latter office. He was a Democrat, but on the formation of the Republican party he helped in its organization, and has since belonged to that party. He was a delegate to the Chicago convention which nominated Lincoln; he organized the department of internal revenue, and was its first commissioner; he was twice elected to Congress; was chairman of the committee to report articles of impeachment, and was one of the seven managers of Johnson's impeachment. President Grant called him to be secretary of the treasury. In this office he was accused of violating law, but although the house absolved him Mr. Boutwell resigned and took his seat in Congress. He was for six years an overseer of Harvard, and has written on educational topics, taxation, and politics. He has of late years practiced law in Washington, D. C.

BOUVARDIA (named in honor of *Dr. Bouvard*, director of the *Jardin des Plantes*, Paris), a Mexican genus of *Rubiaceae*, sub-order *Cinchonaceae*. *Bouvardia triphylla* has oblong ternate leaves and beautiful corymbs of scarlet flowers produced from June to November. It is among the favorite ornaments of flower-borders, but requires careful protection from frost.

BOUVINES, a village in the French department of Nord, eight miles southeast of Lille, the scene of the victory of Philip Augustus of France over the Emperor Otto IV in 1214—commemorated by a monument (1863)—and a series of struggles in 1794 between the Austrians under Kinsky and the victorious French Army of the North.

BOVATE, or **OXGANG**, an old English land-measure, representing as much as one ox, out of a co-operative team of eight, could plough in a season. A bovate was thus the eighth of a *carucate* or work of a plow-team. The area varied according to circumstances from 8 to 13, or sometimes even 24 acres.

BOVEY COAL, a form of wood-coal or lignite, which derives its name from being found at Bovey, in Devonshire. It is not now mined, the original excavations being filled with water.

BOW, the general name for the stem and fore-part of a ship, beginning where the sides trend inward, and terminating where they close or unite in the prow. The word is often used in the plural, the ship being considered to have starboard and port-bows. Starboard is applied to the right-hand side, and port to the left-hand side, looking forward. A narrow bow is called by seamen a *lean bow*, and a broad one is called a *bold* or *bluff bow*. The "V-form," or "U-form" is a nomenclature adopted by the naval architect to denote the character of a section of a bow.

BOWDITCH, NATHANIEL INGERSOLL, author, born in Salem, Mass., Jan. 17, 1805, died in Brookline, Mass., April 16, 1861. He was a Harvard graduate, studied law, and became a conveyancer. It was said scarcely a transfer of real estate took place in Boston without his examination of the title; for in this kind of legal business he became very proficient, and his services were in great demand. He derived a large income from his profession, and made a gift of \$72,000 to Harvard College for scholarships and books. He was interested in public institutions of Boston, and published at his own expense a history of its General Hospital.

BOWDLER, THOMAS (1754-1825), born of wealthy parents at Ashley, near Bath, July 11, 1754. At

sixteen he went to St. Andrews to study medicine, but graduated M. D. of Edinburgh in 1776, and after some years of travel settled in London, devoting himself mainly to charitable work. He lived for ten years at St. Boniface, Isle of Wight, and for the last fifteen years of his life at Rhyd-dings, near Swansea, where he died Feb. 24, 1825.

In 1818 Bowdler published "*The Family Shakespeare*, in 10 volumes, in which nothing is added to the original text; but those words and expressions are omitted which cannot with propriety be read aloud in a family." The work had a large sale, and was long popular, spite of the ridicule it brought down upon the head of its over-prudish editor, whose name has been immortalized by the addition to the English tongue of the term *Bowdlerism* as a synonym for senseless expurgation.

The last years of Bowdler's life were devoted to preparing a purified edition of Gibbon's History, which was published in six volumes the year after his death, edited by his nephew, under the title: *Gibbon's History of the Decline and Fall of the Roman Empire*, "for the use of families and young persons, reprinted from the original text, with the careful omission of all passages of an irreligious or immoral tendency." In a note the editor says that "it was the peculiar happiness of the writer to have so purged Shakespeare and Gibbon that they could no longer 'raise a blush on the cheek of modest innocence, nor plant a pang in the heart of the devout Christian.'"

BOWDOIN, JAMES, an American statesman and author, born in Boston, Aug. 8, 1727, died Nov. 6, 1790. He graduated at Harvard in 1745. In 1778 he was president of the convention by which the constitution of Massachusetts was framed. He was governor of Massachusetts in 1785 and 1786. In the latter year he suppressed the Shays rebellion. Bowdoin College was named in his honor, his son having donated to that institution his valuable library and paintings with gifts of land and money.

BOWDOIN, JAMES, son of the preceding, born Sept. 22, 1752, died on Naushorn Island, Buzzard's Bay, Mass., Oct. 11, 1811. He was of French Huguenot descent. He graduated from Harvard, spent a year in college at Oxford, England, traveled in that country and on the continent, and on his return to the United States engaged in politics and literary pursuits. He was a member of the State Assembly, Senate and Council. The government sent him as minister to Spain in 1804, and commissioned him to treat with that foreign country with regard to "wrongful captures and other injuries" inflicted by the Spaniards. On the establishment of Bowdoin College he gave it 6,000 acres of land, £1,100, and at his death his will bequeathed a large library, paintings, and collections of minerals and philosophical apparatus to that institution, which had been named in honor of his father.

BOWDOIN COLLEGE, a Congregational institution founded in 1794 at Brunswick, Maine. See COLLEGES, in these Revisions and Additions.

BOWEN, FRANCIS, author, born in Charlestown, Mass., Sept. 8, 1811, was a Harvard graduate, and after finishing his course gave instruction there in intellectual philosophy and political economy. He went to Europe in 1839, and made the acquaintance of Sismondi and other scholars. On his return to Cambridge in 1841 he devoted himself to literary labors, and two years later he started the "North American Review." He edited this periodical for 11 years, much of the time contributing the larger part of the articles. In 1850 he lectured before the Lowell Institute on Political Economy, and two years later on the Origin and Development of the

English and American Constitutions. In 1853 he was appointed to the Alford professorship of Natural Religion, Moral Philosophy and Civil Polity in Harvard College. Prof. Bowen opposed Adam Smith's views on free trade, Ricardo on rent and Malthus on population. He has lectured much on the English philosophers and written several books, among which are *Principles of Political Economy Applied to the Condition, Resources and Institutions of the American People*, and *Gleanings from a Literary Life*.

BOWER, BOWMAKER, WALTER (1385-1449), completed the history of Scotland which is known as the *Scotichronicon*, and which was begun by Fordun. See *Britannica*, Vol. XXI, p. 540; Vol. IX, 397. Of Bower's personal history little is known except his own statement that he was born in 1385, and that in the manuscript of the *Scotichronicon*—which manuscript is known as *The Black Book of Paisley*—he is spoken of as "the venerable father in Christ, Walter Bower, Abbott of the Monastery of St. Columba." This monastery was situated on the Island of Inchcolm in the Firth of Forth. He died in 1449. Bower has been somewhat overlooked as one of the authors of the *Scotichronicon*, which is frequently quoted as though written entirely by Fordun, whereas his share of the work, with the exception of certain further materials which he had collected, ends at the close of book V, with the death of David I (1153). Bower continued the history to the death of James I (1437); and, as he was contemporary with the later events which he describes, he is for this period certainly entitled to be regarded as an independent historian. Like Fordun, he wrote in Latin. The only edition of this history is that printed by Walter Goodall, Edinburgh, in 1759, and no complete translation of it has yet appeared.

BOWERBANKIA, a common genus in the class of *Bryozoa* or *Polyzoa*. These are colonies of minute but highly-organized animals, formerly included among the hydroids or zoophytes, but now unani-mously placed at a much higher level. *B. imbricata* is one of the British coast forms. It grows on seaweeds, corallines, stones, etc., between high and low-water mark, or in shallow water, and forms branching tufts sometimes 1½ inches in height. The branches are small and transparent, and bear numerous individual animals of microscopic size. The genus is named after James Scot Bowerbank, who wrote a famous monograph on the British *Spongiadæ* (1864). See *Britannica*, Vol. XIX, p. 430.

BOWER-BIRD, a name given to certain Australian birds remarkable for their habit of making bower-like erections, called "runs" by the colonists of New South Wales, and for adorning them with gay feathers, rags, bones, shells, and such other white or bright-colored objects as they can pick up. These bowers are not used as nests, but they appear to be places of resort. Fine specimens of them, transported with no little difficulty, were deposited in the British Museum by Mr. Gould, in whose magnificent work on the *Birds of Australia* (1848) a full account of them was first given to the world.

The bowers of the satin bower-bird (*Ptilonorhynchus holosericeus*) are built among the low branches of some tree, and appear to be repaired and frequented from year to year. The base consists of an extensive and rather convex platform of sticks firmly interwoven, on the center of which the bower itself is built of more flexible twigs. It is chiefly at or near the entrance that the shells, feathers, etc., employed for decoration are placed.

The satin bower-bird is particularly abundant in the mountainous districts of the west of New South

Wales, and is found in all the "brushes" from the mountains to the coast. The adult male has the whole plumage of a deep, shining black. The colors of the female are grayish, green and brown, curiously mingled.

The bowers of the spotted bower-bird (*Chlamydo-dera maculata*, Britannica, Vol. III, p. 740), are longer and more avenue-like than those of the satin bower-bird; they are placed upon the ground, are outwardly built of twigs, and beautifully lined with tall grasses so disposed that their heads nearly meet. The decorative propensity appears in the highest degree in this species. The spotted bower-bird is restricted exclusively to the interior of Australia. It is rather smaller than the satin bower-bird, has a general color of rich brown beautifully marked with black and buff; a band of elongated feathers of light rose-pink crosses the back of the neck, and forms a broad, fan-like, occipital crest. The regent-bird (*Sericulus melinus*) is also known to form bowers.

BOWIE-KNIFE, a heavy sheath-knife, used both as a hunting dagger and weapon. It was named after its inventor, Colonel James Bowie, who fell at Fort Alamo in the Texan war (1836), and was first used in Kentucky and other parts of the United States. The blade is from 10 to 15 inches in length, double-edged near the point. The best knives formerly used on the frontier were made of old horse-rasps and the like, and consequently varied much in pattern and size. The term is now frequently applied to any large sheath-knife without regard to shape.

BOWLES, SAMUEL, journalist, born in Springfield, Mass., Feb. 9, 1826, died there, Jan. 16, 1878. After receiving a public school education he began work at the age of 17 in the office of the "Springfield Republican," a paper owned and published by his father. The boy was very active, and soon learned to do all kinds of newspaper work. It was through his persuasions that the paper became in 1844 a daily. From this time the paper flourished. Dr. J. G. Holland was editor, the elder Bowles devoted his attention to the financial department, and the son threw all his energies into the management of the paper. In 1851, by the death of his father, young Bowles, then only 25 years of age, was obliged to assume entire control. During the civil war the "Springfield Republican" acquired a national reputation and great political influence. In 1872 it supported the nomination of Greeley for the presidency, and since then has been independent in politics.

BOWLING GREEN, a beautiful city of Kentucky, county-seat of Warren county, situated on Barren River, at its head of navigation, about 70 miles north of Nashville. It is the trade-center of Southern Kentucky, and an important shipping point for pork, tobacco, hay and grain. Its industries include manufactories of iron, woollens and cereal products. It is the seat of a college and a Catholic academy, and contains excellent public schools.

BOWMAN, SIR WILLIAM, oculist, born in Nantwick, July 20, 1816. He studied chiefly in London, where he commenced practice as a surgeon, and became curator of the Anatomical Museum. In conjunction with Todd he published the valuable *Physiological Anatomy and Physiology of Man* (5 volumes, 1845-56), and gained a high reputation as an oculist by his *Lectures on Operations on the Eye* (1849), followed by his *Observations on the Artificial Pupil*. He was professor of Physiology at King's College (1845-55); has received honorary degrees from Dublin, Cambridge and Edinburgh; is a fellow of the Royal Society, became consult-

ing surgeon and vice-president of King's College, London (1877) and a baronet (1884).

BOWMANVILLE, a thriving town of Ontario, pleasantly situated near the shore of Lake Ontario, about 40 miles northeast of Toronto. It is a port of entry, has an excellent harbor, and contains manufactories of machinery, castings, leather, boots and shoes, woolen goods, carriages, cabinet-ware, lumber and leather.

BOWSPRIT, a strong boom or spar projecting over the stern of a ship or other vessel. Its use is to support the jib-boom, a longer and lighter spar, forming a continuation of the bowsprit, which receives the lower ends of the foremast stay-ropes, on which sails are carried.

BOWSTRING, the string by which a bow is drawn and the arrow discharged. The term is specifically used for an old Turkish mode of execution, the offender being strangled by means of a bowstring or similar cord.

BOWSTRING HEMP, or **MOORVA**: the fiber of a species of *Sansevieria* (especially *Sansevieria Zeylanica*), a plant of the natural order *Liliaceæ*, tribe *Hemerocallææ*, used in the East Indies for making bowstrings. The fiber is hair-like, silky and elastic, and in strength is apparently about equal to hemp. A very similar species (*Sansevieria guineensis*) is found in abundance on the west coast of Africa, and its fiber has been imported as African bowstring hemp.

BOWYER, SIR GEORGE, born at Dudley, England, near Oxford, in 1811, died in London, June 7, 1883. He was called to the bar in 1839, represented Dundalk in Parliament in 1852-68, and the county of Wexford 1874-80, when his home rule principles estranged him from the Liberal party, and in 1876 led to his expulsion from the Reform Club. He succeeded his father as seventh baronet in 1860. He was author of several able works on constitutional law and Roman Catholic subjects.

BOWYER, WILLIAM, an eminent English printer and classical scholar, born in London, Dec. 19, 1699, died Nov. 18, 1777. He was educated at Cambridge, and in 1722 joined his father in trade. Appointed in 1729 printer of the votes of the House of Commons, he subsequently became printer to the Society of Antiquaries and to the Royal Society. In 1767 he was nominated printer of the Rolls of the House of Lords and the Journals of the House of Commons. Bowyer edited several volumes of Swift's works, and the first translation of Rousseau's *Paradoxical Oration* (1751), and was the author of two essays on the *Origin of Printing* (1774); but his chief production was an edition of the New Testament in Greek, with critical and commendatory notes.

BOX-DAYS, days appointed by the Court of Sessions in Scotland, during the vacations, on which pleadings or other law papers may be lodged or filed, the object being to expedite the procedure, notwithstanding the vacation. The name is derived from the fact that all printed papers in the Court of Sessions must be placed in boxes, one for each judge, for each legal society, and for the reporters. These boxes were introduced in 1690 to avoid the evil of private solicitation of judges.

BOX-HAULING, a mode of turning a ship when the swell of the sea renders tacking impossible, or when the ship is too near the shore to allow room for veering. The operation is effected by hauling the head-sheets to windward, bracing the head-yards aback, and squaring the after-yards, the helm at the same time being put a-lee. *Boxing-off* is a very similar operation.

BOXING-DAY: in England, the first week-day after Christmas, and so called from being the day

on which Christmas-boxes, or presents, are given to servants and others.

BOXTEL, a town in the Dutch province of North Brabant, 38 miles southeast of Utrecht. An Anglo-Dutch army, under the Duke of York, was here defeated with great loss by the French in 1794. Population, 5,703.

BOX-THORN (*Lycium*), a genus of the order *Solanaceæ*, having funnel-shaped or tubular flowers and two-celled berries. Several species are natives of the south of Europe, thorny shrubs, with long slender shoots and simple lanceolate leaves. *Lycium europæum* may be trained to a height of 30 or 40 feet, and is often planted—as are also other species—to cover walls, etc. *Lycium vulgare* has been sparingly naturalized in the United States. *Lycium fuchsoides*, although destitute of spines, is used as a hedge-plant in the Andes of Quito.

BOYAR, a title conferring a rank in the state, given to the highest class of Russian officials previous to the reign of Peter the Great. They ranked next to the knjazes or knjases (ruling princes), and were universally looked up to by the mass of the people—so much so that the most powerful rulers considered it prudent to add to public papers "The Boyars have approved it." Their power acted as a wholesome check upon the authority of the princes, in consequence of which the latter became their bitter enemies. Peter the Great finally abolished the order by giving them a place among the Russian nobility, but at the same time stripping them of their peculiar privileges. The higher nobility of Roumania are also called Boyars.

BOYAUX (French, "bowels") are the zigzag approaches used in siege operations to connect the parallels.

BOY-BISHOP. The custom of electing a boy-bishop on St. Nicholas's day dates from a very early period. It spread over most Catholic countries, and prevailed in almost every parish of England. The election took place on St. Nicholas's day (Dec. 6), and the authority conferred lasted to Holy Innocents' day (Dec. 28). The boy-bishop, chosen from the children of the church or cathedral choir, or from the pupils at the grammar school, was arrayed in episcopal vestments, and, attended by a crowd of subordinates in priestly dress, went about with songs and dances from house to house, blessing the people. The mock prelate exacted implicit obedience from his fellows, who, with their superior, took possession of the church, and performed all the ceremonies and offices except mass. In 1299 Edward I, on his way to Scotland, permitted a boy-bishop to say vespers before him at Heaton, near Newcastle-on-Tyne. At Salisbury the boy-bishop, it is said, had the power of disposing of such prebends as happened to fall vacant during the days of his episcopacy. The custom was abolished in England by a proclamation of Henry VIII, dated July 22, 1542; it was restored by Queen Mary in 1554, and again abolished during the reign of Elizabeth, though it seems to have lingered here and there in villages till about the close of her reign. On the continent it was the subject of a formal interdict at the Council of Basel (1431); and at Zug, in Switzerland, a similar usage was suppressed so recently as 1797.

BOYCOTTING, the system of combining to hold no relations, social or commercial, with a person or company, on account of political or other differences, or of disagreement in business matters, employed as a means of punishment or coercion. It was first formulated by Mr. Parnell, the Irish leader, at Ennis on Sept. 19, 1880, and derived its name from one of the first victims, Captain Boycott, a Mayo factor and farmer. The word, like the

practice, soon became common throughout the English-speaking world, though the term "exclusive dealing" is much preferred by its apologists.

BOYD, REV. ANDREW KENNEDY HUTCHISON, D.D., born at Auchinleck, Ayrshire, November, 1825. He was educated at King's College, London, and Glasgow University, where he took the highest honors in philosophy and theology. He first became known in literature by his essays, published in "Fraser's Magazine" under the now familiar initials, A. K. H. B., most of which have been reprinted. He is author of *Recreations of a Country Parson* (three series, 1859-1861), and of many volumes of sermons. His works have been exceedingly popular in America.

BOYDEN, SETH, a noted American inventor and manufacturer, born at Foxboro, Mass., in 1788, died in 1870. He began the manufacture of patent leather in 1819 at Newark, N. J., where he invented a machine for splitting leather, and a process for making spelter. Among his other inventions and discoveries were a doming-machine for hats and a process for making Russia sheet-iron. He built one of the first locomotives with outside cylinders, and is thought by many to have made the first daguerreotype in the United States.

BOYDEN, URIAH, an American inventor and philanthropist, born at Foxboro, Mass., in 1804, died in 1879. He is known for his improvements in hydraulic engineering, and as the inventor of the modern improved form of the turbine water-wheel. He founded the Boyden Fund for the promotion of education, and spent the latter years of his life in the encouragement and support of chemistry and physics.

BOYESEN, HJALMAR HJORTH, author, born in Fredericksvern, Norway, Sept. 23, 1848. He was educated at the gymnasium in Christiania, and graduated (1868) at the University of Norway, having pursued a course of study at Leipsic, Germany. He came to the United States, where in 1869 he became editor of "Fremad," a Scandinavian paper printed in Chicago. From 1874 to 1880 he taught German in Cornell, and then was called to the same work at Columbia College. During his residence in this country, he has shown a marked aptitude for writing stories and poetry in English. He has been a frequent contributor to the magazines of the day. A partial list of his books is as follows: *Gunnar: a Norse Romance*; *A Norseman's Pilgrimage*; *Tales from Two Hemispheres*; *Goëthe and Schiller: their Lives and Works*; *Queen Titania*; *The Story of Norway*; *Ilka on the House-top*. The last mentioned has been dramatized and successfully performed in New York.

BOYLE, a town in County Roscommon, Ireland, (see Britannica, Vol. XX, p. 850), situated on the river Boyle above its expansion into Lough Key, 108 miles northwest of Dublin by rail. It has a thriving trade in corn, flax, butter, and provisions. An abbey built here in the twelfth century was reduced to its present ruined state in 1595 by the Earl of Tyrone. Population, 2,994.

BOYLE'S FUMING LIQUOR, a term applied to a solution of sulphide of ammonium obtained by distilling a mixture of slaked lime, sal-ammoniac, and sulphur. The same substance is produced by passing sulphureted hydrogen into a solution of ammonia. It is a straw-colored liquid, liberating sulphureted hydrogen on addition of an acid or exposure to the air.

BOZEMAN, a thriving city of Montana, county-seat of Gallatin, beautifully situated on a small affluent of the Gallatin River, about a hundred miles south of Helena. It is the seat of an acad-

emy and a university school, and contains important manufactories of flour and lumber. Gold and silver are mined in the vicinity, and vast agricultural and grazing interests center here.

BOZZOLO, a town of North Italy, fourteen miles southwest of Mantua. Population, 4,154.

BRABANÇONNE, the patriotic song of the Belgians, originally sung by the insurgents during the revolution of September, 1830, when they threw off Dutch rule. The words were written by a young French actor named Jenneval, then at Brussels. The verses end with a refrain relating to the substitution of the Tree of Liberty for the Orange, in reference to the house of Orange, then ruling the Netherlands. The music was composed by Campenhout.

BRACCIO, **FORTEBRACCI**, Count of Mentone (1368-1424), celebrated Italian free-lance, born at Perugia, of an old patrician family, in 1368. He was engaged in warfare from his early youth, and had already given his sword to various causes, when in 1416 he obtained the sovereignty of his native city. He accepted from Queen Joanna of Naples the command of her land forces, and for his services was created Count of Foggia and Prince of Capua. In 1423, by the queen's command, he was crowned at Perugia, as Prince of Aquila and Capua. His ambition now soared to the throne of Naples itself. He overran Campania and Apulia, and advanced into Calabria, but in a battle before Aquila was wounded and taken prisoner. He died three days later, June 5, 1424.

BRACE: in carpentry, an oblique piece of wood used to bind together the principal timbers of a roof or other wooden structure. The name is also used of a curved instrument of iron or wood for holding a bit, used by carpenters for boring.

BRACE: on shipboard, a rope attached to the yard-arm, and employed to turn or swing the yard round.

BRACE, CHARLES LORING, philanthropist, born in Litchfield, Conn., June 29, 1826, died in Switzerland, Aug. 11, 1890. His father, John Pierce Brace, was connected with the Litchfield Academy and subsequently with the Hartford Female Seminary. The son graduated at Yale (1846), and studied theology at that college and also at the Union Theological Seminary. He was not connected as pastor with any church, but frequently preached. He made a pedestrian tour in England in 1850, and his companion, Frank Olmstead, gave a description of the journey in the book *Walks and Talks of an American Farmer in England*. In Hungary he was arrested, imprisoned and tried by a court-martial on suspicion of being in league with Hungarian revolutionists in America. The U. S. minister at Vienna obtained his release. In his further travels in Europe he paid special attention to schools, prisons and the condition of the masses. On his return to the United States (1852), he associated himself with Rev. Mr. Pease in missionary work at the Five Points, and among the prisoners and inmates of hospitals and almshouses. In 1853 he assisted in founding the Children's Aid Society, and a year later opened the first newsboys' lodging house. The benevolent projects originated by Mr. Brace have enlisted public attention and secured hearty cooperation on the part of many; lodging houses for boys have multiplied, and the Children's Aid Society has accomplished great good. Mr. Brace lectured and wrote in behalf of this charitable object, and was sent as delegate to the International Convention for Children's Charities in London (1856), and also to the International Prison Convention in London (1872). Among his published books are: *Hungary in 1851*; *Home Life in*

Germany; *Short Sermons for Newsboys*; and *The Dangerous Classes of New York*.

BRACH, or **BRACHE**, an old term (origin unknown) for a dog that hunts by the scent; a scenting hound.

BRACHIAL ARTERY, the arterial trunk supplying the upper arm; the direct continuation of the axillary artery. It runs down the front and inner side of the upper arm, giving off several branches as it proceeds, and at a point about an inch below the bend of the elbow it terminates by dividing into radial and ulnar arteries.

BRACHYPTERÆ (Gr., "short winged"), an ornithological term applied in Cuvier's system of classification to such aquatic birds as penguins, puffins, auks, divers and grebes, whose wings are short and whose feet are placed so far back as to compel them to assume a nearly erect position when on land.

BRACHYURA, a technical name applied to short-tailed decapod crustaceans or crabs, in contrast to the *Macrura*, long-tailed forms like the lobsters, where the abdomen is not tucked in on the under surface in the characteristic crab fashion. They are divided into about sixteen families, without super-family grouping. The term is also applied to a family of short-tailed bats, including *Mystacina* and *Noctilio*.

BRACKEN, or **BRAKE**, a large genus of ferns of the division *Polypodex*, distinguished by spores-cases in marginal lines covered by the reflexed margin of the frond. It is very widely distributed, from arctic and temperate to tropical countries. The common brake or bracken (*Pteris aquilina*; see *Britannica*, Vol. IX, p. 103) is very abundant in rocky thickets, dry fields, etc.

BRACKENRIDGE, HUGH HENRY, jurist, born near Cambeltown, Scotland, in 1748, died in Carlisle Pa., June 25, 1816. At the age of five he came to America with his father, and they settled in Pennsylvania. He graduated from Princeton (1771), then spent some years teaching there and in Maryland. At about this time he wrote for his pupils a drama, *Bunker Hill* (see *Britannica*, Vol. I, p. 722), edited the "United States Magazine," studied divinity and served as chaplain in the army. Dropping these varied pursuits he applied himself to law, was admitted to the bar, practiced in Pittsburgh, Pa., and soon obtained such prominence that he was elected to the legislature (1786). During the "Whisky Insurrection" he used his influence to bring about an adjustment of the difficulties. In 1799 he was appointed to the supreme bench of the State, and held the office up to his death. He was author of poems and essays; but his best known work is a story in the form of a political satire which is largely drawn from his own experiences. It is entitled *Modern Chivalry, or the Adventures of Capt. Farrago and Teague O'Regan, his Servant*.

BRACKET, an ornamental projection from a wall, used for the purpose of supporting a statue, bust, or the like. Brackets are either of stone, wood, or metal, and are frequently elaborately designed and carved. The term bracket is also employed in joinery to designate a wooden support of triangular outline placed under shelves, galleries, etc., and is also generally applied to such gas-lights as project from the wall. See *Britannica*, Vol. II, p. 461.

BRACKETT, ANNA, an American writer and teacher, born in Boston in 1836. She has been prominent in connection with the work of various educational institutions, has published several works on pedagogy, and has contributed numerous able articles to magazines and other periodicals.

BRACKETT, WALTER M., painter, born in Unity, Me., June 14, 1823. Charles Sumner, Oliver Wendell Holmes, and Edward Everett sat to him for their portraits. Of late years he has painted fishing scenes, among which is a series representing salmon-catching with a fly. The artist resides in Boston, Mass.

BRACKLESHAM BEDS, a group of highly fossiliferous strata in the middle Eocene formation, included in the Bagshot series.

BRACQUEMOND, a noted French artist, born in Paris in 1833. See *Britannica*, Vol. XVI, p. 45.

BRADBURY, WILLIAM BACHELDER, musician, born in York, Me., Oct. 6, 1816, died in Montclair, N. J., Jan. 7, 1868. He inherited a taste for music from his parents, and by the time he was fourteen years old he had mastered many musical instruments. In 1830 he resided in Boston, where he became acquainted with Dr. Lowell Mason, and took up the study of the organ. In 1840 he began teaching singing school and giving concerts in New York and Brooklyn. He became very popular, and in 1847 he decided to visit Germany for the purpose of receiving instruction in music. In 1854 he and his brother, E. G. Bradbury, began the manufacture of pianos in New York. William Bradbury composed and published a series of musical collections for the use of choirs, day-schools and Sunday-schools. For thirty years he was engaged in publishing his works, and so popular were they that over 5,000,000 copies have been sold. *The Golden Chain*, *The Shulam*, *The Jubilee*, *Temple Choir*, and *Fresh Laurels* were the titles of some of his song collections.

BRADDOCK, a manufacturing town of Pennsylvania, situated on the right bank of the Monongahela, ten miles southeast of Pittsburgh. It contains important manufactories of railroad cars and steel rails, and is noted as the site of the battle of Braddock's Field, in which, in 1755, General Braddock was killed and his British army defeated by the French and Indians.

BRADDOCK, EDWARD, British soldier, born in Perthshire, Scotland, about 1695, died near Pittsburgh, Pa., July 13, 1755. He had served forty years in the British Guards, and attained the rank of major-general, when in 1755 he was ordered to America to assist the colonists in their war with the French and Indians. The plan of his campaign was to march his soldiers from Fredericktown to Fort Duquesne, now Pittsburgh, Pa., thence to Niagara, and on to Frontenac. Benjamin Franklin and Washington (then aides-de-camp to Braddock), warned the general that the Indians would be likely to give him trouble on the way to Fort Duquesne; but Braddock, who was very opinionated, would heed neither advice nor warning, trusting that the discipline of British soldiers was superior to any variety of barbarous warfare. The army set out for the fort and before they reached it were attacked by the savages, who were hidden behind rocks and trees. So sudden was their appearance and so terrifying their war-whoop that the English soldiers, not being able to see their antagonists, fell back with rapidity, would not obey their officers, and the force suffered a terrible defeat. They retired to Great Meadows, where in a few days General Braddock died from a wound received in the engagement.

BRADDON, MARY ELIZABETH (Mrs. John Maxwell), novelist, born in Soho Square, London, in 1837. She very early showed a turn for literature, which she indulged in the usual manner, by sending verses and other trifles to the magazines and newspapers. These were followed by a comedietta brought out at the Strand in 1860, a volume of

verse, and one or two novels, none of which were very successful. In 1862 was published *Lady Audley's Secret*, which attained an enormous popularity, in three months reaching its eighth edition. *Aurora Floyd* (1863) was little less popular. Of all her fifty novels the best, perhaps, is *Ishmael* (1884), a tale of the Second Empire, which depends not so much on sensation as character. Several of them were published in "Temple Bar," "St. James's Magazine," and "Belgravia." She was for some years editor of the last-mentioned magazine.

BRADFORD, a village of Massachusetts, situated on the south bank of the Merrimac, opposite Haverhill. It is the seat of Bradford Female Academy and of an excellent high school.

BRADFORD, a city of McKean county, Pa., on a branch of the New York & Erie Railroad and also on the Rochester and Pittsburgh Railroad. It is 63 miles southeast of Dunkirk, N. Y. It has two national banks, fine hotels, two daily and weekly newspapers, several churches, excellent schools, a handsome park, water-works, streets well lighted with natural gas, and is noted for its many oil wells. It was incorporated as a city in 1879. Population in 1870, 1,446; in 1880, 9,197; in 1890, 10,478.

BRADFORD, a village of Vermont, situated on the Connecticut River, about thirty miles southeast of Montpelier. It is the seat of Bradford Academy and Union High School, and carries on important manufactures of paper, machinery, iron, flour, casks, and woolen goods.

BRADFORD CLAY: in geology, a subdivision of the Great Oolite (Lower Oolite), a blue, slightly calcareous clay, occurring at Bradford in England, and extending for some miles in the vicinity. It is about 10 feet thick at Bradford, but may be thicker at Farleigh. It is remarkable for the occurrence in it of large numbers of a crinoid, *Apiocrinites Parkinsoni*. Although Bradford clay is considered a local deposit, yet deposits containing the same fossils occur in Dorsetshire. See *Britannica*, Vol. X, pp. 354, 355.

BRADFORD-ON-AVON, a town of England, situated on both sides of the Avon, and on the Kennet and Avon canal, nine miles southeast of Bath. It is an ancient town, and still shows some gable-fronted houses, built and roofed with stone. Formerly it was the seat of important woolen manufactures, and kerseymeres were first made here. The tiny church of St. Lawrence, built by St. Aldhelm between 675 and 709, is the only perfect building of pre-Norman times now remaining in England. Near by, on the site of Aldhelm's monastery, is the parish church of the Holy Trinity, of various dates from the 12th to the 16th century, and restored in 1865-66. On the summit of Torr Hill are the ruins of a 14th-century chapel of the Virgin. In the neighborhood is the pleasant valley of Avon, with many picturesque spots. At Bradford, Cenwalh, king of the West Saxons, gained a great victory over the Welsh in 652. Population, 4,922.

BRADFORD, WILLIAM, colonial governor, born in Austerfield, Yorkshire, England, March, 1588, died in Plymouth, Mass., May 9, 1657. From childhood he was religiously inclined, and at an early age joined the Puritan congregation at Scrooby Manor. See *Britannica*, Vol. XII, pp. 725, 726. Persecution arose in Nottinghamshire, and the Puritans, or Separatists, emigrated to Holland as they could find opportunity. See *Britannica*, Vol. XX, p. 608. After imprisonment and delay Bradford and his companions reached Amsterdam in 1608, and joined the colony there, which in 1609 removed to Leyden.

Bradford soon began to agitate the question of emigrating to Virginia, but not until 1620 was he able to put his scheme in practice, and on Sept. 6th

of that year 100 pilgrims took passage from Southampton on the *Mayflower*. (See Britannica, Vol. XII, p. 726.) Stormy weather drove the ship to the shores of Massachusetts, and taking this as an indication of the hand of Providence, they abandoned the idea of settling in Virginia and entered Plymouth harbor. On the death of Carver, the first governor, Bradford was chosen by the colonists to the office. With the exception of five years (which were not successive), he held the office from April 21, 1621, until his death.

A patent was obtained for the settlement from the New England council, in 1629. It was a grant of the Plymouth plantation to William Bradford, his heirs, associates, etc. In 1640 he made over the property to the body of colonists, reserving for himself no more than one settler's share.

Gov. Bradford was a man of culture and possessed some knowledge of the classics. His leisure was largely spent in writing, and after his death the interesting manuscripts were published. Among them were the following: *A Diary of Occurrences* (relating the history of the colony during the first year, and written with the help of Edward Winslow); *Some Observations of God's Merciful Dealings with Us in this Wilderness*; *A Word to Plymouth*; *Memoir of Elder Brewster*; and *History of Plymouth Plantation*.

BRADFORD, WILLIAM, painter, born in New Bedford, Mass., in 1827. Up to middle life he followed the mercantile profession, when he met with reverses and began to paint marine views as a means of livelihood. He had previously attained some artistic proficiency by practice in leisure hours. He does work in colors, India ink and oils. He made an Arctic excursion with Dr. Hayes and others, and from studies of snow, ships and icebergs then made he painted many famous scenes. Some of his best works are *Shipwreck Off Nantucket*; *Sudden Squall in the Bay of Fundy*; *The Coast of Labrador*, and *Sunset in the North*.

BRADING, a small but ancient town, once a parliamentary borough, in the Isle of Wight, four miles south of Ryde by rail. In 1880 the remains of a Roman villa, with a tessellated floor, were unearthed near the town. In the ruins, assumed to be those of the villa of the Roman governor, were found numerous coins and tiles; there are also traces of a whole row of buildings.

BRADLAUGH, CHARLES, a prominent social reformer, but vigorous anti-socialist, born in London in 1833, died Jan. 30, 1891. Early dependant upon his own efforts, he was in turn errand-boy, small coal merchant, and trooper at Berlin. Procuring his discharge, he returned to London in 1853, became clerk to a solicitor, and soon a busy secularist lecturer, and pamphleteer under the name "Iconoclast." In 1880 he was elected M. P. for Northampton. He at first refused to take the parliamentary oath, then offered to take it; but as he had been loud in his avowal of atheism, the House refused to allow him even to affirm. He was thrice re-elected by Northampton, and at length, in 1886, having taken the oath, he was allowed to take his seat. In Parliament he gained respect by his strong sense and debating power, and he earned wide popularity by his agitation against perpetual pensions. Of Bradlaugh's writings the best known is his *Impeachment of the House of Brunswick*. His republication, in conjunction with Mrs. Annie Besant, of an old pamphlet, *The Fruits of Philosophy*, led in 1876 to a sentence of six months' imprisonment and a fine of £200, but the conviction was quashed on appeal during what proved to be Mr. Bradlaugh's last illness. On Jan. 27, 1891, a motion was made and carried in the House of Commons

that the action of Parliament, by which he was ejected from that body in 1880, be expunged from the record.

BRADLEY, REV. EDWARD, better known by the pseudonym of "Cuthbert Bede," was born at Kidderminster, England, in 1827, and educated at Durham University. He was successively rector of Denton, Huntingdonshire, of Shelton, near Oakham, and of Lenton, near Grantham. His facetious description of Oxford life in *Adventures of Verdant Green* (1853-57) has been exceedingly popular, and was followed by the *Book of Beauty* (1856), *Fairy Fables* (1858), *Glencraggan* (1861), *Tales of College Life* (1862), *Little Mr. Bouncer and His Friend Verdant Green* (1873), *Fotheringhay* (1885), etc., none of which have equaled his first book in popularity.

BRADLEY, JOSEPH P., LL. D., jurist, born in Berne, N. Y., March 14, 1813. In his youth his educational advantages were at first very meager, but a clergyman prepared him for college, and he pursued the course at Rutgers. He studied law, was admitted to the bar in 1839, and for a number of years practiced in Newark, N. J. His services were sought in important cases, and he was highly esteemed as an orator. In 1870 President Grant appointed him to the supreme court bench and circuit justice for the southern circuit; later he was assigned to the third circuit, comprehending the States of Pennsylvania, New Jersey and Delaware. While in the supreme court many and intricate cases came up for decision—civil war cases, maritime cases, and others of like importance. In 1877 he was a member of the electoral commission. He has never been a politician, but was a member of the Whig party and now of the Republican, always supporting the Government.

BRADSTREET, SIMON, colonial governor of Massachusetts from 1679 to 1686, and from 1689 to 1692, born at Horbling, Lincolnshire, England, in 1603, died at Salem, Mass., in 1697. He was educated at Cambridge, and, having been chosen assistant judge of the court to be established in the Massachusetts colony, sailed for the New World and arrived at Salem in 1630. During his public life of more than 60 years he held prominent and responsible government positions, in all of which he showed himself able and trustworthy. He visited England in 1660 as agent for the colony and to congratulate Charles II on his restoration. Bradstreet opposed the witchcraft delusion at Salem in 1692. He was one of the founders of Cambridge, and was connected with the settling of other of the early New England towns.

BRAEMAR, a highland district of Scotland, occupying the southwest corner of Aberdeenshire, in the heart of the Grampian Mountains, and traversed by the upper waters of the Dee. In the eastern part is Balmoral, and near its center, 61 miles southwest of Aberdeen, is the village of Castleton of Braemar, a favorite resort for travelers, sportsmen, and lovers of grand scenery. See Britannica, Vol. I, p. 44.

BRAG, a game at cards, so called because each player endeavors to impose upon the others, and to make them believe that his hand is better than it really is;—same as *poker* and *bluff*.

BRAGG, BRAXTON, soldier, born in Warren county, N. C., March 22, 1817, died in Galveston, Tex., Sept. 27, 1876. He graduated at West Point, and was appointed to military service in Florida during the Seminole war. He took part in the Mexican war, and was brevetted lieutenant-colonel for his gallant services during the campaign. From this time until the civil war he was mostly engaged in frontier service. In 1861, when the war broke out, he was commissioner of public works in Louis-

iana, and taking the Confederate side he was appointed brigadier-general and assigned to duty in Florida. On the death of A. S. Johnston at the battle of Shiloh he was promoted general. After the evacuation of Corinth he succeeded to General Beauregard's command. At Perryville, Ky., where he led a force of 45,000 men, he retreated after the battle without sufficient cause. He was on this account removed from command and arrested, but soon restored to rank. He was beaten at Murfreesboro, by Rosecrans Dec. 31, 1862, and Jan. 2, 1863, but retaliated at Chicamauga in September. Grant inflicted a severe defeat upon his troops at Chattanooga in November, and soon after he was relieved of command and called to Richmond as military adviser to Jefferson Davis. He performed no other important service during the war. Afterwards he became chief engineer of Alabama, and superintended the improvements in Mobile Bay.

BRAGI: in Northern mythology, son of Odin and Frigga, god of poetry and eloquence. Upon his tongue were engraved the runes of speech, so that he could not utter a sentence that did not contain wisdom. According to the elder or poetic Edda, he is the most perfect of all scalds or poets, and the inventor of poetry, which is designated by a kindred word, *bragr*. Bragi is represented as an old man with a long flowing beard, but his brow is always mild and unwrinkled. Together with Hermothe or Hermode, he receives and welcomes all those heroes who have fallen in battle, on their arrival in Valhalla. On festive occasions, as well as on the burial of a king, a goblet called Bragafull (Bragi's goblet) was presented, before which each man rose up, made a solemn vow, and emptied it. See Britannica, Vol. I, p. 211.

BRAHMA, Hindu deity. See Britannica, Vol. IV, p. 207; Vol. XXIV, p. 118.

BRAHMANS. Hindu caste. See Britannica Vol. V, p. 188.

BRAHMANBARIA, a town of India, Tipperah district, in the presidency of Bengal, on the Titas River. It has sea and railway communication with Calcutta, and some trade in rice. Population, 17,438.

BRAHMS, JOHANNES, born in Hamburg, Germany, in 1833. He is the greatest living composer. His father being a musician, Brahms received a thorough musical education, and at the age of 20 gave such signs of extraordinary powers that Schumann became convinced that he would be the man who would carry on the progressive development of modern music. During his youth he remained mostly in retirement, studying and composing. In 1861 he removed to Vienna. No comparison between Brahms and Wagner, the other great modern composer, is possible, as they have occupied different fields of activity. Wagner's fame is entirely founded on his operatic works, while Brahms has devoted himself to choral and chamber music, and is without a rival in these directions.

The genius of Brahms is conservative in spirit, contrary to Wagner and the so-called "school of the future;" he bases his art upon systematic principles of musical form, and it is only in style and construction, and the character of his ideas, that he differs from other composers. His intellectuality is intense, and will probably prevent his music from becoming popular with the great mass of music lovers, for he sometimes sacrifices beauty of sound to the more forceful expression of an idea.

His works have now reached Opus 108. The "Deutsches Requiem" and Symphonies are his greatest compositions. As a pianoforte player Brahms is well known, especially as an interpreter

BRAID, JAMES, born in Fife, studied medicine at Edinburgh, and settled as a surgeon in Manchester, where he died March 25, 1850. He is noted for his researches on animal magnetism, which he named hypnotism. See Britannica, Vol. XV, p. 278.

BRAIDWOOD, a city of Illinois, about 20 miles south of Joliet. It is noted for its extensive mines of bituminous coal.

BRAIDWOOD, THOMAS, teacher of deaf mutes. See Britannica, Vol. VII, p. 6.

BRaille, Louis, the inventor of the Braille system of raised letters for the blind, was born near Paris, France, January, 1809. He became blind (the result of accident) at the age of three. In 1819 he became a pupil of the institution for the blind in Paris, and subsequently was elected a professor in the institution. While there he devised a system of points or raised dots, instead of raised lines, for the uses of the blind in reading or writing. See BLIND, READING FOR, in these Revisions and Additions.

BRAIN-CORAL, or BRAINSTONE CORAL, a popular name for corals of the genus *Meandrina*, family *Meandrinidae*, belonging to the aporose division of stone-corals. The individual animals which compose the colony are arranged in long winding rows. Those of one row are not separated from one another by the usual round walls, and thus elongated continuous furrows are formed not unlike brain convolutions—hence the name. The entire shape is roughly hemispherical; the rate of growth slow; the total size often large. They are abundant in the West Indian Ocean. About 20 species of *Meandrina* are known, some living, others occurring from the chalk on to tertiary strata.

BRAINE-LE-COMTE, a busy town of the Belgian province of Hainault, on the Senne, 19 miles southwest of Brussels. It has an old church of the 18th century, cotton and corn mills, dye-works, breweries, etc. Some of the finest flax is grown in the district. Population, 8,176.

BRAINERD, a city of Minnesota, county-seat of Crow Wing county, about 115 miles west of Duluth. It contains the shops of the Northern Pacific Railroad.

BRAKE. See Britannica, Vol. IV, p. 211.

BRAMA, or RAY'S BREAM (*Brama raii*), a bony fish closely related to the *Coryphænas*, or "dolphins," and therefore nearly allied to the mackerel family. In this genus the body is laterally compressed and more or less deep. The spinous portion of the long dorsal fin is not well developed, and the tail is deeply forked. Ray's bream is found from the Cape seas northward to the Mediterranean, and even to British coasts. Its total length may be as much as two feet.

BRAMBLE, a name common to plants of the genus *Rubus*, in England the popular name for common blackberry, *Rubus fruticosus*. Brambles are little cultivated in Britain; but in America, where they are called blackberries, they are extensively cultivated for their fruit, and of late American varieties have been with advantage introduced into Britain. Species of *Rubus* very similar to the common bramble, or varieties of it, abound in the northern parts of Asia, and in the Himalaya Mountains.

BRAMBLING BIRD. See Britannica, Vol. IX, p. 193.

BRAMHALL, JOHN (1594-1663), a great anti-Puritan Irish prelate, born in 1594, and educated at Sidney-Sussex College, Cambridge. He was already sub-dean of Ripon, on the road to high preferment, when he went to Ireland as Wentworth's chaplain in 1633. He soon became archdeacon of

Meath and was consecrated Bishop of Derry in 1684. Bramhall's intolerance roused the wrath of the stubborn Scotch settlers in his diocese, and ruined the king's cause in Ulster. When the civil war broke out, for safety's sake, he crossed to England, but the Royalist disaster soon drove him to the continent. The Restoration gave him the metropolitan see of Armagh, which he filled till his death in 1663. Bramhall closely imitated Laud in policy, but was far his inferior in intellect. Not strong, but merely obstinate in purpose, the so-called Athanasius of Ireland, by his impolitic intolerance, sealed the doom of episcopalian supremacy in Ulster. See *Britannica*, Vol. XII, p. 36; Vol. XIII, p. 266.

BRAMPTON, a very ancient town of Cumberland, England, nine miles northeast of Carlisle by rail. The chief manufacture is the weaving of checks and ginghams. There are coal mines in the vicinity. Two miles to the east stands Lanercoast Abbey, founded in 1169.

BRAMPTON, a village of Ontario, county-seat of Peel county, about 20 miles west of Toronto. It is an important grain and flour market, and contains also manufactories of iron, of agricultural implements and of pumps.

BRANCHIOPODA, as defined by Huxley, a sub-order of crustaceans. See *Britannica*, Vol. VI, p. 663.

BRANCO RIO, a river of northern Brazil, which rises in the Parima Mountains, on the very borders of Venezuela; and after a southerly course of about 400 miles joins the Rio Negro, of which it is the principal tributary.

BRAND JOHN (1744-1806), antiquary, born in Durham county, England, Aug. 19, 1744, was apprenticed to a cordwainer in Newcastle, and educated at the grammar school there. His industry procured him patrons, who sent him to Oxford, where he graduated B. A. in 1775. He had been ordained some years previously, and in 1784 he was presented to a rectory in London, and in the same year was elected resident secretary of the Society of Antiquaries, to which office he was reelected annually until his death, Sept. 11, 1806. His *Observations on Popular Antiquities*, first published in 1777, and edited with additions by Sir Henry Ellis (three volumes 1813; new edition by W. C. Hazlitt, 1870), is considered the best work on its subject in the English language.

BRANDES, GEORG, a Danish literary critic of Jewish family, born in Copenhagen, Feb. 4, 1842, and graduated there at the University in 1864. Several books on aesthetic and philosophic subjects brought on him a charge of skepticism, which was not removed by an epoch-making series of lectures, delivered before large audiences, and published under the title, *The Great Tendencies of Nineteenth Century Literature* (1872-75); for his description of the later intellectual position of Europe, as broken away from the orthodoxy and romanticism of the beginning of the century, brought on him the bitter attacks of all the reactionary forces in Denmark. His *Danske Digtere*, a masterpiece of psychological analysis, appeared in 1877. The hostility of his enemies induced him in the same year to leave Denmark, and settle in Berlin, where he published, among other works, *Critical Biographies of Lassalle* (1877), *Esaias Tegnér* (1878), and *Lord Beaconsfield* (1879). A lecture tour through Norway and Denmark brought a powerful party to his side, and in 1882 he returned to Copenhagen, his countrymen having guaranteed him an income of 4,000 crowns, with the one stipulation that he should deliver public lectures on literature. His later works include *Den Romantiske Skole i Frankrig* (1882) and a

biography of *Ludwig Holberg* (1885). See *Britannica*, Vol. VII, p. 93.

BRANDING has been practiced from very early times. The Greeks marked their slaves with the stigma; in Rome, runaway slaves (*fugitivi*) and thieves (*fures*) were branded with the letter F; and the slaves who worked in the mines, and convicts condemned to the galleys or to the mines, were also branded on the forehead for identification. Constantine limited branding to the hand, arm or calf. The canon law provided for this punishment, and in France, down to 1832, galley slaves were marked T F (*travaux forcés*); but in Germany it has never been recognized by common law. The famous Statute of Vagabonds under Edward VI of England authorized the branding of the letter V on the breast of a runaway servant, and in the same reign brawling in church was punished by branding with the letter F on the cheek as a fraymaker. During the three centuries of persecution to which the gypsies were subjected throughout Europe, this was considered a mild form of punishment. From 1698 to 1707 theft and petit larceny were punishable by branding in the left cheek. This form of punishment was discontinued in the reign of George III, and finally done away with in 1829. Army "branding" or "marking" with the letter D or B C (deserter or bad character), by tattooing with needles and Indian ink, not by burning, was abolished in 1879.

BRANDON, a quaint old market-town of England, situated on the Little Ouse, 86 miles northeast of London. In the neighborhood are the *Grimes Graves*, demonstrated by Canon Greenwell to be Neolithic flint-workings. Gun-flints are still made here, chiefly for the African market; and the continuity of this industry can be traced at Brandon in unbroken sequence to the early prehistoric periods, when the flint was excavated with stone tools and picks made of the antlers of the red deer. Population of parish, 2,309.

BRANDYWINE CREEK, a stream rising in Chester county, Pa., flowing with a general southeasterly course into Delaware, and emptying into Christiana Creek at the city of Wilmington. During the War of Independence a battle was fought on its banks, Sept. 11, 1777, in which 13,000 Americans under Washington were defeated by a force of 18,000 British under Lord Howe.

BRANFORD, a manufacturing town and summer resort of Connecticut. It is situated on Long Island Sound, eight miles east of New Haven. It has a good harbor, a granite quarry and various manufactures, and is the seat of an academy.

BRANK, or **BRANKS**, an instrument formerly used for the punishment of scolds in England and Scotland, and often in the former country called "the scold's bridle," or "gossip's bridle." When the brank first came into use is unknown, but it is found at Edinburgh as early as 1567. According to Mr. Llewellynn Jewitt it was never a legalized instrument of punishment, although corporations and lords of the manor in England, and town councils, kirk-sessions, and barony courts in Scotland, exercised the right of inflicting such punishment. Men were put in the stocks or pillory, women in the branks, for such petty misdemeanors as are now termed breaches of the peace, using abusive, insulting or threatening language, cursing and swearing, and contumacy.

The brank in its simplest form is a hoop of iron, opening by hinges at the sides, so as to inclose the head, and fastened by a staple with a padlock at the back; a plate within the front of the hoop projecting inwards, so as to fit into the mouth of the culprit, and by pressing upon the tongue, be an

effectual gag. The brank was used at Longholm, in Dumfriesshire, in 1772; at Morpeth in 1741; it was used at a later date at Manchester and at Macclesfield; and at Bolton-le-Moors in 1856 the iron bridle was stated to be "not many years since in use" for the correction of immorality. Brank was at one time a common name in Scotland for any sort of bridle, and the word is so used by Burns.

BRANT, JOSEPH, called Thayendanega, a Mohawk chief, born on the banks of the Ohio in 1742, died at the old Brant mansion, Wellington square, Canada, Nov. 24, 1807. His father was a full-blooded Mohawk Indian. The son, being a favorite with Sir William Johnson, was sent at his expense for a year's tuition in the "Moor Charity School," which afterwards became Dartmouth College. He was employed by General Carleton in making raids on the colonists during the Revolutionary war; the Cherry Valley and Minisink massacres were participated in by him. At the head of a clan of Hurons he marched against Fort Stanwix and afterwards took part in the battle of Oriskany (1779). When the war closed he used his influence for peace and helped the Indian commissioners to secure a treaty with the Miamis. He was a convert to Christianity, and helped raise funds by visiting England (1786) for the erection of the first Episcopal church in Upper Canada. The Gospel of St. Mark and the "Book of Common Prayer" were translated by him and Colonel Daniel Claus into the Mohawk language. He is said to have been faithful to a friend, a cautious warrior, an accomplished diplomat, and humane to a captive. At Brantford, Canada, a monument was erected to his memory in 1886.

BRASSEY, THOMAS, BARON, K. C. B., son of the great railway contractor, born at Strafford, England, in 1836. He was elected to Parliament for Devonport in 1865, and afterwards represented Hastings (1868-86). As Civil Lord of the Admiralty (1880) and Secretary (1884), his influence has been felt in naval questions, and he is author of several works on seamanship and naval affairs. He was made K. C. B. in 1880, and was raised to the peerage in 1886. He is a veteran yachtsman; and Lady Brassey's pleasant records of their yacht voyage round the world in 1876-77, and of succeeding trips of the *Sunbeam*, were widely popular. She died on the homeward voyage from Australia, Sept. 14, 1887, and was buried at sea. Lord Brassey is author of *Work and Wages* (1872), *British Seamen* (1877), *The Eastern Question* (1878), *Foreign Work and English Wages* (1879), *The British Navy* (five vols., 1882-83), etc.

BRASSICA, the turnip and cabbage genus of *Cruciferae*, containing about 100 species, all natives of Europe and Northern Asia. The cultivated species are of great economic importance. *Brassica oleracea* gave rise to all the forms of cabbage, cauliflower, kale, kohlrabi, broccoli, etc. *Brassica campestris* (see *Britannica*, Vol. XII, p. 288) is the source of the turnip and the rutabaga, in which the nourishment is stored in the root, and of the colza and rape, which are raised for the oil of the seed. *Brassica alba* and *Brassica nigra* are the white and black mustards. See CABBAGE, *Britannica*, Vol. IV, pp. 617, 618.

BRATHWAITE, RICHARD, minor poet, born in Westmoreland, England, about 1588, died near Richmond, in Yorkshire, in 1673. He entered Oriel College, Oxford, at sixteen; passed afterwards to Cambridge and thence to London, where he devoted himself to poetry and play-writing. In 1611 he published *The Golden Fleece*, a collection of poems, and in 1614 three works, one of them a book of pastorals, en-

titled, *The Poet's Willow*. In 1615 he published the collection of satires, *A Strappado for the Devil*, in imitation of *The Abuses Whipt and Stript* of George Wither. The latter part of his life was spent in Westmoreland and Yorkshire, where he lived the life of a country gentleman, without, however, ceasing his literary activity. Of his numerous books the most noteworthy one is *Barnabæ Itinerarium*, or *Barnabee's Journal*, published in 1638, and often reprinted under the title of *Drunken Barnaby's Four Journeys*. This lively book, in rhymed Latin and doggerel English verse, was popular in the 18th century, and had the honor of an eleventh edition in 1876.

BRATTLEBORO, a beautiful town of Vermont, is situated on the Connecticut River, about eighty miles south of Rutland. It is the seat of the Vermont Asylum for the Insane. It is an important center of trade, and contains extensive manufactories of organs, machinery, furniture, and carriages.

BRAUN, ALEXANDER, born at Ratisbon, Bavaria, in 1805, professor of botany at Berlin from 1852 till his death, March 29, 1877. He did special service in the departments of the morphology of plants, systematization, and the lower cryptogams.

BRAUN, AUGUST EMIL, archæologist, born at Gotha in 1809, died in Rome, Sept. 12, 1856. He studied at Göttingen and Munich, and in 1833 went to Rome, where in a short time he was made secretary to the Archæological Institute. He wrote many valuable works on art and mythology in German and Italian. Of these the most important are his *Vorschule der Kunstmythologie* (1854), and an admirable guide-book, *Die Ruinen und Museen Rom* (1854), both of which have been translated into English.

BRAVO ("excellent!" "well done!"), an Italian exclamation of praise, the superlative form of which is *bravissimo*. It is commonly used in England without distinction of number or gender; but the Italians say *bravo!* to a male singer or actor, *brava!* to a lady, and *bravi!* to a company of singers.

BRAVOES, those persons in Italy, but especially in Venice, who undertook to perform any dangerous deeds for money. The name is now employed chiefly to designate hired assassins.

BRAVURA, an Italian word, in music applied to a composition as well as a style of performance. As a composition, the bravura is a florid air or song, with many difficult and rapid passages, requiring great spirit and dexterity of execution. The term is chiefly applied to vocal compositions, but occasionally to instrumental.

BRAWLING IN CHURCHES, in English law, was an old statutory offense in the ecclesiastical courts. If it was committed by words only, the bishop might exclude a lay offender from church, and might suspend a priest. In more serious cases excommunication and branding were the punishment. Anglican priests may still be punished for such conduct by their own courts; but the riotous, violent, or indecent conduct of laymen in any place used for religious worship is dealt with by the ordinary criminal courts.

BRAXTON, CARTER, signer of the Declaration of Independence, born in Newington, King and Queen county, Va., Sept. 10, 1736, died in Richmond, Va., Oct. 10, 1797. He inherited a large estate, and was educated at William and Mary College. In 1761 he entered the house of burgesses and remained in the public service until his death. He supported Patrick Henry's stamp-act resolutions, and favored independence. He was a member of the last house of burgesses; of the general convention at Richmond (July 17, 1775), which organized the militia;

and in December, 1775, when the president of the Continental Congress died, Mr. Braxton was chosen for the office. He signed the Declaration of Independence July 4, 1776. In 1777, 1779, 1780, 1781, 1783 and 1785 he was a member of the House of Delegates. In 1786 he was chosen to the council of state; in 1791 he was elected to the legislature; and from 1793 until his death he served as a member of the executive council of the General Assembly. Mr. Braxton's fortune was greatly reduced by the events of the Revolutionary war and the depreciation of the currency.

BRAY, ANNA ELIZA (*née* Kempe), author, born in London, England, Dec. 25, 1790, died there Jan. 21, 1883. She studied for the stage, but in 1818 married the artist Charles Alfred Stothard, whose death occurred in 1821 (see *Britannica*, Vol. XXII, p. 578). In 1825 she married the Rev. E. A. Bray (1778-1857), vicar of Tavistock, and after his death settled in London. Between 1820 and 1874 she published a score of romances, books of travel, and other works, the best being *The Borders of the Tamar and the Tavy* (1836); *Life of Thomas Stothard, R. A.* (1851); and *A Peep at the Piries* (1854).

BRAZIL, UNITED STATES of, a republic of Central South America. Area, 3,218,032 sq. miles; population (estimated in 1888), 14,002,335; capital, Rio Janeiro, with a population of 357,332. For the early history, productions, and government of Brazil, see *Britannica*, Vol. IV, pp. 221-240.

In 1887, an official estimate gave the white population at about one-third of the total population; slaves, 1,500,000; the remainder were mulattoes, half-castes, freed negroes, and nomadic Indians. In 1888 a law was enacted freeing the slaves, and since that date every person in that great country has been permitted to claim the right of citizenship.*

Brazil contains 20 States, 16 of which have a coast frontage. The following table gives the names of the States, their areas, severally, and their populations in 1888:

States.	Area: English sq. mile.	Popula- tion, 1888.	Density per sq. m., 1888.
Amazonas.....	732,460	80,654	0.11
Pará.....	443,653	407,350	0.91
Maranhão.....	177,566	488,443	2.7
Piauhy.....	116,218	266,933	2.2
Ceará.....	40,253	952,625	23.6
Rio Grande-do-Norte.....	22,195	308,852	13.9
Parahyba.....	28,854	496,618	17.0
Pernambuco.....	49,625	1,110,831	22.0
Alagoas.....	22,583	459,371	20.0
Sergipe.....	7,870	232,640	31.0
Bahia.....	164,649	1,821,089	11.0
Espirito Santo.....	17,312	121,562	7.0
Rio de Janeiro.....	26,634	1,164,468	43.7
Município Neutro (City of Rio).....	538	406,958	756.0
Santa Catharina.....	27,436	236,346	8.6
Rio Grande-do-Sul.....	91,335	564,527	6.18
Minas Geraes.....	222,160	3,018,807	13.58
Matto Grosso.....	532,708	79,750	0.149
Goyaz.....	288,546	211,721	0.77
Paraná.....	85,468	187,548	2.19
Sao Paulo.....	112,330	1,386,242	12.34
Total.....	3,209,878	14,002,335	4.36

* Brazil was the last American country to abolish slavery. The number of slaves had greatly decreased since the year 1850, when they were estimated at 2,500,000. On March 30, 1887, the official return gave the number of slaves in Brazil as 723,419, of the legal value of \$485,225,212. On May 13, 1888, the Crown Princess, as regent, gave the royal assent to a short measure of two clauses, the first declaring that slavery was abolished in Brazil from the day of the promulgation of the law, and the second repealing all former acts on the subject. Both Chambers refused to consider the claim for compensation made by the slave-owners.

The apparent increase in 16 years (from 1872 to 1888), was 41 per cent., or at the average rate of 2.56 per cent. per year. In 1888 the latest estimated population of the chief cities other than the capital was as follows: Bahia, 140,000; Pernambuco, 130,000; Pelotas, 45,000; Belem, 40,000; San Paulo, 40,000; Campos, 40,000; Campinas, 35,000; Maranhão, 35,000; Porto Alegre, 35,000; Careteba, 34,000; Ouro Preto, 20,000.

In 1888 there were 5,281 miles of railway open, and 869 miles in course of construction; also 7,605 miles of telegraph wire, and 1,816 post offices. It is unequaled for the number and extent of its rivers. The Amazon, though not the longest, is with its tributaries, the largest in the world.

The public debt of Brazil on Nov. 15, 1889, was officially reported as follows:

Foreign Debt.....	\$152,097,500
Internal Funded Debt.....	305,766,730
Internal Floating Debt.....	140,794,185
Total.....	\$598,658,415

Later, some additions to the above were made, and in December, 1889, a further loan of \$100,000,000 was successfully floated.

The Brazilian army in 1888 consisted of 13,000 men, on a peace footing, and the navy of 59 vessels, inclusive of 9 ironclads, 17 gun-boats, and 9 torpedo boats.

As explanatory and preparatory to the more recent and most radical changes in the Brazilian government we summarize in this connection a few salient items of the earlier history. The territory was acquired by Portugal early in the sixteenth century, and resolutely held by her against all claimants. When the French over-ran Portugal in 1807, the royal family took refuge in Brazil. In 1815 the exiled monarch Dom João, issued a formal decree declaring the colony to be a part of "the Kingdom of Portugal, Brazil, and the Algarves," and thenceforward assumed the title of "King of Brazil." In 1821 he returned to Portugal leaving his son Dom Pedro as regent of Brazil. There had been for some time a tendency toward separation, and in 1822, when the Portuguese Cortes adopted a resolution requiring Dom Pedro to return to Lisbon, a crisis was precipitated, and the Brazilians declared for independence. Dom Pedro put himself at the head of the movement, and summoning a general council he was declared by that body to be "Constitutional Emperor and Perpetual Defender of Brazil." In 1824 a constitution was adopted by the Emperor and a vote of the people. A year later the independence of Brazil was recognized by Portugal. In 1834 a law was passed giving a federal character to the empire, delegating to the provincial assemblies, both legislative and executive, authority within the provinces. The presidents, however, were to be appointed by imperial selection. The constitution declared that "The Empire of Brazil is the political association of all Brazilian citizens," and that "the representatives of the Brazilian nation are the Emperor and the General Assembly."

Among the powers of the General Assembly were these: "To receive the oath of the Emperor, Prince Imperial, or Regent, or Council of Regency; on the death of the Emperor, in the event of the throne becoming vacant, to institute an inquiry into the administration which has come to an end, and to reform the abuses which have crept in; to select a new dynasty should the present fail; to make, interpret, suspend, or abrogate the laws; to take measures for the maintenance of the Constitution, and for the general welfare of the nation."

The imperial dynasty continued until Nov. 15, 1889, when, with remarkable unanimity by the

principal citizens in the national capital, a declaration was adopted in favor of a republic, and a provisional government assumed control. The revolution was sudden and bloodless. The Emperor was regarded as a very weak personage, but as one having good intentions, and patriotic purposes toward all the people. He was, therefore, most kindly treated, and most generous provision was made for his support. Lest his presence should open the door for trouble during the reorganization of the government, he was transferred to his kindred in Portugal.

The preference of the people was for a republic, formed on the American model, and hence the provisional administration immediately and vigorously proceeded to formulate a new constitution on the general plan of that of the United States. The draft of the new constitution was promulgated June 23, 1890, under the provisional presidency of Marshal Deodoro da Fonseca. There was no serious trouble in the administration—everything went on as usual; the imperial officials became republicans; most of the ambassadors to foreign courts continued at their posts; only a few important changes were made.

The proposed constitution provided for a president and vice-president, elected indirectly through an electoral college for six years; two legislative chambers—viz, a senate, elected by the State legislatures for nine years, and a chamber of deputies, elected by popular vote for three years; a supreme federal tribunal of fifteen judges, appointed for life, and a federal judicial system; a federal district for the national capital, like the District of Columbia, but with privileges of representation in the two chambers and in the presidential election like any State; the transformation of the old provinces into self-governing States; universal suffrage to all (except illiterates, mendicants, soldiers, rank and file, and members of religious orders, companies, congregations or communities who owed obedience to the same to the prejudice of their personal liberty); guarantees for life, property, and political rights; responsibility of the president and his cabinet before the law; religious freedom and separation of church and state, obligatory civil marriage, etc. The President of the federation was declared alone responsible to the nation, and the ministers were replaced by secretaries of state answerable to the President alone. The powers of the two chambers were to be purely legislative and moderating, so that an adverse vote in either house would not necessarily entail a change of ministry. This scheme was to be submitted to the constituent assembly in November, for which the elections took place in September, 1890, the supporters of the provisional government obtaining a large majority at the polls. As the result of these elections it was declared that the adoption of Republican institutions had been confirmed by the people, and that the Republic had thus been placed upon a firm basis.

The principal acts of the provisional government during the year were of a financial character. On August 2d a decree was issued establishing a National Mortgage Bank, with a capital of 100,000 contos of reis in gold. On the 30th of the same month the Bank of the United States of Brazil was authorized to issue an additional 50,000,000 milreis in currency on a gold basis, it being explained that speculative enterprises on foot required this increase of the currency. On September 3d a decree was issued granting a government guarantee on State loans, amounting in the aggregate to 50,000,000 milreis; and on October 3rd it was announced that, from November 15th, all import duties were to be paid in gold, a decision which it was stated would bring eleven millions sterling annually into the treasury.

At the meeting of the deputies to the First National Assembly, the proposed Constitution was submitted to a commission composed of one deputy from each State in the Republic, and was favorably reported back to the National Assembly and discussed at great length, numerous amendments being proposed and adopted or formally rejected. The first section of the Constitution was adopted about the middle of January, 1891. The next formal act of the new Republic was the election of General da Fonseca as first "President of the United States of Brazil." He had been identified with all the important movements of the provisional government during the whole revolutionary period, and had manifested not only great sagacity and courage, but also sound sense, moderate temper, and commendable fairness of spirit. He had met all the trying difficulties of his chief executive position in such a statesmanlike manner that this critical period of transition was passed by the whole country in entire peacefulness. Indeed, as one of the leading journals expressed it: "The whole country seemed to have been during this period a great debating school, where the utmost freedom of opinion and of speech had been permitted to all parties, in all pos-

sible ways, so that no occasion for complaint was given to any State or person in the Republic." The completed constitution was formally adopted by the Assembly, Feb. 24, 1891, and the United States of Brazil thence forward was constituted a government in law as well as in fact.

The new flag of the new Republic is of green color with a large yellow lozenge, in the center of which is a blue sphere; crossing the sphere is a white ribbon inscribed "Ordem e progresso" in green letters. Twenty white stars, indicating the twenty States, are arranged in the form of the southern constellations, the Cross and the Scorpion, while another large star is intended to symbolize the capital—Rio de Janeiro.

BRAZIL, a mining and manufacturing town of Indiana, county-seat of Clay county, situated about 15 miles east of Terre Haute. It contains extensive manufactories of pig-iron and numerous mines of block-coal. There are also manufactories of boilers, terra-cotta, pottery, chairs and flour.

BRAZZA, **PIERRE SAVOIGNAN DE**, an African explorer, born at Rome in 1852. He studied at Paris, entered the French navy in 1870, and served in Africa on the Gaboon station. In 1876-78 he made a famous exploration of the Ogoway and of some of the northern tributaries of the Congo. In 1878 the French government gave him 100,000 francs for exploration of and the promotion of French interests in the country of the Congo, where he secured vast grants of land for France and founded several stations, that called Brazzaville, being on the northern shore of Stanley Pool. In 1883 he returned to extend the territory secured to France, this time with a government grant of 1,275,000 francs, besides stores and provisions of all kinds; and by the end of 1885 he had established 26 stations, of which Franceville was the chief. The securing for France of her great dependency in Africa, lying between the Gaboon and the Congo, is mainly his work; and of that dependency he was made governor in 1886.

BREACH: in a military sense, a gap or opening in any of the defenses of a fortress, effected either by mining or by the fire of guns placed in what are called "breaching-batteries." See *Britannica*, Vol. IX, pp. 454-461.

BREACH, a legal term used to denote the violation of a legal right or obligation. The most common form of this is *breach of covenant*. A covenant may be violated by simple failure to pay or to perform. *Breach of trust* is the violation of the express or implied obligations of a person occupying a position of trust. It frequently consists of an investment of trust funds not sanctioned by the trust deed; often takes a criminal complexion and is punished as embezzlement. *Breach of the peace* includes a great variety of criminal acts which are violations of public peace, from rioting down to small police offenses. *Breach of close* is a technical expression for trespass on another's land. *Breach of arrestment*, in Scottish law, is the disregard of a prohibition to pay or deliver, which is effected by the use of arrestment in the hands of a debtor; it involves only civil consequences. *Breach of promise* is often used absolutely for breach of promise of marriage. See *Britannica*, Vol. XXIV, p. 643.

BREACHING TOWER, or **BEFFROI**, the name of a tower used in the military sieges of ancient and mediæval times. Its use is more than once spoken of by Cæsar in his account of his campaigns in Gaul. Froissart describes a buffroi employed at the siege of the castle of Breteuil in 1356. At the siege of Jerusalem by the Crusaders, a beffroi was carried in pieces, put together just beyond bow-shot, and then pushed on wheels to a proper position. Sometimes they were propelled by pressure, sometimes by capstans and ropes. The highest were on six or eight wheels, and had as

many as ten or twelve stories; but it was usual to limit the height to three or four stages. They were often covered with raw hides to protect them from the flames of boiling grease and oil directed against them by the besieged; and there was a hinged draw-bridge at the top to let down upon the parapet of the wall to aid in landing. The lower stage frequently had a ram, while the others were crowded with bowmen and slingers; or there were bowmen on all the stages except the top, which had a storming or boarding party.

BREAD. See **BAKING**, *Britannica* Vol. III, pp. 250-58.

BREAD-NUT, the fruit of the tree *Brosimum alicastrum*, natural order *Urticaceæ*, a native of Jamaica, closely allied to the bread-fruit. The bread-nut tree is dioecious, with ovate-lanceolate evergreen leaves, and abounds in a tenacious gummy milk. Its leaves and young shoots are eaten by cattle, but deleterious qualities are said to be developed in them as they become old. The fruit is a one-seeded drupe, and the kernels, boiled or roasted, form an agreeable article of food, and are eaten instead of bread. Their taste resembles that of hazel-nuts. Another species, *Brosimum galactodendron*, is the cow-tree of South America. *Brosimum aubletii* of British Guiana and Trinidad yields heartwood of a deep mottled brown, hence called letterwood, snakewood, or leopardwood. It is chiefly used for veneering.

BREAKING BULK, in Scots law, signifies making use of an article supplied in bulk, or in quantity, by which act one is said to break bulk, and is in consequence prevented from afterwards objecting to it, and returning it to the seller.

BREAKING INCLOSURES, the technical name of an old statutory offense in Scotland, which consisted of injuring plantations or breaking their inclosures. Special punishments were provided for the purpose of favoring planting and inclosing, in the 17th century. The offense would now be termed malicious mischief.

BREAM, a popular name applied to three very different kinds of fish, but especially to the freshwater bream (*Abramis brama*), a common little European fish, nearly allied to the bleak. It has an elongated, laterally compressed body, a short blunt snout, and long anal fins. The color varies from silver gray to brown. It may measure over a foot, and usually weighs between two and four pounds, though often more. It is little valued for food. The white bream (*Abramis blicca*) is another European species, much like the preceding. Quite distinct from these is the large family of sea-brems or *Sparidæ*, represented in England by the species *Sparus*, *Pagrus*, *Pagellus*, and *Cantharus*, and in the United States by *Lagodon rhomboides* the sailor's choice, and *Diplodus holbrooki*, the pinfish. The term bream is also applied to *Brama rai*, a widely distributed fish of the mackerel family.

BREASTPLATE, also called *breast-plate of judgment*, an ornament worn by the Jewish high-priest. See *Britannica*, Vol. X, p. 138.

BREASTPLATE: in ancient armor, a plate of iron, steel, or other metal, so fastened as to protect the chest of the wearer. It was not commonly used until the early part of the 16th century, when armor for the limbs was being abandoned.

BRECCIA: in geology, a term adopted from the Italian to designate a conglomerate in which the fragments are angular instead of being rounded. See *Britannica* Vol. X, p. 237. The term is most commonly applied to masses composed of such fragments as have become cemented together before being rounded by friction. Bones and fragments of bones cemented together by calcareous matter

often occur upon the floors of caves in limestone; these accumulations are termed *bone-breccia*.

BRECKENRIDGE, an important mining town of Colorado, county-seat of Summit county, situated on Blue River, on the western slope of the Rocky Mountains, about 20 miles northeast of Leadville. Its history is coincident with that of the latter city. The surrounding country was one of the rich and populous placer-mining diggings of 1859-60; it is now a leading producer of silver, copper, and lead, as well as gold, and contains numerous smelters, mills, and sampling works.

BRECKENRIDGE, JOHN, clergyman, born at Cabell's Dale, Lexington, Ky., July 4, 1797, died there Aug. 4, 1841. He was a graduate of Princeton, was licensed to preach (1822), was chaplain to Congress (1822-23), and pastor of a church in Lexington (1823-27), when he began the publication of a religious newspaper called the "Western Luminary." In 1831 he was appointed secretary and general agent of the board of education of the Presbyterian church, and five years later he was called to the chair of theology at Princeton. He engaged in a printed controversy with Archbishop Hughes on the question "Is the Roman Catholic Religion in any or in all its Principles or Doctrines inimical to Civil or Religious Liberty?" Mr. Breckenridge was a keen debater and engaged in the controversies of the Presbyterian church. He upheld old-school doctrine, and was the author of numerous polemical writings. Excessive work caused his death just after he was called to be president of Oglethorpe University, in Georgia.

BRECKENRIDGE, JOHN CABELL, vice-president of the United States, born near Lexington, Ky., Jan. 21, 1821, died in Lexington, May 17, 1875. His grandfather was a United States Senator and attorney-general. He was educated at Center College, Danville, and at the Transylvania Institute, and then practiced law in Lexington. He served in the Mexican war, and on his return was sent to the legislature and to Congress, 1851-53. He was elected to the vice-presidency when Mr. Buchanan became president. At the conclusion of his term of office he was nominated (1860), for the presidency by the Southern delegates to the Democratic convention; Northern delegates at the same time nominating Stephen A. Douglass. Mr. Lincoln was elected, receiving 180 votes in the electoral college against 72 in favor of Breckenridge. In 1861 he became U. S. Senator and defended the Confederate cause in that official body. He joined the rebel troops in the same year, and was expelled from Congress. He was at the battles of Shiloh, Baton Rouge, Murfreesboro, Chickamauga, Chattanooga, Cold Harbor, and in other engagements. In 1865 he was Confederate Secretary of War. At the close of the war he escaped to Florida Keys, thence to Cuba and to Europe. Returning in 1868, he devoted himself to his profession. He was the youngest man ever elected to the office of vice-president, being at that time 35 years old.

BRECKENRIDGE, ROBERT JEFFERSON, clergyman, born in Cabell's Dale, Ky., March 8, 1800, died in Danville, Ky., Dec. 27, 1871. He studied at Princeton, Yale, and Union Colleges, and graduated at the latter in 1819. He read law, and practiced in his native State for eight years. Four years he sat in the legislature, then he abandoned politics, and began a private study of theology. His first pastorate was at the Second Presbyterian church in Baltimore, where he remained 13 years. He became president of Jefferson College, Pa. (1845); then was chosen (1847) superintendent of public instruction for Kentucky, whither he had removed in the same year. The new theological seminary of Danville

called him to the chair of didactic and polemic theology, and here he remained till his death. He was an eminent theological disputant, and in politics was anti-slavery and intensely loyal.

BRECKNOCK, or **BRECON**, the capital of Brecknockshire, South Wales, situated in an open valley in the middle of the county, at the confluence of the Usk and Honddu, 183 miles northwest of London by rail. It lies in the midst of fine mountain scenery, the triple-peaked Brecon Beacons (2,910 feet) rising to the south. The town was founded by Bernard de Newmarch, who built a castle here in 1094. Flannels, coarse woollens, and hats are manufactured. Population, 6,247.

BREDERODE, **HENRY**, **COUNT OF** (1531-68), born in Brussels, December, 1531. He was a leader of the disaffected nobility in the struggle against Spain. He drew up the "Compromise" of 1566, and headed the deputation to which the name Gueux was first applied. He was active in organizing the fraternity, but the failure of an attempt in the following year to raise an armed revolt in Amsterdam obliged him to flee to Germany, where he died at Recklinghausen, Aug. 24, 1568.

BREE, **MATTHIAS** **IGNATIUS** **VAN**, a Flemish painter, was born at Antwerp in 1773, died Dec. 15, 1859. In 1797 his *Death of Cato* gained for him the *Prix de Rome*, which entitled him to study in Italy. On his return to Antwerp in 1804, he became director of the Academy of Fine Arts. His chief works are the *Entrance of Napoleon into Antwerp*, the *Death of Rubens*, in the Antwerp Museum, and *Patriotism of the Burgomaster at the Siege of Leyden*, 1576, in the town-house of Leyden.

BREEDÉ, a river of South Africa in Cape Colony, rising in the Warm-Bokkerveld, and flowing south-eastward into the sea at Port Beaufort, about 60 miles northeast of Cape Agulhas. It is one of the largest rivers of the colony, but its navigation is impeded by a bar at its mouth.

BREHM, **ALFRED** **EDMUND**, naturalist, born at Benthendorf, in Thuringia, Feb. 2, 1829, died there Nov. 11, 1884. He was son of the pastor there, Christian Ludwig Brehm (1787-1864), a noted ornithologist. After five years of travel in Africa, Brehm went to Jena and Vienna to study natural science, and subsequently traveled in Spain, Norway, Lapland, Siberia, and Turkistan. In 1863 he became keeper of the Hamburg Zoological Garden, and in 1867 founded the Berlin Aquarium. His greatest work is the *Illustriertes Thierleben* (2d edition, 10 volumes, 1876-79).

BREISACH, **ALR**, a town of Baden, situated on an isolated basalt hill (804 feet) on the right side of the Rhine, 14 miles west of Freiburg. The *Mons Briciacus* of Cæsar, it was taken by Ariovistus when he invaded Gaul; being regarded as the key to the west of Germany, it figured prominently in the wars of the 17th and 18th centuries. The minster is a 13th century structure, with several old monuments. Population, 3,106.

BREISGÂN, a German district which in the middle ages extended along the right bank of the Rhine, from the episcopal territory of Strasburg to Basel, embracing Freiburg and the southern Black Forest. Since 1810 it has been part of Baden.

BREITENFELD, a village of Saxony, five miles north of Leipsig, remarkable for three battles fought in its neighborhood. In the first, fought on the 17th of September (old style, 7th), 1631, Gustavus Adolphus inflicted a decisive defeat upon the imperialists under Tilly, who, as well as his generals, Pappenheim and Fürstenberg, was wounded. The second battle was also a victory of the Swedes under Torstenson, over the imperial forces under the Arch-duke Leopold and Piccolomini, Nov. 2d

(old style, Oct. 23d), 1642. The third battle was one act of the great "Battle of the Nations" at Leipsig, Oct. 16, 1813.

BREMEN, one of the Free Cities of the German Empire, located on both sides of the Weeser. Area 99 sq. miles, population (in 1885) 166,392. For early history, map and constitution, see *Britannica*, Vol. III, pp. 255-56.

The constitution was proclaimed March 5, 1849, revised in 1854, 1875, 1878 and 1879. It is governed by a senate of 16 members, forming the executive, and a representative Convent of Burgesses ("Burgerschaft") of 150 members, returned by a vote of the citizens. The citizens who have studied at a university return 14 members; the merchants, 42 members; the mechanics and manufacturers, 22 members; and the other taxpaying inhabitants of the Free City the rest. The Convent and Senate elect the 16 members of the Senate, 10 of whom at least must be lawyers. Two burgomasters, the first elected for four years, and the second for the same period, direct the affairs of the Senate, through a ministry divided into twelve departments. All the ministers are senators.

Bremen, with Bremerhaven, is one of the chief outlets of German emigration. The following table shows the emigration statistics of the years 1886-88: 1886, 76,809; 1887, 99,476; 1888, 95,270. Public revenue in 1888, \$3,174,320; expenditure, \$3,214,680; imports, \$128,172,930; exports, \$123,765,865.

BRENDAN, **SAINT**, of Clonfert, an Irish abbot, born at Tralee in 484, died in 577. He studied under St. Jarlath of Tuam, and was ordained by Bishop Erc. His name is memorable chiefly for his voyages in search of "the mysterious land far from human ken." After seven years' fruitless wandering he returned, but once more, in a ship of wood instead of hides, set sail with sixty friends, and at length after many wanderings reached "that paradise amid the waves of the sea." Brendan founded a monastery at what is now Clonfert. His festival is on the 16th of May. *The Navigation of St. Brendan* was a very popular book in Western Europe as early as the 11th century; but the two voyages were compressed into one, and many other adventures added. In maps before Columbus's day, "St. Brendan's country" is placed to the south of the island of Antilia and west of the Cape Verde Islands.

BRENTHAM, a thriving town of Texas, county-seat of Washington county. It is situated in a fertile cotton and grain region, about a hundred miles east of Austin. It contains manufactories of iron, carriages, and lumber, and is an important center for the shipment of cotton.

BRENTA, a river of North Italy, issuing from a small lake in the Tyrol, and flowing 120 miles southward and eastward through the Venetian territory, till it falls into the Gulf of Venice at the haven of Brondolo. The old bed of the river was made use of as a canal, which forms the chief communication by water between Venice and Padua, while the Brenta is but little used for navigation.

BRENTANO, **LUJO**, political economist, born at Aschaffenburg, in Bavaria, Dec. 18, 1844. He studied at Dublin, and at four German Universities, and after attaining a post in the royal statistical seminary in Berlin went to England to study the condition of the working classes, especially trades associations and unions. The result of his observation was his work *On the History and Development of English Guilds* (London 1870); *Die Arbeitergilden der Gegenwart* (two volumes, Leipsig, 1871-72). He became professor of political economy at Breslau, and in 1882 at Strasburg. He has written works on wages (1877), labor in relation to land

(1877), and compulsory insurance for workmen (1881), on the English Chartists, on the Christian Socialist movement in England (2d edition Leipzig (1888)), and numerous political pamphlets.

BRENT-GOOSE, or **BRENT BARNACLE** (*Bernicula brenta*), a species of wild goose, inhabiting most of the northern hemisphere. It is smaller than most geese, and has the head, neck, long wing-feathers, and tail black, the belly white, the rest slaty gray. It breeds in the far north, coming south in winter in great numbers. It lives on marine plants and small animals. There are twelve other species. See *Britannica*, Vol. X, p. 778.

BRENTWOOD, a market town in Essex, England, 10 miles southwest of Chelmsford by rail. It has a richly endowed grammar school, founded by Sir Anthony Browne, chief-justice of England, in 1567. There are remains of an old chapel, dedicated in 1221 to St. Thomas à Becket. Population, 4,653.

BRENZ, JOHANN, the Reformer of Württemberg, born at Weil, in Swabia, June 24, 1499, died at Stuttgart, Sept. 11, 1570. He went in his 13th year to study at Heidelberg, where in 1518 he became one of Luther's zealous adherents, and after his appointment as a preacher in the imperial free city of Hall, in Swabia (1522), he openly attached himself to the Reformation. He was at the Marburg Disputation in 1529, and the Diet of Augsburg in 1530, and in 1536 was summoned by Duke Ulrich to Württemberg to lead the Reformation there. For his opposition to the *interim* of Charles V he was forced to flee to Stuttgart, where in 1553 he became "propst" (or superintendent). Brenz was co-author of the Württemberg Confession of Faith, and his Catechism (1551) has held the next place to that of Luther in Protestant Germany.

BRESSAY, one of the Shetland Isles, separated from Lerwick by Bressay Sound. It is six miles long, one to three miles in breadth, and 10¼ square miles in area. Flag and roofing stones are quarried for exportation. Population 847, chiefly fishermen. Bressay Sound is one of the finest natural harbors in the world, and is a rendezvous for herring-boats, and for whalers and other vessels proceeding north.

BRETIGNY, a village in the French department of Eure-et-Loir, 20 miles south of Paris by rail. Here, in 1330, Edward III concluded a peace with France, by which John II of France was released from his captivity in England on agreeing to pay three million crowns for his ransom, while England renounced her claims to Normandy, Anjou, Maine, and Touraine, and was confirmed in possession of Gascony, Guienne, and several other parts of France, recently acquired by conquest.

BRÉTON, JULES ADOLPHE, born in 1827, and educated at St. Omer and at Douai. He received his instruction in art under Felix Devigne at Ghent, and in Drölling's atelier at Paris. The subjects of his earlier pictures are taken from the French Revolutionary period, but he soon turned to scenes from peasant life, which he had treated with an admirable union of style with realism. In 1853 he exhibited *Le Retour des Moissonneurs*, and in 1855 his celebrated *Les Glaneuses*. He is represented in the Luxembourg by *La Bénédiction des Blés* (1857); *Le Rappel des Glaneuses* (1859), and *Le Soir* (1861). Bréton is also known as a poet. His brother, Emile-Adélaïd is also a noted landscape painter.

BRÉTON DE LOS HERREROS, DON MANUEL, Spanish dramatist, born at Quel, in the province of Logroño, in 1798, died at Madrid, Nov. 13, 1873. He served as a volunteer in the army from 1814 to

1822, and subsequently held several government offices for short periods. His poems fill 5 volumes (Madrid 1850-52), and he brought out upwards of 150 plays, partly original, partly adaptations from the older Spanish classics, and partly translations from the Italian and French, most of which have been highly popular. See *Britannica*, Vol. XXII, p. 361.

BRETSCHNEIDER, HEINRICH GOTTFRIEDSON, VON, a satirist of unsettled life and eccentric habits, born at Gera, Germany, in 1739, died in 1810. From the Moravian Institute at Elbersdorf Bretschneider passed to the Gymnasium at Gera, and at seventeen entered the army. In 1778 he became librarian to the University of Ofen (Buda), and in 1782 Joseph II gave him a government appointment. Of his numerous works, including plays and poems, the chief are his satires, *Almanach der Heiligen auf* (1778) and *Waller's Leben und Sitten* (1793).

BRETTEN, a town of Baden, the birthplace of Melancthon, 16 miles northeast of Karlsruhe by rail. The house in which the Reformer was born belongs now to a foundation bearing his name for the support of poor students, established in 1861. A monument was erected in 1867. Population, 3,932.

BRETTS AND SCOTS, THE LAWS OF THE: the name given in the 13th century to a code of laws in use among the Celtic tribes in Scotland. In the year 1305 an ordinance of Edward I of England, who appeared then to have reduced all Scotland to his subjection, decreed "that the usage of the Scots and the Bretts be abolished, and no more used." It is unknown how far this prohibition took effect. Of the code which it prescribed only a fragment has been preserved. It was printed by Sir John Skene, in his *Regiam Majestatem* (1609); and by Thomas Thomson and Cosmo Innes, in the *Acts of the Parliaments of Scotland*, volume 1 (1844), where the laws are given in three languages—Latin, French and English. The French version, which is the oldest, is printed from a manuscript of about 1270, formerly in the public library at Berne, in Switzerland, now in the Register House at Edinburgh. The fragment of the "laws of the Bretts and Scots" thus published is of much the same nature as the ancient laws of the Anglo-Saxons, the Welsh, the Irish, and other nations of Western Europe.

BRETWALDA, a title of supremacy among the early Anglo-Saxon kings, the exact signification and history of which are highly uncertain. The *Anglo-Saxon Chronicle* says of Egbert, "and he was the eighth king that was *Bretwalda*;" and the word only occurs elsewhere in an English and Latin charter of Athelstan in 934, in which that king is styled "King of the Anglo-Saxons and *Brytaenwalda* of all the island."

BREVARD, EPHRAIM, patriot, born about 1750, died in Charlotte, N. C., about 1783. He was a Princeton graduate, studied medicine and practiced in Charlotte. He was secretary of the noted Mecklenburg convention (May 31, 1775), at which he drew up a "declaration" which preceded the formal Declaration of Independence by a year. With six brothers Dr. Brevard entered the Continental service, but it was his misfortune to be captured and kept in prison till the ills he there suffered caused his death soon after he was liberated. He was a man of many accomplishments, and very influential in promoting the cause of Independence.

BREVE, a note in music. The name was originally applied to the shortest of the three notes used in early music, but in modern notation it is appropriated to the longest note used, having double the duration of a semi-breve. It occurs but

seldom except in church music, modern music being divided into bars, which usually fall short of it in length.

BREVE, or **BRIEVE**: in Scots law, a writ issuing from chancery, in the name of the crown, to a judge ordering him to try by jury the points or questions stated in the breve. In ancient times these writs appear to have been the foundation of almost all civil actions in Scotland; but latterly they have been much less used.

BREVET: in the British and American armies, a commission to an officer which promotes him to a higher rank irrespective of there being any vacancy in its established number. In the British army this promotion carries with it the higher rate of pay, but is neither purchasable nor salable. It has never been given to officers below the rank of captain, and is now only conferred for distinguished service. The holder retains his place and rank in his regiment if it is alone, but if acting with other troops he will take command of the whole force, provided that he is senior by brevet to the other officers. In the United States army, brevet rank extends from first-lieutenant to lieutenant-general; does not entitle the holder to the higher rate of pay, and gives no advanced command except by special assignment of the President. Brevets are conferred by and with the consent of the Senate for "gallant actions and meritorious services."

BREVIPENNES (Latin, "short-winged"), a name applied by Cuvier to the first family of *Grallæ*, comprising the ostrich, rhea, emu, etc., in which the wings are rudimentary, and not used in flight. The term is no longer in use.

BREVOORT, **JAMES CARSON**, born in New York, city, July 10, 1818, died in Brooklyn, N. Y., Dec. 7, 1887. He was educated in France, returned to the United States, and in 1838 accompanied Washington Irving as secretary when he went as minister to Spain. He traveled much in Europe. He came to reside in Brooklyn, where he held several offices. He was made president of the Long Island Historical Society, regent of the University of New York, superintendent of the Astor Library for two years, and member of various historical, scientific, literary and geographical societies. He made valuable collections of books, manuscripts, medals, coins, and entomological and ichthyological specimens, which were given to public institutions where they would be preserved for reference.

BREWER, **JOHN SHERREN** (1810-79), born at Norwich, England, in 1810; graduated with classical honors at Queen's College, Oxford, in 1833, took orders, and was appointed professor of English in King's College, London, in 1841. For nearly twenty years he labored in the Record Office editing the *Monumenta Franciscana* (1858); the *Opus Tertium* and *Opus Minus of Roger Bacon* (1859); volumes I-III of *The Works of Giraldus Cambrensis* (1861); the *Calendar of the Carew Papers* (1861), with the aid of Mr. Bullen; and volumes I-IV of the *Calendar of Letters and Papers, Foreign and Domestic, of the Reign of Henry VIII* (1862-72). As an editor Brewer possessed patient industry and a rare sense of order, besides sound judgment and extensive knowledge. He was elected Honorary Fellow of Queen's College in 1870, and in 1877 was presented to the living of Toplefield, in Essex, where he died Feb. 16, 1879.

BREWING STATISTICS. For the general subject of brewing and for numerous statistics relating to various countries, See *Britannica*, Vol. IV, pp. 264-75. The following statistics showing the number of barrels of beer produced in the several States and Territories for the calendar years ending Dec. 31, 1889, and Dec. 31, 1890, were compiled by the

United States Internal Revenue Bureau for the "Western Brewer":

	1889.	1890.
Alabama.....	27,447	38,558
California.....	749,021	761,586
Colorado.....	175,925	204,863
Connecticut.....	286,648	314,512
Georgia.....	27,815	46,800
Illinois.....	2,129,978	2,504,807
Indiana.....	488,298	557,469
Iowa.....	89,141	102,173
Kansas.....	2,440	2,110
Kentucky.....	301,931	348,396
Louisiana.....	173,552	218,375
Maryland.....	676,907	703,896
Massachusetts.....	971,255	968,042
Michigan.....	533,522	586,728
Minnesota.....	318,288	356,116
Missouri.....	1,751,928	2,084,761
Montana.....	70,192	81,917
Nebraska.....	164,141	164,343
New Hampshire.....	374,462	370,856
New Jersey.....	1,453,178	1,586,266
New Mexico.....	6,452	7,520
New York.....	8,333,407	8,910,674
Ohio.....	2,232,057	2,568,841
Oregon.....	140,054	202,926
Pennsylvania.....	2,563,864	3,016,557
South Carolina.....	9,357	8,880
Tennessee.....	57,048	80,134
Texas.....	61,283	82,066
Virginia.....	48,070	56,280
West Virginia.....	112,766	128,978
Wisconsin.....	1,969,898	2,318,201
Total barrels.....	26,211,320	29,328,586

The net increase for 1890 over 1889 is 3,117,216 barrels. The list of States is given as constituted for purposes of collection by the Internal Revenue Bureau in 1887. California's return includes Nevada; Colorado includes Wyoming; Connecticut includes Rhode Island; Louisiana includes Mississippi; Maryland includes Delaware, the District of Columbia, and two counties of Virginia; Montana includes Idaho and Utah; Nebraska includes the Dakotas; New Hampshire includes Maine and Vermont; New Mexico includes Arizona; Oregon includes Washington and Alaska.

The monthly sales for 1890 range from the lowest, 1,682,571 barrels in January, to the highest, 3,804,895 barrels in July.

BREWSTER, **BENJAMIN HARRIS**, jurist, born in Salem county, N. J., Oct. 13, 1816, died in Philadelphia, Pa., April 4, 1888. He was a graduate of Princeton in 1834, and was admitted to the Philadelphia bar in 1838; was Indian commissioner in 1846, attorney-general of Pennsylvania in 1867-69, and of the United States under President Arthur, 1881-85. He prosecuted the famous Star Route trials.

BREWSTER, **JAMES**, born in Preston, Conn., Aug. 6, 1788, died in New Haven, Nov. 22, 1866. He was a descendant of Elder Brewster. Thrown on his own resources at an early age he learned the trade of carriage building, and eventually employed a large force of men, in whose welfare he took a philanthropic interest. He was president of the New Haven and Hartford Railroad Company, giving up his business for four years that he might attend to the building of the road (1834-38), and assuming large financial responsibility in its interest.

BREWSTER, **WILLIAM**, pilgrim in the *Mayflower*, born in Nottingham county, England, about 1560, died in Plymouth, Mass., April 10, 1644. Authorities differ as to the exact dates. He was of good family, and after studying at Cambridge entered the service of William Davison, ambassador, and afterwards secretary of state to Queen Elizabeth, with whom he visited the Netherlands. Subsequently returning to Scrooby, he held the honorable and important office of postmaster. He had become a "Separatist" and as this sect was the object of persecution he made two attempts to emigrate to Amsterdam. The first effort ended in arrest and imprisonment, as the skipper of the vessel betrayed him and his companions; the second attempt was successful. He was obliged to teach English on

arriving at Amsterdam in order to support himself. Here he set up a printing press and published religious books, which were prohibited in England. Sir Edward Sandys, treasurer of the Virginia Company, secured for him a grant of land in North America; and Elder Brewster, with a company of one hundred pilgrims, set sail in the *Mayflower* and landed where Plymouth, Mass., is now located, Dec. 21, 1620. Brewster was made ruling elder of the church and teacher in the colony. All the hardships were patiently borne by him. He left four sons and a daughter, and their descendants are among the highly esteemed families of New England.

BRIANCHON, CHARLES JULIEN, French mathematician, born at Sèvres in 1785, died in 1865. He contributed some important papers to French mathematical journals; but is best known by a theorem (see *Britannica*, Vol. X, p. 397), the correlative of Pascal's, which he published in 1806.

BRIARE, a town in the French department of Loiret, on the Loire, 102 miles southeast of Paris by rail. The Canal-de-Briare (35 miles long), which unites the Loire and the Seine, was the first constructed in France (1642). Population, 5,034.

BRIAR-ROOT, a fine hard wood obtained from the roots of a species of very large heath (*Erica arborea*), which grows in the Pyrenees, in Corsica, and in Algeria. The name is a corruption of the French *bruyère* ("heath"), and has nothing to do with *briar*. See *Britannica*, Vol. XIX, p. 112.

BRIBERY. See *Britannica*, Vol. IV, pp. 278-89. The Constitution of the United States numbers bribery among the crimes for which the President and other civil officers may be impeached. In the several States the definition and punishment of bribery are generally fixed by statute.

BRICE, SAINT, Bishop of Tours, commemorated as a confessor in the beginning of the fifth century. *St. Brice's Day*, in 1002 (in the reign of Ethelred II), is notorious in old English history for a great massacre of the Danes. It was believed that it was a concerted attempt to exterminate all the

Danes in England; but, failing of its bloody purpose, it led to reprisals by the Danish king Sweyn.

BRICK. See *Britannica*, Vol. IV, pp. 279-284.

BRIDEWELL, a well between Fleet Street and the Thames, London, dedicated to St. Bride, which has given its name to a palace, parish, house of correction, hospital and an industrial school.

BRIDGEPORT, a city and seaport, one of the capitals of Fairfield county, Conn., situated on Long Island Sound, 53 miles northeast of New York, on the New York, New Haven & Hartford Railroad, at the southern terminus of the Housatonic and Naugatuck Railroads. It has a safe harbor, which is accessible for small vessels at all seasons of the year, and has a regular passenger steamboat service to New York. Bridgeport is distinguished for its manufactories of sewing-machines, metallic cartridges, carpets, malleable iron, copper, cold-rolled steel-plates, steam engines, etc. The streets are well paved, handsomely shaded and lighted with gas and electricity. Horse-cars traverse all parts of the city. It has an efficient police force and fire department and an abundant water supply. A new court-house and a United States building for post-office and custom-house have recently been completed. It has a city high school, systems of public schools, several private schools, a public library of 18,000 volumes, and a number of charitable institutions. The city has four handsome parks. Population in 1870, 18,969; in 1880, 27,643; in 1890, 43,856. See *Britannica*, Vol. IV, p. 284.

BRIDGEPORT, a village of Ohio, is situated on the Ohio River, opposite Wheeling. It contains important manufactories of iron, glass, stoves, machinery, barrels and lumber. In the vicinity are extensive coal mines.

BRIDGEPORT, a beautiful town of Pennsylvania, situated on the Schuylkill River, opposite Norristown. It contains manufactories of paper, woollens and iron, and in the neighborhood are numerous lime-kilns.

BRIDGES. For an elaborate illustrated article on bridges, with an extended discussion of the tensile strength of materials, architectural finish, and practical construction of various kinds of bridges, see *Britannica*, Vol. IV, pp. 284-341. The following is an alphabetical list of the principal bridges throughout the world, with descriptive notes of those which are most recent:

Agén—Stone; length, 352 feet; arch, segment.
 Albany—(over the Hudson)—Stone; length, 1,740 feet.
 Alcantra—Stone; length, 612 feet; semi-circular arch.
 Alma—Stone; length, 452 feet; elliptical arch.
 Almaraz—Stone; length, 530 feet; semi-circular arch.
 Arthur Kill—Staten Island, N. Y. See descriptive notes below.
 Arcueil Aqueduct—Stone; length, 1,279 feet; semi-circular arch.
 Arica Viaduct—Stone; length, 885 feet; semi-circular arch.
 Athlone—Wrought iron; length, 564 feet; truss.
 Avignon—Length, 1,710 feet.
 Avon Viaduct—Stone; length, 725 feet; elliptical arch.
 Badajoz—Length, 1,874 feet.
 Ballochmyle Viaduct—Stone; length, 645 feet; semi-circular arch.
 Barentin Viaduct—Stone; length, 1,545 feet; semi-circular arch.
 Barnes—Cast iron; length, 380 feet; arch, segment.
 Bassano—Timber; length, 209 feet; truss.
 Beauey Viaduct—Stone; length, 911 feet; semi-circular arch.
 Belfast—Length, 2,500 feet.
 Belloccour—Stone; length, 417 feet; elliptical arch.
 Bergshette—Stone; length, 280 feet; semi-circular arch.
 Berne—Stone; length, 405 feet; arch, segment.
 Bewdley—Stone; length, 187 feet; arch, segment.
 Biddeford—Stone; length, 720 feet; ogival.
 Bietighelm Viaduct—Stone; length, 936 feet; semi-circular arch.
 Birkwood Burn—Stone; length, 98 feet; semi-circular arch.
 Biscari Aqueduct—Stone; length, 1,222 feet; ogival.

Bismarck (over Missouri River).—See notes below.
 Blackfriars—Stone; length, 995 feet; elliptical arch.
 Bombay—(Madras); length, 3,730 feet.
 Boston—Length, 3,483 feet.
 Bourbon—Wrought iron; length, 250 feet; suspended.
 Boyne—Wrought iron; length, 1,760 feet; lattice; cost, \$700,000.
 Brighton Viaduct—Brick; length, 960 feet; semi-circular arch.
 Bristol—Stone; length, 135 feet; ogival.
 Britannia—Wrought iron; length, 1,488 feet; tubular; cost, \$3,009,325.
 Brooklyn—(East River). See notes below.
 Cabriel—Stone; length, 304 feet; semi-circular arch.
 Carpentras Aqueduct—Stone; length, 2,558 feet; semi-circular arch.
 Caserta Aqueduct—Stone; length, 1,687 feet; semi-circular arch.
 Chalons—Stone; length, 328 feet; semi-circular arch.
 Chaumont Viaduct—Length, 1,968 feet; semi-circular arch.
 Chavanes—Stone; length, 420 feet; elliptical arch.
 Chelsea—Length, 700 feet; suspension.
 Chepstow—Cast and wrought iron; length, 628 feet; tubular.
 Chirk Aqueduct—Stone; length, 710 feet; semi-circular arch.
 Cincinnati and Covington—(over the Ohio); built 1867; length, 1,067 feet; suspension. See notes below.
 Civita Castellani Aqueduct—Stone; length, 890 feet.
 Clifton—(over Niagara River); length, 1,268 feet; suspension. See notes below.
 Coldstream—Stone; length, 355 feet; arch, segment.
 Cologne (over the Rhine).—Iron; length, 1,533 feet; arch.
 Congleton Viaduct—Stone; length, 2,570 feet; arch; segment.
 Crumlin Viaduct—Iron; length, 1,050 feet; truss-gird; cost, \$195,000.
 Curtlant Craigs—Stone; length, 180 feet; semi-circular arch.
 Danube (near Stadlan, Austria)—Iron; length, 2,590 feet.
 De la Ture Viaduct—Stone; length, 838 feet; semi-circular arch.
 Dean—Stone; length, 450 feet; arch, segment.
 Dee Viaduct (Delaware River, Pa.)—Stone; length, 1,388 feet; semi-circular arch.
 Della Trinita—Stone; length, 350 feet; elliptical arch.
 Dinan Viaduct—Stone; length, 685 feet; semi-circular arch.
 Dinting Vale Viaduct—Timber; length, 1,452 feet; arch, segment.

- Dolhain Viaduct—Stone; length, 786 feet; semi-circular arch.
 Douro (Portugal)—Iron; length, 115 feet; arch.
 Dubuque (over the Mississippi)—Iron; length, 1,758 feet.
 Dunkeld—Stone; length, 470 feet; arch segment.
 Eauptlet—Timber; length, 1,148; segment ribs.
 Elsterthal Viaduct—Stone; length, 892 feet; elliptical arch.
 Emilius—Stone; length, 550 feet; semi-circular arch.
 Florence (over the Arno)—Built 1569; marble; length, 822 feet; elliptical arch.
 Forth—Scotland. See notes below.
 Franzdorf Viaduct—Stone; length, 1,916 feet; semi-circular arch.
 Fribourg (built 1882)—Wire rope; length, 870 feet; suspension; cost, \$125,000.
 Gignac—Stone; length, 412 feet; elliptical arch.
 Glasgow—Stone; length, 406 feet; arch, segment.
 Godavery Irrigation Aqueduct—Stone; length, 2,356 feet; arch segment.
 Goetzschthal Viaduct—Stone; length, 1,900 feet; elliptical arch.
 Guetia—Stone; length, 1,476 feet; semi-circular arch.
 Harlem River Aqueduct—Stone; length, 1,450 feet; semi-circular arch.
 Hawksbury (New South Wales)—Iron and steel; length, 2,900 feet; cost, £350,000; opened May 1, 1888.
 Hexham—Stone; length, 524 feet; arch, segment.
 Hungerford—Length, 1,350 feet; suspension.
 Indre Viaduct—Stone; length, 2,468 feet; semi-circular arch.
 Invalides (1)—Length, 480 feet; suspension.
 Invalides (2)—Length, 412 feet; suspension.
 Invalides (3)—Stone; length, 468 feet; arch, segment.
 Jena—Stone; length, 546 feet; arch, segment.
 Kelso—Stone; length, 410 feet; elliptical arch.
 Kentucky River—Iron; length, 1,138 feet; cantilever; opened April 20, 1877. See notes below.
 Kieft—Length, 2,562 feet; suspension.
 Landore Viaduct—Timber; length, 1,760 feet; truss. Cost, \$143,600.
 Laugon—Wrought iron; length, 678 feet; girder.
 Larbert—Stone; length, 483 feet; arch, segment.
 Libourne—Stone; length, 690 feet; elliptical arch.
 Limerick—Stone; length, 412 feet; elliptical arch.
 Lisbon Aqueduct—Stone; length, 3,805 feet; ogival.
 Lockwood Viaduct—Stone; length, 1,428 feet; semi-circular arch.
 Loeban Viaduct—Stone; length, 624 feet; semi-circular arch.
 London (Thames)—Stone; length, 1,005 feet; elliptical arch; cost, £1,458,311; opened, 1831.
 Louisville, Ky. (over the Ohio)—Length, 5,810 feet. See notes below.
 Lune Aqueduct—Stone; length, 420 feet; semi-circular arch.
 Maintenon Aqueduct—Stone; length, 16,367 feet; semi-circular arch.
 Malaunay Viaduct—Stone; length, 500 feet; semi-circular arch.
 Mayence (over the Rhine)—Length, 3,380; arch, segment.
 Menai (built 1819-25)—Length, 1,050 feet; suspension.
 Mersey—Stone; length, 447 feet; semi-circular arch.
 Mont Louis—Stone; length, 1,267 feet; elliptical arch.
 Montpellier Aqueduct—Stone; length, 3,214; semi-circular arch.
 Muhldorf—Timber; length, 370 feet; truss.
 Nabresina—Stone; length, 2,115 feet; semi-circular arch.
 Namur—Stone; length, 450 feet; arch, segment.
 Navilly—Stone; length, 466 feet; elliptical arch.
 Neuilly (built 1774)—Stone; length, 865 feet; elliptical arch.
 Nevers—Cast iron; length, 1,066 feet; arch, segment.
 New Westminster—Cast and wrought iron; length, 900 feet; elliptical arch.
 Newcastle High Level—Cast iron; length, 820 feet.
 Niagara (built 1855)—Length, 2,320 feet; suspension; cost, \$400,000.
 Niagara (1868)—Iron and steel; length between anchorage and piers, 9.10 feet; cantilever. See notes below.
 Nogent-sur-Marne Viaduct—Stone; length, 2,723 feet; semi-circular arch.
 Old London—Stone; length, 926 feet; arch, segment.
 Omaha (over the Missouri)—Length, 2,800 feet. See notes below.
 Orb Canal Aqueduct—Stone; length, 648 feet; elliptical arch.
 Orsenne—Stone; length, 1,209 feet; ogival.
 Orleans—Stone; length, 1,110 feet; elliptical arch.
 Ouse Burn Dean Viaduct—Timber; length, 680 feet; arch, segment.
 Ouse Valley Viaduct—Brick; length, 1,390 feet; semi-circular arch.
 Parkersburg Bridge, W. Va.—Iron; length, 7,045 feet.
 Pavia—Stone; length, 620 feet; ogival.
 Peacock—Timber; length, 660 feet; lattice.
 Perth—Stone; length, 606 feet; arch, segment.
 Pesth (built 1840-49)—Length, 1,263 feet; suspension.
 Po (near Messano-Cortz, Italy)—Length, 2,485 feet.
 Potomac—Length, 5,800 feet.
 Pont de la Concorde—Stone; length, 490 feet; arch, segment.
 Pont Neuf—Stone; length, 996 feet.
 Pont du Gard Aqueduct—Stone; length, 879 feet; semi-circular arch.
 Pont y Cys Sylte Aqueduct—Cast iron; length, 1,007 feet; arch segment.
 Ponte dell' Arcate Aqueduct—Stone; length, 660 feet; semi-circular arch.
 Ponte Corvo—Stone; length, 640 feet; semi-circular arch.
 Portage Viaduct—Timber; length, 676 feet.
 Poughkeepsie—Iron and steel; length, 6,767 feet; cantilever; opened, Feb. 1, 1889. See notes below.
 Prairie du Chien (over Mississippi)—Length, 7,000 feet; drawbridge. See notes below.
 Prague—Stone; length, 830 feet.
 Pyrgos Aqueduct—Stone; length, 728 feet; semi-circular arch.
 Quincy (over Mississippi)—Iron; length, 3,200 feet. See notes below.
 Ratisbon—Stone; length, 994 feet; semi-circular arch.
 Riga—Stone; length, 2,600 feet; semi-circular arch.
 Roanne—Stone; length, 622; elliptical arch.
 Rochester (new)—Cast iron; length, 498 feet; arch, segment.
 Rochester (old)—Stone; length, 560 feet; arch, segment.
 Royal Border Bridge (Berwick)—Stone; length, 2,160; semi-circular arch.
 Ribble—Stone; length, 675 feet; elliptical arch.
 Roman Aqueduct (near Lyons)—Stone; length, 765 feet; semi-circular arch.
 Salzkirk—Wrought iron; length, 2,195 feet; girder.
 Saumur—Stone; length, 920 feet; elliptical arch.
 Schaffhausen—Timber; length, 376 feet; frame truss.
 Schildeache Viaduct—Stone; length, 1,230 feet; semi-circular arch.
 Schuykill—Timber; total length, 1,000 feet; frame truss. See notes below.
 Schuykill—Cast iron; length, 1,000 feet; arch. See notes below.
 Sitterbrücke—Iron; length, 385 feet; lattice.
 Solani Aqueduct—Stone; length, 1,050 feet; arch, segment.
 Southwark—Cast iron; length, 710 feet; arch, segment.
 Spoleto—Stone; length, 676 feet; ogival.
 St. Angelo—Stone; length, 520 feet; semi-circular arch.
 St. Anne's—Wrought iron; length, 1,350 feet tubular.
 St. Charles (Mo.)—Iron; length, 6,536 feet.
 St. Esprit—Stone; length, 2,690 feet; arch, segment.
 St. Germain Viaduct—Stone; length, 830 feet; semi-circular arch.
 St. Louis (over the Mississippi)—Iron; length, 1,509 feet; arch.
 St. Petersburg—Cast iron; length, 1,090 feet; arch, segment.
 Staines—Stone; length, 410 feet; arch, segment.
 Stockport—Stone; length, 1,792 feet; semi-circular arch.
 Strasburg—Stone; length, 3,390 feet; semi-circular arch.
 Sukkur (over Indus)—Iron; length of main span, 820 feet; cantilever.
 Susquehanna—Stone; length, 3,500 feet; semi-circular arch. See notes below.
 Tarascon—Cast iron; length, 1,575 feet; arch, segment.
 Tarragona (Roman Aqueduct)—Stone; length, 895 feet; semi-circular arch.
 Tay (at Dundee)—Iron; length, 10,612 feet; viaduct; cost, £350,000; opened May 23, 1887.
 Toulouse—Stone; length, 1,422 feet; elliptical arch.
 Tower (over Thames)—Iron; length, 2,640 feet; suspension; to be opened, 1893. See notes below.
 Tyne Viaduct—Stone; length, 902 feet; semi-circular arch.
 Union (Tweed) Viaduct—Length, 885 feet; suspension.
 Val Benoit—Stone; length, 366 feet; arch, segment.
 Val Fleury Viaduct—Stone; length, 468 feet; semi-circular arch.
 Vauxhall—Cast iron; length, 796 feet; arch, segment.
 Verona (Coccaglio)—Stone; length, 1,328 feet; ogival.
 Victoria (St. Lawrence)—Wrought iron; length, 9,487 feet; tubular.
 Vistula River (near Dirschau, Germany)—Iron; length, 2,750 feet.
 Washington (over Harlem River, New York city)—Iron and Steel; length, 2,880 feet; arch; opened, May 1, 1889. See notes below.
 Waterloo (London, built 1811-17)—Stone; length, 1,880 feet; elliptical arch.
 Westminster (London, built 1760)—Stone; length, 1,320 feet; semi-circular arch.

NOTES ON THE FOREGOING LIST.—With the exception of the Tower Bridge and Forth Bridge, those described in the following notes are all American, a number of them having been constructed during the past decade. They are placed in alphabetical order for the purpose of convenient reference:

The Albany Bridge, 1,740 feet in length, was built over the Hudson River at Albany to connect the New York Central Railroad with the Harlem, Boston and Albany roads. It has altogether 15 spans, and a swing bridge 274 feet long.

The Arthur Kill, a drawbridge, was authorized by act of Congress of June 16, 1886, and on June 13, 1888, was pronounced in working order. The Kill is a tidal river separating Staten Island, N. Y., from New Jersey. The length of the bridge, not including approaches, is 800 feet. The two shore spans are each 150 feet in length, and are covered by fixed trusses and two draw spans each 206 and 204 feet in the clear. The total length of the draw-bridge is 500 feet, and it can be opened or closed in about two minutes. The total cost of the bridge was \$450,000.

The Bismarck Bridge over the Missouri River, between Bismarck and Mandan, North Dakota, forms an integral part of the Northern Pacific Railroad. The construction of the bridge, which was begun in April, 1881, involved the control and rectification of the river. This consisted in confining the river to the limit of 1,000 feet between the east shore and the end of the dike, and the protection of the east shore with riprap, so as to render it doubly secure from the eroding action of the water. There were used in the construction of the dike 80,000 tons of granite boulders for riprap, besides a large quantity of brush and crib logs, and upwards of 28,000 cubic yards of clay. The bridge proper consists of three through spans, each measuring 400 feet between centers of end piers, and two approach spans, each 113 feet. The east end of the east approach span is supported by a small abutment of granite masonry founded on the natural ground of the bluff. The west end of the west approach span is supported by an iron bent resting on two cushioning cylinders, which are supported by piles driven into the sand bar. The three long spans are supported by four granite piers, containing each 600,950 pounds of wrought iron, 348,797 pounds of steel, and 25,775 pounds of cast iron. The bridge was completed Oct. 7, 1882. George S. Morrison was the engineer during construction.

The Brooklyn Bridge, or East River Suspension Bridge, which connects the city of Brooklyn with New York city, was formally opened on May 24, 1883. The designs were completed by the late John A. Roebling at least ten years before the work of construction was begun, which occurred Jan. 2, 1870. The caisson for the Brooklyn tower was sunk in 1871, and the caisson for the New York tower was laid the year following. These caissons were sunk by the pneumatic process, and the compressed air caused many cases of caisson-disease. The Brooklyn tower, which contains 38,214 cubic yards of masonry, was completed in May, 1875, and the New York tower, containing 46,945 cubic yards of masonry, was finished in July, 1876. The first wire was run out May 29, 1870. The cable-making commenced June 11, 1877. Each cable contains 5,296 parallel galvanized steel oil-coated wires, closely wrapped in a solid cylinder 15½ inches in diameter. The total height of towers above the high-water line is 278 feet. The clear height of bridge in center of river span above high water is 135 feet. The depth of foundation below high-water mark is 45 feet for Brooklyn tower, and 78 feet for New York tower. The length of each land span is 930 feet, and 1,860 feet, respectively; length of Brooklyn approach, 971 feet; length of New York approach, 1,562 feet; making the total length of the bridge 5,989 feet. The length of the suspended structure from anchorage to anchorage is 3,454 feet; and its total weight is 6,470 tons. The termini of the bridge are respectively opposite the City Hall, New York, and at the junction of Sands and Fulton streets, Brooklyn. The bridge has a width of 85 feet. The roadway is divided into a central promenade with a single track on either side for rapid transit, and a platform for passengers, which is in turn flanked by a tramway for wheeled vehicles. The actual cost of the bridge was nearly \$15,000,000. Engineer Roebling died June 23, 1869, when his son, Washington A. Roebling, was placed in charge of the work. The latter was prostrated early in 1873 by a peculiar form of caisson-disease, which compelled him for a while to give up active work, but his intellectual faculties remained unimpaired. C. C. Martin was principal assistant engineer, and has held the position of superintendent and principal engineer since the completion of the bridge.

The Clifton Bridge, though of less importance than the Niagara bridge proper, is quite remarkable from its peculiar construction. The end resting on the left bank is three-quarters of a mile below the great Horse Shoe Fall on the Canada side of the Niagara River. The end of the bridge resting on the right bank is 300 yards below the American Fall. The span between the centers of towers is 1,268 feet 4 inches. The elevation is 183 feet above the water on the Canada side, and 188 feet on the American side, and the elevation of the center is from 190 to 193 feet according to the season. The total length of each cable is 1,888 feet. The length of the bridge from rock to rock is 1,190 feet.

The Cincinnati and Corington Bridge, erected over the Ohio River by the noted engineer John A. Roebling, was completed in 1867. The main span, from center to center of towers, is 1,067 feet, and the total length between abutments is 1,619 feet. The elevation of floor above low water at center is 103 feet. The length of the Cincinnati approach from Front street to the abutment is 341 feet. The total length of the bridge including approaches is 2,252 feet. There are two cables each 12½ inches in diameter.

Firth of Forth Bridge. In 1882 an act of Parliament was obtained for the construction of a cantilever bridge over the river Forth at Queen's Ferry, Scotland, which was begun in 1883, and formally opened on March 4, 1890. The bridge consists of two approach viaducts and of the cantilever bridge proper. The length of the cantilever bridge is 5,330 feet, consisting of the central tower on Inchgarra, 260 feet; the five and Queen's Ferry central towers, 145 feet each; the two central connecting girders, 350 feet each; and six cantilevers of 680 feet each. The cantilever end piers are apart 5,349 feet 6 inches from center to center. The south approach viaduct is 1,978 feet long from center of cantilever end pier to end of arches, consisting of ten spans of 168 feet each, four arches of 66 feet each, center to center, and 34 feet made up by abutments. The north approach viaduct is 968 feet 3½ inches long to end of arches, consisting of five spans of 168 feet each in length, three arches of 37 feet, 31 feet, and 46 feet, center to

center, respectively, and 14 feet 3¾ inches made up by abutments. The total length of the structure is therefore 8,295 feet 9 inches. The two main strands are 1,710 feet from center to center of vertical columns, made up of two cantilevers of 680 feet each, and one central girder 350 feet. The cost of the bridge was £1,600,000 and over 50,000 tons of steel were used in the construction.

The Kentucky River Bridge, erected on the line of the Cincinnati Southern Railway, has a length between abutments of 1,138 feet. The erection was commenced Oct. 16, 1876. The bridge was completed Feb. 20, 1877, and the official test was made April 20 of the same year. The engineer who designed the bridge and carried out the work of construction is C. Shaler Smith. The iron work is of superior quality.

The Louisville Bridge, which crosses the Ohio River at Louisville, is one of the largest iron bridges in America. It has 27 spans, and a total length of 5,310 feet.

The Niagara Cantilever Bridge, over the Niagara River, about two miles below the falls, and 800 feet above the railroad suspension bridge, spans a chasm of 850 feet in width, and 210 feet in depth to the surface of the water. The river is 425 feet wide at the bridge site. The banks slope at about 45 degrees from the water's edge to about 50 feet below the top of the cliff, above which they are perpendicular. The structure carries a double track. It consists of two cantilevers resting on the towers, the shore end being anchored to the anchorage piers, and the river ends connected by an intermediate span. The distance between centers of anchorage piers is 910 feet 2¼ inches; length of each cantilever, 395 feet; length of intermediate span, 120 feet. Each cantilever consists of a shore arm 195 feet long, one panel 25 feet over the tower, and a river arm of 175 feet in length. C. C. Schneider was appointed chief engineer April 26, 1883. The work was vigorously pushed, and the bridge was completed and opened for traffic Dec. 20, 1883.

The Omaha Bridge, which crosses the Missouri River at Omaha, has 11 spans of 250 feet each. The total length is 2,800 feet.

The Poughkeepsie Bridge, across the Hudson River at Poughkeepsie, was originally promoted by the Pennsylvania Railroad Company in 1873 but after the foundation stone of the eastern shore pier had been laid the project was abandoned. In 1876 the scheme was revived and the actual work of building began, but was suspended in 1878 and not resumed until 1886. By this time a cantilever design had been decided on, and the 580 feet center to center of end piers necessary to reach these bluffs was made common for all three cantilever spans. The clear span, with the half width of the towers added, made the spans next the shores 548 feet, and the center span 546 feet, which, with the connecting ones of 525 feet, center to center of piers, located pier 6 in the face of the rock on the east shore. The total length between anchorages was thus established at 3,093 feet 9 inches, the total length, including viaducts, 6,767 feet 3 inches. The general design of the river piers is a crib and grillage, extending from the gravel to 10 feet below high water. On this is the masonry to 30 feet above high water, upon which is a steel tower 100 feet high to pedestals of trusses. The towers at the end of the spans were first erected; next commencing at the fixed end the bottom chord was laid along in place on camber blocks; then commencing from the middle the traveler erected the span. From the shore arms and connecting spans, cantilevers of 160 feet were erected by means of projecting travelers, composed of two trusses 118 feet long, with chords and vertical posts of wood and iron ties and splice plates. The bridge was opened for traffic on Feb. 1, 1890; it reduces the distance between the anthracite fields of Pennsylvania and points east of the Hudson from 116 to 36 miles.

The Prairie du Chien, Pontoon Railroad Bridge, was built in 1874 across the Mississippi River between Prairie du Chien, in Wisconsin, and North McGregor, in Iowa, for the purpose of connecting the divisions of the Chicago, Milwaukee & St. Paul Railway Co., terminating, respectively, at the points named. The river here is divided by an interjacent island into two channels, both of which are navigated. The McGregor channel is 1,500 feet wide, while the width of the Prairie du Chien channel is 2,000 feet. The distance between the Wisconsin and Iowa shores, embracing the island, is 7,000 feet, which corresponds to the length of the bridge. Each of the draws is a single float 80 feet wide at the bottom, 6 feet deep, 41 feet on deck, and 408 feet in length. Each draw contains about 600,000 feet of plank and timber.

The Quincy Iron Bridge, which crosses the Mississippi at a point where the width of the river is 3,200 feet, has 17 spans, and was designed and constructed under Thomas C. Clarke at a cost of over \$1,000,000.

The Schuylkill Arch-truss Bridge, constructed by Lewis Wernwag in 1812, at Philadelphia; was familiarly known as the "Colossus of Fairmount," having a single span of 340 feet 3¼ inches. In consideration of its length of span (longer than any one which had yet been erected), its solidity and its strength, it was regarded by its visitors as a veritable "wonder of the world." This was Wernwag's third bridge. From that date until 1834 he built 29 additional bridges, one of them being the famous "Economy" bridge erected over Neshaminy Creek, Pa., and specially noted for its simplicity and inexpensiveness of construction. Its type was much like that of the cantilever bridges prevalent at later dates. The "Colossus" bridge was destroyed by fire in 1859, and was succeeded by the first wire suspension bridge in this country. It was planned and erected by Charles Ellet,

who, later, designed and built (in 1847) the railway bridge across the Niagara River below the Falls, and who, still later, built a suspension bridge at Wheeling, W. Va. See biographical sketches of ELLET and WERNWAG, in these Revisions and Additions.

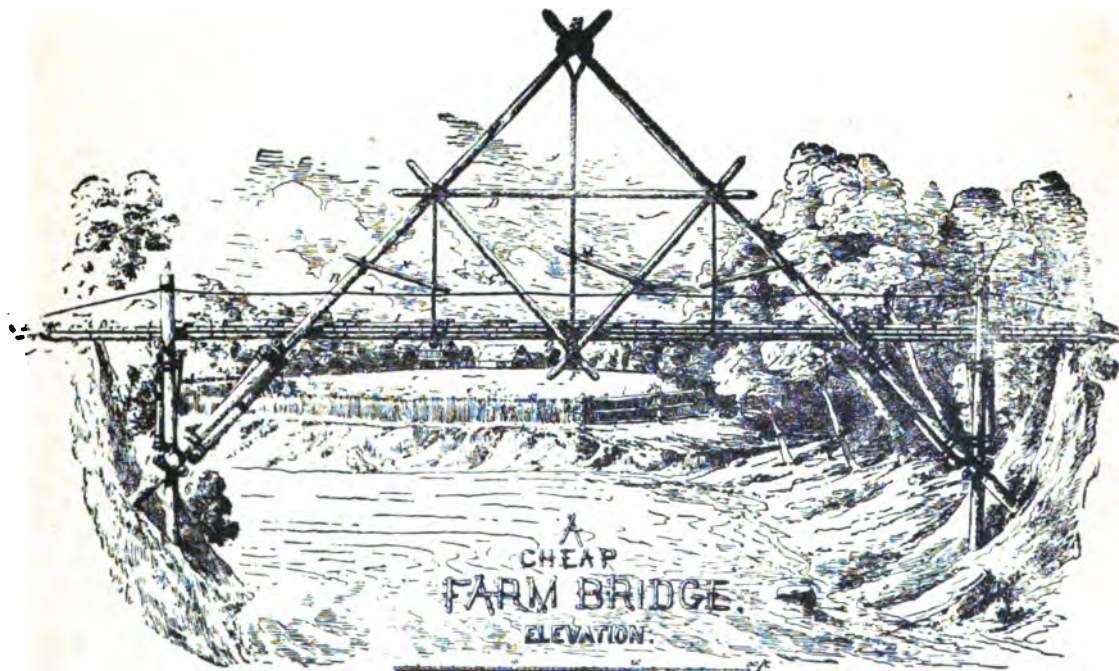
The Schuylkill Cast-iron Arched Bridge, erected at Chestnut street, Philadelphia, Pa., over the Schuylkill River, was finished in 1866. It has two main spans of 185 feet. The total length is 1,000 feet. The cost of construction was \$500,000.

The Susquehanna Bridge, which crosses the Susquehanna River, is located on the Pennsylvania Railroad, 5½ miles north of Harrisburg, Pa. It is supported on 22 piers and two abutments. The total length of the bridge is 3,500 feet.

The Tower Bridge, now in course of construction across the Thames River, London, has a total length of 2,640 feet, including the necessary approaches on both sides. The distance between the abutments on the two sides of the river is 880 feet. The two massive piers of masonry, each 10 feet wide, have been built in the bed of the river, leaving a central opening 200 feet wide above high water, and two side openings, each 270 feet wide, the area of waterway being 20,040 square feet. Along the approaches and across the side spans the roadway will be 60 feet wide, but across the central span the width will be reduced to 50 feet. The headroom under the bridge will be 29½ feet, and this will be sufficient for most of the river traffic. To allow the passage of vessels of greater height, the central span will be made in the form of two leaves nicely balanced, so that they may be easily raised to bring the roadway into a vertical position, hydraulic machinery being used for that purpose. The raising of these leaves will, of course, interrupt the traffic of vehicles, but foot passengers will be able to cross at all times by two permanent high level gangways. The quantities of materials in building this bridge are estimated at 250,000 cubic feet of stone, and 70,500 cubic feet of concrete for the piers and ap-

proaches, while 15,000 tons of iron and steel will be used in the bridge proper. The end of 1892 is the limit given to the contractors to complete all the work, so that the bridge will probably be opened in 1893.

The Washington Bridge, built over the Harlem River at 181st St., New York city, derives its name partly from its contiguity to Washington Heights and Fort Washington, and partly from having been opened at the Washington Centennial, May 1, 1889. The total length of the bridge and approaches is 2,380 feet. Each approach is 660 feet long, leaving 1,060 feet for the main bridge. The masonry superstructure is of granite, and includes an east and west approach, terminating in abutments from which the two great arches spring. The western approach is level; the first portion, 260 feet in length, is in earthwork supported by masonry sidewalls. The west is in masonry, including three semi-circular arches, each of 60 feet span. The eastern approach starts on a lower grade and for part of its length rises towards the bridge. There are 800 feet in earthworks, and the remaining 360 feet include three semi-circular arches of 60 feet span, and one seven-centered of 56 feet span. A clear width of 80 feet is afforded over this portion, as well as over the remainder of the structure, 50 feet of which are roadway, while 30 feet are devoted to the sidewalks. The roadway is paved with asphalt. The supporting members of the bridge proper consist of two steel arches of 510 feet span each. The roadway is 151 feet above the river level. On the approaches it is bordered by a handsome stone parapet, with bronze ornaments. The bridge proper has an iron and bronze rail. William Hutton was the chief engineer, assisted by Theodore Cooper. In order to secure a number of meritorious plans, premiums were offered for the best design. The first and second prizes were awarded to designs by C. C. Schneider and William Hilderbrand, whose plans were followed as regards the general features of the bridge.



A RUSTIC BRIDGE, admirably adapted to farm and park uses, is shown in the accompanying cut. A model of a similar bridge exhibited at Philadelphia in 1876, was 8 feet long, 3 feet 10 inches high, 16 inches broad from out to out, and its largest spars were only 1½ inches in diameter. Its strength, however, was such as to bear the weight of a full-grown man. A person capable of making an ordinary hayrick can easily construct such a bridge. No nails, cleats, bolts or screws are needed; indeed, they are worse than useless. Hempen rope is used to lash the timbers together, as shown in the cut; or, when greater permanence is required, wire rope or chains may be used instead of hempen ropes. Rough timbers with the bark on are the best materials for this purpose.

A scale is given as a convenient guide to the farm builder. But without this, assuming that the length of the bridge is 100 feet, the proportionate dimensions of the other parts should be as follows: The standard pier frame A, 32 feet long; the supporting standards B, 56 feet long; the tension timbers C, 31 feet; the cross-timbers D, 35 feet; the width of the bridge, out to out, 16 feet; width between standards of pier frames, 12 feet; and width of roadway, 11½ feet; the chief timbers, 1½ feet in diameter, and the others in proportion.

There should be 15 short pieces, like E, setting on the split spars I to bind the planks. In the binding of the spars together, all unnecessary lashing

should be avoided; hence follow the hints here given: Do not lash the timbers B at the top, or to secure the cross-pieces F G and the upper spar at H. All ropes should be well secured, and safe knots tied as shown, and with sufficient lashings to resist the strain. If, in case of a heavy bridge,

chains are used, the safest fastening would be made by passing one link through another, and then fastening as a "toggle" a piece of stout wire or small bar of iron through the inserted link, bending the ends so that the "toggle" will not slip out.

CLOVE HITCH.

I.



II.



III.



TIMBER HITCH.



I.



II.



METHOD OF LASHING A PAIR OF SHEERS.

I.



II.



METHOD OF LASHING A DIAGONAL BRACE TO AN UPRIGHT SPAR.

I.



II.



METHOD OF LASHING A TRIPOD TRESTLE.

BRIDGETON, a city, port of entry and the capital of Cumberland county, N. J. It is situated on both sides of the Cohansey Creek, which is navigable from Delaware Bay to Bridgeton for vessels of eighty tons. It is on the Vineland Railroad, and a branch of the West Jersey Railroad, thirty-eight miles south of Philadelphia and eleven miles from Vineland. The Bridgeton and Port Norris Railroad runs southeastward to the mouth of the Maurice River—about twenty miles. Bridgeton has many churches and excellent public and private schools, three weekly and two monthly papers, one National Bank, a rolling mill, nail factory, glass works, woolen mills, leather factories, machinery works and a carriage factory. Population in 1880, 8,722; in 1890, 11,741.

BRIDGEWATER, a village of Massachusetts, twenty-seven miles south of Boston, the seat of the Bridgewater Academy and of the Bridgewater State Normal School. It manufactures cotton-gins, cotton goods, iron, augers, and paper. The State workhouse is in Bridgewater township.

BRIDGMAN, **FREDERICK ARTHUR**, artist and author, born in Tuskegee, Ala., Nov. 10, 1847. While but a child he declared his intention of becoming an artist, and when only sixteen years of age he went to New York and apprenticed himself to the American Bank-note Company in the engraving department. He improved his leisure meantime by studying in the Academy of Design in New York and the Brooklyn Art School. At the age of nineteen he went to Paris and enjoyed the honor of

being one of the first American students of Gérôme. At twenty-one he sent *Jeu Breton* to the Paris salon, and it was his fortune to have it hung "on the line." For several years he annually sent a painting to the salon: *The Breton Children in Carnival Time*, *The American Circus in Brittany*, *Apollo Carrying Away Cyrene*, *Bringing in the Maize*, *The Funeral of a Mummy*, *Pastimes of an Assyrian King*, and *Procession of the Bull Apis* were his contributions to the Paris salon in 1869, 1870, 1872, 1877, 1878 and 1879. Many of his paintings were suggested by trips through the Pyrenees, excursions on the Nile, and residence in Algiers. Since 1871 he has been a frequent exhibitor in the New York National Academy. To the United States centennial exhibition he sent the three canvases: *A Kybelian Woman*, *Flower of the Harem*, and *The Nubian Story-Teller*. Mr. Bridgman was awarded a medal of the second class and decorated with the Legion of Honor, at Paris in 1878; he was chosen a member of the New York National Academy of Design in 1881. His latest paintings are *My Last Price*, *Family Bath at Cairo* and *Summer on the Bosphorus*. He resides in Paris.

BRIDGMAN, **LAURA DREWY**, blind deaf mute, born in Hanover, N. H., Dec. 21, 1829, died in Boston, Mass., May 24, 1889. When two years old a severe illness deprived her of sight, hearing and the sense of smell, and impaired her sense of taste. The difficult task of educating so unfortunate a child was intrusted to Dr. Samuel G. Howe, of the Perkins Institution for the Blind (see Britannica,

Vol. III, p. 830), in which school she spent most of her life, becoming eventually a successful teacher there. The methods employed in her training are of interest. At first objects were given her to handle which bore their own name in raised letters; the words were then given her, and next the separate letters. These she was taught to put together to form words. The manual alphabet was next taught her, and then the use of a lead-pencil. Following this came instruction in arithmetic, geography (with relief maps), sewing and housework. Her teacher was able to explain to her concerning the existence and character of God; her religious feelings were strongly developed after this, and she found much pleasure in reading her Bible. Her hand was more susceptible to sound-vibrations than her ear. Her left eye was sensitive to a strong beam of light. Space relations were not readily comprehended by her. She seemed to enjoy life notwithstanding her great privations, was cheerful, and of a social disposition, and for years was one of the chief attractions of the school.

BRIEF: in law, a concise, systematic memorandum of the points of law or of fact to be developed in argument or used in the examination of a witness. In English law, the name given to the written instructions on which barristers advocate causes in courts of justice. It is an abbreviated statement of the pleadings, proofs and affidavits at law, or of the bill, answer, and other proceedings in equity, with a concise narrative of the facts and merits of the plaintiff's case, or the defendant's defense. The brief is often called "observations" in chancery proceedings. In Scotland, the corresponding term is *memorial*. *Breve* in Scotland has a different meaning. This paper should be confined to the statement of facts without argument or quotation.

BRIENNE-LE-CHATEAU, a town of 1,800 inhabitants in the French department of Aube, on the right bank of the river Aube, 35 miles northeast of Troyes. At the military school here (suppressed in 1790) the great Napoleon spent five years. Here, too, he was defeated by the Allies, after a desperate struggle, in the last days of January, 1814. This victory opened the way to Paris, and led to the fall of the empire.

BRIENZ, a Swiss town, beautifully situated at the foot of the Bernese Alps, on the northeast shore of the lake of the same name, 30 miles southeast of Berne. Population, 2,758. The lake of Brienz, which is $8\frac{3}{4}$ miles long and $1\frac{1}{2}$ in breadth, is an expansion of the river Aar, and is believed to have been at one time united with Lake Thun. It lies 1,857 feet above the sea, is 859 feet deep at one point, and is surrounded by lofty mountains, the principal of which is the Rothorn.

BRIERLY HILL, a town of Staffordshire, England. It is a place of much activity, the district abounding in coal, iron and fireclay; and there are here numerous collieries, large iron-works, glass-works, brick-works and potteries. Population, 11,546.

BRIG, BRIGANTINE. A brig is a square-rigged vessel with two masts. A brigantine is a two-masted vessel with the mainmast of a schooner and the foremast of a brig. A brig's mainsail is the lowest square-sail on the mainmast, whereas the mainsail of a brigantine is a fore-and-aft sail like that of a schooner.

BRIGANDINE, a mediæval coat of mail, made of overlapping scales of steel, sewed upon quilted linen or leather and covered with a similar substance to hide the glittering of the metal. The brigandine formed part of the equipment of the infantry soldier.

BRIGANDS, a name originally given to the mercenaries who held Paris during King John's imprisonment (1358), and who made themselves notorious for their ill-behavior. It was applied by Froissart to a kind of irregular foot-soldiery, and from them was transferred to common robbers; it is now used especially of such of these as live in bands in secret mountain or forest retreats. In this sense the pest has been common to most countries, by whatever name the robbers may have been known—whether the escaped slaves and gladiators of Rome, the pre-Islamite brigands of Arabia, English outlaws and highwaymen, German robber-nobles, the later banditti of Mediterranean countries and of Mexico, American stage-coach robbers, Australian bush-rangers, or the dacoits and hill-robbers of Asia. Vigorous steps have been taken during the last fifty years for their repression, and in some countries with signal success.

BRIGANTES, the most powerful of the old British tribes, inhabiting the country between the Humber and the Roman Wall.

BRIGGS, CHARLES AUGUSTUS, theologian, professor in Union Theological Seminary, born in New York city, Jan. 15, 1841. He studied in the University of Virginia for three years, in Union Theological Seminary for two years, and at the University of Berlin for three years. On his return to the United States he became pastor of the Presbyterian church at Roselle, N. J. In 1874 he was installed in the chair of Hebrew in Union Theological Seminary, New York city, and in January, 1891, was appointed to the chair of Biblical theology. He has published *Biblical Study*, *American Presbyterianism*, *Messianic Prophecy*, and is one of the editors of the "Presbyterian Review."

BRIGGS, CHARLES FREDERICK, author, born at Nantucket, Mass., 1804, died in Brooklyn, N. Y., June 20, 1877. He early removed to New York, where for many years he was connected with the press. The "Brooklyn Journal," "Putnam's Magazine," "New York Times," "Evening Mirror," "Brooklyn Union" and the "Independent" were papers with which he was successively connected. He was a humorous writer and fond of depicting New York life. He wrote *Harry Franco: a Tale of the Great Panic*; *The Haunted Merchant and Trippings of Tom Pepper*.

BRIGHAM CITY, an important trading town of Utah, county-seat of Box Elder county, situated near the southern shore of Great Salt Lake, at the west base of the Wasatch range of mountains. Woolen goods, leather and flour are extensively manufactured here, and it is the seat of an academy.

BRIGHT, JOHN, a politician, son of Jacob Bright, a cotton-spinner and manufacturer at Rochdale, Lancashire, England born at Greenbank, near that town, Nov. 16, 1811, died in March, 1889. The family were members of the Society of Friends, and Bright was educated at a Friends' School at Ackworth, and afterward at York and at Newton. While in his father's factory he took a great interest in public questions, and before he had attained his majority made speeches upon such subjects as capital punishment, church rates, temperance and parliamentary reform.

In 1835 Bright made a foreign tour, and on his return delivered lectures on the subject of his travels, and on topics connected with commerce and political economy. When the Anti-Corn-Law League was formed in 1839, he was one of its leading members, and with Cobden engaged in an extensive Free-trade agitation. In 1843 he became member of Parliament for Durham, and, until their repeal, at public meetings and in Parliament was

incessant in his opposition to the Corn Laws. In 1847, elected one of the members for Manchester, he cooperated with Cobden in the movement in favor of financial reform. He was reelected for Manchester, and strongly opposed the policy of the Crimean war (1854). A severe illness compelled him to withdraw for a time to the Continent, and in his absence he was rejected by his constituency. Elected in 1857 for Birmingham, he seconded the motion against the second reading of the Conspiracy bill, which led to the overthrow of Lord Palmerston's government.

When the civil war in America broke out, he warmly supported the cause of the North, although his own business and the whole of the Lancashire cotton-trade suffered severely in consequence. In 1868 he accepted office as President of the Board of Trade, but in 1870 was again obliged to retire in consequence of severe illness. His health having been restored, he took office in 1873, and again in 1881, as Chancellor of the Duchy of Lancaster; he was appointed Lord Rector of Glasgow University in 1880. Mr. Bright retired from the Gladstone ministry in 1882, being unable to support the government in its Egyptian policy. His subsequent appearances in public were infrequent; but in 1883 he defended himself in the House of Commons from a charge of breach of privilege in connection with speeches delivered at Birmingham. In 1886-88 he opposed the home rule policy of Mr. Gladstone.

BRIGHT, RICHARD, physician, born at Bristol, Sept. 28, 1879, died Dec. 16, 1858. He studied at Edinburgh, Berlin, and Vienna, and from 1820 was connected with Guy's Hospital. He made many important medical observations, and wrote numerous medical dissertations. See *Britannica*, Vol. IV, p. 345. His *Travels Through Lower Hungary* (1818) contains a valuable account of the Gypsies.

BRIGNOLI, PASQUALE, singer, born at Naples, Italy, in 1824, died in New York city, Oct. 30, 1884. He was given a fine musical education and became a talented pianist. He began his vocal training at 21, and, encouraged by his concert-room success, appeared in opera in Paris, London and the United States. Brignoli possessed a tenor voice of great volume and sweetness.

BRIGUS, a town of Newfoundland, capital of the district of Brigus, and a port of entry, situated on Conception Bay, about 40 miles northwest of St. Johns. The harbor is good, and the inhabitants are chiefly engaged in fishing. There is also a considerable trade in agricultural products. The principal buildings are the district jail and a convent of the Sisters of Mercy.

BRIHUEGA, a town of New Castile, Spain, situated on the Tajuña, 20 miles northeast of Guadalajara. Population, 4,140. Here, in 1710, during the War of the Succession, the English general Stanhope, owing to the failure of his allies to afford him support, was defeated by the Duke de Vendôme, and compelled to surrender his force of about 5,500 men.

BRILL, a common European flat-fish, *Rhombus lavis*, of the family *Pleuronectidae* (see *Britannica*, Vol. XII, p. 692), belonging to the same genus as the turbot, from which it is distinguished by its being more elongated in form, by the absence of bony tubercles, by the small, almost smooth scales, etc. It is seldom above eight pounds in weight.

BRILLAT-SAVARIN, ANTHELME, French gastronomist, born at Belley, April 1, 1775, died Feb. 2, 1826. He was a deputy in 1789, and mayor of Belley in 1793; for a time resident in Switzerland, he afterwards came to America, where he played in the orchestra of a theater in New York. Returning to France, he became a member of the Court of

Cassation, which position he held from 1796 until his death. Shortly before this event, appeared his *Physiologie du Goût* (1825), an elegant and witty compendium of the art of dining. It has been repeatedly republished and translated; the latest English form being *A Handbook of Gastronomy*, with 52 etchings by Lalange (1884).

BRINE-SHRIMP, a genus of small animals belonging to the Branchiopod division of Crustacea, *Artemia salina*, found in brackish water and in brine. They are hatched at the lowest level of crustacean life as *Nauplii*. The full-grown animal is about half an inch long, and, having no shell, is transparent. There are five species of *Artemia*, all found in salt-lakes or in brine-pools where salt is manufactured. Of these species the most unlike are *Artemia salina* and *Artemia milhausenii*.

BRINK, BERNARD TEN, philologist, born at Amsterdam in 1841; studied philology at Münster and Bonn; in 1870 became professor of modern languages and literature at Marburg, and in 1873 at Strasburg. He has devoted himself largely to English philology. Among his works are *Chaucer-Studien* (1870), *Geschichte der Englischen Literatur* (1874; English translation 1888), *Chaucer's Sprache und Verskunst* (1884), and a book on *Beowulf* (1888).

BRINK, JAN TEN, a dutch writer, born June 15, 1834, at Appingadam; studied theology at Utrecht, but early devoted himself to literary pursuits. After a short residence at Batavia he returned in 1862 to teach Dutch at The Hague, and since that time he has earned for himself a prominent place as a critic, especially in the departments of fiction and belles-lettres. A popular novel of his is *Het Verloren Kind* (1879), and his *Causertien over Moderne Romans* (1885) is a valuable critique of modern novels.

BRINVILLIERS, MARIE MADELEINE MARQUESE DE, poisoner, was the daughter of Dreux d'Aubray, lieutenant of Paris, and in 1651, while still young, was married to the Marquis de Brinvilliers. She afterward became infatuated with a handsome young officer, the Seigneur de Sainte-Croix. Her father caused him to be imprisoned in the Bastille, where he learned from an Italian the properties of arsenic. On his release he imparted this knowledge to his mistress, who, to test the efficacy of the poison, tried its effects on patients in the Hotel Dieu. Having satisfied herself, she resolved to destroy her father, and after eight months of slow poisoning she administered a dose which caused his death. No one suspected his daughter, who, with the assistance of Sainte-Croix and a domestic, next poisoned her two brothers and her sisters; her object being to procure means for continuing her extravagant style of living with her paramour. She made several attempts to poison her husband; but Sainte-Croix is said to have administered antidotes, dreading that he should be compelled to marry the widow. Sainte-Croix died suddenly in 1672, and left documents inculcating the marchioness. She escaped to England, afterwards traveled in Germany, and finally took refuge in a convent at Liège. From this, however, she was decoyed by an officer of justice disguised as an abbé, and conveyed to Paris. Among her papers was found a general confession of her crimes, the truth of which she acknowledged on being put to the torture, and on July 16, 1676, she was beheaded at Paris.

BRIQUETTE, the name, originally French ("small brick"), given to a comparatively new form of fuel—an admixture of coal-dust with pitch or some other cementing material, molded by pressure and heat into a brick or ball.

BRISTOL, a manufacturing village of Connecticut, about twenty miles west of Hartford. It has manufactories of clocks, water-wheels, and stockings, and several foundries and machine shops. Copper is found in the vicinity.

BRISTOL, a village of Tennessee, situated on the boundary line of Virginia, about a hundred and thirty miles east of Knoxville. That part of the town which lies in Virginia is known as Goodson. Here are important manufactories of machinery, brooms, flour, tobacco, veneer, canned goods, cottons, woolens, iron, and lumber. Bristol is the seat of King College and of Sullins College.

BRISTOL BAY, an arm of Bering Sea, lying immediately to the north of the peninsula of Alaska. It receives the waters of two large lakes, by which communication with the interior is opened up for a considerable distance.

BRISTOL CHANNEL, an inlet of the Atlantic Ocean, in the southwest of England, between South Wales on the north and Devon and Somerset shires on the south. It is about 80 miles long, and 5 to 43 miles broad; the depth ranging from 5 to 40 fathoms. It is the largest inlet in Britain.

BRISTOW, BENJAMIN HELM, statesman, born in Elkton, Todd county, Ky., June 20, 1832. He graduated at Jefferson College, Pa.; entered the legal profession and practiced in Kentucky. He enlisted in the Union army and served throughout the civil war. He successively held the offices of State senator, elected while still in the field (1863-65), U. S. district attorney for the Louisville district (1865-70), solicitor-general for the United States (1870-72), attorney for the Texas Pacific railroad, secretary of the treasury under President Grant (1874-76 when he resigned). In 1876 he was one of the candidates for presidential nomination.

BRISTOW STATION, a village of Prince Williams county, Va., on the Orange and Alexandria railroad. Two battles were fought here between the Confederate and Union forces, one on Aug. 27, 1862, the other Oct. 14, 1863.

BRITANNIA METAL, an alloy (see Britannica, Vol. XVIII, p. 725), of which the essential metal is tin, with varying proportions of antimony and copper, to which bismuth, zinc, and lead are occasionally added. This alloy is extensively used for tableware, being thinly coated with silver and sold as silver-plate. The manufacture was begun at Sheffield in 1770, and Sheffield and Birmingham are still the chief seats of the manufacture. In 1824 it was made in Taunton, Mass., by Isaac Babbitt. Since electroplating came into general use the trade in Britannia metal-ware has greatly increased.

BRITISH ASSOCIATION, an association whose object is, by bringing together men eminent in all the several departments of science, to assist in the progress of discovery, and to diffuse over the whole country the latest results of scientific research. A prevailing impression that England had fallen behind other countries, both as to the general estimation in which scientific men were held and the prosecution of science itself led to its formation, and the honor of being its founder belongs to Sir David Brewster. See Britannica, Vol. IV, p. 277. A meeting of those who were favorable to the design was held at York in the year 1831, at which the constitution of the society was determined, the several sections had their provinces assigned to them, and subjects were proposed on which reports were to be drawn up and read at the ensuing meeting. This took place at Oxford in 1832, and from this date it may be said to have been in complete and successful operation. The annual meeting takes place about the end of August and lasts more than a week. At the close of each meeting the

place at which the next meeting shall be held is determined two years in advance, and a president appointed. Many of the successive presidents have been men of social and scientific eminence. A volume is published annually containing reports on the progress of science, addresses delivered, papers and abstracts of papers read at the meetings, and copies are presented to societies and libraries at home, in the colonies, and abroad.

BRITON FERRY, a seaport of South Wales, in Glamorganshire, at the mouth of the river Neath, $2\frac{1}{2}$ miles from the busy town of Neath, to which it serves as a port. Population of parish, 6,061.

BRITTLE-STARS (*Ophiuroidea*), one of the classes of *Echinodermata*, including forms not far removed from star-fishes, but differing markedly in the more centralized body, more sharply defined arms, and more active habit. An illustration is given in Britannica, Vol. VII, p. 634. The popular name "brittle-star" refers to the extreme ease with which the arms break. Another common name, "sand-stars," refers to their occasional occurrence on the shore; the technical title, *Ophiuroid*, describes the snake-like coils of their "arms."

BROADDUS, ANDREW, clergyman and author, born in Caroline county, Va., Nov. 4, 1770, died in Salem, Va., Dec. 1, 1848. His education was limited, but he had a mind of great capacity. At the age of eighteen he united with the Baptist Church, and soon began to exhort and then to preach. His eloquence and enthusiasm made him popular, and he received flattering calls to pastorates in New York, Philadelphia, Boston, and other cities, all of which he refused, preferring the life of a country pastor. He published a number of books and wrote much for the press.

BROADS, THE NORFOLK, a series of inland lakes of England, usually said to be formed by the widening or "broadening" out of the rivers. More probably their origin is due to a change in the general level of the land surface of that county even within historic times; for the river Yare was an estuary of the sea, in which herrings were caught at the time of Domesday. The broads *par excellence* are those up the Bure or North River, and its tributaries, the Ant and the Thurne. The first (Wroxham) is the largest and deepest, there being sailing-water for large boats all over it. Up the Ant there is a fine broad at Barton, and up the Thurne there is a very large one at Hickling and two others at Martham and Horsey. The broads have grown greatly in favor with holiday-makers of late, and the influx of visitors has destroyed the extreme quiet which was the great charm of the place to naturalists and fishermen. To the antiquary the district is full of interest, the ruins of St. Benet's Abbey, of Burgh Castle (Roman), and many interesting churches, being within easy reach.

BROADSIDE, the simultaneous discharge of all the guns on one side of a ship of war. The fighting power of a ship was formerly estimated by the weight of all the shot and shell that could be fired off at once from one side, or half of the ship. With ironclad turret-ships the term is inapplicable.

BROADSWORD, a term applicable to any form of sword having a broad, flat blade of which the side as well as the point is used for cutting. The term is applied to such a sword as is distinguished from one with a narrow blade, or from a three-sided thrusting-sword.

BROADUS, JOHN ALBERT, clergyman, born in Culpeper county, Va., Jan. 24, 1827. He completed his education at the University of Virginia, and for two years taught there as assistant professor of ancient languages. He belonged to the Baptist denomination, and his first pastoral work was in

Charlottesville. In 1859 the Southern Baptist Theological Seminary, Greenville, S. C., now in Louisville, Ky., called him to the chair of New Testament interpretation and homiletics. He has published *The Preparation and Delivery of Sermons*; a series of papers on *Recollections of Travel*; *Lectures on the History of Preaching*; *Three Questions on the History of Preaching*; *Commentary on Matthew*; and *Sermons and Addresses*. The first book mentioned in the list has been largely adopted as a text-book in theological schools. Dr. Broadus is considered the finest Greek scholar and New Testament critic in his denomination in the South.

BROCA, PAUL, a distinguished French surgeon and anthropologist, born at Sainte-Foy-le-Grand, Gironde, in 1824, died July 9, 1880. After pursuing his medical studies with distinction he was named professor of Surgical Pathology in the Faculty of Medicine in Paris, and surgeon successively of the four hospitals of Bicêtre, the Salpêtrière, Saint-Antoine, and La Pitié. He was also director of the Laboratory of Anthropology in the High School of Paris. Celebrated not only as a surgeon, Broca was regarded as one of the most learned masters of the existing school of anthropology. He founded the Paris Anthropological Society, of which he was secretary till his death, and he was a member of all the leading medical, biological and anatomical societies of Paris and the Continent. Elected a member of the Academy of Medicine in 1866, he was decorated with the Legion of Honor in 1868. Broca was a voluminous writer, and among his more important works may be mentioned the following: *Des Anévrysmes et de leur Traitement* (1856), *Sur l'Anesthésie Chirurgicale Hypnotique* (1859), *Études sur les Animaux Ressuscitants* (1860), *Instructions Générales pour les Recherches Anthropologiques* (1865), *Traité des Tumeurs* (1865), *Caractère Physique de l'Homme et des Primates* (1869). He also collaborated in the production of several important medical and physiological works. In 1878 he presided over an International Congress on Anthropology held in Paris.

BROCADE (Spanish, *brocado*). This term is applied to a silk material variegated with gold or silver, or ornamented with raised flowers, foliage, and various sorts of figures; the name is also applied to other stuffs wrought in the same manner. Oriental brocades date from a remote period, but there were probably no European stuffs of this nature earlier than the 13th or 14th century, when they were made in Italy and Spain. In common with damasks, figured tissues, and other varieties of ornamented silks made in past times, Italian and Spanish brocades, dating from the 14th to the 17th century, as well as those of Persia and Asia Minor, extending over a longer period of time, are extremely valuable objects of study for the textile designer and decorative artist. Fine examples of these are to be found in some continental museums.

BROCCOLI, a well-known and much esteemed garden vegetable, one of the many varieties which cultivation has produced of the *Brassica oleracea*, the common kale or cabbage. See *Britannica* Vol. IV, 818; Vol. XII, p. 279. Broccoli is said to have been originally brought to Italy from Cyprus about the middle of the 16th century. It is closely similar to the cauliflower, having the same general characteristics, but a harder constitution.

BROCHS, the local name applied in the north of Scotland to the ancient, dry-built, circular castles known also to the Gaelic-speaking people as *duns*. See *Britannica*, Vol. XVII, p. 848; also *Round Towers*, Vol. XXI, p. 22.

BROCHURE, a French word (from *brocher*, to stitch), equivalent to the English word pamphlet.

BROCK, SIR ISAAC, soldier, born on the Island of Guernsey, Oct. 6, 1769; killed in battle at Queenstown, Can., Oct. 13, 1812. As a member of the British army he served in Jamaica, Barbadoes, the North Holland expedition and along the Baltic. In 1810 he was sent to Upper Canada, having been appointed lieutenant-general. He prepared for war with the United States, advanced to Detroit and compelled the surrender of the place. From here he went to the Niagara frontier, where a battle was fought with the Americans in which Brock was killed. He had been promoted to the rank of major-general. The government awarded pensions to his father's family, and a church and monument were erected to his memory.

BROCKEN (*Mons Bructerus of the Romans*), popularly known as the *Blocksberg*, the highest summit of the Harz Mountains. It is in Prussian Saxony, about 20 miles southwest of Halberstadt, and has an elevation of 3,740 feet above the sea. See *Britannica*, Vol. XI, pp. 309, 507.

BROCKPORT, a village of New York, situated in a fertile and wealthy agricultural district, about 17 miles west of Rochester. Farming implements and other machinery are extensively made here, and it is the seat of a State normal school.

BROCKRAM (signifying "broken rock"), is the local name given to the breccias of Lower Permian age which occur in the North of England, or near Appleby and Kirky-Stephen. These breccias consist largely of fragments of limestone set in a red sandy matrix, and are occasionally quarried for limestone and building-stone.

BROCKTON (formerly North Bridgewater), a wealthy manufacturing town of Massachusetts, about 20 miles south of Boston. It contains extensive establishments for the manufacture of boots, shoes and other goods.

BROCKVILLE, a beautiful town of Ontario, Can., county-seat of Leeds county, and a port of entry. It is situated on the St. Lawrence River, about 125 miles above Montreal. It is an important center of trade, and contains numerous and extensive manufactories of machinery, steam engines, agricultural implements, stoves, hardware, chemicals, white-lead, sash and blinds, leather, gloves, flour and lumber.

BRODHEAD, a town of Wisconsin, situated on Sugar River, about 35 miles south of Madison. It is the seat of a high school, and manufactories of flour, machinery, carriages, wagons, corn-planters, and plows.

BROGLIE, ALBERT DUC DE, son of Achille (see *Britannica*, Vol. IV, pp. 359-60), born June 13, 1821; elected Academician 1862; returned as a deputy 1871, and was for a few months ambassador at London. As leader of the Conservative Right Center he procured the election of MacMahon in 1873; in the same year, and again in 1877, he was made premier, but was both times forced to resign by Gambetta's exposure of his reactionary tactics. His most important literary work is *The Church and the Roman Empire in the Fourth Century*. He has also written two works on Frederick the Great from family papers.

BROGUE, a light shoe made of rawhide, with the hair outward, gathered round the ankle, which was formerly in use among the native Irish and the Scottish Highlanders. The term brogue is also used to designate the peculiar pronunciation of English that distinguishes natives of Ireland.

BROME-GRASS, a popular name for grasses of the genus *Bromus*, of which there are numerous species distributed chiefly through the northern temperate zone. They are mostly coarse grasses, of comparatively little value.

BROMELIACEÆ, a natural order of endogenous plants, allied to *Amaryllidaceæ*, but usually distinguished by their perianth-whorls differentiated as calyx and corolla, and by their habit. The species are all natives of tropical or subtropical regions of America. Many of them are epiphytic, and are often called air-plants. *Tillandsia usneoides*, Beard Moss or Spaniard's Beard of the West Indies and of the southern United States, hangs from the trees like the lichens of colder climates. It yields a fiber which is used instead of hair for stuffing mattresses. The order includes the pineapple (*Ananas*) and some valuable fiber-plants of the genera *Bromelia* and *Karatas*. Many species are cultivated in hot-houses on account of their peculiar vegetation and showy flowers.

BROMIC ACID, the best-known compound of bromine and oxygen. It forms a whole series of salts called Bromates, none of which are of importance. They are mostly crystalline, but their watery solutions readily decompose when evaporated. When heated, they liberate oxygen and form bromides. Mixed with sulphur or charcoal, they explode by percussion, and in this and other properties resemble the chlorates.

BROMSEBRO, a village and castle of Sweden, 27 miles south of Kalmar. Treaties were signed here between Sweden and Denmark in 1541, 1641, and 1645.

BRONI, a town of Northern Italy, with mineral springs, 11 miles southeast of Pavia. Near by is the castle of Broni, where Prince Eugene obtained a victory over the French in 1703. Population, 5,147.

BRÖNN, HEINRICH GEORG, a German naturalist, born at Ziegelhausen in 1800, died July 5, 1862. He was educated at Heidelberg, where in 1828 he commenced a course of lectures on natural history and paleontology. In 1833 he was nominated professor of physics, and was afterwards appointed to the zoological lectureship. His most important geological work is *Lethæ Geognostica* (1834); other works are *Geschichte der Natur* (1841-49), and *Allgemeine Zoologie* (1850). The last mentioned work was the first attempt to develop zoology in its entirety with reference to extinct organisms.

BRONZE-WING and **BRONZE PIGEON**, names given in the Australian colonies to certain species of wild pigeon, on account of the bronze color of their plumage. The common bronze-wing or bronze-winged ground dove, *Phaps chalcoptera*, abounds in all the Australian colonies. It is often seen in flocks, feeds on the ground, and builds its nest chiefly on low branches of trees growing on meadow lands or near water. It often flies long distances to water, and is considered a sure guide. It is a plump bird, often weighing a pound, and is much esteemed for the table. The brush bronze-wing, *Phaps elegans*, not so plentiful, is found chiefly in Tasmania and the southern parts of Australia.

BRONZITE, silicate of magnesia and ferrous oxide, a rock-forming mineral belonging to the Pyroxene group. It sometimes has a bronze-like luster due to microscopic inclusions. See Britannica, Vol. XVI, p. 415.

BROOKE, STOFFORD AUGUSTUS, born in Letterkenny, Donegal, Ireland, in 1832. After a brilliant course at Trinity College, Dublin, he took orders, and after holding various curacies was incumbent of St. James's Chapel from 1866 to 1875, and subsequently of Bedford Chapel, Bloomsbury, where his ability soon secured him a prominent place among the preachers of London. In 1872 he was appointed chaplain-in-ordinary to the Queen. In 1880, from conscientious motives, he seceded from the Church of England, but continued to preach in his proprietary chapel in Bloomsbury. His works comprise

Life of Frederick Robertson of Brighton (1865), *Theology in the English Poets* (1874), *Primer of English Literature*, and *Milton* (1876), and six volumes of *Sermons* (1868-88).

BROOK FARM, ASSOCIATION FOR EDUCATION AND AGRICULTURE, THE. See Britannica, Vol. XX, p. 567.

BROOKFIELD, an important railroad center of Missouri. It is situated on Yellow Creek, about 25 miles east of Chillicothe. It contains the extensive machine shops and round-house of the Hannibal & St. Joseph Railroad. Coal is found in the vicinity.

BROOKHAVEN, an important manufacturing and lumbering town of Mississippi, the county-seat of Lincoln county. A female college is here located.

BROOKINGS, a town of South Dakota, county-seat of Brookings county, situated in a fertile agricultural district. It has large milling interests, and is the seat of the State Agricultural College.

BROOKLIME, a plant (*Veronica Beccabunga*) having a slight resemblance to water-cress, growing in ditches, water-courses and wet places near springs. It is a species of speedwell.

BROOKLYN, a city of Iowa, about a hundred miles west of Davenport. It contains a number of grain-elevators, a steam flouring-mill and a large round-house.

BROOKLYN, the second city of the State of New York. For its early history and local map, see Britannica, Vol. IV, pp. 370-71. Its population was 206,661 in 1860, 396,099 in 1870, 566,689 in 1880, and 804,377 in 1890. Its magnificent Prospect Park has been greatly improved, and the two boulevards connected with it have been extended, one to Coney Island and the other to East New York. The city now covers an area of nearly 25 square miles, and its boundary line reaches an extent of about 22 miles, with a water frontage of eight and one-half miles. The Long Island Railway system connects the city with every part of Long Island, and two extensive elevated railway systems (the first opened in 1885) furnish rapid transit from the suspension bridge and the principal ferries to the more distant portions of the city. The Atlantic Dock embraces within its piers an area of about 41 acres, Brooklyn Basin 40 acres and the Erie Basin 60 acres. They are the most extensive works of the kind in the United States, and are lined with immense storehouses for grain and other freight, forming probably the largest grain depot in the world. The U. S. Navy Yard occupies about 40 acres, and contains extensive work-shops and an immense dry-dock costing about \$1,000,000. The principal public buildings are the Court House, City Hall, Post-Office (completed in 1891), Academy of Music, with seating capacity of 2,400, Academy of Design, Municipal Building, Hospitals, House of Correction, Alms House, Lunatic Asylum, and Deaf Mutes' Asylum. Charitable institutions are numerous. The Seney Methodist Hospital, completed in 1888, is one of the largest and most thoroughly equipped hospitals in America. The churches number about 300. There are 11 distinct libraries: the Brooklyn Library contains 105,000 volumes; the Long Island Historical Library, 45,000 volumes; The Brooklyn Institute and Youths' Free Library, 16,000; Law Library, 11,000; Long Island Free Library, 5,000; Pratt Institute Library, 20,000, and the Y. M. C. A. Library, 10,000. Educational institutions abound, many being of a high order. There are 78 public schools, and in 1890 there were registered 86,000 pupils. The value of school property is about \$6,000,000. Among the higher institutions of learning are the Brooklyn Institute, embracing 14 departments; Adelphi Academy; Polytechnic Institute; Pratt Institute; St. Francis Col-

lege, and St. John's College. There are seven gas-light companies, using for distribution 479 miles of mains, and several electric lighting companies. There are 26 wards, the government of the city being vested in a mayor and board of aldermen.

BROOKS, CAROLINE SHAW, sculptor, born in Cincinnati, Ohio, April 28, 1840. She first attracted notice by modeling in butter a head of *Dreaming Iolanthe*, and exhibiting it at the Centennial Exhibition in 1876. She subsequently chisled marble busts of Garfield, George Eliot and others.

BROOKS, CHARLES TIMOTHY, author, born in Salem, Mass., June 20, 1813, died in Newport, R. I., June 14, 1883. He graduated from Harvard in 1832, and after pursuing a course of study in theology began to preach in 1835. Two years later he became pastor of a Unitarian church in Newport, R. I. He published poems, sermons, and a book concerning his travels in India. He is best known as a German translator. Some of his translations are Schiller's *William Tell*; *Homage of the Arts*; Goëthe's *Faust*; Richter's *Titan*, and *Hesperius*.

BROOKS, ERASTUS, brother of James Brooks, born in Portland, Me., Jan. 31, 1815. He was a printer and journalist, being successively connected with the "Maine Yankee," the "Haverhill Gazette," and the "New York Express." During 16 successive sessions of Congress he was Washington correspondent of the "Express." In 1843 he went abroad as foreign correspondent. He was several times elected to the New York legislature by the Democratic party.

BROOKS, JAMES, journalist, born in Portland, Me., Nov. 10, 1810, died in Washington, D. C., April 30, 1873. He found much difficulty in obtaining an education on account of his father's death and the poverty of the family. His employer aiding him he graduated at Waterville in 1831, and began the study of law. He was already a newspaper correspondent, and in 1832 he went to Washington and from there contributed articles to the "Portland Advertiser." These were the first "Washington letters," and they set the fashion. He traveled through the South and Europe, sending to the newspaper accounts of his trips. In 1836 he started the "New York Express." He was a member of the Maine legislature (1835), the New York legislature (1847), and of Congress (1849). He was a member of the American party up to 1861, when he became a Democrat. From 1865 to 1873 he was in Congress. In the last-mentioned year he was censured by Congress for having stock in the *Crédit Mobilier*. The mortification caused by this rebuke is thought to have hastened his death. He was in 1869 one of the Government directors of the Union Pacific railroad. In 1871 and 1872 Mr. Brooks made a voyage around the world, and wrote a description of his travels.

BROOKS, MARIA GOWEN, born in Medford, Mass., about 1795, died in Matanzas, Cuba, Nov. 11, 1845. Her father was a man of literary tastes, which she inherited. At the age of 19 she wrote lyrics and a metrical romance. She published *Judith, Esther, and Other Poems, by a Lover of the Fine Arts; Zophiel; Idomen, or the Vale of Yumuri, and an Ode to the Departed*.

BROOKS, NOAH, author, born in Castine, Me., Oct. 30, 1830. He has been connected with the "Alta Californian," "New York Times," and "Tribune," but is best known as a magazine writer and the author of books for young people.

BROOKS, PHILLIPS, clergyman, born in Boston, Mass., Dec. 13, 1835. In 1855 he graduated at Harvard, and then studied theology at the seminary in Alexandria, Va. He was ordained in 1859, and made rector of the Church of the Advent at Philadelphia.

Three years later he was called to Holy Trinity in the same city, and after remaining with that church for seven years he became rector of Trinity Church, Boston, where he has since remained. Mr. Brooks is considered one of the finest orators in the Protestant Episcopal Church. He is noted for his "low church" views, and has frequently preached in the pulpits of other denominations. He is a very popular lecturer and exerts a powerful influence, especially over young men. He has declined calls to several churches, and also a professorship at Harvard. *Lectures on Preaching; Sermons; The Influence of Jesus; Baptism and Confirmation, and Sermons Preached in English Churches*, are among his published works.

BROOKS, PRESTON SMITH, Congressman, born in Edgefield District, S. C., Aug. 4, 1819, died in Washington, D. C., Jan. 27, 1857. He graduated at the State University; was admitted to practice law, elected to the legislature in 1844, and served in the Mexican war. He was three times sent to Congress as a State-rights Democrat. He is remembered chiefly from his brutal attack on Senator Sumner, May 22, 1856 (see *Britannica*, Vol. XXII, p. 643) on the floor of the Senate after the adjournment of the members. He repeatedly struck Sumner on the head with a cane, till the latter fell insensible to the floor. Sumner's speech on Kansas had provoked the wrath of Southern members, and Brooks took this method of showing his disapproval. The vote was taken afterwards to expel him from the Senate, but his friends were in the majority, and the motion did not pass. He was afterwards implicated in a quarrel with Anson Burlingame, and a duel was arranged to be fought in Canada, but Brooks failed to appear;—he dared not risk "going through the enemy's country."

BROOKVILLE, a village of Indiana, county-seat of Franklin county, situated on the White-water River, about 40 miles northwest of Cincinnati. The river furnishes an immense water-power for the manufacture of paper, flour and machinery. Brookville is the seat of Brookville College.

BROOM, a popular name given to a number of species of shrubs, characterized by long, slender branches and yellow flowers. The common broom, *Cytisus*, or *Sarothamnus scoparius* (See *BOTANY*, *Britannica*, Vol. IV, pl. 5), is a well-known native of Britain, the continent of Europe, and Northern Asia, growing in dry soils, and ornamenting hedge-banks, hills and bushy places in May and June, with its large yellow flowers. It is famous as the *Planta genista* (French *Plante genet*), which was the badge of the Plantagenets. In South Germany it is sometimes planted for its fibers; the flowers were formerly employed in medicine, and as a yellow dye. Spanish broom (*Spartium junceum*), a closely allied species, is a native of the South of Europe. It is the *Spartium* of the ancients, and the fiber of the branchlets has been used from time immemorial in some parts of Italy, France, and Spain for the making of canvas, nets, ropes, etc. Dyers' broom (*Genista tinctoria*) is, with other members of the same genus, a well-known source of yellow coloring matter.

BROOM-CORN, a variety of *Sorghum vulgare*, a reed-like grass, growing to a height of eight or ten feet. It is a native of India, but largely cultivated in North America for the manufacture of brooms and whisks, which are made of the tops of the culms and the branches of the panicle.

BROOME, SIR FREDERICK NAPIER, was born in Canada in 1842, and emigrated to New Zealand in 1857. Seven years later, while on a visit to England, he married Lady Baker, whose *Station Life in New Zealand* (1869) quickly became popular.

Broome subsequently returned to England, and in 1875 was appointed Colonial Secretary of Natal, two years later of Mauritius, and at the close of 1882 Governor of Western Australia. He was knighted in 1877.

BROA BEDS, a series of strata occurring at Broa, a village in Sutherlandshire, of the same age as the Inferior Oolite of Yorkshire. They are chiefly remarkable for the occurrence in them of a seam of coal of good quality $3\frac{1}{2}$ feet thick, being the thickest stratum of true coal hitherto discovered in any secondary strata in Britain.

BROSE, a Scotch dish prepared by pouring boiling water, milk, or the liquor in which meat has been boiled on oatmeal, and mixing the ingredients by immediate stirring. When the brose is made with water, butter is usually added. The dish is denominated, according to the liquid used, *kail-brose*, *water-brose*, or *beef-brose*. *Athole-brose*, a famous Highland cordial, is a compound of honey and whisky, so called from Athole, a district of Perthshire, Scotland.

BROTHERHOODS, RELIGIOUS, numerous societies instituted in the Middle Ages for pious and benevolent purposes. Where the rules of monastic life appeared too narrow and severe, the Romish Church favored a freer form of consecrated life without vows other than that of devotion to good works or penitential exercises; but in many other respects, as in living together and the like, the brotherhoods resembled the spiritual orders. Several of the confraternities that either did not seek or did not obtain the recognition of the Church, assumed the character of sect, and being suspected of heresy were severely persecuted. Even within the Protestant churches single brotherhoods have been formed, as the Ranhes Hans, founded by Wichern at Hamburg in 1833; those formed by Father Ignatius and the Cowley Fathers at Oxford are Anglican brotherhoods.

BROTHERS, a name given to a group of six or eight rocky islets immediately outside the strait of Bab-el-Mandeb, varying in height from 250 to 350 feet. Brothers is also the name given to three isolated mountains near the coast of New South Wales, between Harrington Inlet to the south and Port Macquarie to the north. They are valuable as landmarks.

BROTHERS, RICHARD (1757-1824), the originator of the Anglo-Israelite craze, born in Newfoundland in 1757, and in 1772 entered the British navy, which he quitted with a lieutenant's half-pay in 1789. Refusing, from conscientious scruples, to take the oath requisite to enable him to draw his half-pay, he was reduced to great distress, and became an inmate of the workhouse. In 1793 he announced himself as "the Nephew of the Almighty, and Prince of the Hebrews, appointed to lead them to the land of Canaan," and in 1794 he published a book, *A Revealed Knowledge of the Prophecies and Times*. For prophesying the death of the king and the destruction of the monarchy he was committed in 1796 to Newgate, and thence soon after transferred to a lunatic asylum. His disciples included Nathaniel Halhed, the M. P. and orientalist; Sharp, the engraver (See *Britannica*, Vol. XXI, p. 781); and Finlayson, a lawyer from Fife. Brothers was released from the asylum in 1806, and died Jan. 25, 1824.

BROTHERS, LAY, an inferior class of monks, not in holy orders, but bound by monastic rules, and employed as servants in monasteries.

BROTHERS OF THE CHRISTIAN SCHOOLS, an order of Roman Catholic laymen, devoted chiefly to the education of the poor. It was founded in France in 1679. The order has under its control

nearly fifteen hundred houses in various parts of the world. In the United States it has many colleges, academies, and other institutions, mostly educational, under its management.

BROUGH, JOHN, the "war governor" of Ohio, born at Marietta, Ohio, in 1811, died in Cleveland, Aug. 29, 1865. His early education was obtained chiefly in printing offices, and he fitted himself to enter the Ohio University. He was for a time proprietor of the "Washington County Republican" and later of the "Lancaster Eagle." He was clerk of the Ohio senate, and afterwards sat as a member of that body. Elected to the office of State auditor he gave careful attention to the financial system. He was next connected with the "Cincinnati Enquirer" and at the same time practiced law. Each paper with which Mr. Brough was successively connected became, under his management, a powerful Democratic organ. In 1848 he left politics, but during the civil war, in 1863, he was urged to accept the nomination for governor, Clement L. Vallandigham, who had been court-martialed and was then living in exile, being the opposing candidate. Brough was elected by a very large majority. He served his State with patriotism and fearlessness.

BROUGHAM, JOHN, actor and playwright, born in Dublin, Ireland, May 9, 1810, died in New York, June 7, 1880. His father, an Irishman of good family, died young, leaving his widow in great destitution. The son was brought up by an eccentric and rich uncle, who sent him to the University. The stage attracted him, and when his uncle met with financial misfortune the young man went to London in 1830, and entered the dramatic profession, finding a friend in Mme. Vestris, afterwards Mrs. Charles Mathews, who at that time was manager of two theaters. For fifty years he followed the profession, as author of plays, manager of theaters, and actor in Dublin, London, and New York, and was usually successful; yet, but for the generosity of friends, his last years would have been spent in poverty. A benefit was given him in New York, and an annuity bought with the proceeds. He wrote *Life in the Clouds*, *Love's Livery*, *Enthusiasm*, *Playing With Fire*, and many other plays. He was editor and proprietor of the "Lantern," a comic paper, and published collections of his writings, entitled *A Basket of Chips* and the *Bunsby Papers*.

BROUGHTON, RHODA, novelist, native of North Wales, born Nov. 29, 1840. Her first work, *Cometh Up as a Flower*, published in 1867, was at once popular, and was closely followed by *Not Wisely but Too Well* (1867), *Red as a Rose is She* (1870), *Nancy* (1873), *Joan* (1876), *Belinda* (1883), *Doctor Cupid* (1887), and *Atlas* (1890).

BROUGHTY-FERRY, a town of Forfarshire, and a favorite watering-place, on the Firth of Tay, $3\frac{1}{2}$ miles east of Dundee. On the shore stands a castle built in 1498, and repaired in 1860-61, as a defense for the Tay. Population, 7,923.

BROWN, AARON VENABLE, statesman, born in Brunswick county, Va., Aug. 15, 1795, died in Washington, D. C., March 8, 1859. A lawyer, in the legislature almost continuously from 1821 to 1832, he was elected to Congress in 1839, 1841 and 1843; was governor of Tennessee, and held other political offices under the Democratic party, and was post-master-general under President Buchanan. He instituted some reforms in his department, such as shortening the mail route to California by crossing the isthmus of Tehuantepec.

BROWN, BENJAMIN GRATZ, statesman and soldier, born in Lexington, Ky., May 28, 1826, died in St. Louis, Mo., Dec. 13, 1885. He graduated at the Transylvania University in his native city in 1845

and at Yale in 1847; studied law at Louisville, and about 1850 took up his residence in St. Louis. He was a member of the Missouri legislature from 1852 to 1858, during which time he established the "Missouri Democrat," which advocated Republican sentiments. During the civil war he favored the Union and saw some military service. From 1863 to 1867 he was United States Senator from Missouri, and in 1870 was elected governor of the State. In 1872 he was candidate for vice-president on the Greeley ticket.

BROWN, CHAD, or CHADD, elder in the Baptist church. The dates of his birth and death are uncertain, but he probably died in 1665. He was the first elder of the oldest church of the denomination in America, and was chosen to succeed Roger Williams as leader in the Providence colony. Many religious and civil controversies arose in the settlement which, but for Elder Brown's firmness and judicious rulings, would have been settled by physical force. The good elder earned the name of "Peacemaker," and to his memory a stone was erected over his grave a century after his death.

BROWN, FORD MADOX, author and painter, born at Calais, France, in 1821. He pursued his earlier studies at Antwerp under Baron Wappers. After a brief period spent in portrait painting in England, he resided for three years in Paris, where he produced works intensely dramatic in feeling, but somber in coloring. A visit to Italy about 1845 led him to seek greater variety and richness of coloring, and its results were apparent in his subsequent works. In 1850 he was a contributor of verse, prose and design to the pre-Raphaelite paper, "The Germ." (See ROSSETTI, Britannica, Vol. XX, pp. 858-59). He is known to some extent as a book-illustrator, and among the examples of stained glass which he has designed may be mentioned the windows in St. Oswald's Church, Durham.

BROWN, OLIVER MADOX, son of the preceding, author and artist, born at Finchley, near London, England, Jan. 20, 1855, died Nov. 5, 1874. At the age of 12 years he executed a water-color picture, *Margaret of Anjou and the Robber*, of very considerable merit; two years later his *Chiron* was shown at the Dudley Exhibition; in 1870 his equestrian *Exercise* found a place in the Royal Academy; and already several of his designs had been engraved. In 1871-72 he wrote his first novel, *The Black Swan*, a marvelous production for a lad. The tales of *The Duale Bluth* and *Hebditch's Legacy*, with some minor pieces, were incomplete at the time of his early death.

BROWN, GEORGE, Canadian journalist, born in Edinburgh, Scotland, Nov. 29, 1818, died in Toronto, May 9, 1880. He assisted his father in the printing business in Toronto, then came to New York, where he published the "British Colonist" for his father. He returned to Canada, and in 1844 established "The Globe." Twenty years later, having made this a successful daily paper, he started the "Canadian Farmer." In 1852 he entered the Canadian parliament, and soon became a powerful leader. In August, 1858, he was called to assist in forming a government, and the Brown-Dorion administration came into being; but on account of dissatisfaction in the assembly, Brown and his colleagues resigned. In the movement for constitutional changes, which was begun in 1864, he was leader of the reform section, and the report of the committee which he formed was carried out in 1869. He was twice offered the honor of knighthood; sat in many public conferences; was sent as delegate to London in 1865, and to Washington in 1874 to assist in formulating a commercial treaty. He declined the lieutenant-governorship of Ontario in 1875. Mr.

Brown's death resulted from his being shot in the leg by a discharged employee. In Queen's Park, Toronto, there is a statue which was erected to his memory in 1884.

BROWN, SIR GEORGE, British general, G. C. B., born at Linkwood, near Elgin, Scotland, in 1790, died at Linkwood, Aug. 27, 1865. He entered the army in 1806; served through the Peninsular campaign (1808-13), and in 1814 joined Ross's expedition against the United States. In the Crimean war (1854-55), he commanded the Light Division, and was severely wounded at Inkerman. In 1860 he became commander-in-chief in Ireland.

BROWN, GEORGE LORING, painter, born in Boston, Mass., Feb. 2, 1814, died in Malden, Mass., June 25, 1889. He studied art in Boston under Washington Allston, and in Paris with Eugene Isabey, and became noted as a landscape painter. Some of his best pictures are: *The Bay of New York*, *Niagara by Moonlight*, *Venice*, and *Doge's Palace at Sunrise*.

BROWN, GOULD, grammarian, born in Providence, R. I., March 7, 1791, died in Lynn, Mass., March 31, 1857. He was of Quaker descent, taught school in Rhode Island and in a Friend's school in Dutchess county, N. Y., and in 1813 removed to New York city, where he conducted an academy for over twenty years. He published grammars which were great improvements on those previously in use, and were authorities for years. Their titles were: *Institutes of English Grammar*, *First Lines of English Grammar*, *A Grammar of English Grammars*.

BROWN, HARVEY, soldier, born in Rahway, N. J., in 1795, died in Clifton, N. Y., March 31, 1874. In 1818 he graduated at the United States Military Academy, and served successively in the Black Hawk expedition, in Florida in 1836; in the campaign against the Seminoles; on the Canadian border, and again on the Mexican border. He was ordered against the Seminoles in 1852-53 and again in 1854-56; was commander of the Washington defenses until April 4, 1861; was ordered to Fort Pickens, Florida, 1861-62, and his last important services were rendered in New York city, July 12-16, 1863, during the draft riots. For this he was breveted major-general, U. S. A. In the same year he was retired from active service, having had his name on the Army Register for more than forty-five years.

BROWN, HENRY ARMITT, orator, born in Philadelphia, Pa., Dec. 1, 1844, died there Aug. 21, 1879. He was a Yale graduate, studied law in Columbia, traveled in Europe and the East, and on his return became famous as an orator on historical, social or political occasions.

BROWN, HENRY KIRKE, sculptor, born in Leyden, Mass., Feb. 24, 1814, died in Newburg, N. Y., July 10, 1886. At an early age he began to paint, and at the age of seventeen studied with Chester Harding, a portrait-painter, Boston. Removing to Albany, he made portrait-busts of Dr. Wm. B. Sprague, Erastus Corning and others. He spent four years in Europe, and in 1846 returned to New York, where, assisted by skilled foreign workmen, he attempted the first bronze casting ever done in America. He constructed the altar-piece for the Church of the Annunciation in New York, and modeled portrait busts of his friends, Dr. Willard Parker and William Cullen Bryant. He made the statue of De Witt Clinton for Greenwood Cemetery. For several years he lived in South Carolina, where he was engaged on an ideal group to adorn the Columbia State House. Unfortunately, Sherman's army destroyed this work of art before it had been completed. The war compelled Mr. Brown to go North; for, although he had made many warm Southern friends and was

urged to espouse the Confederate cause, his sympathies were with the North. He served on the Sanitary Commission. Among the works executed by this artist are: *Dr. George W. Bethune*, in Parker Institute, Brooklyn; *Lincoln*, in Union Square, New York; *Equestrian Statue of General Scott*; *General Philip Kearney*; *Richard Stockton*, and *An Equestrian Statue of General Nathaniel Greene*. Most of Mr. Brown's works are owned by public or national associations. His equestrian statues are ranked as his best.

BROWN, JACOB, soldier, born in Bucks county, Pa., May 9, 1775, died in Washington, D. C., Feb. 24, 1828. In early life he engaged in surveying, teaching, writing for newspapers, studying law and in military service. He fought at Ogdensburg Oct. 4, 1812; at Sackett's Harbor May 29, 1813; at Chippewa July 5, 1814; at Lundy's Lane, July 25, 1814, and at Fort Erie, Sept. 17, 1814. He was very successful in leading his troops, and it was said of him, "No enterprise that he undertook ever failed." Congress awarded him thanks and a gold medal, and he succeeded to the chief command of the United States army, March 10, 1821.

BROWN, JOHN, grandson of Chad Brown, born in Providence, R. I., Jan. 27, 1736, died there Sept. 20, 1803. He was a wealthy merchant, and his were said to be the first ships trading between Rhode Island and the East. Anticipating the American Revolution, he had his ships from the East freighted with gunpowder, which went to supply the soldiers of Cambridge. The corner-stone of the first building of Brown University was laid by him. He was one of the largest contributors to that institution, and for twenty years its treasurer.

BROWN, JOHN CALVIN, soldier, born in Giles county, Tenn., Jan. 6, 1827, died in Macon county, Tenn., Aug. 17, 1889. He graduated at Jackson College, Tenn., 1846, and soon thereafter began the study and practice of law, in which he succeeded. His health becoming delicate, he traveled extensively in Europe, Asia and Africa, and, having recovered his health, returned to America and resumed his profession in his native county. He was elector of his Congressional district on the Whig ticket in 1860. He entered the military service of the State of Tennessee in 1861 as captain of a company; was soon afterward elected colonel of a regiment, and was transferred from the military service of Tennessee to that of the Confederate States, in which he served with increasing distinction till the close of the civil war in 1865—having been successively promoted to the grades of brigadier and major-general. He was captured at Fort Donelson, Tenn., in February, 1862, when the Confederate forces at that place surrendered to Gen. Grant; was a prisoner of war at Fort Warren, Mass., for about seven months, when he was exchanged and reentered the Confederate army with his command at Chattanooga, Tenn., in September, 1862, and was with Gen. Bragg on his Kentucky campaign; participated in the battles of Perryville, Ky.; Murfreesboro or Stone River, Chickamauga, Missionary Ridge, Kenesaw Mountain, in the battles near Atlanta, Ga.; at Jonesboro, Ga., and at Franklin, Tenn. At the latter battle, which was one of the fiercest and bloodiest of the war, he commanded a division of Tennesseans (formerly Cheat-ham's division), and when the advanced and inferior line of the Federal forces had been stormed and routed, and had sought refuge in their main line, strongly intrenched, and near a half mile to the rear, he shouted to his command to "go into the works with them." His order was obeyed and a portion of his division, under command of Brigadier-General Geo. W. Gordon, were the only Con-

federate troops that made a breach in the main line of the Federal works. But the Federals being opportunely reinforced at that point, the Confederates were driven back to and on the opposite side of the main line of works—Gordon being captured and the battle proving a disaster to the Confederate arms.

After the war, Gen. Brown successfully resumed the practice of the legal profession. He was elected president of the Constitutional Convention of the State in 1870, in which capacity he served with eminent satisfaction to the people, and was twice elected governor of Tennessee, serving as such from 1871 to 1875. About this time, retiring from public life, he became vice-president of the Texas Pacific Railroad. He subsequently became solicitor for Jay Gould's western system of railroads, and more recently became receiver of the Missouri Pacific Railroad, the vast and varied interests of which he managed with signal success and efficiency. He was a well-balanced, many-sided, potential man, with a vigorous, well-disciplined and practical, yet cultivated, intellect; success crowned his varied efforts and enterprises with remarkable uniformity.

BROWN, JOHN CARTER, merchant, philanthropist and book collector, born in Providence, R. I., Aug. 28, 1797, died there June 10, 1874. He was a son of the merchant-philanthropist, Nicholas Brown. In 1816 he graduated at Brown University, and entered the counting-room of his father. He gathered a fine library, which numbered 6,235 volumes, among which were 48 containing the journals and letters of the North American Jesuits. He was a liberal patron of Brown University.

BROWN, JOHN PORTER, Oriental scholar, born in Chillicothe, Ohio, Aug. 17, 1814, died in Constantinople, Turkey, April 23, 1872. He was in the naval service till his uncle, David Porter, was sent as minister to the Porte in 1832, when he accompanied him abroad, and, giving his attention to the study of Oriental literature, achieved a high reputation. In various capacities he spent forty years in Turkey, during the last fourteen of which he was secretary of legation. He frequently contributed to American magazines, translated Ahmed Ben Hemden's *Turkish Evening Entertainments*; *Constantine's Ancient and Modern Constantinople*, and wrote *Dervishes, or Oriental Spiritualism*.

BROWN, JOSEPH EMERSON, statesman, born in Pickens county, S. C., April 15, 1821. He graduated at the Yale law-school, served as State senator and as presidential elector, and was governor in 1857, 1859, 1861 and 1863. He espoused the Southern cause when the civil war opened, seized Forts Pulaski and Jackson, and afterward the United States arsenal at Savannah; this was done early in the first months of the war. He raised an army of 10,000 men, consisting largely of persons usually exempt from military service. When Jefferson Davis called for this force to fight outside the State, Governor Brown would not send them, believing such an order unconstitutional. At the close of the war he was imprisoned for a time, but in 1866 visited Washington and became convinced that the best course for his State was to submit to the reconstruction measures. This policy made him unpopular for a time, and he voted with the Republicans when Grant was elected President. The tide of popularity turned, and ex-Governor Brown has represented his State in the United States Senate from 1880 to 1891, being elected by the Democrats.

BROWN, NICHOLAS, philanthropist, great grandson of Chad Brown, born in Providence, R. I., April 14, 1769, died there, Sept. 27, 1841. He was a graduate of Rhode Island College, and for many years

a member of the State legislature. Rhode Island College was renamed in his honor. He gave nearly \$100,000 to Brown University. Hope College and Manning Hall were erected by him, the former being named for his sister, Mrs. Hope Ives. For 50 years he was officially connected with the college. He was a liberal benefactor of other literary or charitable institutions.

BROWN, OLYMPIA, lecturer, born in Prairie Ronde, Mich., Jan. 5, 1835. She was educated at Mount Holyoke Female Seminary and at Antioch College, Yellow Springs, Ohio. She studied theology at the Universalist school at Canton, N. Y., and in 1864 was installed pastor of a church in Weymouth, Mass. She has since been pastor of Western churches, has lectured, and is president of the Wisconsin Woman Suffrage Association. She is married to Henry Willis.

BROWN, SAMUEL, physician, born in Rockbridge county, Va., Jan. 30, 1769, died in Alabama, Jan. 12, 1880. He graduated at Dickinson College, and studied medicine with Dr. Rush in Philadelphia. For six years he was professor of medicine in Transylvania University, Lexington, Ky., and he afterwards assisted in starting a medical school in that city. Dr. Brown had a large practice, yet found time to invent various industrial and agricultural improvements; the clarification of ginseng was one of these. He was founder of the first American medical association.

BROWN, SIR WILLIAM, founder of the Liverpool Free Library, born at Ballymena, county Antrim, Ireland, in 1784, died March 3, 1864. In 1809 he established at Liverpool a branch of his father's linen business, and laid the foundation of one of the largest mercantile firms in the world. He took a prominent part in local and public affairs, being especially interested in the promotion of education among the people. In 1846 he was elected member of Parliament for South Lancashire, and was thrice afterwards reelected. In 1857, at a cost to himself of £40,000, he founded the Free Public Library of Liverpool, and in 1859 he raised a corps of volunteer artillery. He was made a baronet in 1863.

BROWN, MOUNT, in the Rocky Mountains, near the source of the Columbia River, and on the borders of British Columbia and Alberta. It is 16,000 feet high.

BROWNE, EDWARD HAROLD, English divine, born March 6, 1811, at Morton House, Bucks, and educated at Eton and at Emanuel College, Cambridge, where he became a Fellow and tutor. He was made professor of Hebrew at Lampeter in 1841, and Norrisian Professor of Divinity at Cambridge in 1854; was consecrated Bishop of Ely in 1864, and translated to Winchester in 1873. His works comprise several volumes of sermons, a book on the Pentateuch, and the well-known *Exposition of the Thirty-nine Articles* (1850; 12th edition, 1882).

BROWNE, HABLON KNIGHT, artist, the "phiz" of many clever and humorous book illustrations, born at Kennington, Surrey, England, June 15, 1815, died at West Brighton, July 8, 1882. He early showed a taste for drawing, and was apprenticed to Finden; but, disliking the laborious methods of line-engraving, he took to the freer processes of etching and water-color painting, and in 1883 gained a medal from the Society of Arts for an etching of *John Gilpin*. In 1836 Browne succeeded Seymour and R. W. Buss as illustrators of Dickens's *Pickwick*, competing successfully against Thackeray for the work; and he soon enjoyed a reputation which was continued and preserved by his designs for *Nicholas Nickleby*, *Master Humphrey's Clock*, *Martin Chuzzlewit*, *David Copperfield*, and other of Dick-

ens's works. He also illustrated many of Lever's and several of Ainsworth's novels.

BROWNELL, HENRY HOWARD, author, born in Providence, R. I., Feb. 6, 1820, died in East Hartford, Conn., Oct. 31, 1872. He studied law, but applied himself to teaching in Hartford. During the early part of the civil war he versified Farragut's "General Orders" to his fleet in the attack on New Orleans. The bright little poem came to Farragut's notice, and the poet and commander met each other. Through the influence of the latter, Brownell's desire to witness a naval battle was granted, for he was appointed acting ensign on the flag-ship *Hartford*. He was present at the battle of Mobile bay. *The River Fight* and *The Bay Fight* are his best poems, and are warmly praised by Oliver Wendell Holmes. Brownell published a volume of poems, and a few other works.

BROWNELL, THOMAS CHURCH, Bishop of the Protestant Episcopal church, born in Westport, Mass., Oct. 19, 1779, died in Hartford, Conn., Jan. 13, 1865. He studied at Brown, graduated at Union as valedictorian of his class in 1804, was appointed Greek and Latin tutor, professor of Logic and Belles-lettres in 1806; lectured on Chemistry, and in 1814 was elected professor of Rhetoric and Chemistry. A little time previous to this his religious views had changed; he abandoned the Calvinistic theory, and began the study of theology with the intention of becoming an Episcopal clergyman. He was ordained deacon in 1816, and two years later elected assistant minister of Trinity Church, New York. In 1819 he was consecrated bishop. He labored earnestly for a church college in Connecticut, and in 1823 the charter for Washington (now Trinity) College was granted. He was its first president, but continued in office only a year, as the duties of his episcopate required his whole time. He organized churches in the South, published sermons and religious books, and during the 45 years of his episcopate ordained 179 deacons and confirmed 15,000 people.

BROWNIAN MOVEMENT, also and originally called *Brunonian Motion* or *Movement*, an incessant vibratory motion frequently observed in very small, solid particles when suspended in water, as when gamboge is rubbed up in water, and first described by Robert Brown (1757-1831), a Scotch botanist and agriculturist. The same movements are also manifested by microscopic germs, but the Brownian movement is entirely physical, not vital. Its cause is somewhat obscure, but may perhaps be explained by the fact that the particles being in delicate equilibrium are extremely sensitive to change of temperature.

BROWNIE, kind of domestic spirit in the folklore of Scotland. See *Britannica*, Vol. II, p. 204.

BROWNING, ROBERT, English poet, born at Camberwell, May 7, 1812, died Dec. 12, 1889. He received a local education, attended lectures at University College, and then traveled abroad. While still a youth he acquired the triple reputation of poet, musician and modeler. *Pauline*, a dramatic poem, written at the age of 19, was published in 1833. Two years later appeared his *Paracelsus*, which revealed a greater force. In 1837 he wrote his first tragedy, *Strafford*, but this and subsequent plays were not of the usual popular stage order. *Sordello*, which for its involutions of thought, has given more trouble to Browning's readers than any other of his works, appeared in 1840. A series of plays, tragedies and dramatic lyrics was issued under the collective title of *Bells and Pomegranates* (1841-46), containing some poems which became and still remain the most popular of all Browning's writings.

In 1846 Browning married Elizabeth Barrett, herself a gifted poetess, and with her went to Florence, where they resided for 15 years. In 1850 Browning published *Christmas Eve and Easter Day*, and in 1855 *Men and Women*. After the death of his wife, in 1861, the poet settled permanently in London with his only son, Robert Barrett, born in 1849. His generally accepted master-piece, *The Ring and the Book*, was published in 1869. *Hervé Riel*, a poem upon a French sailor hero, was published in 1871, the proceeds being given to the fund for the relief of Paris. From 1871 onward, works by Browning appeared in rapid succession.

The "Browning Society" of London was established in 1881 for the purpose of promoting the study and influence of the poet's works, and the example of London has been followed by many other large centers in Great Britain, the colonies, and the United States. Browning is the most subtle and intellectual of contemporary English poets; his lyrical faculty, dramatic energy, and power of psychological analysis have rarely been equaled at any period; but his style is too frequently obscure and difficult; his versification hard and rugged, and his rhymes forced.

BROWNLOW, WILLIAM GANNAWAY, born in Wythe county, Va., Aug. 29, 1805, died in Knoxville, Tenn., April 29, 1877. He was an itinerant Methodist preacher, who in 1828 began to interest himself in politics. He soon became known as the "Fighting Parson." He was opposed to nullification, in favor of slavery, but opposed to secession. He was editor of the "Knoxville Whig" from 1838 to 1861, at which last date his paper was suppressed. He was persuaded to leave the town, for he would not take the oath of allegiance to the Confederate government, but on his return was treacherously arrested and imprisoned. Judah P. Benjamin regarded him with distrust, and advised his being set at liberty. Brownlow was put inside Union lines, and then made a trip North, lecturing in prominent cities to large audiences. In 1864 he returned to Tennessee, and the following year was elected governor. He served a second term. The Ku-Klux trouble broke out at this time, and the governor was obliged to proclaim martial law in nine counties. He was elected to the United States Senate in 1869, and, at the close of his term returned to Knoxville, purchased a controlling interest in his old newspaper, and edited it till the time of his death.

BROWN-SÉQUARD, CHARLES EDOUARD, physiologist and physician, born in Mauritius in 1818, his father being a sea captain from Philadelphia, Pa., who married on the island a lady named Séquard. The son studied at Paris, and graduated M. D. in 1846. He has since received numerous prizes for the results of valuable experiments in various departments of physiological science, principally connected with the blood, the brain, and the nervous system. He has edited several medical journals, and held the chair of medicine in the Paris School of Medicine, and since 1878 the chair of Experimental Medicine in the College of France; and again in the French Academy of Sciences. He occupied the chair of physiology in Harvard College from 1864 till 1869. He also practiced medicine in New York city from 1873 to 1878.

BROWNSON, ORESTES AUGUSTUS, born in Stockbridge, Vt., Sept. 16, 1803, died in Detroit, Mich., April 17, 1876. In 1822 he united with the Presbyterian church at Ballston, N. Y., but his religious views changed, and three years later he became a Universalist, preached in New York and Vermont, and conducted successively the "Gospel Advocate" and the "Philanthropist," organs of Universalism. In 1828

attracted by the views of Robert Owen, he helped to form the working-men's party. The writings of Dr. Channing next influenced him to study Unitarianism, and he became a preacher in that denomination in 1832. He was a popular Democratic leader, and in Massachusetts a favorite stump-speaker; he was one of the founders of the "Locofoco" party in New York, and a supporter of Van Buren. By writing articles on eclectic philosophy he gained the reputation of being a philosopher; he started the "Boston Quarterly Review," which was afterwards incorporated with the "Democratic Review" of New York. In 1844 he joined the Roman Catholic church. Dr. Brownson advocated his ideas on politics and religion in the paper published in New York as "Brownson's Quarterly Review," still the leading Roman Catholic periodical of the United States. His orthodoxy was questioned, but Cardinal Franzelin pronounced his published works undeserving of censure. His last years were spent at the home of his son in Detroit. The collected edition of his works is published in nineteen volumes, among these being *Essays and Reviews*; *The Spirit Rapper*; *An Autobiography*; *Charles Elwood, or the Infidel Converted*; and *Conversations on Liberalism and the Church*. In politics as in religion, Dr. Brownson was unstable and liable to a change of views. As a stump-speaker and as a writer he was vigorous and acrimonious.

BROWN SPAR, a name often given by mineralogists to certain varieties of dolomite, or magnesium limestone, distinguished by a brownish or reddish color, and a pearly luster, on account of which they are also sometimes called *pearl spar*.

BROWNSVILLE, a town of Pennsylvania, situated on the east bank of the Monongahela, about 30 miles south of Pittsburgh. It contains extensive manufactories of glass, iron, machinery, flour, steam-engines, and lumber. Coal is mined in the vicinity.

BROWNSVILLE, a town of Tennessee, county-seat of Haywood county. It is situated in a fertile cotton-growing region, about five miles north of the Hatchie River and 25 miles west of Jackson. It is the seat of four colleges, and an important shipping point for cotton.

BROWNSVILLE, a city of Texas, county-seat of Cameron county, and a port of entry. It is situated on the Rio Grande, opposite Matamoras, Mexico. It is historical as the scene of two engagements, the first being an unsuccessful attack by the Mexicans in May, 1846; the second being the capture of the city by General Banks in November, 1863. It contains a custom-house, and is the seat of a Roman Catholic college and convent.

BROWN UNIVERSITY. See COLLEGES, in these Revisions and Additions.

BROWNVILLE, one of the oldest towns of Nebraska, county-seat of Nemaha county. It is pleasantly situated on the Missouri River, about 120 miles, by water, below Omaha. It contains several mills and factories, and has a flourishing local and river trade.

BROWNWOOD, a city of Texas, county-seat of Brown county. It is situated on the Pecan River, near the foot of the Comanche Mountain, about 75 miles northwest of Lampasas. The surrounding country is rich in pasture, and in the vicinity are valuable groves of oak, ash, elm, and other timber.

BROXBURN, a mining and manufacturing village of Scotland, situated on the Union Canal, 12 miles west of Edinburgh. It is chiefly notable for its shale-oil works. See *Britannica*, Vol. XVIII, p. 240. Those of the Broxburn Oil Company, built in 1878, employ about 1,600 men, and turn out annually about 10,000,000 gallons of crude paraffine oil from

the shale mined in the neighborhood, besides paraffine candles and wax, sulphate of ammonia, and other products. Population, 3,210.

BRUCE, ALEXANDER, a Scotch clergyman and educator, born in Perthshire in 1831. He became professor of New Testament exegesis in the Free Church College at Glasgow in 1875. His literary works are chiefly theological.

BRUCE, BLANCHE K., born in Prince Edward county, Va., March 1, 1841. He is an African, was born in slavery and continued in servitude till the civil war, when his young master enlisted in the Confederate Army. Young Bruce had received some education from his master's tutor, and he taught school in Hannibal, Mo., and then entered Oberlin College. After the war he became a Mississippi planter, was elected to several county and State offices, and in 1875 was elected on the Republican ticket to the United States Senate. Since 1868 he has been a member of every Republican convention. In 1881 he was appointed by President Garfield to the office of Register of the Treasury. Senator Bruce is highly esteemed as a platform lecturer as well as politician.

BRUCE, GEORGE, typefounder, born in Edinburgh, Scotland, July 5, 1781, died in New York city, July 6, 1866. Coming to New York at the age of 14 he was apprenticed to a book-binder, and with his brother David afterwards drifted to Philadelphia, Albany, then back to New York. They had had some printing-house experience, and in 1806 opened a book-printing office. Three years later they were able to move to a better locality. In 1812 the secret of stereotyping was learned by David during a visit to England, and the brothers henceforth employed the process in their work, finding it necessary to cast their own type, and in various other ways overcome obstacles. The New Testament in bourgeois (1814) was their first stereotyped work. In 1816 they abandoned the printing business and became exclusively typefounders, erecting in 1818, on Chambers street, the present foundry. George Bruce introduced many improvements in types, and, assisted by his nephew David, his brother having retired from the business, invented the only successful type-casting machine. Mr. Bruce was connected with various industrial societies, and was noted for integrity and benevolence.

BRUCE, JOHN COLLINGWOOD, antiquary, born at Newcastle in 1805, graduated at Glasgow in 1826, and was trained for the Presbyterian ministry, but devoted himself to teaching. He was moderator of the English Presbyterian Church in 1881. His works include *The Roman Wall* (1851; third edition, 1866); *The Bayeux Tapestry Elucidated* (1856); *Lapidarium Septentrionale* (1875), an account of all the Roman monuments in the North of England; and a *Handbook to the Roman Wall* (1863; third edition, 1885).

BRUCEA, a genus of *Terebinthaceæ*, named after J. Bruce (1730-94), the African explorer. *Brucea antidysenterica* or *ferruginea* is an Abyssinian shrub, the leaves of which are said to be tonic, astringent, and useful in dysentery. Those of *Brucea sumatrana*, a native of the Indian Archipelago, China, etc., possess the same medicinal properties. They are intensely bitter, their properties resembling those of quassia. The Abyssinian species acquired a factitious importance in the beginning of the 19th century, from a mistaken belief that it produced the dangerous False Angostura Bark, and in this belief the name *Brucin* was given to an alkaloid really produced by *Strychnos nux-vomica*.

BRUCH, MAX, a German composer, born at Cologne in 1838. He is the composer of the famous *Loreley*. Of his larger works his *Scenes from the Frithiof Saga*, and *Scenes from the Odyssey*, are con-

spicuous for masterly treatment and strong contrast of vocal and orchestral tones.

BRUCIN, a vegetable alkaloid present in *Strychnos nux-vomica*, and St. Ignatius' bean. Its action on the animal economy is similar to that of strychnine, but much less powerful, and on this account it is seldom employed. It is capable of being converted into strychnine by heating it with five times its weight of dilute nitric acid, carbonic acid gas being given off.

BRUGG, a town in the Swiss canton of Aargau, situated on the right bank of the Aar, 36 miles southeast of Basel by rail. Near it is the site of *Vindonissa*, the chief Roman station in Helvetia; and it was also the cradle of the house of Hapsburg, whose ruined castle, founded in 1020, crowns a wooded height two miles from the village. Nearer is the abbey of Königsfelden (1310, converted in 1872 into an asylum), in the vaults beneath which are interred many of the members of the Austrian royal family. Zimmermann was a native of Brugg. Population, 1,435.

BRUGSCH, HEINRICH KARL, an eminent Egyptologist, born at Berlin, Feb. 18, 1827. At the age of 21 he published a Latin treatise on the demotic writing, which gained him the favor of King Frederick William IV, by whose aid he was enabled to visit the museums of Paris, London, Turin, and Leyden. He visited Egypt in 1853, taking part in the excavations of the French archæologist, Mariette, at Memphis. He was called to the chair of Oriental Languages at Göttingen, but returned to Egypt in 1870, on the invitation of the viceroy, to take charge of the School of Egyptology at Cairo with the rank of Bey, receiving the title of Pasha from the viceroy in 1881. In 1884 he accompanied the German embassy to Persia. Brugsch's works on Egyptology are numerous and valuable. Of these the chief are: *Geographische Inschriften altägyptischer Denkmäler* (three volumes, 1857-60); *Geschichte Egyptens unter den Pharaonen* (1877; English translation, 1879); *Hieroglyphisch-demotisches Wörterbuch* (seven volumes, 1867-82); *Grammaire Hieroglyphique à l'Usage des Étudiants* (1872); *Dictionnaire Géographique de l'Ancienne Egypte* (1877-80); *Thesaurus Inscriptionum Ægyptiacarum* (1882); and *Religion und Mythologie der alten Egypter* (1884).

BRÜHL, a town of Rhenish Prussia, eight miles southwest of Cologne by rail. It has a fine castle, erected in the early part of the 18th century by the Elector Clement Augustus of Bavaria, and restored by the king of Prussia in 1842. After his banishment from France in 1651, Cardinal Mazarin took up his residence in Brühl. Population, 4,030.

BRÜHL, HEINRICH, COUNT VON, prime minister of Augustus III, king of Poland and elector of Saxony, memorable among unworthy ministers and venal statesmen, born at Weissenfels in 1700, died Oct. 28, 1763. In early life he entered as a page into the service of the duchess of Saxe-Weissenfels. His winning address and tact gained for him rapid promotion through several offices of state, until in 1746 he became prime minister to Augustus III (see *Britannica*, Vol. XXI, p. 355). While humoring the whims of his unworthy master he contrived to enrich himself and to accumulate honors and titles, maintaining the most splendid establishment in the kingdom. The effect of this robbery of the national finances was felt at the outbreak of the Seven Years' War, when the country could furnish only 17,000 men to oppose Frederick of Prussia, who surprised and captured the whole Saxon army in its camp at Pirna. Augustus and Brühl fled to Warsaw, returning to Dresden when peace was concluded.

BRUMAIRE (French, "foggy month"), a division of the year in the Republican calendar of France.

It includes the time from Oct. 22 to Nov. 20. The celebrated 18th Brumaire, which witnessed the overthrow of the Directory and the establishment of the sway of Napoleon, corresponds with Nov. 9, 1799, of the Gregorian calendar.

BRUMMELL, GEORGE BRYAN (1778-1840), better known as "Beau Brummell," born in London, June 7, 1778, the son of Lord North's private secretary. At Eton, and during a brief sojourn at Oxford, he was less distinguished for studiousness than for the exquisiteness of his dress and manners, and, after four years in the army, having come into a fortune of £30,000, he entered society as an arbiter of elegancies, in which vocation he proved a brilliant success. His wit proved too fine for his 20 years' patron and admirer, the Prince Regent, resulting in a quarrel in 1813. Three years later Brummell was forced by gambling debts to flee to Calais, where he continued his reckless course for 14 years. From 1830 to 1832 he held a sinecure consulate at Caen. He subsequently became imbecile, and died in the pauper lunatic asylum of that city, March 30, 1840.

BRUNAL, an independent Mohammedan territory in the northwest of Borneo, whose sultan was formerly overlord of the whole island. Area, about 18,000 square miles; population estimated at about 200,000, divided into trade castes. The capital, Bruani, situated on a river of the same name, is a squalid town, built on piles. It has 30,000 to 35,000 inhabitants, who carry on considerable trade with Singapore and other ports.

BRUNANBURGH, the scene in 937 of a bloody battle, in which Athelstan defeated an allied army of Welsh, Scots, and Danes (see *Britannica*, Vol. VIII, p. 285; Vol. XVIII, p. 570; Vol. XXI, p. 479). The exact location of the place is not known. Of the Anglo-Saxon poem on the victory, preserved in the *Anglo-Saxon Chronicle*, there is a spirited version by Lord Tennyson.

BRUNÉ, GUILLAUME MARIE ANNE (1768-1815), a French marshal of the First Empire, born at Brives-la-Gaillarde, March 13, 1763. At first a Paris bookseller, he became a member of the Cordeliers' Club, and a friend of Danton. In 1792 he was sent as civil commissary to Belgium, but he soon entered the army, fought in the Vendean war and in Italy under Massena, and after Rivoli was made general of division. Sent by the Directory to Switzerland in 1798, he executed his orders with brilliant success (see *Britannica*, Vol. XXII, p. 798). In 1799 he was made commander of the army of Holland, where he achieved the reputation of being one of the best generals of his age. In 1803 he was ambassador to Turkey, and in 1804 obtained the dignity of marshal. He became governor-general of the Hanseatic towns, but was recalled by Napoleon. After the return from Elba he joined the Emperor, was made a peer, but, like many better men, had his prospects blasted by Waterloo. He was brutally murdered by an infuriated mob at Avignon, Aug. 2, 1815.

BRUNIG, a Swiss pass (3,396 feet), forming the shortest and easiest route between the "Forest Cantons" and the Bernese Oberland. A road was formed in 1857-62, and in 1888 a Brunig branch of the Berne-Lucerne railway was opened.

BRUNI ISLAND (North and South) lies off the east coast of Tasmania, from which it is separated by D'Entrecasteaux Channel. It has a length of 32 miles, a varying breadth of one to 11 miles, and an area of 160 square miles. Coal is here mined.

BRUNNOW, PHILIPP, COUNT VON (1797-1875), diplomatist, born at Dresden in 1797, and entered the Russian service in 1818. Sent on a special mission to London in 1839, he was accredited as

permanent ambassador there in the following spring. In this capacity he soon acquired distinction as a diplomatist. On the outbreak of the war in 1854 he retired from London, and represented Russia at Frankfort. He was afterwards appointed to the court of Prussia, but in 1858 he returned to his old place in London, where he represented Russia at the conferences in 1864 and 1871. He was raised to the rank of count in 1871, and in 1874 retired to Darmstadt, where he died April 12, 1875.

BRUNO THE GREAT, archbishop of Cologne, one of the most eminent men of his time, born about 925, died at Rheims, Oct. 11, 968. He was the third son of Henry the Fowler. He became archbishop of Cologne and chancellor of the empire under his brother Otto I, and afterwards, as a reward for his service, duke of Lorraine. Distinguished alike for piety and learning, he strove to reform the monasteries and advance the love of learning among the clergy.

BRUNSWICK, a duchy of the German empire. Area, 1,441 square miles; population, 372,580; capital Brunswick, with a population of 85,174 at the census of Dec. 5, 1885. For early history and institutions, see *Britannica*, Vol. III, pp. 401-3.

The budget is voted by the chamber for the period of two years, but each year separate. For the year 1888 the revenue and expenditure of the state were made to balance at 11,175,000 marks, and of the domains at 2,445,000 marks. Not included in the budget estimates is the civil list of the duke—1,125,000 marks in 1888. The public debt of the duchy, without regard to a premium-loan repayable in rates of 1,200,000 marks yearly till 1924, at the commencement of 1888 was 28,971,000 marks, four-fifths of which were contracted for the establishment of railways; the productive capital of the state was at the same time 42,490,000 marks, besides an annuity of 2,625,000 marks till 1934, stipulated at the sale of the railways of the state. In 1888 there were 255 miles of railway.

The last duke of Brunswick, Wilhelm I (born April 25, 1806; crowned April 25, 1831), died Oct. 18, 1884. With him the ducal house of Brunswick became extinct, his son Duke Charles having died in 1873 without issue.

The heir to Brunswick, the duke of Cumberland, was excluded, owing to his refusal to give up claim to the throne of Hanover. The duke of Cambridge (cousin to Queen Victoria, and commander-in-chief of the British Army), the nearer *agnate* heir, was also not accepted owing to his refusal to give up his English appointments and residence.

The Brunswick Regency law of Feb. 16, 1879, enacts that in case the legitimate heir to the Brunswick throne be absent or prevented from assuming the government, a council of regency, consisting of the ministers of state and the presidents of the Landtag and of the Supreme Court, should carry on the government, while the German Emperor should assume command of the military forces in the duchy. If the rightful heir, after the space of a year, is unable to claim the throne, the Brunswick Landtag shall elect a regent from the non-reigning members of German reigning families.

Under this provision of the constitution, Prince Albrecht, son of the late Prince Albrecht, of Prussia, was unanimously elected regent of Brunswick by the Diet, Oct. 21, 1885. He is the son of the late Prince Albrecht, brother of the late William I, King of Prussia and Emperor of Germany. He is, therefore, second cousin to the present Emperor, William II. He was born May 8, 1837, and married April 19, 1873, to Princess Marie, daughter of Duke Ernst of Saxe-Altenburg. When

chosen regent he was commanding-general of the tenth corps d'armée.

BRUNSWICK, a city of Georgia, county-seat of Glynn county, and a port of entry. It is situated on St. Simon's Sound, about 80 miles south of Savannah and 8 miles from the Atlantic Ocean. The harbor is safe and commodious, and the chief industry is the manufacture and export of yellow pine lumber and cyprus staves. There is also a considerable trade in naval stores and cotton.

BRUNSWICK BLACK, a varnish employed for coating over coarsely finished iron grates, fenders, etc. It is prepared by melting together asphalt, linseed oil and oil of turpentine. For finer work it has been superseded by Berlin black, a similar composition of finer quality.

BRUSH, CHARLES FRANCIS, inventor, born in Euclid, Ohio, March 17, 1849. His early years were spent on a farm, and he attended the Cleveland public schools. Physics, chemistry and engineering were favorite studies, and his leisure was spent in scientific experiments. He graduated at the University of Michigan in 1869, and became analytical chemist in a laboratory of his own, established in Cleveland. In 1875 he built a dynamo machine, which could supply several lamps in one circuit with the right kind and amount of electricity. His next important invention was an electric lamp. In 1876 these inventions were successfully introduced in the United States, and since then he has obtained half a hundred patents, most of which are highly remunerative.

BRUSH, GEORGE JARVIS, mineralogist, born in Brooklyn, N. Y., Dec. 15, 1831. While attending a course of lectures on agriculture at Yale, with the intention of becoming a farmer, he became so interested as to extend his stay from six months to two years, meanwhile taking up chemistry and mineralogy. In 1851 he was assistant professor of chemistry in Louisville University, and from 1852-53, chosen for the same work in the University of Virginia. For two years in Germany and in 1857 became professor of mineralogy in Yale. He has for years been prominent in the management of the Sheffield Scientific School of Yale. Professor Brush assisted Prof. J. D. Dana in preparing a *Descriptive Mineralogy*, and has himself published a *Manual of Determinative Mineralogy*. He is a contributor to several journals, and a member of various scientific societies.

BRUTÉ, SIMON GABRIEL, Roman Catholic bishop, born in Rennes, France, in 1779, died in Vincennes, Ind., in 1839. He was educated in his native city and at the Paris medical school, being destined for the medical profession, but decided to enter the priesthood. In 1808 he was ordained, and decided to do missionary work in the United States. He came to Baltimore in 1810, and was made professor of philosophy in St. Mary's College. Two years later he assisted Father Dubois in missionary work at Emmitsburg, and for two years was president of St. Mary's College. When the see of Vincennes was created he was chosen its first bishop, and he crossed the ocean many times to secure money and missionaries for his enterprises. He established schools and colleges, and exercised great influence over the Catholic Church of America.

BRUTTIUM, the country of the Bruttii, anciently the name of the southwest peninsula of Italy.

BRYAN, a village of Ohio, county-seat of Williams county, about 50 miles west of Toledo. It is noted for its artesian wells. It is the seat of an academy, and contains important manufactories.

BRYAN, a city of Texas, county-seat of Brazos county. It is situated about five miles east of the

Brazos River, and 100 miles northwest of Houston. It is the seat of two colleges, including the State Agricultural and Mechanical College, and of two academies. It is an important shipping-point for cotton, and contains extensive manufactories of cotton, tobacco, soap, oil, flour, chairs and carriages.

BRYANT, WILLIAM CULLEN, poet and editor, born in Cummington, Mass., Nov. 3, 1794, died in New York city, June 12, 1878. He was descended from noble Puritan stock, his mother being a descendant of John Alden. When but 13 years old he wrote *The Embargo*, a clever, satirical poem. In 1810 he entered Williams College, where he remained a year, then returned home to study law. It was at this period that he wrote *Thanatopsis*. In 1815, he was admitted to the bar. *The Yellow Violet*, *Inscription for the Entrance to a Wood* and *To a Waterfowl*, were poems written before his 21st year. He was married to Miss Frances Fairchild in 1821, and the poems entitled *O Fairest of the Rural Maids*, *The Future Life* and *The Life That Is*, were among the poems addressed to her. Mr. Bryant practiced law for 10 years, first being located at Plainfield, Mass., and afterward at Great Barrington. In 1825 he removed to New York city, and became assistant editor of the "New York Review and Athenæum Magazine." The paper did not flourish, was soon consolidated with another, and Mr. Bryant became assistant editor of the "Evening Post," and in 1826 editor-in-chief, continuing in this position until his death. Under his control that journal took high rank. It was anti-slavery in tone, a firm supporter of the Union cause, and Democratic in politics. Mr. Bryant visited Europe in 1834, 1845, 1849 and 1857, and published accounts of his travels. He was frequently called upon for public addresses, and his last public appearance was at the unveiling of a bust of Mazzini in Central Park, May 29, 1878. He made an eloquent address, but was overcome by the heat, and on reaching the house of his friend, James Grant Wilson, he fell on the front steps, and lived only two days after the fall. He was a healthy, athletic man, and very fond of walking. In the poetry of Bryant the influence of Pope is plainly seen, and Cowper and Thomson probably also modified his verse.

BRYCE, JAMES, an eminent British author and statesman, born at Belfast, Ireland, in 1838, and educated at Glasgow and Oxford. In 1870 he became regius professor of civil law at Oxford University. He has been a member of Parliament since 1880, and was under-secretary for foreign affairs in 1886. He is a representative Liberal, and is noted for his study of the "Eastern question," and his deep interest in the condition of the Armenians. Mr. Bryce's first book was *The Holy Roman Empire*, which established his literary reputation. Among his other works are *Transcaucasia and Ararat*, and various contributions to magazines; but he is best known in this country by *The American Commonwealth*, published in 1889, the result of 20 years' study of the country and its institutions. Mr. Bryce has made four visits to the United States, the last in 1890.

BRYENNIOS, PHILOTHEOS, D. D., Metropolitan of Nicomedia, born at Constantinople in 1833, studied at the theological school in Chalce, near Byzantium, and after being ordained deacon, attended lectures at Leipsig, Berlin and Munich (1856-61). He was for some years a teacher at Chalce, and presided over the Greek school in Constantinople from 1867 to 1874. He was one of two representatives of the Greek church at the old Catholic conference in Bonn in 1876, and while absent there was chosen Metropolitan of Serræ in

Macedonia. In 1877 he was translated to Nicomedia. Author of several minor works, Bryennios is chiefly known as the editor of the Epistles of Clement and of the *Didache*.

BRYN-MAWR COLLEGE, a college for women, situated in the village of Bryn-Mawr, on the Pennsylvania railroad, nine miles northwest of Philadelphia. It was founded by the late Joseph Taylor, M. D., in 1879. See **COLLEGES**, in these Revisions and Additions.

BRYONY, or **BRIONY**, the common name of species of *Bryonia*, a genus of *Cucurbitaceæ*, of which the common bryony, *Bryonydioica*, and *Bryony alba*, are both natives of Europe. The former is frequent in the hedge-rows in England, but becomes rarer in the north, and is not indigenous to Scotland. It has cordate palmate leaves, axillary bunches of flowers, and red berries about the size of a pea. *Bryony alba*, which is monœcious, with black berries, is common in Central Europe. The root of both varieties is applied to bruises, was formerly in use as a purgative, and its tincture is still employed in homœopathic and veterinary practice. The roots of bastard bryony, *Vitis (Cissus) sicyoides*, are also acrid and purgative, and are used medicinally in the West Indies; but it is said that the root of *Bryony abyssinica*, when cooked, is eaten without danger. Black bryony, *Tamus communis*, is a plant of a different natural order (*Dioscoreæ*). Its habit and distribution is similar to that of briony proper, but it may be readily distinguished by its simple, entire heart-shaped leaves, which are smooth and somewhat glossy. See *Britannica*, Vol. XXIV, p. 727.

BRYOPHYLLUM, a genus of *Crassulaceæ*. *Bryophyllum calycinum*, a succulent shrubby plant, native of the Moluccas, with oblong, crenulated leaves, and large drooping panicles of greenish-yellow flowers, is not infrequent in northern hot-houses, being regarded as an object of interest on account of its producing buds on the edges of the leaves more readily than almost any other plant.

BRYUM, a large and important genus of common mosses. They are small, generally grow in dense patches, and are characterized by fruit borne at the ends of the branches.

BUACHE, PHILIPPE, a French geographer, born in 1700, became in 1729 royal geographer, and in 1730 a member of the Academy of Sciences, died in 1773. He published atlases and geographical works. His nephew, Jean Nicholas Buache (1741-1821), was also a celebrated geographer.

BUACHE, an island off the west coast of Australia, separated from the mainland by Cockburn Sound, which is a valuable harbor for ocean steamers.

BUAZE, an asclepiadaceous shrub found by Livingstone north of the Zambesi, where its twigs are employed as a source of fiber, which much resembles flax.

BUBALIS, an animal belonging to the antelope family, but distinguished from the majority of those animals by its lack of gracefulness. It is clumsy in appearance, a little larger than the average stag, and resembles an ox, except that the head is rather longer. The horns, which form the base to the tip are deeply indented with heavy rings, are long and somewhat circular in form, the tips pointing backward, and the body is covered by a brownish coat with a tuft of black on the end of the tail, and the animal feeds on vegetables. It is found on the banks of the Nile, and numerous pieces of ancient Egyptian architecture and sculpture bear engravings of the B. It is, however, a native of Barbary. The *Camma* of Southern Africa is the antelope most nearly related to it.

BUBO: in medicine, an inflammatory swelling of the glands in the groin; used occasionally also of the armpit.

BUCCINATOR (Latin, from *buccanare*, "to sound a trumpet"), the trumpeter's muscle; a flat muscle forming the wall of the cheek, so called because when the cheeks are distended with air, the contraction of this muscle forces it out, thus assisting in blowing wind-instruments.

BUCENTAUR, the name of the State barge in which the doges of Venice used to sail out annually, on Ascension-day, amid great festivities, to perform the ceremonial marriage of the State with the Adriatic, in token of perpetual sovereignty. The ceremony was already in use in the 13th century; in 1798 the last "bucentaur," built in 1722-29, was burned by the French, but some portions, spared for their gold work, are still preserved in the arsenal. The word signifies a mythical monster, half bull, half man, such as may originally have been depicted on the vessel.

BUCEPHALUS (Greek, "ox-head"), the name of the favorite charger of Alexander the Great. See *Britannica*, Vol. I, p. 484; probably also the name of a peculiar breed of horses in Thessaly. The young hero was the first to break in the steed, and thus fulfilled the condition stated by an oracle as necessary for gaining the crown of Macedon.

BUCHAN, DAVID, Arctic explorer, born in 1780, held a lieutenant's commission in the British navy in 1806, and in 1810 was in command of a schooner on the Newfoundland Station. He explored the river Exploit (1811), and penetrated 160 miles into the interior. Promoted commander in 1816, he was two years later appointed to the command of a Polar expedition, at the same time that Ross and Parry started on their voyage in search of a north-west passage. Buchan reached Spitzbergen with the *Dorothea* and *Trent* (see *Britannica*, Vol. XIX, p. 319); but all attempts to pierce the gigantic icy barrier were in vain. On his return he commanded for a time on the Newfoundland Station, was appointed high-sheriff in 1825, and a few years later sailed on another voyage to northern waters, from which he never returned. His name was removed from the list of living captains in 1839.

BUCHAN, PETER, collector of Scottish ballads, born at Peterhead, Scotland, in 1790, died in London, Sept. 19, 1854. At 24 he published a volume of original verse. He taught himself copper-engraving, learned the art of printing at Stirling, and set up a press at Peterhead in 1816. He afterwards removed to London, but returned after two years to Peterhead. Buchan's *Ancient Ballads and Songs of the North of Scotland* was published at Edinburgh in 1828. A second collection was edited for the Percy Society, in 1845, by J. H. Dixon. Buchan was the author of a number of books, among them *Annals of Peterhead* (1819), and *The Eglinton Tournament and Gentlemen Unmasked* (Glasgow, 1839).

BUCHAN, WILLIAM, physician, born in 1729 at Ancrum, Roxburgshire, Scotland, died in London, Feb. 25, 1805, and studied divinity and medicine in Edinburgh, where he subsequently practiced, and lectured on natural philosophy. His *Domestic Medicine* appeared in 1769. Its success was great and immediate—19 large editions, amounting to 80,000 copies, being sold during his life-time. Other of his works were *Cold Bathing* (1786), *Diet* (1797), and *Offices and Duties of a Mother* (1800). He removed to London in 1778, where he died, and was buried in Westminster Abbey.

BUCHANAN, CLAUDIUS, born at Cambuslang, near Glasgow, Scotland, March 12, 1786, died Feb. 9, 1815. He studied for two years at Glasgow University, and at the University of Cambridge (1791-

95). In 1797 he became chaplain in the East Indian Company's service at Barrackpur, where he studied Hindustani and Persian; in 1799 he removed to Calcutta, and became vice-provost of the College founded by Lord Wellesley at Fort William. He translated the Gospels into Persian and Hindustani, and traveled through southern and western India, but was debarred as a chaplain from directly engaging in missionary work. He returned to England in 1808, where he succeeded, through his sermons and his periodical, "The Star of the East" in exciting such interest as to secure the appointment of an English bishop to Calcutta. His *Christian Researches in India* was published in 1858.

BUCHANAN, ROBERT, a versatile writer of poetry and prose, born in Warwickshire, England, Aug. 18, 1841. He was educated at Glasgow University, and while a mere boy went to London to seek his fortune. His first work, *Undertones*, a volume of verse published in 1863, was well received; but his first distinct success was *London Poems*, published in 1866. Later volumes of verse are a translation of Danish ballads, and *Wayside Posies* (1866); *North Coast Poems* (1867); *Napoleon Fallen: a Lyrical Drama* (1871); *The Drama of Kings* (1871); *Ballads of Love, Life, and Humor* (1882); and *The City of Dream* (1888). He has contributed prose to the magazines, and has written several novels, among them *A Child of Nature* (1879), *God and the Man* (1881), *The Martyrdom of Madeline* (1882), and *Foxglove Manor* (1884). He was successful as a dramatist with *A Nine Days' Queen*, *Lady Clare*, *Storm-beaten*, and *Sophia*.

BUCHANAN, a village of Michigan, is situated on the St. Joseph River, about eighty-five miles east of Chicago. It contains a number of manufacturing, and is the trade-center of an extensive farming and fruit-growing region.

BUCHANITES, a sect of fanatics which sprang up in the west of Scotland in the last quarter of the 18th century. Its founder was Elspeth Buchan, born in 1738, the daughter of John Simpson, a wayside inn-keeper near Banff. Separating from her husband, Robert Buchan, she began to preach strange religious doctrines, which she professed to find in the Scriptures. Expelled from the town by the magistrates in 1784, she established herself near Thornhill with a few followers. The poet Burns, in a letter (August, 1784), speaks of their idleness and immorality. Mrs. Buchan died in May, 1791; the last survivor of her sect died in 1848.

BÜCHNER, LUDWIG, a German physician and materialist philosopher, born at Darmstadt, March 29, 1824. He studied at Giessen, Strasburg, Würzburg, and Vienna; became a lecturer at Tübingen University, and in 1855 published *Kraft und Stoff* (14th ed., 1876; English translation, *Force and Matter*, 1870), in which he attempted scientifically to establish a materialistic view of the universe. As a result of the controversy caused by the appearance of this work, Büchner was compelled to resign his University post, and began medical practice in Darmstadt. He has been a frequent contributor to periodicals on physiological and pathological subjects, as also in support of his atomistic philosophy. *Natur und Geist* (1857; 3rd ed., 1876), and *Aus Natur und Wissenschaft* (1862), are works in the latter department. He has also written on Darwinism, the idea of God, the intelligence of animals, and has translated Lyell's *Antiquity of Man* (1864).

BUCK, DUDLEY, born in Hartford Conn., March 10, 1839. He studied at Trinity College, and received a musical education at the Leipzig Conservatory of Music, and afterwards was instructed by Hauptman, Rietz, Richter, Plaidy, Moschelles, and Schneider. He has been organist of the Music Hall,

Boston, assistant director of the New York garden concerts, composer of the centennial cantata sung at Philadelphia in 1876, organist of Holy Trinity in Brooklyn, and director of the Apollo Club. Mr. Buck has written operetta, organ compositions, song music, and has published *Dictionary of Musical Terms*, and *Influence of the Organ in History*.
BUCKAU, a manufacturing town of Prussian Saxony, practically a suburb of Magdeburg. Population, 16,049.

BUCK-BEAN, BOG-BEAN, or MARSH TREFOIL, common names of *Menyanthes trifoliata*, a species of *Gentianaceæ*, widely distributed in the more temperate parts of the northern hemisphere. It has trefoiled leaves, small fringed flowers, and usually grows in marshy places. It is a bitter tonic. The root-stock was formerly used as a sort of starchy food in Northern Europe.

BUCKEYE, an American name for several trees and shrubs of the same genus (*Æsculus*) as the horse-chestnut. The more commonly distinguished species are *Æsculus glabra*, known as fetid buckeye, *Æsculus Californica*, California buckeye, and *Æsculus flava*, the sweet buckeye.

BUCK-HOUND, a species of hunting-dog, resembling a small staghound, used by sportsmen for hunting bucks.

BUCKIE, a fishing-town of Banffshire, Scotland, situated 13 miles northeast of Elgin by rail. It is the head of the fishery district from Banff to Findhorn. The present harbor, constructed of concrete at a cost of £60,000, consists of an outer and an inner basin, with an area of nine acres. Population, 4,350.

BUCKINGHAM, JAMES SILK (1786-1855), English traveler and lecturer, was born at Flushing, near Falmouth, in 1786, and went to sea at an early age. After years of unsettled and wandering life, he established a journal at Calcutta, the boldness of whose strictures on the Indian government led to his expulsion from Bengal. In London he established the "Oriental Herald" (1824), and the "Athenæum" (1828), now the leading weekly literary journal. He subsequently traveled through the United States. He was projector of a literary club, the British and Foreign Institute (1843-46); and president of the London Temperance League (1851). Besides eighteen books of travel, etc., he had published two volumes of his autobiography when he died, June 30, 1855.

BUCKLAND, CYRUS, inventor, born in Manchester, Conn., Aug. 10, 1799, was educated at a common school. At the age of twenty-one he became interested in mechanical pursuits, and in 1828 entered the United States armory at Springfield, Mass., as pattern-maker, where he subsequently became designer of machinery and tools for the manufacture of fire-arms. While occupying this position he made great improvements both in the machinery used and in the guns, raising the standard in all the mechanical departments. His chief invention was a set of machines for working up gun-stocks from the rough state till they were complete, except the outward smoothing. So important was this invention that the British Government sent commissioners over to copy the machines and to obtain skilled workmen from the Springfield armory. Mr. Buckland received no compensation for his valuable inventions beyond his daily wages; but at his retirement in 1850, Congress voted him \$10,000.

BUCKLER, a sort of shield used in ancient and mediæval times. It was usually grasped by the hand only, and in combat was interposed to receive the blow of a sword. The early Roman style was four feet long and 2½ feet broad; it was plated on the outside with iron and lined with sheep-skin

and linen. Later on the shield was of a square or rounded form, generally composed of wicker-work or hide, plated with metal.

BUCKLEY, JAMES MONROE, a prominent Methodist divine, born in Rahway, N. J., Dec. 16, 1836. He was educated at Pennington Seminary, N. J., and Wesleyan University. He has been pastor in Detroit, Mich., and in Brooklyn, N. Y.; has three times been a member of general conference, was elected editor of "New York Christian Advocate," and has written *Two Weeks in the Yosemite Valley*, *Cats and Wild Cats*, *Land of the Czar and the Nihilist*, and other books.

BUCKNER, SIMON BOLIVAR, born in Kentucky in 1823, graduated at West Point in 1844; was there made professor of ethics in 1846, and assistant instructor of infantry tactics from 1848 to 1855. He subsequently practiced law, and at the outbreak of the civil war joined the Southern Army. He surrendered Fort Donelson to Gen. Grant, Feb. 16, 1862, was imprisoned in Boston harbor, and on his release took command in Bragg's army; was made major-general, fought at Murfreesborough and Chickamauga, and surrendered at Baton Rouge, May 26, 1865.

BUCKSKIN, a soft leather made of deerskin or sheepskin; also a strong, twilled woolen cloth, cropped of nap and carefully finished. "Buckskin breeches" are usually of this cloth, not of the leather.

BUCKSPORT, a village of Maine, situated on the west bank of the Penobscot, twenty miles below Bangor. It is the seat of the East Maine Conference Seminary, and contains various manufactories. The harbor is accessible to large vessels, and ship-building and fishing are the chief industries.

BUCKSTONE, JOHN BALDWIN, comedian and dramatic writer, born at Hoxton, London, in 1802, died Oct. 31, 1879. Having, in 1822, exchanged an attorney's office for the provincial stage, he appeared the next year at the Surrey Theater. His success was so unequivocal that in 1827 he was engaged by the Adelphi Theater, where he continued till 1833 as leading low comedian. Except for a visit to the United States in 1840, and short engagements at Dury Lane and the Lyceum, he thenceforward played chiefly at the Haymarket, of which he was lessee from 1853 till 1878. Buckstone's acting was noted for its distinct appreciation of the peculiar traits in each individual character he assumed. He was also a prolific dramatic author, and several of his pieces have been highly popular.

BUCKTHORN (*Rhamnus*), a genus of *Rhamnaceæ*, including a number of species distributed through temperate and tropical regions. The common buckthorn, *Rhamnus catharticus*, is characterized by its spinous and cross-like branchlets, serrate leaves, and yellow-green dioecious flowers. The berries are violently purgative and were formerly much used in medicine. They supply the sap green of painters. The bark affords a beautiful yellow dye. Dyers' buckthorn, *Rhamnus infectorius*, is a low shrub, abundant in the South of Europe, whose unripe fruit yields a brilliant yellow dye. The alder-buckthorn, *Rhamnus frangula*, or, in the United States, *Rhamnus Caroliniana*, is spineless, with oval entire leaves, and small, whitish, axillary flowers. The charcoal of the wood is light, and is used by gunpowder-makers. The sea-buckthorn, of the coasts of Europe, the *Hippophaë rhamnoides*, is a shrub of a different genus and order. Southern buckthorn, of the United States, is a small sapotaceous tree, *Bumelia lycioides*.

BUCOLIC, a term derived from the Greek word signifying "belonging to herdsmen," nearly equal to *pastoral* from Latin. It is especially used of a

kind of pastoral poetry representing rural affairs, or the life, manners, and occupation of the shepherds. The great bucolic poets were Theocritus, Bion, Moschus; and Virgil's Eclogues are sometimes called *Bucolica*.

BUCYRUS, a town in Ohio, county-seat of Crawford county. It is situated on the Sandusky River, sixty-five miles north of Columbus. It is the center of an extensive farming district, and the headquarters of numerous manufacturing industries. A fossil mastodon was discovered here in 1838. In the town and its vicinity occur a number of valuable mineral springs.

BUZACZ, a town of Austria, in Galicia, situated on the Stripa, an affluent of the Dneister, 47 miles northeast of Stanislau by rail. A treaty of peace between the Poles and Turks was signed here in 1672. Population, 9,970.

BUDDING: in horticulture, a process in the propagation of ligneous plants analogous to grafting. See HORTICULTURE, Britannica, Vol. XII, p. 237.

BUDDLEA, a genus of shrubs of the natural order *Scrophulariaceæ* (sub-order *Loganiaceæ*), of which many species are known, all natives of the warmer parts of the world, and some of them much admired for their beautiful flowers. *Buddlea globosa*, a native of Chili, is hardy enough to endure the climate of most parts of England, and several half-hardy species have also been introduced.

BUDRUN, a seaport town of Asiatic Turkey, situated on the north shore of the Gulf of Kos, about 96 miles south of Smyrna. It is the site of the ancient Halicarnassus, the birthplace of Herodotus and Dionysius. Population, 6,000.

BUELL, DON CARLOS, an American officer, born in Ohio, March 23, 1818; graduated from West Point in 1841; served in the Mexican war from 1846 to 1848; was assistant adjutant-general at Washington in 1848 and 1849, and at headquarters of various departments from 1849 to 1861. He assisted in organizing the Army of the Potomac, and soon after superseded Gen. W. T. Sherman in the department of the Cumberland, afterwards the Ohio. In 1862 he was made major-general of volunteers, and in July of the same year assistant adjutant-general. He was engaged at the battle of Shiloh and the siege of Corinth. His army retreated before Bragg's, through Tennessee to Louisville, from which place, being reinforced by Thomas, he pursued Bragg, who was obliged to turn southward, and was slowly driven from Kentucky. Buell did not force another engagement, as it was thought he should have done, and his command was transferred to General Rosecrans. There was an official investigation of his conduct, but the report was not made public. He resigned his commission June 1, 1864. Since that time he has been president of the Green River Iron Works of Kentucky, and later pension agent at Louisville, Ky.

BUENAVENTURA, a town on the Pacific coast of the Republic of Colombia. It has a hot, sickly climate, but is the port for the healthful and rich Cauca valley. Population, 5,000.

BUENA VISTA, a rich mining city of Colorado, county-seat of Chaffee county. It is situated at an altitude of nearly eight thousand feet, near the confluence of Cottonwood Creek with the Arkansas River, about thirty-five miles south of Leadville. The interests of many of the richest silver mines of the State center here, and the surrounding country includes also a small but fertile agricultural section. The climate is mild and healthful, and in the neighborhood are a number of favorite health and pleasure resorts.

BUENA VISTA, a village of Mexico, seven miles south of Saltillo, where, on Feb. 22-23, 1847, some

5,000 United States troops under Taylor defeated 20,000 Mexicans under Santa Anna.

BUEN-ARJRE, a West Indian island, 60 miles from the coast of Venezuela, and 30 east of Curaçao, belonging to the Dutch. It produces timber, cattle, cochineal and salt. Area, 127 square miles; population, 4,898.

BUENOS AYRES. For the history and early growth of this greatest city of the Argentine Republic, see Britannica, Vol. IV, pp. 440-442. The later statistical returns show progress in several important items. The rapidity of its growth in population is most remarkable—statisticians pronouncing it without parallel. At the date of the last census, which was taken in September, 1887, the effective population of the city, including visitors, was 433,375. The legal population—that is to say, the population born on the spot—was only 75,062. The balance consisted of 129,672 born in various parts of the republic, and 228,641 foreigners. At the time of the last preceding census, which was taken in 1869, the total population of the city and suburbs was only 187,126; so that it has more than doubled in 18 years. The present annual increase of population in Buenos Ayres is greater than that of Chicago or any other North American city. The proportion of foreigners is 112 to every 100 Argentines. Of the 228,641 foreigners Italians are the most numerous, numbering 31.1 per cent., while North Americans number less than 4 per cent.

The city has naturally increased with the growth of its population. In 1869 the city and suburbs contained a total of 20,858 houses, while in 1887 the census gave a total of 33,804. The increase is really much larger than the figures indicate, for a large number of huts or ranchos were returned as houses by the census of 1869, which have since been replaced by larger and substantial buildings.

In religious faith the city is overwhelmingly Roman Catholic, 97.8 per cent. professedly belonging to that faith. There are six street railway companies, with 199,378 kilometers of track, 342 cars, and 5,882 horses. During the first three months of 1890 these railroads transported 10,177,078 passengers.

Great progress has also been made in educational matters. There are two universities with a total attendance of 993 students. In 1889 234 diplomas were delivered, including 81 to doctors of law, 85 to medical practitioners, and 11 to civil engineers. In addition to several colleges and normal schools, there are in Buenos Ayres 285 primary schools, directed by 1,571 teachers and attended by 54,509 pupils. A large proportion of the school-houses are the property of the nation. About 100 periodicals are published in the city.

In commerce, in the arts, and in manufactures the Argentine capital has made remarkable progress, there being upwards of 6,000 industrial establishments in the city, giving employment to more than 40,000 persons.

BUFFALO, in zoölogy. See Britannica, Vol. IV, p. 442. See also BISON, in these Revisions and Additions.

BUFFALO, a city of New York, located at the eastern extremity of Lake Erie, where the lake contracts to form the Niagara River. See Britannica, Vol. IV, p. 448. It has a water front of nearly four miles on the lake, and about the same on the Niagara river. That portion of the city fronting on the lake rises gradually to a height of 50 feet above the level of the harbor, and at a distance of about two miles becomes an extended undulating plateau. The other portion, fronting on the river, is on a bluff 60 feet in height. The streets are broad and

straight, intersecting at right angles, and are generally lined with trees. Water is brought through a tunnel extending into the middle of Niagara River, through which 43,000,000 gallons are daily distributed through 281 miles of mains to consumers. The park system includes Forest Lawn Cemetery, containing 75 acres, and a beautiful lake dotted with numerous islands, covering 40 acres. The harbor is protected by a breakwater 7,600 feet in length, running parallel with the shore, and a shore arm of piles and crib-work 4,100 feet long, running out towards the southern end of the main or detached breakwater. Buffalo is one of the greatest railroad centers in the world, having within the city limits 638 miles of railroad.

The grain trade of Buffalo is immense. In 1843 Joseph Dart erected the first elevator for storing and transferring grain by steam-power. It had a storage capacity of 55,000 bushels, and a transfer capacity of 15,000 bushels per day. In 1890 the aggregate storage capacity of the numerous elevators was 13,080,000 bushels, and the daily transfer capacity 4,000,000 bushels. In 1890 the grain receipts were 89,312,800 bushels. The trade in live-stock is also very extensive, the stockyards covering 80 acres of ground, well paved, and protected by sheds.

Public buildings are numerous, and display superior architectural taste. Among the more noteworthy are the City and County Hall; the Erie county jail; the Postoffice building; Police headquarters; Music Hall; Buffalo Library; State Insane Asylum; County Almshouse; Young Men's Christian Association building; and the State Normal and Training School.

Buffalo has 40 public schools, and upwards of 50 private schools and colleges. One of the public schools (No. 31) is the largest in America, having 2,775 registered pupils. There are several libraries, the Buffalo Library ranking among the foremost in the country. Population in 1890, 155,134; in 1890, 254,457.

BUFFINGTON, ADELBERT R., soldier, born in Wheeling, Va., Nov. 22, 1837. He graduated at the United States Military Academy in 1861. He drilled volunteers at Washington for the civil war for a month (1861) and was made first-lieutenant of ordnance in 1862. For a year he was engaged in mustering Missouri and Illinois volunteers, afterwards assisted in the defense of Pilot Knob, and was successively commander of the arsenals at New York, Baton Rouge, Watertown, Detroit, Watervliet, Indianapolis, Alleghany, and in 1881 was placed in command of the National Armory. For eleven years he was on leave of absence inspecting arms for the Egyptian government. He has perfected various inventions, among them the magazine gun and carriages for light and heavy guns. He reduced the cost of manufacturing rifles at the Springfield armory, and was the originator of the nitre and manganese method of bluing iron and steel, in use at the National Armory.

BUFF LEATHER. See OIL LEATHER, Britannica, Vol. XIV, p. 390.

BUFFOON (Italian, *buffa*, "a trick"), one who entertains others by tricks, odd gestures, and other vulgar pleasantries; a clown. From the same word comes *buffo*, "a comic actor or singer"; and the French name, *opera-bouffe*, for comic opera. See FOOL, Britannica, Vol. IX, p. 366.

BUFORD, JOHN, American officer, half-brother of N. P. Buford, born in Kentucky in 1825, died in Washington, D. C., Dec. 16, 1863. He was a West Point graduate, served against the Indians on the plains, and at the commencement of the civil war was assistant inspector-general. In 1862 he entered active service, being on the staff of General Pope

in Northern Virginia, engaged at Madison Court House, the passage of the Rapidan, Kelly's Ford Thoroughfare Gap, Manassas, South Mountain, Antietam, Fredericksburg, Gettysburg and many other battles. Just before his death he was assigned from the Army of the Potomac to the Army of the Cumberland. Buford was an admirable cavalry officer. He died from the effects of exposure and wounds.

BUFORD, NAPOLEON BONAPARTE, American officer and engineer, born in Woodford county, Ky., Jan. 13, 1807, died March 28, 1888. He was a West Point graduate; served as lieutenant of artillery on various surveys, and was appointed as instructor at West Point. In 1861 he entered the Union army; was engaged at the battles of Belmont, Mo., Island No. 10, and at the sieges of Corinth and of Vicksburg. In 1865 he was brevetted major-general of volunteers, and five months later (August) mustered out of service. After the close of the war General Buford was United States commissioner of Indian Affairs (1868) and inspector of the Union Pacific Railway (1867-69).

BUGBANE, or **BUGWORT**, a name given to species of plants belonging to genus *Cimicifuga*, in Europe applied to *Cimicifuga foetida*, and in the United States to *Cimicifuga racemosa* and *Cimicifuga Americana*, from their reputed virtues as destroyers of insects. The term is sometimes applied to the white hellebore, *Veratrum viride*.

BUGEAUD, THOMAS, French marshal, born at Limoges in 1794, died of cholera at Paris, June 9, 1849. He entered the army at the age of 19, and by his bravery during the Napoleonic campaigns earned a colonelcy, which was bestowed in 1814. Recalled from a 15 years' retirement to active life by the July revolution of 1830, he was elected deputy for Perigneux, and soon gained Louis Philippe's esteem; in 1836 was dispatched to Algeria, where he distinguished himself against Abd-el-Kader, and in 1840 was appointed governor-general. The Zouaves owed their organization to him. In 1843 he received the marshal's baton, and the following year his victory at Isly over the Emperor of Morocco's forces gained him the title Duc d'Isly. In the revolution of February, 1848, he commanded the army in Paris.

BUGGE, ELSENS SOPHUS, a Norwegian philologist born at Laurvik, Jan. 5, 1833; studied at Christiania, Copenhagen and Berlin, and in 1866 was appointed professor of Comparative Philology and Old Norse at the University of Christiania. His Old Norse ballads (1858) and historical legends (1864-65); critical edition of the earlier *Edda* (1867); studies in ancient Italian dialects (1878), and on the origin of the Scandinavian legends of gods and heroes (1881-82), besides numerous dissertations on all departments of the Teutonic and Romanic languages, place him in the first rank of living philologists.

BUGLE, the common English name of *Ajuga reptans*, a low labiate plant of Europe. Its flowers are generally blue, but white and purplish varieties are sometimes grown in flower-borders. *Ajuga alpina* is one of the beautiful flowers of the Swiss Alps.

BUGLE, a name for the slender, elongated kind of bead, usually black, used in decorating female apparel.

BUGLOSS, a name popularly applied to many plants of the natural order *Boraginæ*, more strictly to *Anchusa officinalis*. The small wild bugloss is *Asperugo procumbens*; viper's bugloss is the English name of the beautiful *Echium vulgare*. Both these plants are naturalized in the United States. Other varieties are the small bugloss, *Lycopsis arvensis*, and the sea-bugloss, *Mertensia maritima*.

BUHRSTONE, or **BURSTONE**, a name given, without reference to geological relations, to certain vari-

eties of stone, whose dressed surfaces present a keen-cutting texture, which adapts them for use as millstones. Buhrstones are quarried at Conway in Wales, at several places in Scotland, and in various parts of the United States, but the most desirable varieties are obtained from the quarries of La Ferte-sous-Jonarre, in the department of Seine-et-Marne, near Paris, and from the Eocene strata of South America. The stone is found in beds or in detached masses, and the mode of quarrying is peculiar. When the mass is large, it is cut out into the form of a huge cylinder; around this grooves are cut, at distances of about 18 inches, the intended thickness of the millstones; into these grooves wooden wedges are driven, and water is thrown upon the wedges, which, causing the wood to swell, splits the cylinder into the slices required. It is not unusual to form millstones of pieces of buhrstone cut into parallelipedes and bound together by iron hoops.

BUILDING ASSOCIATIONS. See *Britannica*, Vol. IV, pp. 513-14.

BUILDING-LEASE, a lease of land for a term of years, under which the lessee is bound to erect certain buildings on the land according to specification, these buildings to become the property of the landowner on the expiration of the lease. The term of ninety-nine years has come to be associated with building leases in England, but such leases are granted for various periods. In the United States building leases may continue for any term of years agreed upon by the parties, no time being specified by State or United States law.

BUKKUR, a fortified island of the Indus, in Sind, between the towns of Rohri and Sukkur. The fortress occupies almost the whole island, but has now no military value.

BULGARIA, a principality now incorporated with Eastern Roumelia and under the suzerainty of Turkey. Area, including that of South Bulgaria, (E. Roumelia) 38,562 square miles, population, 3,154,000. For early history and productions, see *Britannica* Vol. IV, pp. 516-17; capital, Sofia, with a population in 1889, of 30,438.

Bulgaria, made a principality by the treaty of Berlin, July 13, 1878, was to be governed by a prince elected by the national assembly (*Sobranje*), with a legislature and a constitution. Prince Alexander, of Battenberg, was elected sovereign, and at a meeting held in 1881 the *Sobranje* invested him with extraordinary powers and authorized him to convoke, at the close of seven years, a *Sobranje* to form a revised constitution to be promulgated in 1888. The Prince, however, was compelled to abdicate in 1886.

On July 7, 1887, Prince Ferdinand, of Saxe-Coburg (born in Vienna in 1861, youngest son of Prince Augustus of Saxe-Coburg and Princess Clementina, daughter of Louis Philippe), was elected to fill the vacancy caused by the deposition of Prince Alexander. He accepted the position, and took the oath of office at Tirnova. At the time of his election he was an officer in the Austrian army. His sovereignty has not been recognized by the Powers, and his tenure of office is generally regarded as precarious. Russia is strongly opposed to his incumbency. He is now (1891) 30 years of age.

The province of Eastern Roumelia, which received its autonomy in 1878, united itself with the principality of Bulgaria in 1885, and six months later Turkey agreed to the union. Bulgaria, which had previously paid no tribute, agreed in 1887 to pay \$700,000 a year as the Roumelian contribution to Turkey.

In 1890 the combined public debt of Bulgaria was reported as about \$10,000,000, of which about

\$2,000,000 was the share of Eastern Roumelia—exclusive of the liability to Turkey.

An electoral law passed in 1882 establishes two grades of electors to the Sobranje. Those of the first degree included all persons holding public office, graduates, ecclesiastics, owners of real estate and their children, and persons practicing an independent calling, such as merchants, farmers, manufacturers, and employers of labor. Every 50 electors of the first degree were to nominate one of the second degree; and the men so nominated were to elect the deputies by *scrutin-de-liste* in the thirteen departments. The normal period of election is six years. Other laws were subsequently passed to determine the method of municipal elections, to establish the judiciary organization, and to provide for the institution of a Second Chamber. Some of these measures are already in operation; but the frequent disturbance of the country has made it impossible to change the electoral machinery, and in the meantime the Great Sobranje, or National Assembly on the wider franchise, has had the direction of affairs in its own hands.

BULBUL, a Persian name for the nightingale, which was introduced into English poetry by Moore, Byron and others. In ornithology the name is given to a very different bird, *Pycnonotus hæmorrhous*, usually ranked among the babbling thrushes. It is a little bird of brilliant plumage, remarkable for its pugnacity. The name bulbul is also applied to several related forms.

BULL, a ludicrous blunder in speech implying some obvious absurdity or contradiction. The origin of the name is supposed to be due to the contrast in papal bulls between the assertion of excessive humility in the title, by which the pope styles himself "servant of servants," and his assumption of absolute supremacy and authority over the world. Bulls are commonly regarded as especially characteristic of the Irish. Coleridge, remarking on the well-known bull, "I was a fine child, but they changed me," says: "The bull consists in bringing together two incompatible thoughts, with the sensation but without the sense of their connection."

BULL, JOHN, a generic name for an Englishman as a personification of what is supposed to be the English type, from Arbutnot's use of the name in his *History of John Bull* (1712; reprinted complete in Pope's *Miscellanies* in 1728). The description of bull is very similar to the familiar figure in the pages of "Punch."

BULL, OLE BORNEMANN, violinist, born in Bergen, Norway, Feb. 5, 1810, died there Aug. 18, 1880. At the age of five he began to show musical talent by his performances on the violin, and at nine years of age played as first violinist in the theater where his father was an actor. After unsatisfactory experiences with various teachers and schools he went to Paris, where he was befriended by Madame Villeminot, and, under the patronage of the Duke of Montebello procured means for a tour through Switzerland and Italy, giving concerts and stopping at Milan to study music. His first great success was achieved at Bologna; was followed by a series of successful concerts in the principal cities of Italy, and he returned to Paris in 1835 with an established reputation. He subsequently visited London, the various countries of Europe, traveled through the United States, Canada and the West Indies, returning to Norway in 1848. In 1852 he paid a second visit to America, where he spent five years. He endeavored to found a colony, "Oleana," in Potter county, Pa., but in this enterprise was not successful. For several years he spent his winters in America and his summers in Europe. His life

has been written by his widow; the book is entitled *Ole Bull: a Memoir*.

BULLACE, *Prunus inasittia*, a shrub or small tree, larger and much less spiny than the sloe, but very closely allied to it, as it is also to the plum, so that many botanists regard them all as one species. The fruit is larger than the sloe, generally globose, and is used like damsons. The bullace is a native of Asia Minor and Southern Europe, but now common in hedges and coppices in England, and is sparingly naturalized in the United States. Bullace is a popular name of *Melicocca bijuga*, a common West Indian tree; in the United States it is given to the muscadine grape, *Vitis vulpina*.

BULLÆ, or **BLEBS**, are collections of serous fluid, situated immediately beneath the cuticle, and raising it from the true skin. They differ from vesicles only in being of larger size. The most familiar examples are the "blisters" produced on the hands by rowing or the feet by walking. They are occasionally met with in many diseases of the skin, as eczema, erysipelas, etc.; but in pemphigus and in some forms of hydroa they constitute the chief feature of the disease.

BULL-BATING, a barbarous sport once very popular in England. A number of dogs were set on to attack a bull, whose nose, that he might be made as furious as possible, was sometimes blown full of beaten pepper before he was turned loose. Another form of the sport was to fasten the bull to a stake, by a rope some yards in length, and to set bull-dogs on him, one at a time, which were trained to seize him by the nose, and when this was accomplished it was called "pinning the bull." But no small part of the enjoyment of the spectators was derived from the success with which the attacks of the dogs were met by the bull lowering his head to the ground, and receiving them on his horns, often tossing them to a great distance. King James I delighted in this sport; and when the Czar Nicholas of Russia visited England, before his accession to the empire, a boxing-match and a bull-bating were got up to show him English tastes. Bull-bating was declared illegal in 1835.

BULLET, the leaden projectile discharged from any kind of small-arm. Case-shot or canister and schrapnel shell are also filled with spherical bullets hardened by the addition of antimony to the lead. Formerly all bullets were spherical, and cast in molds. The bullet used for rifles of recent construction is elongated and conical at the apex, with a hollow at the base, into which some kind of plug is inserted, which, driven into the lead by the force of the explosive, forces the base of the bullet outward till the lead takes the grooves in the rifled barrel, thus giving the bullet a rotation during the motion forward. The plug is sometimes omitted, the base of the bullet being forced into the grooves by the expansive force of the powder. The advantage of rotary motion is that it steadies the ball, causing it to travel point first, thus enabling a heavier, because longer, projectile to be fired with accuracy from a smaller bore than was formerly used, thereby presenting less surface to the resistance of the air, and so increasing the range.

The diameter of rifle-bullets has been decreasing ever since their introduction. Bullets are now made by means of a machine, which unwinds a leaden rod of the proper thickness, cuts it into the required length, and stamps the bullets into shape by means of steel dies, dropping them into a box when finished. Each machine can turn out 7,000 per hour, and one man can attend to four machines.

BULLET-TREE, or **BULLY-TREE**, a sapotaceous tree of the West Indies and tropical America, valued for its wood, which is solid, heavy, close-

grained, and durable, and also in some species for its fruit. The bullet-tree of Guiana, *Mimusops globosa*, yields balata-gum, a valuable substitute for India-rubber. Other fruit-bearing congeners are *Bumelia retusa*, the bastard bully-tree, and *Bumelia ingens*, the black bully-tree, while *Lucuma mammosa*, of which the fruit is called the marmalade, is sometimes called Jamaica bully-tree.

BULLETIN, diminutive of bull, an official report concerning some public event, especially a report of news recently received, and issued for the information of the public.

BULL-FIGHT, a combat of men with bulls for the entertainment of the public, common in Greece, particularly in Thessaly, and in Rome under the emperors, though in later times forbidden both by emperors and popes. The bull fight is still a favorite spectacle in Spain and Mexico. Formerly the most magnificent bull-fights were instituted by the monarchs themselves; at present, both in the capital and in the larger towns of Spain, they are held either as speculations or for the benefit of public institutions. Every large town in Spain possesses a *Plaza de Toros*, and so do many towns in Spanish America; those of Madrid, Seville, and Caceres are especially handsome. Bull-fighters personally are esteemed much as prize-fighters are in this country; but they are the idols of the lower classes, from whose ranks they are drawn.

BULLFINCH. See *Britannica*, Vol. IV, p. 518.

BULLOCK, RUFUS BROWN, born in Bethlehem, N. Y., March 28, 1834. For many years he was connected with the Adams Express business in the Southern Atlantic States; he was active in extending telegraph and railroad lines and in the organization of the first national bank of Georgia. He was delegated to the convention which framed a new State constitution after the civil war, and was elected governor of Georgia in 1868. During his term the reactionists in the legislature secured a majority, and the colored members were expelled from their seats; but the governor was enabled, through authority conferred by Congress, to reassemble the legislature and restore them to their rights. His course in this matter developed the spite and abuse of many, and charges of corruption were brought against him, but he was vindicated by the courts. During his term the State increased much in prosperity, but at its close he refused to take any further part in politics.

BULLOCK, WILLIAM, inventor, born in Greenville, N. Y., in 1813, died in Philadelphia, Pa., April 14, 1867. He became an iron-founder, making a careful study of mechanics. After engaging in various enterprises he commenced the publication of the "Banner of Truth," for the printing of which he made a hand-press of wood turned by a crank, and having a self-feeder attached. He continued his experiments in regard to printing-presses, and soon constructed a fast press on the planetary system, which was used for printing "Frank Leslie's Illustrated Weekly." This made him famous, but he attained to even better results. He built a press consisting of a single machine which was self-feeding, printed on both sides, cut the paper at regular intervals and delivered 12,000 sheets an hour. Further improvements raised the speed of the press till 30,000 sheets could be delivered in an hour. Mr. Bullock's presses rapidly took the place of all preceding ones. Since their invention the idea has been enlarged upon by other inventors and further improvements made.

BULL-ROARER, a toy made of a thin piece of wood usually about eight inches long and three broad, sharpened somewhat at the ends, to one of which a string about 30 inches in length is tied, by

means of which it is whirled rapidly in the air, causing by its revolution a loud and peculiar whizzing noise. An instrument of the same kind is to be found in almost every country in the world. It has been identified with the *rhombos* used in the ancient Greek mysteries, and is to this day employed in religious rites or mysteries in New Mexico, New Zealand, and South Africa.

BULLS AND BEARS. In the slang of the stock exchange, a "bull" is a person who seeks artificially and unduly to raise the price of stock, and speculates on a rise. On the other hand, a "bear" is one who speculates on a fall; who sells stock for delivery at a future date, in the hope that meanwhile prices will fall, so that he will buy at a lower price what he has sold at the higher price.

BULL-TROUT, a name applied to certain species of the salmon genus, especially to *Salmo cambricus*. By anglers it is considered next to the salmon as a prize, and by many is mistaken for it. The laws for fishing salmon apply also to the bull-trout. See *Britannica*, Vol. XXI, p. 222.

BÜLOW, HANS GUIDO VON, a German pianist and composer, born at Dresden, Jan. 8, 1830, the son of Karl Edward von Bülow (1803-53), poet and author. Hans qualified at Leipzig and Berlin for a legal career; but, subsequently resolving to give himself to music, spent some time with Richard Wagner, and in 1857 became the pupil of Liszt, whose daughter he married. In 1854 he became Prussian court-pianist, in 1864 pianist to the Bavarian court and head of a music school at Munich. In 1869 family troubles led him to resign his appointments and retired to Florence, and subsequently he undertook the great concert tours through which he became known in England and America. In 1880 he settled as director of music to the court at Meiningen. He is a brilliant pianist, remarkable for skill in conquering technical difficulties, and is famous as a concert director, and as a representative of the Liszt-Wagner school. He has produced works for piano and for the orchestra, as also numerous editions of pieces by the great musicians, with arrangements and transcriptions from the works of Berlioz, Wagner and Liszt.

BULRUSH (formerly sometimes written bull-rush), a popular name for large rush-like or reed-like plants growing in marshes, not very strictly limited to any one kind. The term both in literature and botany is more particularly applied to two distinct plants of somewhat similar vegetative habit; namely, *Typha latifolia* and *Scirpus lacustris* (see *Britannica*, Vol. XX, p. 319), perhaps more generally restricted to the latter, a tall rush-like plant from which the bottoms of chairs, mats, etc., are manufactured. *Typha latifolia*, also called reed-mace or cat's-tail, is a large handsome plant of grass-like habit, and reaching a height of 5 to 7 or 8 feet, and applied to uses almost identical with the preceding. In the United States the name is given to species of *Juncus*. The bull-rush of Egypt is the papyrus *Cyperus papyrus*.

BULSAR, a seaport of India, in the district of Surat, on the estuary of the river of the same name, 115 miles north of Bombay by rail. Timber is the chief export. Population, 13,229.

BULTI, a name given to the northern part of Kashmir, once an independent state.

BUL-TSO ("Borax Lake"), a lake of Thibet, 100 miles northwest of Lassa. Its area is 24 square miles.

BUMBOAT, a boat used in peddling provisions, fruit, and small wares among vessels lying at some distance from the shore.

BUNBURY, HENRY WILLIAM, an English caricaturist, born at Mildenhall in Suffolk in 1750, died in 1811. Educated at Westminster and Cambridge,

he early became distinguished for his humorous designs, which gave him the right to rank after Rolandson and Gillray. He usually avoided political subjects. He drew mainly in pencil and chalks, but also produced water-colors.

BUNCE, OLIVER BELL, author, born in New York city, Feb. 8, 1828, died May 15, 1890. He was educated at the then famous Rands Academy of his native city, and became a bookseller and publisher. He was on the editorial staff of "Appleton's Journal" during its publication, and was a contributor to other periodicals. He is well known by his popular little book on manners, entitled *Don't*. His other writings are *A Bachelor's Story*, *The Romance of the Revolution*, *Life Before Him*, *Benaley*, *Bachelor Bluff*, *My House An Ideal*, *Timias Terrystone*, *Marcos Bozaris*, and *Love in '76*.

BUNCOMBE, EDWARD, soldier, born in St. Kitts, West Indies, died in Philadelphia, Pa., in 1777. He was educated in England, but came to live in Tyrrel county, N. C. He fought in the Revolutionary war at Brandywine and at Germantown. In the latter battle he was wounded, captured and died soon after from his wounds. A county of North Carolina was named for him in 1791.

BUNDEHESH, the name of a book in the Pehlevi language, which is one of the most important sources of information as to the Zoroastrian system of belief. There are translations by Justi (1868) and West (1879).

BUNGALOW, the kind of house usually occupied by Europeans in the interior of India, and commonly provided for officers' quarters in cantonments. The bungalow is a one-storied thatched or tiled house, usually surrounded by a veranda; houses of masonry, with terraced roofs, are distinguished as *pukka houses*. The name bungalow is a corruption of the native word *bangla*, "Bengalese," and probably refers to the first district where the form of building was noticed by Europeans. *Dak-bungalows* are houses for travelers, constructed at intervals of from 12 to 15 miles on the highroads in many parts of India and maintained by government. A rupee (about 40 cents) a day is charged for the use of these bungalows.

BUNGAY, an English market town, situated on the Waverney, six miles west of Beccles. It grew up around the 12th-century castle of the Bigods, Earls of Norfolk, some ruins of which still remain; but the town is mostly of later date, having been rebuilt since the great fire of 1688. It has a large printing establishment, and considerable trade in corn, malt, flour, coals, and lime. Population, 3,579.

BUNGENER, LOUIS FÉLIX, a Protestant writer, born of German family at Marseilles, France, in 1814, died June 14, 1874. He studied theology at Geneva, and became director of the gymnasium there in 1843, but was removed by the new radical government. Engaging in literature, he published a series of writings on theological and historical subjects, but is most widely known for several works, in the form of romances, in which the principles of Protestantism are set forth and defended.

BUNIAS, a small genus of *Cruciferae*. The leaves of *Bunias orientalis* are eaten in Russia, and are used in Western Europe as fodder. The leaves and root of *Bunias eruca* are eaten in Greece.

BUNION, BUNYON, a term applied to enlarged burse, or synovial sacs, situated on any part of the foot; but most common over the meta-tarsophalangeal joint of the first or the fifth toe, and accompanied by more or less distortion of the joint.

BUNKER HILL. See *Britannica*, Vol. IV, p. 521.

BUNKUM, BUNCOMBE, a phrase used in the United States for mere bombastic speech-making, intended for the newspapers without regard to the

audience present. There is a county named Buncombe in North Carolina, to which the word seems originally to have been due. Bartlett quotes from Wheeler's *History of North Carolina*: "Several years ago, in Congress, the member for this district arose to address the House, without any extraordinary powers, in manner or matter, to interest the audience. Many members left the hall. Very naively he told those who remained that they might go, too; he should speak for some time, but he was only 'talking for Buncombe.'"

BUNSEN, ROBERT WILHELM, a distinguished German chemist, born at Gottingen, March 31, 1811. He studied zoölogy, chemistry, and physics at the University of his native town, and at Paris, Berlin, and Vienna. He filled the chair of chemistry in succession at Marburg, at Breslau, and from 1852 at Heidelberg. He invented the charcoal pile and the burner which bear his name; discovered that the hydrate of oxide of iron is an antidote to arsenic; was the first to produce magnesium in large quantities, and in 1860 invented the magnesium light, which has proved so important to photography. The greatest discovery with which his name is associated is that of the spectrum analysis, made in conjunction with Kirchhoff, which has been the means of working wonders in chemistry and revealing much to astronomers. Besides his original work in chemistry, Bunsen proved himself a most successful teacher, and his laboratory is still a favorite resort for Americans studying chemistry in Europe. His writings on physics and geology, as well as on chemistry, are numerous.

BUNSEN BURNER, a gas-burner named for its inventor, the distinguished German chemist. Prior to its introduction, the heating by gas or oil was unsatisfactory, owing to the imperfect combustion of the carbon causing the deposit of soot on any body in contact with the flame. By this invention the gas, just previous to burning, is largely diluted with air, thus producing a non-luminous and very hot flame. Probably no other invention has done so much to facilitate work in the chemical laboratory, and it has been adapted for use in connection with a variety of small furnaces, and in many forms of gas-stoves.

BUNT, a parasitic disease of cereals, due in Europe to *Tilletia caries*, a mold belonging to the *Astilagineae*. The common smut of wheat and corn in the United States is *Ustilago carbo*, and is not called *bunt*.

BUNTER SANDSTEIN, or "variegated sandstone," the German name for the New Red Sandstone. It is the lowest member of the Triassic system. See *Geology*, *Britannica*, Vol. X, p. 352.

BUNTING, a thin woolen material, of which flags of all kinds are usually made. Also a soft, warm fabric in use for women's dresses.

BUOL-SCHAUENSTEIN, KARL FERDINAND, Count, an Austrian statesman, born May 17, 1797, died Oct. 28, 1865. He was minister in succession at Karlsruhe, Stuttgart, Turin, and St. Petersburg. He was second Austrian plenipotentiary at the Dresden Conference (1850), after which he was minister at London, until the death of Schwarzenberg recalled him to Vienna, to hold the portfolio of foreign affairs. He presided at the Vienna Conference in 1855, and represented Austria at the Congress of Paris.

BUONONCINI, the name of three Italian composers. The elder, Giovanni Maria (1640-78) wrote instrumental pieces, songs, and church music. His sons, Marc Antonio (1660-1726) and Giovanni Battista (1667-1750), were known as composers of operas. The latter settled in London in 1720, and for some years was very famous and popular.

BUPRESTIS, a genus of beetles, typical of the large family *Buprestidae*. Those occurring in warmer countries are conspicuous for bright color and metallic sheen. Some of them are popularly known as *golden beetles*. *Buprestis gigas*, found in Cayenne, is about two inches long. Some small species occur in England. *Buprestis rufipes* is a North American species. See *Britannica*, Vol. III, p. 507; and *COLEOPTERA*, Vol. VI.

BUR: in engraving, a slight ridge of metal raised on the edges of a line by the burin, the rocker, or the dry-point. It produces an effect like a smear, and is therefore usually regarded as a defect, and scraped off. Some etchers, however, take advantage of it to deepen their shadows; in mezzotint engraving the whole effect comes from the bur, which is untouched in the deep shades and more or less burnished away in the light. As the bur soon wears off, in valuable old proofs its presence is strong evidence of the early date of an impression.

BURANO, an island and town of Northern Italy, five miles northeast of Venice. There is here a school for the designing and making of fine laces; this manufacture, once famous, then nearly extinct, has latterly been revived. Population of town, 4,492; of commune, 6,800.

BURBAGE, RICHARD (1567-1618), an English actor, born about 1567, the son of James Burbage, himself an actor, and the builder of the Shoreditch and Blackfriars theaters (see *Britannica*, Vol. XXI, pp. 760-61; Vol. XXIII, p. 224). Richard, who commenced acting while very young, had by 1588 earned considerable reputation, and during the next 10 years outstripped all competitors. On the death of his father in 1597, he became part owner of the Blackfriars Theater; and two years later, in conjunction with his brother, pulled down the Shoreditch house, replacing it with the famous Globe Theater as a summer play-house, while Blackfriars became exclusively a winter-house. To cover the expense Burbage took as partners in his undertaking Shakespeare, Hemming, Condell, and others. At one or other of these two theaters Burbage gained his greatest triumphs, and took the leading part in new plays until his death in 1618.

BURBOT, a fresh-water fish of the genus *Lota*, family *Gadidae*. It has an elongated form, depressed head, two small barbels on the nose and a larger one on the chin, a short low anterior dorsal and a long posterior one. *Lota vulgaris* is found in various parts of Middle Europe, in Asia, and in several rivers of England, where it is called *conyfish* and *eel-pout*. An American species (*Lota maculosa*) is found in New England, the Great Lakes, and farther north. In the United States it is commonly known as *eel-pout*, *ling*, and *fresh-water cod*, and is regarded as inferior for food. In the fur countries it is generally known as *losh* or *loche* and *marthy* or *methy*, and its flesh is esteemed.

BURCHARD, SAMUEL DICKINSON, born in Steuben, N. Y., Sept. 6, 1812. He became pastor of a Presbyterian church in New York city in 1839. At a ministers' meeting during the Presidential campaign of 1884, he referred to the Democratic party as the party of "Rum, Romanism and Rebellion." The alliterative sentence was quickly picked up by the press, and is thought to have turned the tide which resulted in the election of the Democratic candidate.

BURDEKIN, a river of Queensland, Australia, draining the district of North Kennedy. It rises not far from the coast, and after an irregular course forms a delta emptying into Bowling Green and Upstart bays. It was discovered by Leichard

in 1845, and explored by Dalrymple and Smith, 1859-60. See *Britannica*, Vol. XX, p. 171.

BURDEN, HENRY, inventor, born in Dumblane, Scotland, April 20, 1791, died in Troy, N. Y., Jan 19, 1871. While a lad on his father's farm he showed his inventive genius by making labor-saving machinery. A thrashing-machine was his first successful invention. He pursued a course of scientific studies in Edinburgh, and in 1819 came to America. In 1822 he was connected with the Troy iron and nail factory as agent, but ultimately became sole proprietor of the works. He invented agricultural implements. He made an improved plow, the first cultivator, then a machine for making horse-shoes, and one for the manufacture of hook-headed spikes, such as are now used by nearly all the American railroads. Previous to this these spikes had to be made by hand, and his invention gave a new impulse to railroad building.

BURDEN OF PROOF, in legal procedure, signifies the obligation to establish by evidence certain disputed facts; and, as a general rule, this burden lies on the party asserting the affirmative of the issue to be tried or question in dispute, or on the party against whom judgment would be given, according to the presumption recognized by the law of evidence if no proof were adduced on either side. Accordingly it almost always rests on the plaintiff or pursuer in an action, or on the party asserting the facts on which the result of the litigation must depend. There may, however, be such a legal presumption in favor of the pursuer that the burden falls on the defender. The burden of proof is said to be shifted when the party upon whom it lay has produced sufficient evidence to turn the presumption in his favor.

BURDETT-COUTTS, ANGELA GEORGIANA, the Right Honorable baroness, English philanthropist, daughter of Sir Francis Burdett, born April 21, 1814. In 1837 she inherited much of the property of her grandfather, Thomas Coutts, the banker, and the liberal and philanthropic use she made of this wealth has rendered her name deservedly popular. Among her numerous public charities may be mentioned the erection and endowment of several churches and schools, and the endowment of the three colonial bishoprics of Cape Town, Adelaide, and British Columbia; the establishment of a shelter and reformatory for fallen women; and the erection of Columbia Square, consisting of model dwellings at low rents for about 300 families. Her private charities have been on a corresponding scale, and she is also a liberal patroness of art. In 1871 she accepted a peerage from Government. In 1872 the freedom of the city of London was conferred upon her; in 1874 that also of Edinburgh. In 1881 she was married to Mr. William Ashmead-Bartlett, who in 1882 obtained the royal license to assume her name, and who in 1885 was elected to Parliament as Conservative member for Westminster.

BURDETTE, ROBERT JONES, humorist and lecturer, born in Greensborough, Pa., July 30, 1844. He was educated in the public school of Peoria, Ill., and in 1862 enlisted as a private in the 47th Illinois volunteers, and served through the war. He was connected with the "Peoria Transcript" in 1869, afterwards with the "Review," and later he started with friends a new paper, which was unsuccessful. He became associate editor of the "Burlington Hawkeye," of Iowa, and his humorous sketches in this paper were widely copied, and made him known to the newspaper-reading world. His fun was never coarse or vulgar. In 1877 he began to deliver lectures, which were only moder-

ately successful, and most of which have since been compiled with fugitive pieces and published in book form; as, *The Rise and Fall of the Mustache*, and *Other Hawkeye Terms*, *Buckeyes*, *Life of William Penn*. He has recently been licensed by the Baptist denomination to preach, and during vacation trips has supplied destitute country churches.

BURDOCK, the common name of a genus of the natural order *Compositæ*, familiarly characterized by the bracts of the involucre, which are hooked inwards at the tip. By means of these hooks the flower-head, popularly called a *bur*, readily adheres to clothing, the wool of sheep, or the like, and in this way the seeds are transported from one place to another. The common burdock, *Arctium lappa*, is a native of the Old World, but is widely naturalized in America. The root is a diaphoretic and diuretic, and is used as a remedy for rheumatism, cutaneous diseases, etc. The young shoots are cultivated in Japan for culinary purposes. See *Britannica*, Vol. XXIII, p. 307.

BUREAU, a French word signifying a writing-table or desk with drawers for papers. In the United States it is applied to a chest of drawers for holding clothing and other articles. Bureau is also an office, a department of government, or the officials that carry it on. In England the term is confined to subordinate departments, and in the United States to certain sub-divisions of some of the executive departments.

BUREAUCRACY, a name often given to signify a government where the administration is centralized in regularly graded series of government officials, who are responsible only to their chiefs, and who interfere with and control every detail of public and private life.

BURGAS, a port of Eastern Roumelia, situated on the Gulf of Burgas, 76 miles northeast of Adrianople. It has a trade in agricultural produce, and sends large quantities of clay to the Turkish pipe-makers. Population, 5,000.

BURGESS, EDWARD, naval architect, born at West Sandwich, Mass., June 30, 1848. He was a Harvard graduate and afterwards instructor at that college in the entomological department. He spent some time traveling in Europe, began the study of naval architecture, and engaged in building boats. He was the builder of the yachts *Puritan* and *Mayflower*, which in the international races of 1885 and 1886 won, respectively, the races with the English *Genesta* and *Galatea*.

BURGLARY. (See *Britannica*, Vol. IV, p. 534.) In the United States, the common-law ingredients of burglary have been somewhat modified by statute. In some of these the definition is extended so as to include breaking and entry in the daytime; in others, buildings other than dwelling-houses are included. Some laws even include in their definition the breaking out of a building, as well as into it. The laws of the different States adhere in general to the principles of the common law, but vary widely in detail, both as to the crime itself and its penalty.

BURGLEN, a village of Switzerland, situated in the canton of Uri, about a mile from Altorf. It is the traditional birthplace of William Tell. The supposed site of the patriot's house is now occupied by a chapel, erected in 1522, upon the walls of which are represented certain well-known scenes from his history.

BURGMASSTER, the Anglicized form of the Dutch *burgemeester* (German, *burgermeister*), the title of the chief magistrate of a municipal town in the Netherlands, Germany, and other Teutonic countries. It is analogous to the French *maire*, English *mayor*, and Scotch *provost*. The German

governments usually retain the right to confirm or reject the elected burgomaster.

BURGUNDY PITCH, a resinous substance prepared from common frankincense (the spontaneous exudation of the Norway spruce-fir, *Abies excelsa*) by melting it in hot water, by which means it is freed from a considerable part of the volatile oil which it contains. See *Britannica*, Vol. IX, pp. 223, 711.

BURGUNDY WINES, a class of wines produced in Burgundy, in France, chiefly the produce of vineyards cultivated on the hilly lands forming the Côte-d'Or (see *Britannica*, Vol. XIV, p. 606). They share with the Bordeaux wines the reputation of including the finest wines made.

BURIN, the principal instrument used in engraving. It is made of tempered steel, and is of prismatic form, the graving end being ground off obliquely to a sharp point. The distinctive style of a master is frequently described by such expressions as a *soft burin*, a *graphic burin*, or a *brilliant burin*. See *Britannica*, Vol. VIII, p. 439.

BURION, the house-finch, *Carpodacus frontalis*, a fringilline bird common in the southwestern parts of the United States. The name is of uncertain origin, but is supposed to be a corruption of the Spanish-Mexican *gorrion*, a sparrow.

BURITI PALM (*Mauritia vinifera*), one of the largest of the South American palms, often attaining a height of 125 feet. It grows in the swamps from Southern Brazil to the West Indies. Cords are made of the fibers from the young leaves, and the pith of the leaf-stem is utilized as cork. The abundant sweet sap is drunk fresh or is fermented into palm wine by the natives. Hence the name *wine palm*, commonly given to the tree. A single bunch of the sago-like fruit frequently weighs over a hundred pounds. The pulp and seed of this fruit are eaten and made into sweetmeats. *Mauritia flexuosa*, the *moriti* or *sea palm* of Trinidad and Brazil, is of similar appearance and uses; but its leaves yield better fiber, and its stem a useful wood.

BURKE, WILLIAM (1792-1829), born in 1792, became notorious through his partnership with William Hare in a series of infamous murders committed in Edinburgh. Toward the close of 1827 they sold for dissection to Dr. Robert Knox, the body of an old pensioner who had died in the house, and the ease and safety with which they had earned this money tempted them to commit murder to procure more bodies. They inveigled unknown travelers into the lodging-house, made them drunk, and then suffocated them in such a way as to leave no marks of violence, receiving for the bodies sums of money varying from \$40 to \$70. They had murdered 15 persons in this way when they were discovered by the police. Hare, the more execrable wretch of the two, was admitted king's evidence, while Burke was hanged Jan. 28, 1829. His abhorred name has added a word to the English tongue: *burke*, to smother; to get rid of by indirect means.

BURLEIGH, WILLIAM HENRY, born in Woodstock, Conn., Feb. 2, 1812, died in Brooklyn, N. Y. March 18, 1871. He early entered a printing office where he learned type-setting and wrote for the press. From 1832 to 1835 he was in charge of newspapers which advocated reforms. His principles were in favor of peace and temperance, and against slavery. He was more than once the object of mob violence. He was editor of the "Prohibitionist." In 1855 he became harbor-master of the New York port, which office he held for 15 years. A collection of his poems which had appeared in his newspapers was published in book form. His wife, *Celia*, was born in Cazenovia,

N. Y., in 1825, died in Syracuse, July 26, 1875. Mr. Burleigh was her third husband, she having been divorced from C. B. Kellum and later from Charles Chauncy Burr. After Mr. Burleigh's death she studied theology, entered the Unitarian ministry, and was pastor of a church in Brooklyn, Conn., till her health failed.

BURLINGAME, ANSON, born in New Berlin, N. Y., Nov. 14, 1820, died in St. Petersburg, Russia, Feb. 23, 1870. He graduated at Harvard law-school in 1846, practiced law in Boston, and was elected to the legislature. In 1854 he was sent to Congress, where he became known as an able debater and an opponent of slavery. For his severe denunciation of Brooks's assault on Sumner he was challenged to fight a duel (see Brooks, Preston S., in these Revisions and Additions). President Lincoln sent him to China in 1861 as United States minister, and at the expiration of his term Prince Kung, regent of the empire, appointed him special envoy to the United States and the principal European powers to make an amicable treaty with those nations—an honor never before conferred upon a foreigner. In 1868 the "Burlingame Treaty" was signed at Washington, being the first official acceptance, on the part of China, of the principles of international law. Mr. Burlingame then visited England, Denmark, Sweden, Holland and Prussia on diplomatic missions, and in 1870 reached St. Petersburg, where he died before transacting the official business which he had in hand.

BURLINGTON, a city of Iowa, located on the west bank of the Mississippi River, and on the main line of the Chicago, Burlington & Quincy railroad, and on six other railroads. The manufacturing and jobbing business is compactly gathered in the valley adjacent to the railroads and river, while for the most part the residences are spread over three hills that rise above the valley. The Mississippi is crossed here by a railroad bridge. The streets are paved with brick, granite and macadam pavement, and are lighted with gas and electricity. There are twenty-five miles of street railway operated by electricity. The mains of a steam-heating company, extending through the business portion, supply steam heat abundantly. The city is well supplied with water from the river by the Holly system. Among the principal buildings are a government building costing \$100,000, and an opera house costing \$90,000. There is also a charity hospital, a free circulating library of 10,000 volumes, numerous public and denominational schools, and a business college. The city has a free-delivery post-office, a telephone exchange, and an excellent fire department. The advantages of river and railroad transportation have aided in building up an extensive manufacturing business. Population in 1880, 19,450; in 1890, 22,528. See *Britannica*, Vol. IX, p. 551.

BURLINGTON, a city of Kansas, county-seat of Coffey county. It is situated on the Neosho River, about sixty miles south of Topeka. The river furnishes an abundant water-power, and the city contains several mills and factories.

BURLINGTON, a city of Vermont, the largest, in respect of population, in the State. It is a port of entry, and has a good harbor, well protected by a breakwater constructed by the United States Government. The Vermont Central Railroad connects this city with Rutland, Montpelier, and Ogdensburg, N. Y. That portion of the city lying near the lake is not much above the water, but the largest part is on ground elevated about 300 feet above the lake, thus affording fine views of the surrounding country and of the Adirondack Mountains beyond. In the center of the city is a handsome square, bor-

dering which are the post-office, court-house, and large hotels. Among the institutions of learning are the Vermont Episcopal Institute, the State Agricultural College, founded in 1865, and the University of Vermont. This latter institution, founded in 1800, is not sectarian, and is open to both sexes. It occupies four large buildings on an elevated site, and has connected with it a medical college. The city contains a free library, with over 12,000 volumes. Here also is an orphan asylum and a hospital founded by Miss Mary Fletcher, and costing \$175,000. Burlington abounds in manufactories, and is one of the most extensive lumber markets in the United States. Population in 1880, 11,365; in 1890, 14,566. See *Britannica*, Vol. IV, p. 550.

BUR-MARIGOLD (*Bidens*), the book-name of a coarse worthless weed commonly called *beggar's-ticks*, or *beggar's-lice*.

BURMEISTER, HERMANN, zoölogist born in Stralsund, Germany, Jan. 15, 1807. He occupied the chair of zoölogy, at Halle; was deputy to the national assembly of Prussia; traveled in Brazil for two years, and was made director of the Museum of Natural History at Buenos Ayres, and head of the Academy of Sciences in the National University of Cordoba, Argentine Republic. He has published many scientific works, among which are: *Treatise on Natural History*; *Manual of Entomology*; *The History of Creation*; and *The Animals of Brazil*.

BURNABY, FREDERICK GUSTAVUS (1842-85), a daring traveler and dashing *sabreur*, born at Bedford, England, March 3, 1842. He was educated at Bedford, Harrow, and in Germany, and early became an accomplished linguist. He joined the Royal Horse Guards in 1859, became captain in the regiment in 1866, lieutenant-colonel in 1880, and colonel in 1881. His travels in Central and South America; his experiences in the Carlist camp in 1874, and with Gordon in the Soudan in 1875, fitted him for his most notable exploit, the ride to Khiva, in the winter of 1875, across the steppes of Tartary. His *Ride to Khiva* (1876), written in a bright and pleasing style, made him famous; and indeed his fine physique, reckless courage, and outspoken frankness of manner admirably fitted him to be a hero of the English people. In 1876 he traveled in Asia Minor and Armenia, publishing on his return, *On Horseback Through Asia Minor*, which was no less popular than his first venture. He was attached to the Intelligence Department in Graham's expedition to Eastern Soudan, and was wounded at El Teb. In 1884 he joined Sir Herbert Stewart's column in the Nile expedition, and was killed by an Arab spear-thrust in the battle of Abu-Klea, Jan. 17, 1885. Burnaby was a daring aeronaut, and crossed the Channel to Normandy in 1882 in the balloon *Eclipse*.

BURNAND, FRANCIS COWLEY, English author and dramatist, born Nov. 29, 1836. He was educated at Eton and Trinity College, Cambridge (1854-58), and afterwards went to Cuddesdon Theological College with a view to becoming a clergyman of the Church of England. In December, 1858, he joined the Roman Catholic Church, and for four months continued his studies at the house of the Oblate Fathers at Bayswater. He was called to the bar in 1862, but the success of some early dramatic ventures altered his plans. He joined H. J. Byron in starting "Fun," but left that paper for "Punch," then edited by Mark Lemon. His first contribution to "Punch" was *Mokeanna*, a burlesque on sensational romance writing; soon after appeared *How, When and Where*, followed by the now well-known *Happy-Thoughts*, which in book form soon ran through over sixteen editions. Later, he continued the *Happy Thoughts* series, and wrote

a series of burlesques of popular novelists—that on Ouida's style, *Strapmore*, being perhaps the happiest. Burnand has been editor of "Punch" since 1880.

BURNE-JONES, EDWARD, A. R. A., born at Birmingham, England, of Welsh descent, Aug. 28, 1833. He was destined for the church, and educated at Exeter College, Oxford, but his love of art asserted itself, and he received from Rossetti encouragement and guidance in his attempts as a painter. From the first he was a fine colorist, and his earlier works attain in water-color greater brilliancy and purity of hue than is usual even in oil. It was not until 1870 that he began to be known as an oil-painter. Among his pictures are *The Days of Creation* and *The Mirror of Venus* (1877); *Le Chdnt d'Amour* (1878); *The Golden Stairs* (1880); *The Tree of Forgiveness* (1882); *King Cophetua* (1884), and *The Brazen Tower* (1888). In his later works his coloring tends to become less splendid, inclining to restrict itself to curiously varied tones of bluish purple and ruddy bronze. He has furnished many striking designs for stained glass.

BURNET, JOHN, painter, engraver and author, born at Fisherrow, near Edinburgh, Scotland, in 1784, died at Stoke Newington, April 29, 1868. He first became known through his admirable engravings of Wilkie's works. Of his paintings the best known is the *Greenwich Pensioners* (1837). He was author of several books on art, the most important being a *Practical Treatise on Painting*; he was also author of *Rembrandt and His Works* (1849), and, in conjunction with Cunningham, of *Life and Works of Turner* (1852).

BURNET, the common name of species of *Poterium*, natural order *Rosaceæ*. Great burnet, *Poterium officinale*, is common in meadows in all parts of Europe, and is cultivated in Germany for fodder. The root-stalk is astringent, and was formerly used in medicine. Common burnet, *Poterium sanguisorba*, grows on chalky soils, and has also been cultivated as a fodder plant. It grows wild in the United States.

BURNET-SAXIFRAGE (*Pimpinella saxifraga*), an umbelliferous plant, which, on account of its similar foliage, habit, use as fodder, and (more distinctly) astringent root-stalk, has been associated or confused with burnet from the earliest times.

BURNETT, FRANCES HODGSON, author, born in Manchester, England, Nov. 24, 1849. Her parents emigrated to America and settled in Knoxville, Tenn. Two years afterward the daughter began to write short stories for magazines and in 1872 a story from her pen was published in "Scribner's Monthly." After her marriage to Dr. Luan M. Burnett, of Knoxville, she visited Europe, and, on her return took up residence in Washington, D. C. Among her stories are *That Lass o' Lourie's*; *Polly Pemberton*; *Haworth's Louisiana*; *A Fair Barbarian*; *Through One Administration*; *Little Lord Fauntleroy*; *Sara Crewe*; and *Little St. Elizabeth*.

BURNETT'S LIQUID, a solution of zinc chloride introduced by Sir William Burnett (1779-1861) for the purpose of disinfecting ships, hospitals, etc. It is of service in preserving dead animal tissues, as in the dissecting room, and in jars containing anatomical specimens. When added to bilge or sewage water as a deodorizer, it mainly acts by decomposing the offensive sulphide of ammonium. Burnett's liquid has also been applied to the preservation of timber from the ravages of dry-rot, and the process of so treating wood is called *Burnettizing*.

BURNHAM, GORDON WEBSTER, born in Hampton, Conn., March 20, 1803, died in New York city,

March 18, 1885. He became interested in the manufacturing industries of Waterbury, Conn., and was member of the firm of Benedict & Co., which made brass goods. After earning a large fortune the firm dissolved, and he became successively the president of the Waterbury Clock Co., the Waterbury Watch Co., the Waterbury Brass Co., and the American Pin Co. Mr. Burnham presented to New York city a statue of Daniel Webster, erected a statue to his father-in-law, Bishop Brownell, and his own monument, erected some time before his death, is among the finest in Greenwood Cemetery.

BURNHAM BEECHES, the remains of an ancient forest in Buckinghamshire, England, 25 miles northeast of London. The London Corporation purchased the surrounding 374 acres in 1879, and set them apart for public use Oct. 3, 1883. Many of these beeches are of immense size.

BURNING BUSH (*Euonymus atro-purpureus*), a small ornamental shrub of North America, with oblong leaves, and bright crimson, pendulous, four-lobed, smooth capsules; its congener, *Euonymus Americana*, has scarlet, prickly capsules. The French *Buisson ardent* is a red hawthorne (*Crataegus pyracantha*). The plant *Dictamnus fraxinella* is called burning bush because its secretions render the surrounding air inflammable in hot weather.

BURNS, ANTHONY, fugitive slave, born in Virginia about 1830, died in St. Catharine's, Can., July 27, 1862. He escaped to Boston, where he found work during the winter of 1853-54. After the passage of the Kansas-Nebraska bill, Burns was arrested under the provisions of the fugitive slave act by United States Marshal Watson Freeman, on the warrant sworn out by Charles F. Suttle. The arrest created much excitement, as Boston was the center of the anti-slavery sentiment. A mass-meeting was called in Faneuil Hall. During its progress an unsuccessful raid was made on the court-house, led by Col. Thomas W. Higginson, to rescue Burns, and several persons were injured. The next day the court decided that Burns must be returned to his master. He was to be taken to Virginia in the revenue cutter *Morris*, and an immense crowd followed him to the wharf. So strong was popular feeling that a riot was feared, till Rev. Daniel Foster exclaimed, "Let us pray!" The crowd was instantly subdued and stood in silence with uncovered heads, while Burns was hastily transferred to the ship. Afterwards Burns studied at Oberlin College and became a Baptist minister. He settled in Canada, where he was pastor of a colored church.

BURNS, FRANCIS, M. E. bishop, born of free colored parents in Albany, N. Y., Dec. 5, 1809, died in Baltimore, Md., April 18, 1863. When fifteen years old he was converted and studied for the ministry, showing such ability in his work among his own people that he was sent in 1834 on the Liberian mission. Here he remained for ten years. In 1844 he visited the United States, and was ordained deacon in Brooklyn and elder in Mulberry Street Church, New York city; he returned to his work in Africa, where he was made presiding elder of Cape Palmas district, and opened an academy at Monrovia. He was made superintendent of missions, and on his second return to the United States was ordained missionary bishop. After five years more in Africa, he returned to the United States on account of ill-health.

BURNS, REV. JABEZ, D. D., LL. D., Baptist minister and prolific religious writer, born at Oldham, near Manchester, England, Dec. 18, 1805, died in Paddington, Jan. 31, 1876. He was educated at

Chester and at Oldham Grammar-School, uniting at an early age with the Methodist New Connection. At the age of twenty-one he removed to London, where he published his first two works, *The Christian Sketch-book* and *The Spiritual Cabinet*, both of which were popular. After exercising the functions of the ministry at Perth (1830-35), he returned to London to take charge of a General Baptist congregation in Marylebone, and subsequently lectured in all parts of the United Kingdom on temperance, abolition of capital punishment, etc. He received the degrees of D.D. and LL.D. from American colleges during his visits to this country in 1847 and 1872. In 1869 he visited Egypt and Palestine. He was the author of more than thirty separate works. One of them, *Sketches and Skeletons of Sermons* (15 volumes), reached a 14th edition.

BURNS, JOHN, born in Burlington, N. J., Sept. 5, 1793, died in Gettysburg, Pa., Feb. 7, 1872. He was one of the first volunteers of the war of 1812, and served at Plattsburg, Queenstown and Lundy's Lane. He was a volunteer of the Mexican war, and, when he offered his services on the outbreak of the civil war, he was not accepted on account of his age, but was given the place of teamster, and whenever an engagement took place he would borrow a gun so as to take part. He was finally discharged from the service on account of infirmities, but was chosen constable of Gettysburg. In June, 1863, when the Confederate scouts approached the town, he met them with a company of volunteers. June 28 the Confederates held possession, and John Burns was locked up for exercising his authority in opposition to the Confederate officials. The Southern army went on toward York, and Burns, now being at liberty, began to arrest Confederate stragglers and scouts. On the 28th the Union army came to the assistance of the veteran who, almost single-handed, had been contending against the Army of Northern Virginia. When the battle of Gettysburg was fought, Burns borrowed a gun from a wounded Union soldier and went into the thickest of the engagement. He was wounded and fell into the hands of the Confederates, to whom he told a plausible story, and then managed to be taken to his own house for medical treatment. He had a narrow escape from being shot for not wearing the army dress (Federal), but on the following day the Union army drove the opposing forces from the field, and John Burns was again in the hands of friends. The story of his patriotism was appreciated in the Northern States, and visitors to the field of Gettysburg substantially remembered him. In his last years his mental faculties became clouded, and he frequently wandered from home. One cold night in December, 1871, he was found in a destitute condition, wandering about in New York city. His wants were supplied and he was taken home, but died soon after from pneumonia.

BURNSIDE, AMBROSE EVERETT, an American general. See *Britannica*, Vol. XXIII, p. 788.

BURNT STONES, antique carnelians sometimes found in ancient ruins, and seeming to have been acted upon by fire, having a dull appearance externally, but exhibiting a beautiful red color when held up to the light. When ornamented with fine engraving they bring a high price.

BURR, AARON, statesman, born in Newark, N. J., Feb. 6, 1756, died on Staten Island, N. Y., Sept. 14, 1836. His father, Aaron Burr, was president of Princeton College, and his mother was Esther, daughter of Jonathan Edwards. His parents died when he was very young, and himself and sister

Sarah were cared for by their uncle, Rev. Timothy Edwards, of Elizabeth, N. J. The children possessed an abundant fortune and were well educated.

As a lad Aaron was small and very handsome; with black eyes, fascinating manners and a precocious intellect. At the age of 11 he was sufficiently advanced in his studies to enter Princeton, but was not allowed to do so on account of his youth. Two years later he entered, and graduated in 1772. About the time of his leaving college a religious revival was in progress, and young Burr went to the president Dr. Witherspoon, for help in his mental difficulties. The doctor called the excitement fanatical, but Burr was not content, and went to live in the family of Dr. Bellamy with the purpose of settling his convictions in regard to Christianity. To the surprise of his friends he became an infidel, and adopted the Lord Chesterfield code of manners and morals.

In 1774 Burr resided with his brother-in-law, Tapping Reeve, and studied for the legal profession. The following year he entered the Revolutionary Army at Boston, accompanied Benedict Arnold to Quebec, and returned from the expedition with the rank of major and a high reputation for military daring. He became for a few weeks a member of Washington's family, but each came to dislike the other, and Burr withdrew and attached himself to General Putnam as aide. Burr was promoted to the rank of lieutenant-colonel and fought at Hackensack and Monmouth. After four years of service he resigned his commission on account of ill health, and after a period of rest resumed the study of law.

He opened an office for practice in Albany, and in the same year (1782) married Mrs. Theodosia Prevost, widow of an English officer. The next year he moved to New York city, lived in magnificent style, entertained Talleyrand, Louis Philippe and other famous guests; entered political life, and ranked among the leading lawyers of the city—Alexander Hamilton being his sole rival.

In 1791 Burr was elected to the United States Senate, and afterwards to the New York legislature. Jefferson and Burr stood highest in the presidential campaign of 1800, each candidate receiving 73 votes. This threw the choice into the House, where, after a week's debate, Jefferson was chosen President and Burr Vice-President. Burr had grown unpopular with his party, as his election to the Senate and also to the Vice-Presidency had a somewhat mysterious, not to say dishonest, look. To clear away suspicion he offered himself as candidate for governor of New York. In the contest he was beaten by Morgan Lewis; for Alexander Hamilton, whose father-in-law Burr had outstripped in the senatorial race in 1791, exerted his powerful influence in the campaign, and warned the party to distrust him. Burr made Hamilton's speeches the excuse for challenging him to fight. Hamilton endeavored to avoid this extremity, but finally accepted, and the duel took place at Weehawken, N. J., July 7, 1804. Hamilton was killed, and Burr indicted for murder. He fled for safety to his daughter's home in South Carolina, and after the excitement died down, engaged in a mysterious project which was nothing less than the conquering of Texas, and possibly Mexico; the founding of a republic with himself at the head and New Orleans as his capital; the Western States might eventually leave the Union and join his republic. When events were almost ripe for testing the plan, the President denounced the scheme (1806), and it fell through.

Burr was tried the following year on a charge of treason, but was acquitted on some technicality.

His duel with Hamilton had spoiled his political prospects, and now his name was branded as that of a traitor. He sailed to England, but was from there expelled; went to Sweden, Germany and France, and in every place was under the watchful eyes of government officials. He was forbidden to return to America, but after living in great poverty in London, whither he had again returned, he came to the United States in the disguise of wig, whiskers, strange garments and the assumed name of Arnot. He reached Boston in 1812, then drifted to New York, and finally ventured to open a law office on Nassau street. Here he lived for 23 years, and although shunned by society, whose favorite he had been, he built up a good practice.

Two great misfortunes befell him: his only grandchild, a boy 11 years of age, died, and his idolized daughter, Theodosia, was lost at sea. When 78 years of age (his first wife having died in 1794) he married Madame Jumel, the wealthy widow of a French merchant. His reckless expenditure of her fortune brought about a separation, and in his last days an old Scotch woman, a former friend, gave him a home. Burr died at Port Richmond, Staten Island, and was buried, according to his own wishes, in the Princeton Cemetery, near the graves of his father and grandfather.

BURR, THEodosia, only daughter of Aaron Burr and his wife, Mrs. Theodosia Prevost, born in New York city in 1783; lost at sea in January, 1813. She was a brilliant and highly accomplished woman, for her father superintended her education, carefully developing her mental and physical qualities and training her to independence of thought and self-reliance. She married Joseph Alston (1801), afterwards governor of South Carolina. She and her father were passionately fond of each other, and her faith in him remained unshaken through all the misfortunes which he brought upon himself. Burr's scheme to become emperor of Mexico was known by herself and husband, and it was even planned that her only child, a son, would be heir-apparent to the throne. On her father's trial for treason at Richmond, she appeared in court, and her beauty and graces were not without effect, both on jury and spectators, in securing a favorable verdict and modifying popular indignation. She wrote eloquent letters to Mrs. Madison, Secretary Gallatin, and former friends of her father while he was in exile, and thus made it possible for him to return to the United States. The death of her only child was a terrible blow, and made her ill with a fever; but learning that her father had arrived in America, she left Charleston on the pilot-boat *Patriot*, and started for New York. A storm off Cape Hatteras probably capsize the boat, for it was never heard of again.

BURRA-BURRA, the name of a famous copper mine in South Australia, 101 miles northeast of Adelaide, discovered in 1844. See *Britannica*, Vol. III, p. 109; Vol. XXII, p. 284.

BURRARD INLET, a narrow inlet in the southwest corner of British Columbia, a little north of the mouth of the Fraser River. It is nine miles in length, and forms one of the finest harbors on the Pacific coast, being easy of access for the largest ships. It has become of much more importance since the opening of the Canada Pacific Railway, whose terminus is at Vancouver on the north shore of this inlet.

BUR-REED, the popular name of a species of *Sparganium*, closely allied to the bulrush, and of similar habitat and distribution, so called from its reed-like leaves and bur-like heads of fruit. See *Britannica*, Vol. XX, p. 319.

BURRIANA, a town of Spain, 34 miles north of Valencia, on the Mediterranean. Population, 10,058.

BURRITT, ELIHU, a prominent advocate of the principles of the Peace Society, and widely known as the "Learned Blacksmith," born in New Britain, Conn., Dec. 8, 1810, died there March 6, 1879. His father was a shoemaker, and the boy learned the trade of a blacksmith, which he pursued in his native place and in Worcester, Mass., to which town he removed. All his leisure was devoted to study, especially of mathematics and languages. In the latter he achieved a very wide range, but is even better known to the world as an earnest advocate of peace than as a scholar. At Worcester he edited the "Christian Citizen," advocating the peaceful settlement of international questions, and the doctrine of "universal brotherhood," and he traveled much in Europe and America lecturing and working in other ways for the extension of his views on peace, temperance, self-culture and the emancipation of the slaves. In 1865 he was appointed United States consul at Birmingham, England. Among his published works were: *Sparks from the Anvil*; *Olive Leaves*; *Hand-book of the Nations*; *A Walk from John O'Groat's to Land's End*; *The Mission of Great Suffering*; *Walks in the Black Country*; *Ten Minute Talks*; and *Chips from Many Blocks*.

BURROUGHS, JOHN, born in Roxbury, N. Y., April 3, 1837. He was a farmer's son, received an academic education, became a New York journalist, was a treasury clerk in Washington, D. C., from 1864 to 1873, and afterwards examiner of national banks. In 1874 he settled on a farm near Esopus, N. Y., and has devoted his time to fruit culture and literature. A close observer and enthusiastic lover of Nature, his published essays make delightful reading. Among them are: *Wake Robin*; *Winter Sunshine*; *Birds and Poets*; *Locusts and Wild Honey*; *Pepacton*; *Fresh Fields*; and *Signs and Seasons*.

BURSARY: in the universities and colleges of Scotland, the annual proceeds of a sum permanently invested for the maintenance of a student. Elsewhere the term is applied to the treasury of a college or monastery.

BURSCHEID, a manufacturing town of Prussia, situated on the Wupper, 20 miles southeast of Düsseldorf. Population, 6,828.

BURSCHENSCHAFT, the name of a famous association of German students, at one time prominent in the politics of the Fatherland. It was founded at Jena in 1813, and composed of students who had fought in the great war of liberation. The *Burschenschaft* aimed to cherish the higher ideals of patriotism, and especially of German national unity. In the time of reactionary policy, the club was suspected of revolutionary tendencies, and in 1819 was dissolved by the Prussian and other governments.

BURTON, SIR FREDERIC WILLIAM, water-color painter, born in County Clare, Ireland, in 1816, and educated at Dublin. In 1856 he became a member of the Society of Painters in Water-Colors, and in 1874 director of the National Gallery. In 1884 he was knighted.

BURTON, JOHN HILL, historian, born at Aberdeen, Scotland, Aug. 22, 1809, died Aug. 10, 1881. He graduated at Marischal College, Aberdeen; was articled to a lawyer, and came to the Edinburgh bar, but subsequently devoted himself chiefly to study and letters. He was appointed secretary to the Prison Board of Scotland, and became one of the prison commissioners. He held the old office of Historiographer Royal for Scotland. Among his original works may be mentioned *Life of Hume*

(1846), *Political and Social Economy* (1849), *History of Scotland from the Revolution to the Extinction of the Last Jacobite Insurrection* (1853), *The History of Scotland from Agricola's Invasion to the Revolution of 1688* (1867-70), *The Book-Hunter* (1862), *The Cairngorm Mountains* (1864).

BURTON, SIR RICHARD FRANCIS, the son of Colonel J. N. Burton, and one of the most daring and successful of modern travelers, born in 1821 at Barham House, Hertfordshire, England, died at Trieste, Austria, Oct. 20, 1890. He was educated in France and England, and in 1842 he entered the Indian service, and served in Sind under Sir Charles Napier. In 1851 he published his first important work on *Sindh*. Burton acquired a very familiar acquaintance with Hindustani and Persian, and learned to speak Arabic like a native.

Burton resolved to explore Arabia in the disguise of an Afghan pilgrim, and after a visit to England in 1851 he set out on his journey. His *Personal Narrative of a Pilgrimage to El Medinah and Mecca* (1855; new edition, 1879-80) records one of the most daring feats on record.

His next journey was into the country of the Somalis, in Eastern Africa. He was chief of the staff to General Beatson in the Crimea. In 1856 he set out in company with Speke on the journey which led to the discovery and exploration of the great lake of Tanganyika, and afterwards traveled in North America.

In 1861 Burton married, and was appointed consul at Fernando Po; and while holding this appointment he visited the Cameroon Mountains, and went on a mission to the king of Dahomey. He was subsequently consul at Santos in Brazil, and at Damascus; and in 1872 he succeeded Charles Lever in the post of British consul at Trieste. In 1876-78 he paid two visits to Midian. In 1882 he visited the gold-producing country of the Guinea coast, along with Captain Cameron. He received the gold medal of both the English and French geographical societies, and was knighted in 1886. He was master of 35 languages and dialects.

Lady Burton was the companion of his wanderings after 1861, and has written a narrative of travel, *Inner Life of Syria, Palestine, etc.* (1875), and *Arabia, Egypt, India* (1879). Among Burton's many works are: *First Footsteps in East Africa* (1856), *The Lake Regions of Central Africa* (1860), *Wanderings in West Africa* (1863), *The Nile Basin* (1869), and works on Goa, Abbeokuta, Paraguay, Brazil, Syria, Iceland, etc., as well as several translations.

BURTON, WILLIAM EVANS, English playwright and comedian, born in London, Sept. 24, 1804, died in New York, Feb. 10, 1860. His father was a printer, and at his death the son attempted to support his mother and carry on the printing business, although but eighteen years of age. Failing in this he drifted into the dramatic profession, and made his first appearance in a London theater in 1831, in *The Lottery Ticket*, and in 1833 his play *Ellen Wareham* was performed in five London theaters on the same night. He came to the United States in 1834, and spent four years in Philadelphia. Subsequently he appeared in New York in James W. Wallack's theater, playing *John Jones*, for the benefit of Samuel Woodworth, author of *The Old Oaken Bucket*.

Burton opened a theater of his own in New York in 1848. He had a strong force of actors, among whom were John Brougham, John Lester Wallack, Charles Fisher, Mrs. Skerrett, Mrs. Rhea, Mary Devlin, Fanny Wallack and Mrs. Hughes. Mr. Burton excelled as a low comedian, although he preferred the tragic parts. His most brilliant hits were in the characters of Sir Toby Belch, Micawber,

Sam Weller, Captain Cuttle, Bottom, Mr. Toodles, Jeremiah Clip, Touchstone and Falstaff. For eight years he conducted this Chambers street theater, then for two years had the management of the Metropolitan (afterwards Winter Garden).

Burton's last performance was in December, 1859, in Hamilton, Can. Mr. Burton played in 184 characters; in the character of Toodles he acted 640 times. He wrote *The Actor's Alloquy*, and *Wageries and Vageries*, edited "Literary Souvenir," established "The Gentleman's Magazine," published *Cyclopædia of Wit and Humor*, and collected a fine library, particularly rich in Shakespearean literature.

BURYING BEETLE (*Necrophorus*), the common name of insects of the family *Silphidae*, remarkable for their habit of burying the bodies of mice, moles and other small animals, in which they have deposited their eggs. The known species are mostly natives of Europe and of North America. See *Britannica*, Vol. VI, p. 130.

BUSACO, a ridge (1,826 feet) on the north side of the river Mondego, in the Portuguese province of Beira. Here Wellington, with 40,000 British and Portuguese troops, repulsed the attack of Massena with 65,000 French, Sept. 27, 1810.

BUSBY, a military head-dress worn by hussars, horse artillerymen and engineers in the British army. It consists of a fur hat with a short bag hanging down from the top on its right side, of the same color as the facings of the regiment, and an upright plume in front. The origin of the name is obscure, but seems to be Hungarian, and it is said that the bag is a relic of a Hungarian head-dress, from which a long padded bag hung down over the right shoulder to ward off sword-cuts.

BUSCH, JULIUS MORITZ, a German writer, born in Dresden in 1821. His literary works consist of numerous translations into his own language of the writings of popular American and English authors, of entertaining accounts of his own extensive travels, and of political essays on his own and other countries. During the Franco-Prussian war he was in close relationship with Bismarck; and his diary kept during the campaign has been translated into English, French, Dutch, Swedish and Russian.

BUSH ANTELOPE, also called Bush Buck and Bush Goat, names common to a number of species of the genus *Tragelaphus*, natives chiefly of the southern and western parts of Africa. They are animals of more compact form, shorter limbs, and greater strength, but much less agility, than the true or typical antelopes. They frequent jungles, thick forests, and beds of reeds, and when pursued seek to escape by diving into a thicket.

BUSHEL, a dry measure containing eight gallons or four pecks. In Great Britain the Winchester bushel (so called because the ancient standard bushel measure was preserved in the town-hall of Winchester) was the standard measure from Anglo-Saxon times until the imperial bushel was legally established in 1826; its capacity was 2,150.42 cubic inches. The capacity of the imperial bushel is 2,218.192 cubic inches, and contains 80 pounds avoirdupois of distilled water, at the temperature of 62° F., with the barometer at 80 inches. Measures of capacity in the United States are founded on the Winchester bushel. Various weights of different commodities have been made bushels by law, and vary considerably in different States.

BUSHNELL, DAVID, born at Saybrook, Conn., in 1742, died in Warrenton, Ga., in 1824. He was a graduate of Yale in 1775. His mind was of an inventive turn, and during his college course he was

at work constructing a torpedo for the destruction of ships. He built the *American Truth*, an iron-plate diving boat to carry one man who should guide himself to the vessel belonging to the enemy and thereto fasten the Bushnell torpedo, which was regulated by clockwork to explode at a given time. In 1777 he successfully tested his invention, and with it blew up a British schooner in New York harbor. The following year he sent a fleet of barrels down the Delaware to destroy the British ships. The scheme was not entirely successful, but the next day they exploded and blew up one boat. *The Battle of the Kegs*, a humorous poem by Francis Hopkinson, describes the incident. Mr. Bushnell invented several destructive machines, not all of which were successful. He served during the war of the Revolution, and was made captain of the corps of sappers and miners.

BUSHNELL, a city of Illinois, about 50 miles west of Peoria. It is finely situated in a healthy prairie region. It contains various manufactories, and in the vicinity are found excellent coal and timber.

BUSHRANGERS: in Australia, originally runaway convicts, who had taken to the "bush" and become robbers. In the early years of the century they established a reign of terror in what was then the sparsely settled Van Diemen's Land. In 1815 martial law was proclaimed in the district by the lieutenant-governor, and under Governor Arthur (1824-36) stern measures were taken to repress crime. In 1830 a severe bushranging act was passed in New South Wales, where at one time a band of 50 desperadoes in the Bathurst district fought regular engagements with the settlers and police, and only surrendered to a detachment of soldiers brought from Sydney. Subsequent outbreaks occurred at intervals, but generally only three or four ruffians would band themselves together, and after a more or less brief and desperate course they were brought to justice. In later years bushranging has been facilitated by the colonial land laws, which permit "free selection before survey," thus allowing people to settle in isolated spots outside the scope of police supervision.

BUSH-STRIKE, the name of a South American passerine bird, of the family *Formicariidæ* and subfamily *Thamnophilinæ*. It resembles the butcher bird or shriek in its habits; and haunts thick trees, bushes and underwood, where it seeks for insects, larvæ, young birds and eggs.

BUSKIN, a kind of half-boot laced to the ankle and lower part of the leg. The ancient tragedians wore a similar boot (*cothurni*), often with a thick sole in order to add to the actor's height. Hence the word "buskin" is often used for tragedy as "the sock" (*soccus*, "a flat-soled shoe") is for comedy.

BUSSEY, CYRUS, born in Hubbard, Trumbull county, Ohio, Oct. 5, 1833, was the son of a Methodist preacher, and entered the mercantile business. He was elected to the State legislature as a Democrat in 1858, and was a delegate to the convention that nominated Stephen A. Douglas for the Presidency. During the war he served on the Union side. He commanded the militia in southeastern Ohio, raised and was colonel of the 3d Iowa volunteer cavalry; was in the Arkansas campaign of 1862, led the 3d brigade of Steele's division, was chief of cavalry at the siege of Vicksburg, led the advance on Johnston under Sherman, was made brigadier-general in 1864 for "special gallantry," restored discipline at Fort Smith, where he was given command, and in 1865 was brevetted major-general. He has been in business in St. Louis and New Orleans since the war, and in 1881 removed to New York. He was for six years president of the New

Orleans Chamber of Commerce, and was chairman of the committee from that body which secured from Congress the appropriation for Captain Eads's jetties at the Mississippi River's mouth.

BUSSU PALM (*Manicaria saccifera*), a palm growing in the tidal swamps of the Amazon. The stem is only from 10 to 20 feet high, but the immense undivided coarsely serrate leaves are often 30 feet in length by 4 or 5 in width. These are used by the Indians for thatch. The spathes, taken off entire, are used as bags, or, when cut longitudinally and prepared, answer the purpose of coarse, strong cloth.

BUST, the sculptural representation, in the round, of the head and shoulders of a person. The term may be applied to the head and neck only, or to a representation of the head with the neck, breast, shoulders and upper part of the arms, or to the head, neck, shoulders and breast. A bust is usually set upon a base or pedestal, and may be made of marble, stucco, clay, metal, wood, or wax. It may be portrait or be purely ideal.

BUSTAMANTE, ANASTASIO, a Mexican physician, soldier and statesman, born at Jiquilpan, in the province of Michoacan, July 27, 1780, died at San Miguel de Allende, Feb. 6, 1853. He was physician in the family of Don Felix Maria Calleja, military governor at San Luis Potosi. Presented by his employer with a commission in the San Luis militia, he served in many battles, and in those of Aculeo, Guanajuato and Calderon gained special distinction. He rose through the successive military grades to the position of general of division, the highest rank in the Mexican army, and became military governor of the interior provinces. In 1829 he headed the revolution, and the following year became vice-president of the republic, exercising the supreme executive power. This position he held until the revolution of 1832 obliged him to resign, and the following year he was banished from Mexico. On the death of Santa Anna he was recalled and elected president of the republic, his term extending from 1837 to 1841. In 1846 he was appointed president of the congress, the last important office held by him.

BUSTEED, RICHARD, born in Cavan, Ireland, Feb. 16, 1822. He emigrated with his father to Canada, whence he came to New York city, where he worked on the "Commercial Advertiser," and was a licensed local Methodist preacher. Admitted to the bar in 1846, he made a reputation in extradition cases, and for three years was corporate counsel for New York city. He was a Democrat and a supporter of Douglas, but after the outbreak of the civil war he strongly supported the Union cause. He was made brigadier-general of volunteers, and was assigned to service at Washington and New York. He commanded a brigade at Yorktown in Virginia, but resigned on account of the jealousy of his enemies in the Democratic party. In 1864 he was appointed by the President as United States district judge of Alabama, and while occupying this position rendered the decision that the test-oath prescribed by the United States was unnecessary and unconstitutional as applied to lawyers practicing before the United States courts. This opinion was afterwards confirmed by the Supreme Court. Busted resigned his office in 1874, and returned to his law practice in New York city.

BUTCHER-BIRD, the Shrike. See *Britannica*, Vol. XXI, pp. 845-46.

BUTCHER'S BROOM (*Ruscus*), a genus of ever-green, usually dioecious, shrubs of the asparagus group of *Liliaceæ*. *Ruscus aculeatus* is the common butcher's broom, so-called because used by butchers to sweep their blocks. It grows more commonly

and luxuriantly in the south of Europe. The fruit is a red, one-seeded, sweetish berry. It grows well under trees or shrubs, and can often be advantageously introduced for ornamental purposes. The root was formerly used as an aperient and diuretic.

BUTLER, BENJAMIN FRANKLIN, an American lawyer, statesman and soldier, was born in Deerfield, N. H., Nov. 5, 1815. He graduated at Waterville College (now Colby University, Me.); began the practice of law in Lowell, Mass., in 1840, and attained a high reputation in criminal cases. He was elected to the Massachusetts legislature (1853 and 1859), serving in the lower and afterward the upper house; was delegated to the Charleston Democratic national convention, and on the re-assembling of some of the delegates at Baltimore he resigned his seat on account of the slavery question. In 1861 (being already a commissioned brigadier-general) he responded to the President's call for troops, and marched his 8th Mass. regiment to Annapolis; moved forward to Baltimore; was made a major-general, and assigned to the command of Fortress Monroe. At this time some slaves escaped into his lines, and he refused to give them up to their masters on the ground that they were "contraband of war." Feb. 23, 1862, he was placed in command of troops forming part of the expedition against New Orleans, Captain Farragut commanding the naval force. Gen. Butler took possession of the city May 1, 1862, and remained there until the middle of December following, when he was relieved by Major-General N. P. Banks. During his administration of the Department of the Gulf he compelled the rich citizens to contribute to the support of those rendered destitute by the war, armed the freed colored men, and enforced strict sanitary regulations. In the latter part of 1863 he was given command of the Department of Virginia and North Carolina. In 1864 he was ordered to New York during election, as trouble was feared. The following month he was sent against Fort Fisher in North Carolina, but the expedition was ineffectual. Gen. Grant relieved him of command, and he returned to Massachusetts. The Republicans elected him to Congress in 1866, and he served there until 1879, with the exception of the term 1875-77. He took part in the impeachment of President Johnson, as one of the managers of the case. In 1882 the Democrats united upon him as candidate for governor of his State, and he was elected to that office. He was defeated in his candidature for the same office in 1883, and was also an unsuccessful Greenback candidate for the Presidency in 1884.

BUTLER, BENJAMIN FRANKLIN, born at Kinderhook Landing, N. Y., Dec. 17, 1795, died in Paris, France, Nov. 8, 1858. He studied law with Martin Van Buren in Hudson, N. Y., and became his partner. In 1821 he was chosen district attorney of Albany county. He was one of three commissioners appointed by the legislature to revise the New York statutes, and in 1828 was elected to the legislature to assist in the deliberations on the work of this committee. He was appointed attorney-general by President Jackson.

BUTLER, ELIZABETH SOUTHERDEN THOMPSON, a noted English artist, born in Switzerland in 1844, and in 1877 married Major-General Butler. She was brought into prominence by her painting, *The Roll Call*, which was exhibited at the Royal Academy in 1873, and which became the property of Queen Victoria. Her works are mostly military subjects.

BUTLER, FANNY KEMBLE. See KEMBLE.

BUTLER, JOHN, born in Connecticut, died in Niagara, 1794. He espoused the British cause at the commencement of the Revolution, and, placed

in command of a force of Indians and Tories, took part in the Niagara and Montreal campaigns, and was present at the battle of Oriskany, the Wyoming massacre, and the raids on the Schohaie and Mohawk settlements. He was guilty of great barbarities, but some of the worst deeds attributed to him were due to his son Walter. Colonel John Butler was rewarded by the British government for his military services by being made Indian agent with a salary of \$3,500 a year and the gift of 5,000 acres of land in Canada.

BUTLER, PIERCE MASON, colonel, born in Edgefield district, S. C., April 11, 1798, killed in the battle of Churubusco, Mexico, Aug. 20, 1847. He received a military education, and after four years' service in the army he resigned and went to Columbia, S. C., where he was president of a bank. In 1836 he went as lieutenant-colonel of a regiment to put down the Seminole Indians; in 1838 he was elected governor of South Carolina, and at the expiration of his term was appointed Indian agent. In 1846 he resigned this office to enter the Mexican war. He served with great bravery, and won distinction at Cerro Gordo. In the battle of Churubusco he led his men after being wounded, but was again shot, and this time instantly killed.

BUTLER, WILLIAM ALLEN, author and lawyer, son of B. F. Butler, of New York, born in Albany, N. Y., Feb. 20, 1825, graduated from New York University, traveled in Europe, practiced law in New York city, and published books, magazine articles and fanciful poems. Among his writings are: *Out-of-the-Way Places in Europe*; *The Colonels' Club*; *The Cities of Art and the Early Artists*; *Barnum's Parnassus*; *Nothing to Wear*, a satirical poem; *Two Millions*; *General Average*; *The Bible by Itself*; *Martin Van Buren*; *Lawyer and Client*; *Mrs. Limber's Raffle*; and *Domesticus*.

BUTLER, MAJOR-GENERAL WILLIAM FRANCIS, K. C. B., born in county Tipperary, Ireland, in 1838. He was educated at Dublin, and joining the army served on the Red River expedition; was sent on a special mission to the Saskatchewan (1870-71); served on the Ashanti expedition (1873), as staff officer in Natal (1879), and took a prominent part under Lord Wolseley in the Soudan campaign (1884-85). He has published *The Great Lone Land* (1872); *Wild North Land* (1873); *Akimfoo* (1875); *Far Out* (1880). In 1877 he married Miss Elizabeth Southerden Thompson, a distinguished painter of battle scenes.

BUTLER, WILLIAM ORLANDO, born in Jessamine county, Ky., in 1791, died in Carrollton, Ky., Aug. 6, 1880. He was a graduate of Transylvania University, studied law, but on the outbreak of the war of 1812 went into military service. He was at Fort Wayne, the two battles (Jan. 18 and 22, 1813) on Raisin River, and at the second was wounded and captured, escaping to his native State only after great hardships. He raised a company of volunteers, which did good service at Pensacola and New Orleans. He was promoted to be major, and soon after succeeded his brother as aid-de-camp to General Jackson. He left the army in 1817, and resumed his law practice. He served three years in the legislature, and was unsuccessful candidate for governor in 1844. He served in the Mexican war, and was wounded at Monterey. In 1848 he succeeded General Scott as chief commander, and held the place till the war closed. He was unsuccessful candidate for the vice-presidency in 1848, when Cass was at the head of the ticket.

BUTLER, a prosperous town of Missouri, county-seat of Bates county. It is pleasantly situated in a fertile prairie, about 75 miles southeast of Kansas City. It is an important shipping point for coal,

which is extensively mined in the vicinity. It contains also manufactories of wool, and is the seat of an academy.

BUTLER, a thriving town of Pennsylvania, county-seat of Butler county, situated on the Conequenessing Creek, about 25 miles north of Pittsburgh. It contains extensive glass manufactories, in which natural gas is used; a number of planing-mills, flouring-mills, and woolen mills, and several establishments for the manufacture of machinery for the numerous oil-wells in the vicinity.

BUTLERAGE, otherwise called the *prisage* of wines, was a right exercised by the crown in England to take two tons of wine from every ship (English or foreign) importing into England twenty tons or more, which, by charter of Edward I, was exchanged into a duty of two shillings for every ton imported by merchant strangers, and called butlerage, because paid to the king's butler.

BUTOMUS, a genus of *Helobia*, an order of aquatic monocotyledons, sometimes called marsh-lilies, of which one species, *Butomus umbellatus*, is frequent in ditches and ponds in England, Ireland and many parts of Europe, but rare in Scotland. It is considered one of the most beautiful plants in the British flora. The leaves are all radical, 2 to 3 feet long, linear and triangular. The flowering stem bears a large umbel of rose-colored flowers.

BUTT, ISAAC, Irish patriot, born in County Donegal in 1813, died May 5, 1879. He was educated at Raphoe and at Trinity College, Dublin, where he gained a brilliant reputation for accomplished scholarship. He edited the "Dublin University Magazine" from 1834 to 1838, and filled the chair of Political Economy in his University from 1836 to 1841. Called to the Irish bar in 1838, he soon became a champion of the Conservative cause, actively opposing O'Connell's Repeal Association in 1843. His political conversion occurred early, for in 1852 he was returned as a "Liberal Conservative" for Youghal, for which constituency he sat until 1865. He defended Smith O'Brien and others in the state trials of 1848, and all the Fenian prisoners between the years 1865 and 1869. Butt was the first to make political use of the phrase "home rule," and in 1871 he was returned for the city of Limerick to take the lead of the Home-Rule party in the House of Commons, but was unable to control the forces he had formed.

BUTTE CITY, a city of Montana, capital of Silver Bow county, located 65 miles south of Helena. It derived its name from its proximity to a lofty mountain peak, called Big Butte, half a mile west of the present city limits. It is preëminently a mining town, the output of gold, silver and copper during 1890 exceeding \$25,000,000. The principal part of the city is regularly laid out, the streets crossing at right angles. The principal public buildings are the court-house, opera-house, high school, St. James's Hospital, and St. James's parochial school. The city is well supplied with water, has two electric light companies, a gas company, good sewerage, and three lines of street railways, one using a cable and another electricity as its motive power. There are daily and semi-weekly newspapers, and both National and State banks. The growth of the city is very rapid, the amount expended for the erection of business houses in 1890 being \$943,500, and for residences double this amount. The population has increased from 3,363 in 1880 to 10,701 in 1890.

BUTTER: in old chemistry, applied to certain metallic substances which have an oily aspect and consistence resembling melted butter; such as butter of antimony, bismuth, zinc and tin. It is often applied generically to any substance of the consist-

ence of butter, and is therefore used to designate palm, cocoa-nut, shea, and nutmeg oils, called "vegetable butters."

BUTTER ROCK, or *HALOTRICHITE*, a mineral which may be regarded as a variety of alum—an iron alum, appearing as a pasty exudation from rocks that contain alum or its constituents, particularly alum-slate and other schistose rocks. Rock butter occurs at Hurler alum-works near Paisley, Scotland, and in a number of places on the continent of Europe. It is not unlike butter in color, is silky-fibrous, and has an astringent taste.

BUTTER-BUR (*Pectasites vulgaris*), a perennial composite, common in wet meadows and beside streams. The small sub-dioecious whitish-purple flower-heads are born in exuberant racemose masses, which come up like those of its ally, colts-foot (*Tussilago*), in early spring, before the leaves.

BUTTERCUP, a name given to one or more of the common species of *Ranunculus*, having bright yellow cup-shaped flowers. See Britannica, Vol. XX, p. 272.

BUTTERFIELD, DANIEL, born in Utica, N. Y., Oct. 31, 1831, graduated at Union College, and then became a merchant in New York city. When the civil war began, as colonel of the 12th New York regiment he accompanied it to Washington (July, 1861), and led the advance into Virginia, joining General Patterson on the Upper Potomac. He fought in the divisions of Fitz-John Porter, Pope, and McClernand, and was in the battles of Hanover Court House, Mechanicsville, Gaines's Mills, Fredericksburg, Chancellorsville, Gettysburg, where he was wounded, Mission Ridge, Buzzard's Roost, Dallas, New Hope Church, Kenesaw and Lost Mountains, and others. His rank was frequently raised, and he was brevetted brigadier and major-general for meritorious conduct. After the war he was superintendent of the general recruiting service in New York city, and commanded the New York harbor forces from 1865 to 1869. Resigning from the army, he was placed at the head of the United States sub-treasury in that city. He has since been connected with the American Express Company, which his father organized.

BUTTERFIELD, JOHN, born in Helderberg, N. Y., in 1783, died in Utica, Nov. 15, 1869. He was a self-educated man, who in his youth was the driver of a stage-coach. He removed to Utica in 1822, and did much for the prosperity of that city. He assisted in the management of the Albany and Buffalo stage line, owned many stage routes in Western New York, was part owner of a line of steamers on the St. Lawrence River and Lake Ontario, founded the Butterfield, Wesson & Co. Express Company, and was the originator of the American Express Company, in which a number of firms were consolidated. He also built the Morse telegraph connecting New York and Buffalo, and was president (1858) of the Overland Mail Company, which was employed by the Government to carry the mail between San Francisco and the Missouri River once a month, and afterwards once a day.

BUTTERFLIES. See Britannica, Vol. IV, pp. 592-98.

BUTTERFLY-WEED, or *PLEURISY ROOT* (*Aclepias tuberosa*), a North American plant, of which the root has considerable medicinal repute, the infusion being used as a diaphoretic and expectorant.

BUTTERNUT, an American tree (*Juglans cinerea*) of the walnut family; also the fruit so-called from the oil it contains. The nut is long, pointed, and furrowed. The wood is used in cabinet-work.

BUTTER-TREE (*Bassia*), a genus of tropical or sub-tropical trees of the natural order *Sapotaceæ*,

remarkable for the abundance of oil or butyraceous fat which the seeds contain, and which is used for many purposes by the inhabitants of the countries where they are indigenous. The butter-tree described by Mungo Park as growing in the interior of Africa, in the country of Bambarra, belongs to this or a nearly allied genus. It produces the galam butter also called shea butter, which is highly valued, and forms an important article of commerce in the interior of Africa. The Mahwa-tree of India, *Bassia latifolia*, attains a height of 40 to 60 feet, and is a valuable timber tree. Its flowers are eaten raw, and have a luscious taste when fresh; when dry, they resemble figs in flavor. One tree sometimes produces as much as 800 pounds of flowers. The Indian butter-tree, or Fulwa tree, *Bassia butyracea*, a native of Nepal, attains a height of 50 feet. Its timber is light and of no value. The fruit is of the size of a pigeon's egg, and, although eaten, is not much esteemed; but from the seed a concrete oil or butter is obtained, much valued for medicinal uses. *Bassia longifolia*, a native of Coromandel, yields a large quantity of oil; the flowers are much esteemed for eating, and the wood is almost as hard and durable as teak. The name butter-tree is also given to other tropical trees, belonging to quite different orders, the fruits of which yield fixed oils.

BUTTERWORT, a name common to the several species of *Pinguicula*, small plants with a characteristic bunch of apparently stemless leaves, growing in wet ground. The common butterwort, *Pinguicula vulgaris*, is abundant in the northern parts of Britain and Europe, and grows also in Canada. Its leaves are covered with stalked glands, which yield a viscous, insect-catching secretion. The edges of the leaf roll over on the insect and retain it, and it is supposed that insects so caught serve as food for the plant. This secretion contains acid and pepsin, and has active digestive properties. Hence it has the power of coagulating milk, and is used for this purpose by the Laplanders. Some species possess flowers of much beauty, especially *Pinguicula grandiflora*. North and South America have several species of butterwort. See Britannica, Vol. XIII, pp. 134-37.

BUTTERWORTH, HEZEKIAH, author and editor, born in Warren, R. I., Dec. 22, 1839. As an author he is best known for his juvenile stories of travel. In the series of "Zig-Zag Journeys," descriptions are given of his tours in many lands. Among his other writings are: *Stories of the Hymns; The Prayers of History; Poems for Christmas, Easter, and New Year; Great Composers*, written for the Chautauqua course of reading; *Wonderful Christmases of Old*; and the three cantatas, *Under the Palms, Faith, and Faith Triumphant*. In 1871 he became assistant editor of the "Youth's Companion."

BUTTS, ISAAC, journalist, born in Washington, Dutchess county, N. Y., Jan. 11, 1816, died in Rochester, N. Y., Nov. 20, 1874. He was educated at the common school and at Rochester high school, engaged in various pursuits, and in 1845 assumed editorship of the Rochester "Advertiser," the oldest daily newspaper in the United States west of Albany. The paper was Democratic in politics, and as the question came up in Congress at this time whether slavery should be allowed in the territory newly acquired from Mexico, Mr. Butts took the ground that the people of the territory should settle the matter themselves. "Popular Sovereignty" or "Squatter Sovereignty" was the principle, and the phrase originated in Mr. Butts's paper (Feb. 8, 1847), although Daniel S. Dickinson, Lewis Cass, and Stephen A. Douglas respectively claimed the honor. Mr. Butts sold the "Advertiser" in 1848, and for four years was engaged in the enterprise of house

printing telegraph and in the construction of lines which converged at St. Louis. In the latter part of 1852 he purchased an interest in the Rochester "Union." Five years later the "Advertiser" was incorporated with it, and Mr. Butts continued as editor till 1864, when he permanently retired. He was an organizer and for years one of the managers of the Western Union Telegraph Company. His volume on *Protection and Free Trade*, with a memoir, was published after his death.

BUTYRIC ACID, volatile fatty acid, first prepared by Chevreul, by treating butter with an alkali. It has a strong rancid smell and acrid taste. Butyric acid may be prepared from butter, or by fermenting sugar with putrid cheese. It occurs also in the juice of meat in various fats, and in perspiration. It is readily soluble in water and alcohol, and forms a whole series of salts.

BUTYRIC ETHER, or ARTIFICIAL PINE-APPLE OIL, a fragrant oil obtained by distilling butyric acid, alcohol, and sulphuric acid. The material which passes over is the butyric ether, which is usually prepared for commerce by being mixed with alcohol. It possesses the flavor of pine-apples, and is extensively used for flavoring confections, for sophisticating bad rum, and for flavoring ices, creams, etc.

BUXBAUMIA, a small genus of mosses.

BUYS-BALLOT, CHRISTOPH, meteorologist, born at Kloetingen in Zealand, Oct. 10, 1817. He studied at Utrecht, where he subsequently became professor of Mathematics (1847) and of Experimental Physics (1870), and in 1854 director of the Royal Meteorological Institute. He was one of the initiators of the new system under which, by daily synoptical weather reports, and by simultaneous observations by land and by sea, materials are collected for forecasting changes; his own observations have resulted in the determination of a general law of storms, known as the Buys-Ballot law (see Britannica, Vol. III, p. 29). The inventor of the Aëroklinoscope, and of a system of weather signals, he has been largely instrumental in bringing about an international uniformity in meteorological observations. His works include *Changements Périodiques de la Temperature* (Utrecht, 1847), and in English *Suggestions on a Uniform System of Meteorological Observations* (1872-73).

BUYUKDEREH, a village beautifully situated on the Bosphorus, 10 miles northeast of Constantinople. It forms the summer residence of many of the ambassadors of the Christian powers, some of whom have splendid mansions here.

BUZZARD. See Britannica, Vol. IV, p. 603. For the so-called "turkey-buzzard" of the United States, see under AMERICAN VULTURE, Britannica, Vol. XXIV, p. 302.

BYBLOS, an ancient city of Phœnicia, at present a village of 600 inhabitants, called Jebel. It is situated on a shallow bay at the base of the lower range of the Libanus, about half-way between Tripoli and Beyrout. Byblos was famous as the birthplace of Adonis or Tammuz, of whose worship it became the center, and many devotees were also attracted to the splendid temple of Astarte erected here. The name given to the town by the Jews was Gebal, and its inhabitants are noticed in the Scriptures as stone-squarers and calkers of ships. A ruined wall belonging apparently to the era of the Crusades surrounds the town, and Roman and earlier remains are still visible.

BY-LAWS, the private regulations which are made by a legislative body, a corporation, or a society for its government. They differ from provisions of its constitution in that they are more particular and more readily altered. By-laws are bind-

ing unless contrary to the laws of the land, or to the charter or act of incorporation, or unless they are manifestly unreasonable.

BYRD, WILLIAM, F. R. S., born in Westover, Va., March 16, 1674, died there Aug. 24, 1744. He was educated in England, and there studied law, but returned to reside on his American estates, and long held important offices in Virginia. He collected a valuable library, was the founder of Richmond and Petersburg, and was one of the commissioners appointed to settle the boundary line between Virginia and North Carolina. He was author of valuable papers relative to the boundary line settlement and his travels in Virginia. A part of his writings were published as *The Westover Manuscripts* (1841).

BYRGIUS, JUSTUS, or JOSEPH BURGI, the inventor of various astronomical instruments, born at Lichtensteig, in the Swiss canton of St. Gall in 1552, died in 1633. In 1579 he entered the service of the learned Landgrave of Hesse, Wilhelm IV, and in 1604 that of the Emperor Rudolf II. His first work was a celestial globe, in which the stars were placed according to his own observations.

BYRLAW (also BIRLAW or BURLAW), a sort of popular jurisprudence formerly in use in Scotland. Sir John Skene, writing in 1597, when the system was in full force, defines byrlaw as "*leges rusticorum de re rustica latae*—laws made by husbandmen, concerning neighborhood to be kept among themselves." As the byrlaw was enacted by the common consent of the villagers or neighbors, so it was administered by judges chosen by them from their own ranks. These judges were commonly called "byrlaw men." Byrlaw seems to be an interesting survival of the system of the ancient Aryan village community, or at least an illustration of the principle of visnet, voisinage, or neighborhood, on which many early institutions were founded.

BYRNE, ANDREW, Roman Catholic bishop, born in Navan, Ireland, in 1802, died at Little Rock, Ark., 1862. He was educated at the college of his native town, and came to America in 1820 with Bishop England, who visited Ireland for the purpose of securing Catholic missionaries for the work in America. Having completed his studies under the prelate's direction, Byrne was ordained in 1827, and assigned to duty in North and South Carolina. In 1836 he was appointed to pastoral work

in New York city, and in 1844 was made first bishop of the diocese of Little Rock. He made three visits to Ireland, on the last two of which he secured the services of priests and sisters of mercy to assist in his work. Through his efforts the Catholic schools and churches increased in numbers and prosperity, and immigration was greatly promoted.

BYRON, HENRY JAMES, dramatist, born in Manchester, England, in 1834, died in London, April 11, 1884. He entered the Middle Temple in 1858, and was for many years a prolific and popular writer of burlesque and extravaganzas. He also wrote extensively for periodicals, was the first editor of "Fun," and occasionally himself appeared in the presentation of his plays. Of his plays the best was *Cyril's Success* (1868), and the most successful, *Our Boys*, which had an unprecedented run in London from Jan. 16, 1875, to April 18, 1879.

BYSSUS, a genus of plants established by Linnaeus to include some of the lowest and most obscure forms of vegetation, and defined as having a substance like fine down or velvet. Botanists have sometimes ranked it among *Algæ*, sometimes among *Fungi*, and others have rejected the genus as altogether spurious. It is still retained by some systematists, but as a mere provisional limbo to include a number of forms of moulds which appear in damp places and disappear without showing any signs by which their true nature and affinities may be determined. The progress of research has greatly reduced this vague alliance, some forms having been recognized as algal, others as fungal in nature; and its disappearance from our lists may be regarded as a mere question of time.

BYSSUS: in conchology, a name for silk-like threads secreted by the "foot" or muscular ventral protrusion of many bivalve mollusks. The secretion, manufactured by a gland opening in a median posterior furrow, is at first fluid, but soon hardens into a tuft of silky, spreading threads, which serve to anchor the mollusk temporarily or permanently to its base of attachment. It is developed by species of the families *Mytilidæ*, *Pinnidæ*, *Aviculidæ*, *Limidæ*, *Arcidæ*, etc. That of the *Pinna* is capable of being woven, and in early times was made into small articles of dress for royal personages.

BYTTNERIACEÆ, a natural order of plants, of which the typical genus is *Byttneria*. The species are chiefly tropical or subtropical.

C

CAANG WHALE—CABLE

CAANG WHALE (*Globicephalus melas*), one of the Cetacea, in the dolphin family, belonging to a genus common in all seas, and oftener stranded than any other "whale." The length varies from 16 to 24 feet; the maximum girth is about 10 feet. It feeds chiefly on cuttle-fish. The caang whale is gregarious, and vast shoals of 50 to 100 sometimes impetuously follow their leader ashore, when alarmed. Many names are given to these common cetaceans; among the most popular are *pilot-whale*, *black-fish*, *social whale*, and *grindhoal*. See Britannica, Vol. XXIV, p. 525.

CAAMÑO, José M. PLÁCIDO, born in Guayaquil, Ecuador, Oct. 5, 1838. He studied law and theology in his native city and at Quito. He was mayor of Guayaquil, was leader of a successful revolutionary expedition, became president *ad interim*, and then president of the government in 1884. He has advanced the prosperity of Ecuador by encouraging the building of railroads, telegraphs, colleges and schools.

CAB, a carriage with either two or four wheels, and drawn by one horse. The name is derived from the *cabriolet-de-place*, introduced into England from France at the beginning of the present century (see Britannica, Vol. V, p. 136). In Paris the *cabriolet-de-place* was introduced about the middle of the 17th century by Nicholas Sauvage, whose residence in the Rue St. Martin at the Hotel St. Fiacre has given the name of fiacres to the public carriages of that city. The cabs of foreign countries and of our own chief towns have their peculiar features, and are governed by police or municipal regulations.

CABANEL, ALEXANDRE, a noted French historical and portrait painter, born at Montpellier in 1823. Among his principal works are *The Lost Paradise*, *John the Baptist*, *Venus*, and *Lucretia and Tarquin*.

CABAL, a term now employed to denote a small, intriguing, factious party, united for political or personal ends. It had been previously used to denote a secret committee or cabinet when, during 1667-73, it was especially applied to Charles II's infamous ministry (see Britannica, Vol. I, p. 121). The derivation goes back to the Hebrew *Kabalah*.

CABBAGE BUTTER-FLY, a name applied to several species of butter-fly, the larvæ of which devour the leaves of plants of the cabbage tribe. The female lays her eggs, which are conical and of a bright yellow color, in clusters of 20 or 30 on the under sides of the leaves of plants which are the destined food of the caterpillars. When fully grown these are about one inch and a half long, and excessively voracious. They suspend themselves by their tails, and are transformed into shining pale-green chrysalids, spotted with black, from which the perfect insect emerges, either the same season or after the lapse of a winter, no longer to devour cabbage leaves, but to subsist delicately upon honey.

CABBAGE-FLY, a fly of the same family as the house-fly, whose larvæ often do great injury to the roots of cabbages and similar plants. Watering with lime-water will kill the maggots, which are on the lower stems.

CABBAGE-MOTH, a species of moth, whose caterpillar feeds on cabbage and turnip leaves. The caterpillar is greenish-black, and changes to a brown pupa in autumn. The perfect insect is of a rich mottled-brown color, the upper wings clouded and waved with darker brown, and having pale and white spots, a yellowish line near the fringe, the fringe dotted with black and ochre, the under wings brown and white.

CABBAGE-PALM, or **CABBAGE-TREE**, a name given to a species of palm, whose great terminal bud is eaten like cabbage. The *Areca oleracea* is the cabbage-palm of the West Indies. The *Sabal palmetto*, otherwise called the palmetto, is the cabbage-palm of the Southern States. See PALM, Vol. XVIII, p. 189.

CABER, **TOSSING THE**, a Scottish athletic exercise or feat, in which a long peeled sapling or undressed stem of a young tree, heavier at one end than the other, is held perpendicularly balanced against the chest, small end downward, and tossed so as to fall on the heavy end and turn over, the farthest toss and straightest fall winning. The thin end, held in the hand, should be not more than three inches in diameter; the average length of a good larch caber is about 21 feet.

CABES, or **KHABS**, **GULF OF**, an inlet of the Mediterranean Sea, lying between the islands of Kerkenna and Jerba, on the northeast coast of Africa, in latitude 34° north, and longitude from 10° to 11° east. The town of Cabes stands at the head of the gulf.

CABEZON DE LA SAL, a town of Spain, in the province of Valladolid. It is situated on the Pisuerga, and is celebrated as the scene of one of the first battles of the Peninsular campaign, in which the Spaniards were defeated by the French. Population, 2,000.

CABINDA, a small Portuguese territory on the west coast of Africa, delimited in 1886, bounded on the east by the Congo State, which on the south separates it from the mouth of the Congo. The capital, Cabinda, was formerly a noted slave port. See Britannica, Vol. IV, p. 618.

CABINET, a small chamber set apart for some special purpose, such as the conservation of works of art, antiquities, specimens of natural objects, models, etc. It often means simply a small room appended to one larger. From signifying the chamber in which such collections are contained, the term has more recently come to be applied to the collections themselves. Cabinet also signifies an ornamental piece of furniture having shelves or drawers, or both, or simply cupboards closed with doors.

CABLE, GEORGE WASHINGTON, author, born in New Orleans, La., Oct. 12, 1844. Obligated by the death of his father, in 1859, to leave school, he became a clerk, and in 1863 enlisted in the Confederate army, fought gallantly, was wounded, and, at the end of the war finding himself destitute, became an errand-boy. He studied civil engineering, and was for a time attached to a surveying expedition. During a period of ill-health he began writing poems and humorous sketches for the New Orleans "Picayune," and soon after was regularly attached to the editorial staff. On severing his

connection with this paper, he became a contributor to "Scribner's Monthly." His stories deal with Creole life as found in the city of his birth. His published books are: *Old Creole Days*, *The Grandisimus*, *Dr. Sevier*, *Madame Delphine*, *The Creoles of Louisiana*, *The Silent South*. This author has introduced a new field to the attention of readers. His stories are gracefully told, the characters are delicately drawn, and a sunny humor traces its way through them all. He is a popular lecturer, and gives most enjoyable readings from his own works. He is greatly interested in Sunday-school work, and is a favorite writer and lecturer on the International Lessons.

CABLING, the moulding by which the hollow parts in the flutes of columns and pilasters in classical architecture are often partially filled. The cabling seldom extends beyond the third part of the shaft from the ground.

CABOCHED, or **CABOSSED**, a term in heraldry, from the old French word *caboché*, the head. When the head of an animal is borne, without any part of the neck, and exhibited full in the face, it is said to be caboched.

CABOOSE, or **CAMBOOSE**, the name of a kitchen or cook-room in a merchant-ship. In coasting-vessels the term is applied to a portable cast-iron stove on the deck, where food is cooked. In the United States a car for the use of the conductor, brakemen, etc., on a freight train.

CABOT, **GEORGE**, statesman, born in Salem, Mass., Dec. 3, 1751, died in Boston, April 18, 1823. At the age of 25 he was a member of the Massachusetts Provincial Congress, and in 1790 was elected to the United States Senate. He was an assistant of Alexander Hamilton in his financial schemes, and an authority on political economy.

CABRERA, **DON RAMON**, Carlist leader, born at Tortosa, Catalonia, in 1810, died at Wentworth, near Staines, May 24, 1877. He was intended for the church, and had already received the minor orders when the civil war broke out at the death of Ferdinand in 1833. He at once joined the partisans of Don Carlos, and by his energy and pitiless cruelty made his name a household word throughout Aragon and Valencia. Defeated and wounded at Rancon, he escaped with difficulty, but soon reappeared at the head of a formidable force, defeated the royal army in two engagements, and for a time threatened Madrid itself. In 1839 Don Carlos created him Count of Morella and governor-general of Aragon, Valencia and Murcia. He strongly opposed Don Carlos's abdication in 1845, and in 1848 renewed the struggle for absolutism in Spain; but the attempt proved an utter failure, and he was obliged to take refuge in France.

CACAO BUTTER, a fixed oil expressed from the fruit of *Theobroma cacao*, and largely used in pharmacy and in the preparation of cosmetics.

CACCAMO, a town in the province of Palermo, Sicily, about six miles southwest of Termini. Population, 6,394.

CÁCERES, **ANDRÉS AVELINO**, Peruvian soldier, born in Huanta, April 12, 1831. He joined the army as second-lieutenant in 1852. He assisted in the abolition of slavery under Castilla; won the rank of colonel, distinguished himself in the war with Chili, was made brigadier-general, and was instrumental in the overthrow of the Peruvian General Iglesias, who had established a government of his own at Cajamarca. Cáceres entered the capital in March, 1885, was elected president in December, and inaugurated in July, 1886.

CÁCERES, **Nuéva**, a town of the Philippines in the province of South Camarines, on the island of Luzon. It is situated on the river Naga, or Santa

Cruz, between the Bay of San Miguel and the Gulf of Rogay, about 175 miles southeast of Manila. Population, 12,500.

CACHE, a name given by travelers in Canada and the western part of the United States to places for concealing provisions and other articles for present convenience or future use. Usually the place of concealment is in the ground or under a cairn.

CACHEXIA, a name applied by physicians sometimes to a group of diseases, and sometimes to the constitutional state accompanying a particular disease, as the cancerous cachexia, gouty cachexia, etc. Cachexia has come to be chiefly employed with reference to diseases in which the general nutrition of the body is at fault, and in which the local disorders are supposed to be the result of a constitutional cause.

CACHOLONG, a mineral, regarded as a variety of opal, and sometimes called pearl-opal, or mother-of-pearl opal. It is generally of a milk-white color, rarely with a yellowish or reddish tinge, opaque and dull, or pearly and shining, and has a flat, conchoidal fracture. It is often found united with common chalcedony.

CACIQUE, or **CAZIQUE**, the designation given to the chiefs of Indian tribes in the central and southern parts of America. The title was first applied by Spanish discoverers to the native princes whom they found reigning in Mexico, Peru, Hayti and Cuba.

CACOUNA, a village of Quebec, beautifully situated on the right bank of the St. Lawrence, about 130 miles below the city of Quebec. It is a favorite summer resort for fishing and hunting and for salt-water bathing.

CADAMBA, or **KUDUMBA**, the wood of several species of *Nauclea*, an Indian genus of *Cinchonaceæ*. The wood is deep yellow in color, and is used for furniture, flooring, etc.

CADASTRAL MAPS, maps on a large and complete scale, having reference to the extent, value and ownership of landed property, and used for the purpose of apportioning taxes.

CADE, **JACK**, leader of the insurrection of 1450, was by birth an Irishman. For a violation of law he was obliged to flee to France, and served for a time against England, but subsequently returned and settled in Kent as a physician. In June, 1450, assuming the name of Mortimer, and the title of Captain of Kent, he placed himself at the head of about 16,000 followers and marched on London, encamping on Blackheath, from which place he sent a paper to the king demanding redress of certain grievances, and change of counselors. This demand was met by an army, before which Cade retreated to Sevenoaks; there he defeated a detachment, and killed its two leaders. He entered London on July 2d, and for two days maintained strict order, though he forced the Lord Mayor to pass judgment on Lord Say, one of the king's detested favorites, and he was promptly executed by Cade's men. On the third day some houses were plundered, and that night the citizens held London Bridge against the insurgents. Dissensions arose among Cade's men; they dispersed, and a price was set upon his head. He attempted to escape, but was overtaken and killed on July 12, near Heathfield, Sussex.

CADELLE, a name given in France to the larva of a beetle of the family *Trogositidae*. It commits great ravages in granaries, and is often imported with grain into countries where it is not indigenous. When full grown it is about three-quarters of an inch long, flattened, fleshy, rough with scattered hairs, whitish, and has a black horny head, furnished with two curved jaws.

CADENCE, the finish of a phrase of which there are three principal species, namely: the whole, the half, and the interrupted cadence. The whole cadence, which finishes on the harmony of the tonic, is always used at the end of a composition, and is frequently called the final cadence. In its most perfect use it consists of three chords, the one before the final being always dominant. The half cadence is used to mark the termination of an idea or phrase, like the colon and semicolon, showing a considerable division, but at the same time that a continuation is necessary. The harmony of the half cadence is the reverse of the whole cadence, as it falls from the tonic to the dominant. In the interrupted cadence another harmony quite strange is introduced, so that the ear is deceived. The more particular the preparation for the usual cadence is made, the more strange and unexpected is the interruption, which can be made in so many ways that Reicha, in his *Traité de Haute Composition Musicale*, gives 129 interrupted cadences.

CADENZA: in music, an ornamental succession of notes introduced by the performer at the finishing of a phrase.

CADER IDRIS ("Chair of Idris," a reputed giant), a picturesque mountain in Merionethshire, Wales, five miles southwest of Dolgelly. It consists of an immense ridge of broken precipices, 10 miles long and one to three miles broad, the highest peak reaching an elevation of 2,914 feet. It is composed of basalt, porphyry and other trap rocks, with beds of slag and pumice. The view from the summit is very extensive, including the Wrekin in Shropshire, and St. George's Channel almost to the Irish coast.

CADET, MILITARY. Cadet is a term applied in a general sense to the younger son of a noble house as distinguished from the elder. The military use of the word arose from the practice of providing for younger sons, or cadets, by making them officers of the army. In the United States a military cadet is one who is receiving instruction and military discipline at the West Point Military Academy or at the Naval Academy at Annapolis. Cadets are nominated for admission, after examination, by the President or a member of Congress. Of British military cadets, those destined for the Royal Artillery or Royal Engineers study at the Royal Military Academy at Woolwich, and those for other branches of the service at the Royal Military Academy at Sandhurst.

CADI, an Arabic word signifying a judge or person learned in the law. The title of an inferior judge among the Mohammedan nations, who, like the mollah, or superior judge, must be chosen from the higher ranks of the priesthood, as all law is founded upon the Koran.

CADILLAC, ANTOINE DE LA MOTHE, born in Gascony, France, about 1660, died about 1717. He was a descendant of a noble family, and was ordered by Louis XIV to examine the coast defenses of the French territory in America. He founded Detroit, Mich., in 1701 (calling it Fort Pontchartrain), established trading forts, discovered a silver mine, which was named "La Mothe," and in 1711 became governor of Louisiana. A fine hotel in Detroit has been named in honor of this Frenchman.

CADILLAC, a city of Michigan, county-seat of Wexford county, situated on Clam River, about 100 miles north of Grand Rapids. It is the seat of an extensive trade in lumber, and contains numerous lumber mills, machine shops and foundries, and manufactories of bricks, cigars, carriages and wagons.

CADIZ, a town of Ohio, county-seat of Harrison county, pleasantly situated in a fertile, hilly dis-

trict, about 20 miles northwest of Wheeling. It is the center of an important wool-growing industry. In the vicinity are valuable mines of bituminous coal.

CADMIA, the term applied to the crust formed in zinc furnaces, and which contains from 10 to 20 per cent. of cadmium.

CADWALADER, American general, born in Philadelphia, Pa., Jan. 17, 1742, died in Shrewsbury, Pa., Feb. 11, 1786. He was interested in public affairs prior to the Revolutionary war; was captain of a military company, and when the city battalions were formed was placed in command of one of them. Promoted brigadier-general, he was placed in command of the Pennsylvania militia, assisted in the capture of the Hessians at Trenton, and was present at the battles of Brandywine, Germantown and Monmouth. After the close of the war he removed to Maryland, and was elected to the State legislature.

CADWALADER, GEORGE, soldier, born in Philadelphia, Pa., in 1804, died there Feb. 3, 1879. He practiced law; served in the Mexican war as brigadier-general of volunteers; rose to be major-general on account of gallantry at Chapultepec, served as major-general of volunteers in 1862, and was a member of a commission appointed to revise the United States military laws and regulations.

CADY, ALBERMARLE, American officer, born in New Hampshire about 1809, and graduated from West Point in 1829. He served chiefly at frontier posts until 1846, fought in the Mexican war from 1846 to 1848, and during the early part of the civil war was on Pacific coast duty. In 1864 he was appointed to the command of the drafting rendezvous in New Haven, Conn., was brevetted brigadier-general, and was soon after retired from service.

CÆCILIA, a genus of serpent-like amphibians (see *Britannica*, Vol. I, p. 751), the typical genus of the family *Cæciliidæ*, in which the body is without tail or limbs, with transversely furrowed skin, and usually with small hidden scales. They inhabit warm countries and damp places, burrow like earthworms, and eat worms and insects. About 30 species are known, and are very widely distributed. *Cæcilia* itself is a South American genus, about 20 inches in length, and the thickness of a large worm.

CAEN STONE, a fine oolite stone, for which the neighborhood of Caen, in Normandy, France, has long been celebrated. The quarries are subterranean, and the stone is brought up in blocks eight or nine feet long and two thick, through vertical shafts.

CÆSALPINIA, a genus of trees of the natural order *Leguminosæ*, the type of the sub-order *Cæsalpiniæ*. This sub-order contains about 1,500 known species, among which many are notable for their purgative properties, as senna; some produce eatable fruits, as the tamarind; some yield resinous and balsamic products, some produce important dye-woods, and some are trees of great size and very valuable for their timber. They are natives of the warm parts of Asia and America.

CÆSAR, the title of the Roman emperors, and of the heirs to the throne, was originally the name of a patrician family of the *Julia gens*, one of the oldest in the Roman state, claiming to be descended from Iulus, the son of Æneas. Octavian bore the name as the adopted son of the great Julius Cæsar, and handed it down to his own adopted son, Tiberius, after whom it was borne by Caligula, Claudius, and Nero. Although the Cæsarian family proper became extinct with Nero, the word Cæsar was part of the style of the succeeding emperors.

perors, usually between emperor and the personal name, as "Imperator *Cæsar* Vespasianus Augustus." When the Emperor Hadrian adopted Ælius Verus (136), the latter was permitted to take the title of *Cæsar*; and from this time in the western, and afterwards also in the eastern empire, it was borne by the heir-apparent to the throne, while Augustus continued to be the exclusive name of the reigning emperor. The name reappears in the *Czar* (or *Tsar*) of Russia, in the *Kaiser* of the "Holy Roman Empire," and the modern empire of Germany, and the *Kaisar-i-Hind* or empress of Hindustan.

CÆSAREAN OPERATION: in midwifery, the operation by which the foetus is removed from the uterus by an incision through the walls of the abdomen and uterus, when delivery is impossible by the natural channel. The risk to the child's life, if it be alive when the operation is begun, is slight; but to the mother's very great. Practitioners are not quite agreed as to the circumstances which justify the performance of such a severe operation on the living female, but all are unanimous as to the propriety of at once removing by it the child of a recently dead woman. The operation has been less often and less successfully resorted to in Great Britain than on the continent of Europe and in America. The *Cæsarean* operation was so called from the report that Julius *Cæsar* was brought into the world in this way.

CÆSURA, or **CESURA:** in prosody, a pause or break occurring in the middle of a foot—a sense pause—on the variations in the position of which much of the effect of the rhythm of verse depends.

CAFFEINE, or **THEINE**, the alkaloid or active principle of coffee and tea. When isolated it forms beautiful white crystals, with a silky luster, which are soluble in water, alcohol, and ether. It is present in coffee to the extent of about one per cent., and in ordinary tea, from two and a half to six per cent., and is also found in Paraguay and Guiana teas.

CAGAYAN SULU, an island of the Asiatic archipelago, lying in latitude 6° 58' north, and longitude 118° 28' east. It is about 20 miles in circumference, well wooded and elevated.

CAGSANA, a town near the southern extremity of the island of Luzon, Philippines, with a population of 12,755.

CAHAWBA, a navigable river of Alabama. It rises in the northern central part of the State, flows southward about 200 miles, and enters the Alabama at the old village of Cahawba, 10 miles below Selma.

CAHIR, a town in the county of Tipperary, Ireland, on the Suir, beautifully situated on the east end of the valley between the Galtees and Knockmealdown Mountains. Cahir Castle, an ancient irregular Norman structure of considerable extent, is situated on a rock on the left bank of the Suir. It has extensive flour mills. Population, 3,000.

CAHOKIA, so named from an extinct tribe of Indians, is a quaint village of Illinois, situated on the Mississippi, near East St. Louis. It was settled by the French about 1682; and its present inhabitants, descendants of the original settlers, preserve many of the customs and traditions of their ancestors. In the neighborhood are found numerous remarkable prehistoric mounds.

CAICOS, **CAYOS**, or **KEYS**, a group of islands belonging geographically to the Bahamas, but annexed in 1874 to Jamaica. Together with Turk's Islands they have an area of 223 square miles. Population in 1881, 4,778. See *Britannica*, Vol. III, p. 236; Vol. XIII, p. 549.

CAILLIAND, **FREDERIC** (1787-1869), a French traveler, born at Nantes, June 9, 1787, died there May 1, 1869. He became a goldsmith and traveled over Europe, and in 1815 went to Alexandria. In examining the mineral resources of Egypt he rediscovered the ancient emerald mines of Jebel Zobara, near the Red Sea; and his report of a journey to Siwah led to its annexation by Egypt in 1820. In 1821-22 he accompanied Ibrahim Pasha's expedition to the White Nile, and his *Voyage à Méroé* (four volumes, Paris, 1823-26) contained the first trustworthy account of that district. In 1827 he became conservator of the Natural History Museum at Nantes. He published a *Voyage à Syouah*, and two volumes of researches on the life of the ancient Egyptians, Nubians, and Ethiopians.

CAINOZOIC ("recent life"), a geological term, synonymous with tertiary, introduced to avoid the confusion which attended the use of the terms primary, secondary, and tertiary, owing to the various meanings attached to them by geologists.

ÇA IRA ("It will go on!"), a popular song which arose in the fever of the French Revolution of 1789, so called from its refrain:

"Ah! ça ira, ça ira, ça ira!
Les aristocrates à la lanterne!"

It became a French national song, and was styled the *Carillon National*. The original words (afterwards much changed) were due to a street singer named Ladre; the melody to Becourt, a drummer of the Grand Opera. The song was prohibited by the Directory in 1797.

CAIRD, **JOHN**, D. D., an eminent Scottish preacher, was born at Greenock in 1820. He studied at the University of Glasgow, and was locally well known as an able preacher, when a sermon delivered before the Queen in Crathie in 1855, and published under the title of *The Religion of Common Life*, quickly carried his fame into all parts of the Protestant world. It was pronounced by Dean Stanley to be the greatest single sermon of the century. In 1858 Dr. Caird published a volume of sermons, marked by beauty of language, strong thought, and intense sympathy with the spiritual aspirations of mankind. He received the degree of D. D. in 1860, was appointed Professor of Divinity in 1862, and in 1873 Principal of Glasgow University. In 1880 he published a work of great importance, *An Introduction to the Philosophy of Religion*.

CAIRD, **EDWARD**, a brother of the foregoing, born in 1835, and educated at the University of Glasgow. From Glasgow he passed as a Snell exhibitioner to Balliol College, Oxford, and became in 1864 Fellow and tutor at Merton. In 1868 he was appointed professor of Moral Philosophy at Glasgow University, where he has since exercised an unusual personal influence over the students. His works are a *Critical Account of the Philosophy of Kant* (1877), an excellent little book on *Hegel* in Blackwood's "Philosophical Classics," and an examination of *The Social Philosophy and Religion of Comte* (1885).

CAIRNS, **HUGH MACCALMONT**, **LORD**, an eminent Irish statesman and lawyer, born near Belfast in 1819, died in 1885. He was appointed attorney-general in 1866. He became a leader of the Conservative party in the House of Lords, and was twice lord chancellor of England.

CAIRO, a city of Illinois, and county-seat of Alexander county, situated on a low point of land at the junction of the Mississippi and Ohio Rivers. It was formerly subject to inundations, which retarded its growth; but extensive levees that have recently been erected at great expense afford ample protection against the encroachments of the rivers, and the city is now rapidly increasing in

numbers and wealth. Population in 1880, 9,011; in 1890, 10,044. See *Britannica*, Vol. IV, p. 647.

CAITHNESS FLAGSTONES, dark-colored bituminous schists, slightly micaceous and calcareous, valuable on account of their great toughness and durability for pavements, and various other purposes. They belong to the Old Red Sandstone, and contain abundant remains of fossil fishes.

CAIVANO, a town of Southern Italy, four miles north of Naples. Population, 10,832.

CAJABAMBA, capital of the province of Chimbo-razo, in Ecuador, situated 102 miles south of Quito, on the arid plateau of Topi, at an elevation of 9,480 feet. Population, 16,000. The former town of Riobamba, founded on this site in 1533 was in 1797 overwhelmed by an earthquake, in which 30,000 lives were lost.

CALABASH, or **GOURD-TREE**, a tree of the West Indies and the tropical parts of America, of the natural order *Bignoniaceæ*, sub-order *Crescentiaceæ*. In height and size it resembles an apple-tree; it has wedge-shaped leaves, large whitish fleshy flowers, and a gourd-like fruit, some times a foot in diameter. The wood of the tree is tough and flexible and is well adapted for coach-making, but the most useful part is the hard shell of the fruit, which is used instead of bottles, goblets, cups, water-cans, etc. The calabashes are sometimes polished, carved, dyed and otherwise ornamented.

CALAIS, a city of Maine, county-seat of Washington county, situated at the head of navigation on St. Croix River, opposite St. Stephen's, New Brunswick. Its chief industry is ship-building, and there is an extensive export trade in lumber, which is sawn in the vicinity. There are also a number of machine-shops and foundries. Calais is the seat of Calais Academy and of a high school.

CALAMANDER WOOD, a cabinet wood of great value, resembling rosewood, but surpassing it in beauty and durability. The tree which produces it is *Diospyros hirsuta*. See *EBONY*, *Britannica*, Vol. VII, p. 619.

CALAMARY, or **SQUID**, a name applied to numerous forms of cuttle-fish or *Cephalopoda*. See *Britannica*, Vol. VI, p. 735; Vol. XVI, p. 669; Vol. XXI, p. 609.

CALAMBUCO, a very durable timber tree of Luzon, somewhat resembling the teak, and much used in ship-building and in the manufacture of furniture and agricultural implements.

CALAMIANES, a group of islands in the Eastern Archipelago, in latitude about 11° 25' to 12° 20' north, and longitude 120° east. See *Britannica*, Vol. XVIII, p. 752.

CALAMINE, an ore consisting essentially of silicate of zinc. It occurs in small obtuse edged crystals, also compact and massive; it is white, brown, green, gray, and yellowish-white; is sometimes opaque and sometimes translucent. It is found in beds and veins in rocks of various kinds, but most commonly in limestone. See *Britannica*, Vol. XXIV, pp. 784, 785.

CALAMINT (*Calamintha*), a genus of plants of the natural order *Labiatae*, *Calamintha officinalis*, is not un-frequent in England. It has whorls of flowers on many-flowered stalks, and serrated leaves, with an agreeable aromatic odor. It is used to make herb tea, and as a pectoral medicine.

CALAMITES, a group of fossil plants, which make their first appearance in the Devonian, occur abundantly in the Carboniferous, and seem to die out in the Permian strata. They are among the commonest and most characteristic fossil plants of the coal-measures. There is some doubt as to the affinities of these plants; but they are generally admitted to be allied to the recent *Equisetaceæ* or

horsetails, from which, however, they differ in certain points. It has not yet been fully decided whether they should be considered as a peculiar form of *Equisetaceæ*, or classed as a distinct but allied order. The gigantic decorticated stem is longitudinally ribbed and transversely jointed; in some stems long narrow branchlets proceed from the transverse joints, and in others branches bearing whorls of small branchlets or long narrow pointed leaves. Some of the species were provided with thick and others with thin bark. Calamites seem to have grown in dense brakes on low alluvial flats, and perhaps even in water.

CALAMUS, the reed pen which the ancients used in writing. It was made of the stem of a reed growing in marshy places, of which the best were obtained from Egypt. The stem was first softened, then dried, and cut and split with a knife, as quill pens are made. Even now the Orientals write with a reed, which the Arabs call *Kalam*. See *Britannica*, Vol. XVIII, p. 483.

CALAMUS AROMATICUS, one of the sweet-scented grasses of India, and one of the substances available for incense. The calamus of the Greeks and Romans came from the East, and to it the ancients ascribed important medicinal virtues. The calamus of America is the creeping root-stalk of the *Acorus calamus*, or sweet flag. See *Britannica*, Vol. XII, p. 718.

CALANAS, a town of Andalusia, Spain, situated about twenty-seven miles north of Huelva, and thirteen miles northeast of Tharsis, with which it was connected by rail in 1887. There is a large copper mine in the vicinity. Population, 3,991.

CALANDO: in music, an Italian expression, meaning diminishing by degrees from forte to piano. It differs from *decrescendo* or *diminuendo*, as the tempo at the same time is slightly retarded, but not so much as in *ritardando*. The proper performance of the calando is purely a matter of good taste and feeling, depending on the performer.

CALANDRONÉ, a wind instrument on which Italian peasants play simple melodies, and also sometimes accompany their national songs. It has the holes of the common flute, but the intonation is produced as in the common pipe.

CALASPARRA, a town of Spain, in the province of Murcia, forty miles northwest of the city of that name. The inhabitants, numbering about 3,000, are chiefly engaged in agricultural pursuits.

CALATANAZOR, a town of Aragon, Spain, about ten miles southwest of Soria. Population, 1,500.

CALATRAVA-LA-VIEGA, a ruined city of Spain, situated on the Guadiana, twelve miles northwest of Ciudad Real. In the middle ages it was a strongly fortified place, but nothing now remains except a single tower.

CALBURGA, a town of the Nizam's dominions in Hindoostan. It is situated on a tributary of the Beemah. It has been successively the capital of Hindoo and Mohammedan sovereignties. Population, 6,000.

CALCAREOUS TUFFA, or **TUFFA**, a mineral which in its chemical composition is nearly identical with limestone and marble, but is distinguished by its spongy and cellular structure. It is generally soft, brittle, and friable, but sometimes it is sufficiently hard to be used in building (see *Britannica*, Vol. XX, p. 808). Sometimes it incrusts animal and vegetable remains, as in "petrifying springs" (see *Britannica*, Vol. X, p. 270), and it is sometimes used as a filtering stone. The stalactites and stalagmites found in caverns are varieties of calcareous tufa.

CALCASIEU, a river of Louisiana, about 230 miles long and navigable for 100 miles. It rises in the western part of the State, flows south through Lake Calcasieu, and enters the Gulf of Mexico near the village of Cameron, ninety miles from Galveston.

CALCEOLARIA, a South American genus of plants of the natural order *Scrophulariaceae*. The calyx in this genus is 4-partite, corolla 2-lipped, the lower lip remarkably inflated so as to form a bag, and the shape of the whole in some species resembles that of a slipper. The art of the gardener has succeeded in producing varieties and hybrids which exhibit many rich and delicate tints. Some of the species are used in South America for dyeing. See *Britannica*, Vol. XII, p. 262.

CALCIFEROUS EPOCH, an epoch in the Lower Silurian system of North America. The division is characterized by the presence of calcareous sandstones and limestones, portions of which are very hard and siliceous, and contain geodes of quartz crystals. The Calcifereous epoch immediately succeeds the Cambrian period.

CALCINATION, or CALCINING, the process of heating or roasting in furnaces or in heaps the various metallic ores. It is resorted to as the first stage in the extraction of the majority of the common metals from their ores, and is essentially a process of oxidation.

CALCIUM, the metal present in chalk, stucco, and other compounds of lime. It is yellowish-white, can be rolled into sheets and hammered into leaves, and is intermediate between lead and gold in hardness. To retain its brightness it must be kept under the surface of naphtha. At a red heat it melts and burns with a dazzling, white light, accompanied by scintillations.

CALDECOTT, RANDOLPH (1846-86), an English artist, born at Chester, March 22, 1846. He was for sometime employed as clerk in a bank, first at Whitchurch and afterwards at Manchester. The success of his work in the London illustrated papers encouraged him to remove to the metropolis, where he soon proved himself without an equal in depicting the humors of animal life and the joys of the country-house and hunting-field. He contributed frequently to "Punch" and the "Graphic," and occasionally exhibited at the Royal Academy, the Dudley, and the Grosvenor Galleries. In 1882 he became a member of the Institute of Painters in Water-Colors. His health, however, soon gave away, and, after vain attempts to restore it by trips abroad, he died at St. Augustine, in Florida, Feb. 12, 1886. Randolph Caldecott will be remembered chiefly by the admirable *Caldecott's Picture-books*, which began in 1878 with *John Gilpin* and *The House That Jack Built*. He also illustrated Washington Irving's *Old Christmas* (1875), and *Bracebridge Hall* (1877); Mrs. Comyns Carr's *North Italian Folk* (1878), and several other well-known works.

CALDER, a river of Yorkshire, West Riding. It rises in a marsh on the borders of Lancashire, near Burnley, and after a course of forty miles joins the Aire near Pontefract. It forms a considerable portion of the canal route through Yorkshire and Lancashire, between the east and west coasts of England.

CALDERON, PHILIP HERMOGENES, R. A., painter, born of Spanish parentage, at Poitiers, in 1833. He studied in London and Paris, and regularly contributed to the Royal Academy from 1853, his subjects being chiefly historical or imaginative. He exhibited at the Paris International Exhibitions of 1867 and 1878, receiving at the former the first medal awarded to English art, and at the latter a first class medal and the Legion of Honor.

In 1887 he was appointed keeper of the Royal Academy.

CALDIERO, a decayed town of North Italy, about nine miles east of Verona. Its thermal springs were in repute as early as the first century of the Christian era, and continued to enjoy popularity until the sixteenth century, after which they gradually became neglected, and are now little visited.

CALDWELL, CHARLES HENRY BROMEDGE, naval officer, born in Hingham, Mass., June 11, 1823, died in Waltham, Mass., Nov. 30, 1877. He entered the navy as midshipman in 1838, and became lieutenant in 1852. He commanded the *Itasca* in 1862, when an attack was made on Forts Jackson and St. Philip, and led a party of men who cleared away the chain obstruction which prevented the Union gun-boats from passing the forts. Lieutenant Caldwell was in the action at Grand Gulf in 1862, and was soon afterwards made commander. He subsequently commanded the *Essex*, the *Glaucus*, and the *R. R. Cuyler*, and in 1874 was promoted to the rank of commodore.

CALDWELL, JAMES, American patriot and clergyman, born in Charlotte county, Va., in April, 1784, shot by a sentry near Elizabethtown, N. J., Nov. 24, 1781. He was a graduate of Princeton in 1769, and became pastor of a Presbyterian church in Elizabeth three years later. During the agitations preceding the Revolution he was active in arousing the spirit of rebellion, and was subsequently chaplain in the American Army. A monument commemorating his life and service was erected at Elizabethtown in 1846.

CALDWELL, JOSEPH, D. D., educator, born in Lamington, N. J., April 21, 1773, died at Chapel Hill, N. C., Jan. 24, 1835. He graduated at Princeton in 1791, taught school in his native place and in Elizabethtown, and in 1796 was appointed to the chair of mathematics in the University of North Carolina. He henceforth devoted his energies to the upbuilding of this institution, and to him is due the merit of having saved it from ruin. In 1804 Dr. Caldwell became president of the University, which position he occupied until his death, with the exception of the years 1812-17.

CALDWELL, MERRITT, educator, born in Hebron, Oxford county, Me., Nov. 29, 1806, died in Portland, June 6, 1848. He graduated at Bowdoin in 1828, and in the same year became principal of the Maine Wesleyan Seminary. In 1834 he was elected professor of mathematics at Dickinson College, Pennsylvania, and in 1837 was transferred to the chair of metaphysics and English literature, which position he occupied until his death. Among his published works are: *The Doctrine of the English Verb*; *Philosophy of Christian Perfection*; and *Christianity Tested by Eminent Men*.

CALDWELL, SAMUEL LUNT, D. D., educator, born in Newburyport, Mass., Nov. 18, 1820. He was educated at Colby University, Waterville, Me.; he subsequently graduated at the Newton Theological Institute, and became pastor of a Baptist church at Bangor, Me., and afterwards at Providence, R. I. He held a professorship in Newton Theological Institute, and in 1878 was called to the presidency of Vassar College; this position he resigned in 1885. Dr. Caldwell has published sermons, orations and lectures, and edited Vols. III and IV of *Publications of the Narragansett Club*.

CALDWELL, a city of Kansas, about twenty miles south of Wellington. It is the trade-center of a fertile agricultural district, and contains a number of grain-elevators and flouring-mills.

CALDWELL, or LAKE GEORGE, a village of New York, county-seat of Warren county, situated near

the head of Lake George, about sixty miles from Albany. It is a very popular summer resort. Its surroundings are picturesque and romantic; the lake is studded with numerous beautiful islets; and in the vicinity are several places of historic interest, including Fort George and Fort William Henry. The name Horicon, commonly supposed to be the original Indian name of the Lake, was a fanciful invention of Cooper, the novelist.

CALDWELL, a town of Ohio, county-seat of Noble county, situated about thirty miles east of Zanesville and thirty-five miles north of Marietta. It has a sash and door factory, and in the vicinity are found coal, iron, oil, and salt.

CALEDONIA, a village of Minnesota, county-seat of Houston county, situated about thirty-two miles south of Winona. It contains manufactories of wagons and sleighs, and is the center of an important local trade and the seat of Caledonia Academy.

CALEDONIA, a village of North Dakota, and county-seat of Traill county, situated at the confluence of Goose River with the Red River of the North. It is an important shipping-point for grain.

CALEDONIA SPRINGS, a village of Ontario, about ten miles south of L'Original. It contains a number of alkaline medicinal springs noted for their efficacy in the cure of rheumatic and cutaneous diseases.

CALEDONIA CANAL. See Britannica, Vol. IV, p. 787.

CALENDER, or **KALENDER**, a Persian word (meaning "greater") applied to members of an order of dervishes founded in the fourteenth century. The Calenders are wandering preachers, who hold that sin defiles the body only, and can be removed by ablutions. The members of the order, even during the life-time of its founder, were remarkable for licentiousness and debauchery.

CALENDS, the first day of each Roman month. See **CALENDAR**, Britannica, Vol. IV, p. 665.

CALENTURE, a Spanish term for a species of temporary delirium or fever, occurring on board a ship in hot climates, and probably due to the effect of exposure to the direct rays of the sun.

CALGARY, a town of the Northwest Territory of Canada, with station on the Canadian Pacific

Railway, 2,262 miles west of Montreal. It stands 3,380 feet above the sea-level, in a broad valley between the Bow and Elbow Rivers, and is a trading-center for a wide district. It dates from 1884.

CALHOUN, **WILLIAM BARRON**, LL. D., born in Boston Mass., Dec. 29, 1796, died in Springfield, Mass., Nov. 8, 1865. He graduated at Yale, entered the legal profession, and attained much popular favor. In 1825 he was sent to the legislature, where he served for ten years; was in Congress from 1835 to 1843; was Secretary of State (Mass.) from 1848 to 1851; bank commissioner from 1853 to 1855; presidential elector in 1844, and in 1859 was elected mayor of Springfield.

CALI, **SANTIAGO DE**, a town of Colombia, situated on a tributary of the Rio Cauca, 3,300 feet above the sea. It is connected with Buenaventura by rail, and has considerable trade with that port. Population, 13,000.

CALIANO, a small town of the Austrian Tyrol, on the left bank of the Adige, about nine miles south of Trent. It figures in history as the place where the Austrian Archduke Sigismund won a single victory over the Venetians in 1487. Being a place of considerable military importance, it was also contested in the campaigns of 1797 and 1809.

CALIBRE, or **CALIBER**, a technical name for the diameter of the bore of a fire-arm, whether a piece of ordnance or a small-arm. If the weapon is rifled its calibre is measured, not from the bottom of the grooves, but from the smooth surface between them, technically called the "lands." In the United States the calibre of a fire-arm is expressed in decimal parts of an inch; thus, what is commonly called a .44-calibre rifle is one of .44-inch; the calibre of a cannon is expressed either by the diameter of its bore or by the weight of a solid round shot which it will carry. In Great Britain calibre is expressed as in the United States, with the exception of the heavy guns, which are denominated from their weight; as, a 38-ton gun or a 100-ton gun.

CALIFORNIA, a village of Missouri, county-seat of Moniteau county, situated in the center of the State, in the midst of a rich agricultural and mineral-producing district. It contains a number of mills for the manufacture of flour, paper, and woolen goods.

CALIFORNIA, STATE OF. Area (official 1890), 158,360 square miles. Population (1890), 1,208,130. Capital, Sacramento, with a population in 1890 of 26,272. For the early history, physical geography, climate, mines, and productions of California, see Britannica, Vol. IV, pp. 694-706.

California is rapidly advancing not only in population, but also in respect of numerous industries. In its gold products it is the first State in the Union. Since 1848, and up to Jan. 1, 1891, its gold and silver reached a total of \$1,367,450,000. Its mineral products in 1890 were valued at \$23,850,000. Its manufacturing products in 1880 were valued at \$116,218,000; in 1890, at \$165,000,000. The deposits in its banks in 1890 reached the large total of \$171,229,531; and the assessed value of property, a total of \$1,060,890,296—an amount nearly double the total valuation in 1880. Its wealth *per capita* is the largest of any State in the Union.

On Jan. 1, 1890, California reported 4,500 miles of railway, with an assessed valuation of \$40,248,000. Its chief city, San Francisco, claims to be the third largest commercial city in the United States, and to be practically out of debt.

In 1890 the estimated area of arable land in California embraced 38,000,000 acres; cultivated, 2,500,000; forests, 20,000,000 acres. Its hay, cereal, and root crops in 1890 were valued at \$70,000,000; its bean crop reached a total of 1,000,000 centals; its barley, 16,000,000 bushels; its hops, 40,000 bales; its wheat crops, 27,000,000 centals, of which there were exported 13,266,409 centals, valued at \$17,600,000; its flour exported at 1,201,304 barrels, valued at \$4,000,000.

The fruit crops of the State have increased with extraordinary rapidity. The raisin output of 1890 was reported at 2,000,000 boxes, or 400,000,000 pounds; its prune crop at 15,000,000 pounds; its dried fruits shipped East, at 66,318,000 pounds—more than ten times the quantity shipped East in 1880; oranges shipped East in 1890-91, at 4,000 car-loads, in 1889 at 3,187 car-loads; total green fruits shipped east in 1890 at 105,000,000; in 1880 the amount was 5,180,000. Not only do the orange and grape thrive in California, but also the olive, fig, almond, and walnut; the State is also a very large producer of honey.

The grape districts of California have an area of about 225,000 acres.

The United States Census of 1890 showed an increase in the population, during the last decade, of 343,436, the net increase being about 36.73 per cent. The subjoined table shows the population of the State and its comparative increase by counties:

Counties.	1890.	1880.	Increase.
Alameda.....	93,864	69,976	90,888
Alpine.....	567	539	128
Amador.....	10,320	11,384	d. 1,064
Butte.....	17,989	18,721	d. 732
Calaveras.....	8,532	9,094	d. 212
Colusa.....	14,640	13,118	1,522
Contra Costa.....	13,515	12,525	990
Del Norte.....	2,592	2,584	8
El Dorado.....	9,232	10,683	d. 1,451
Fresno.....	82,028	9,478	23,548
Humboldt.....	28,469	15,512	7,957
Inyo.....	3,544	2,928	616
Kern.....	9,908	5,801	4,307
Lake.....	7,101	6,596	505
Lassen.....	4,239	3,340	899
Los Angeles.....	01,454	33,381	68,073
Marin.....	13,072	11,324	1,748
Mariposa.....	3,787	4,339	d. 552
Mendocino.....	17,612	12,800	4,812
Merced.....	8,065	5,656	2,429
Modoc.....	4,986	4,399	587
Mono.....	2,002	7,499	d. 5,497
Monterey.....	18,637	11,302	7,335
Napa.....	16,411	13,235	3,176
Nevada.....	17,369	20,823	d. 3,454
Orange.....	13,589	.....	13,589
Placer.....	15,101	14,232	869
Plumas.....	4,933	6,180	d. 1,247
Sacramento.....	40,339	34,390	5,949
San Benito.....	6,412	5,584	828
San Bernardino.....	25,497	7,786	17,711
San Diego.....	34,987	8,618	26,369
San Francisco.....	298,997	283,959	65,038
San Joaquin.....	28,629	24,349	4,280
San Luis Obispo.....	16,072	9,142	6,930
San Mateo.....	10,087	8,669	1,418
Santa Barbara.....	15,754	9,513	6,241
Santa Clara.....	48,006	35,039	12,966
Santa Cruz.....	19,370	12,802	6,468
Shasta.....	12,133	9,492	2,641
Sierra.....	5,051	6,623	d. 1,572
Siskiyou.....	12,163	8,610	3,553
Solano.....	20,946	18,475	2,471
Sonoma.....	32,721	25,926	6,795
Stanislaus.....	10,040	8,751	1,289
Sutter.....	5,499	5,159	310
Tehama.....	9,916	9,301	615
Trinity.....	8,719	4,999	d. 1,280
Tulare.....	24,574	11,281	13,293
Tuolumne.....	6,082	7,848	d. 1,766
Ventura.....	10,071	5,073	4,998
Yolo.....	12,684	11,772	912
Yuba.....	9,636	11,284	d. 1,648

Of the 54 counties in California, nearly all produce grapes, the larger portion of them yielding wine for home consumption or for export. There is an established demand for this wine to the amount of 1,000,000 gallons per month from this country alone, making 12,000,000 gallons annually, and an exportation to foreign countries of 311,920 gallons in 1889, valued at \$217,093. The State may be divided into three grape-growing districts: the coast, which includes Sonoma, Lake, Napa, Alameda, Santa Clara, and Santa Cruz counties; the Sierra Nevada Foothill and Sacramento Valley district, which includes Placer, El Dorado, Calaveras, Tuolumne, Yuba, Yolo, Butte, Sacramento, Tehama counties; and the Southern district, which includes San Joaquin, Merced, Fresno, Tulare, Kern, Ventura, Santa Barbara, San Bernardino, Los Angeles, and San Diego counties.

In the first district the finer grades of white and red dry wines are made. The choice variety of the French and German types seem to come nearer to reproducing themselves there than in any other district. In that district are successfully grown the finest varieties of French champagne grapes which yield a handsome profit to the producers. There is one cellar in the district having a capacity of 800,000 bottles, pro-

ducing champagne by natural fermentation in the bottle. The champagne industry in California is constantly growing, with the promise of a bright future. While wine is the leading viticultural product, the district produces also fine table grapes. Grapes for table use and raisins are also extensively grown in the second district, a large portion of the new plantings being for raisins.

In Napa county, in the first district, there was in 1890 a grape acreage of 20,768 acres. There were 142 wine cellars in Napa, many of them of recent construction, and containing all the appliances for the manufacture and handling of wines. There were 3,000,000 gallons of wine made in that county during the year 1889.

Sonoma county, in this district, had in 1889 21,588 acres of bearing vineyards. The same conditions exist there relative to the quality of grapes and wines produced as in Napa. The ravages of phylloxera were felt in Sonoma and Napa in 1874, and a great many vineyards were destroyed. It is now generally believed that the destruction caused by the phylloxera can be stayed by growing the native resistant stock and grafting upon that the foreign vinifera. In Sonoma county in 1889 there were produced about 1,756,300 gallons of wine and 250,000 gallons of brandy.

Santa Clara county, in this district, contains some 12,500 acres of bearing vineyards, and should enjoy a reputation for fine white and red wines equal to Sonoma and Napa. This and Santa Cruz county in 1889 produced 2,544,000 gallons of wine. As yet the phylloxera has troubled the vineyards but little in comparison with the counties before mentioned. There is said to be a deep gravelly bed underlying this whole surface, in which the growers say the phylloxera does not work with success.

Alameda county, in the first district, has 6,500 acres of bearing vines, and produces a type of wine resembling the white and red wines of France; and in this part of the district, known as the "Livermore district," a high grade of Sauterne and claret is produced. The geological formation of the valleys and slopes of the Mount Diablo range more nearly reproduce the soil conditions that characterize the department of the Gironde in France than any other section on the coast. In this district there were produced in 1889 some 60,000 gallons of wine, noted more for the quality than for the quantity which it produces. This is comparatively a new wine district, and has grown up within the last decade. The first systematic planting of high grade grapes began in 1882.

There is in the second district a great viticultural interest, embracing table grapes, raisins, sweet and dry wines, and brandies, excelling in the latter. Sacramento, Placer, El Dorado, Tehama, Yuba, Butte, and Yolo counties produce large quantities of table grapes, and quite a quantity of raisins is shipped from some of these counties. Tehama has the largest vineyard in the world (8,800 acres), to which the manager says 1,000 acres of new vines are to be added within a year. There were in the distillery on this vineyard in April, 1890, when visited by the special agent of the Census Office, 300,000 gallons of brandy and 1,000,000 gallons of wine. Another large vineyard, the second largest in the State, contains 1,500 acres, and is situated at Folsom, Sacramento county. The winery belonging to the vineyard has a capacity of 600,000 gallons. Many table grapes are shipped from this vineyard to the Eastern markets.

In the third district, near Stockton, in San Joaquin county, is located one of the largest vineyards and wineries. Fine brandies are made in that district; also sherries, ports, and some excellent clarets. Fresno county contained in 1891 about 25,000 acres of bearing vines and 15,000 acres of new plantings, the larger portion of which were grown for raisins. There were, however, a great many gallons of wine and brandy made in that county. The wines were mostly sweet, and of excellent quality. The raisin pack in 1889 was 626,596 boxes; the wine produced, 1,200,000 gallons. The California "Wines and Vines," speaking of the Muscatel de Gordo Blanco, the true raisin grape, says: "The soil seems to impart a vigor to the vines that is unknown elsewhere in the world. The second crop is often very nearly equal to the first, and the third comes before the leaves fall off." More than half the raisin grapes grown in California are produced in Fresno county.

San Bernardino county, in the same district, is also principally devoted to the growing of raisin grapes. There were 9,562 acres of bearing and 4,125 acres of non-bearing vines, and the raisin pack for 1889 amounted to 375,000 boxes. Two wineries in San Bernardino county produced 279,000 gallons of wine in 1889. There were also shipped from this district 1,700 tons of table grapes.

There were produced in 1889 in Los Angeles county 25,230 tons, or 51,640,000 pounds of grapes for wine, and 1,000 tons or 2,000,000 pounds of grapes for table purposes. The wines in that county are justly celebrated, and were the first shipped from California to the Eastern markets. That county excels in its sherries, ports, and brandies. There were 20,000 boxes of raisins packed in 1889, the new disease having reduced the product about one-half. The product of Orange, a county lately formed from portions of Los Angeles county, is included in the above figures.

In San Diego county there is an acreage of 6,000 bearing and 7,500 non-bearing vines. Of the latter, 6,000 were just coming into bearing in 1889, and did not add much to the product. While this shows a fair increase in the growth of the industry during the last four years, the increase is accounted for by the fact that the new disease that was so injurious in Los Angeles did not affect San Diego county. It is in the El Cajon

valley of San Diego county that the most progress has been made in viticulture. There are 27,000 acres adapted to fruit growing, and 3,000 acres of bearing raisin vineyards in El Cajon. The raisins from this valley are among the finest produced in California. The product of the El Cajon valley in 1889 was 75,000 boxes; in the balance of San Diego county the pack was 75,000 boxes; in all, 150,000 boxes. Another successful branch of viticulture in this district is the shipment of table grapes to the Eastern markets. Many of the elevated localities are so free from frost that grapes can be left on the vines until January.

As it has been noted that California has the largest vineyard in the world, it may be well to state that she has also the smallest. It is a vineyard consisting of a single vine, in Santa Barbara county. It was planted by a Mexican woman about sixty-eight years ago, and has a diameter one foot from the ground of 12 inches, its branches covering an area of 12,000 feet, and it produces annually from 10,000 to 12,000 pounds of grapes of the Mission variety (many bunches weighing six and seven pounds), the crop being generally made into wine. The old lady who planted this one-vine vineyard died in 1865 at the age of 107.*

In harmony with its genial climate, fully described in Britannica, Vol. IV, California possesses many scores of mineral springs of great variety in respect of temperature and chemical analysis. Over 200 of such springs have already been opened, located chiefly in the Coast range, though there are also many mineralized springs in the Sierra and in the desert regions in the southeastern part of the State. Dr. Winslow Anderson, of San Francisco, undertook not long since the task of collecting descriptive notes, with veritable and practical analyses of the most prominent springs of the State, and has given to the public, in a highly interesting volume, the results of his investigations. He pronounces the California mineral springs to be equal in attractiveness and value, to those of any European or other health resorts. See AMERICAN HEALTH AND PLEASURE RESORTS, in these Revisions and Additions.

CALISTOGA, a picturesque town of California, situated near the Petrified Forest, about sixty-five miles north of San Francisco. It is noted for its mineral springs, and is a popular summer resort.

CALIVER, a matchlock or firearm about midway in size and character between an arquebus and a musket. It was small enough to be fired without a rest or support.

CALIXTINES, the more moderate section of the Hussites in Bohemia. They took their name from the leading article of their confession (published in 1421), which was a demand for the giving of the cup (calix) in communion to the laity. Their tenets were conceded by the articles of Basel in 1433, and they were for a time quite a prominent party; but they gradually became less strict in principle, and had ceased to be of importance by the beginning of the sixteenth century.

CALKING, the operation of driving oakum or untwisted rope into the seams of a ship to render them water-tight.

CALL, a military musical term meaning a signal on the drum, pipe or bugle. The metal whistle used by a boatswain and his mate on ship-board is also a "call."

CALLA, an aquatic or marsh-loving genus of *Araceæ*, of a single species, *Calla palustris*, the water-arum. It has white spathes, cordate heart-shaped leaves, flowers crowded up to the extremity of the spadix, and red berries. It is widely distributed through the cold marshes of Europe and North America, and acquires some economic importance in Lapland and parts of Russia, from the fact that its root-stock when deprived of its acrid properties by cooking, is a source of starchy matter used in bread-making. The well-known and beautiful *Richardia*, the calla of house cultivation, was formerly included in this genus. See Britannica, Vol. XII, p. 264.

CALLANDER, a village in Perthshire, on the left bank of the Teith. It lies in a beautiful and romantic situation surrounded by high mountains and Highland lakes. Population, 1,921.

CALLENDER, JOHN, historian, born in Boston, Mass., in 1706, died in Newport, R. I., Jan. 28, 1748.

He graduated at Harvard and became pastor successively of a Baptist church in Boston, in Swansea, Mass., and in Newport, R. I. At the latter place he was a member of a society called "Company of the Redwood Library." He delivered an address in 1738 entitled, *An Historical Discourse on the Civil and Religious Affairs of the Colony of Rhode Island and Providence Plantations, from the First Settlement to the End of the First Century*. This was, for one hundred years, the sole history of Rhode Island. Mr. Callender published a series of papers relative to the history of the Baptists in America.

CALLERNISH, a district on the west coast of the island of Lewis, 16 miles from Stornoway, remarkable for its pre-historic stone circles, of which there are four at no great distance from one another. See Britannica, Vol. XIV, p. 492.

CALLICHTHYS, a genus of physostomatous bony fishes of the family *Siluridae*, having the body almost entirely covered by four rows of large, hard, narrow, scaly plates. The head is also protected by bony plates. The twelve species of this freshwater genus are natives of South America. See Britannica, Vol. XXII, p. 69.

CALLIGONUM, a genus of plants of the natural order *Polygonææ*, having a quadrangular fruit winged at angles. The best known species is a succulent shrub found on the sandy steppes near the Caspian Sea, where its acid shoots and fruit often serve to allay thirst. The roots afford a nutritious gum.

CALLINGER, one of the hill forts of Bundelcund, elevated 1,200 feet above the adjacent plain. From its position and size it must at one time have been a place of great strength. At the base of the rock stands a town of the same name, which, though much decayed, still bears testimony of its ancient grandeur.

CALLIPERS, compasses with curved legs, used by turners and other workmen for measuring the diameters of cylindrical, spherical, and other curved work.

CALLOVIAN, a division of the Jurassic system, represented in England by the Kellaways Rock.

CALLUS, a term employed in old surgical works and still used, popularly, to indicate the new growth of osseous tissue about the extremities of fractured bones, which serves to unite them.

CALMS, or **CALM LATITUDES**, those parts of the ocean near the equator which are subject to total absence of wind for long periods together.

CALOPHYLLUM, a genus of trees of the natural order *Guttifera*, natives of warm climates. Some of the species yield valuable timber and also supply valuable resins, while the seeds of other varieties produce a fixed oil used in lamps and for other purposes.

CALORIC, a term given to a supposed imponderable fluid to which was formerly ascribed the phenomenon of heat, and hence used loosely for heat.

CALORIMETER, an instrument for measuring the specific heat of a body; the determination being effected by ascertaining the quantity of ice at zero which is turned into water by the transference to it of heat from the body under examination. See Britannica, Vol. XX, p. 132.

CALOTTISTS (*Le Regiment de la Calotte*), a society of witty and satirical men, in the times of Louis XIV, who were headed by two officers in the king's body-guard named Torsac and Aimon. Their name was taken from the cap which formed the symbol of the society. Their amusement consisted in sending to any public character who had made himself ridiculous a "patent" authorizing him to wear the calotte as a covering for the weak part of his head.

* See U. S. Census Bulletin of Viticulture of 1890.

As the society became audacious, and did not spare even royalty itself, it was suppressed.

CALOTYPE, the name given to a photographic process devised about 1840 by Dr. Fox Talbot. It is not now in use.

CALOVIUS, **ABRAHAM**, the chief representative of controversial Lutheran orthodoxy in the 17th century; born at Mohrungen, in East Prussia, April 16, 1612, died at Wittenberg Feb. 25, 1686; he was successively professor at Königsberg, preacher at Danzig, and professor at Wittenberg. He waged war incessantly on Arminian, Socinian, Reformed, and Catholic doctrines, and was very bitter against Calixtus. He was six times married, the last time in his seventy-second year to a young daughter of his colleague, Quenstedt. Calovius's chief writings are his *Systema Locorum Theologicorum* (12 volumes, 1655-77), and *Historia Syncretistica* (1682).

CALOYERS ("good old men"), a general name for the monks of the Greek Church.

CALPE, one of the pillars of Hercules, identified with Gibraltar. See *Britannica*, Vol. X, p. 585.

CALPENTYN, a long and narrow peninsula on the west side of Ceylon. The neck is so low as to be overflowed during the northeast monsoon, so that it is transformed into an island.

CALTABELLOTTA, or **CALATA BELLOTA**, a town of Sicily, 10 miles northeast of Sciacca, most picturesquely situated around an ancient castle, which crowns a steep rock overhanging a stream. Caltabelotta was long a Saracen town, and its name is said to be derived from Kalaat-el-Ballut ("the castle of the cork-trees"). Population, 6,178.

CALTROP, or **CALTHORP**, in military warfare, was a piece of iron with four prongs, each prong about four inches in length. When it was wished to check the approach of the enemy's cavalry or besiegers in the ditch of a fortification caltrops were thrown around. Owing to their shape one prong was sure to stand upright, and horses or men stepping upon them became disabled. See *Britannica*, Vol. XI, p. 703.

CALUIRE-ET-CUIRE, a town of France, in the department of the Rhone, on the left bank of the Saone, about three miles from Lyons. Population, 9,182.

CALUMBA, or **COLOMBO**, used in medicine, is the root of *Jateorrhiza palmata*, a menispermaceous climber of Eastern Africa. Its bitterness and other properties are ascribed to the presence of columbin, berberin, and columbic acid. It is a useful, mild tonic and stomachic. American calumba root is obtained from *Frasera Walteri*, a gentianaceous biennial, and has properties like those of gentian.

CALUMET, a village of Michigan, situated in the copper region, near the northernmost point of the Upper Peninsula. It contains a celebrated copper mine, often spoken of as the richest in the world. See *Britannica*, Vol. XVI, p. 239; Vol. XXIII, p. 816.

CALUSO, a town of Piedmont, Italy, 11 miles south of Ivrea, and connected with Turin by railway. Population, 6,161.

CALVARY, the scene of our Saviour's crucifixion, an eminence which lay just outside the ancient Jerusalem. The name is a translation into Latin of the Hebrew word Golgotha, signifying a "skull," perhaps given because the mount was a place for public execution, or because it was shaped like a human skull.

CALVARY: in Roman Catholic countries, a representation of the various scenes of the passion and crucifixion of our Lord. It consists of three crosses with the figures of Christ and the thieves, usually life-size, surrounded by figures representing the personages who took part in the crucifixion.

CALVELLO, a town in the province of Basilicata, Italy, pleasantly situated on a hill-slope about 13 miles south of Potenza. It has two convents. Population, 5,800.

CALVERLEY, **CHARLES STUART**, English parodist, born Dec. 22, 1831, died at Folkestone, Feb. 17, 1884. He was educated at Harrow, Oxford and Cambridge, and in 1865 was called to the bar, and settled in London, but a fall on the ice in the winter of 1866-67 put an end to what promised to be an exceptionally brilliant career. One of the most gifted and scholarly men of his time, and unrivaled as a humorist, Calverley will be remembered by his two little volumes, *Verses and Translations* (1862), and *Fly Leaves* (1872).

CALVERT. For an account of George Calvert, first Lord Baltimore (see *Britannica*, Vol. IV, p. 713). Cecil Calvert, second Lord Baltimore, was born about 1603, and succeeded to his father's title in 1632. In 1633 he sent an expedition to his American territory, under the charge of his brother Leonard, and thus became the real founder of the colony of Maryland. Leonard Calvert, the first governor of the colony, was born about 1606, and died in 1647. The title became extinct upon the death of Frederick Calvert, the seventh Lord Baltimore in 1771.

CALVERT, **GEORGE HENRY**, author, born in Prince George county, Md., Jan. 2, 1803, died in Newport, R. I., May 24, 1889. He was a great-grandson of the first Lord Baltimore. Having graduated at Harvard he studied at Göttingen, Germany, and on his return resided in the neighborhood of Baltimore, edited the "Baltimore American," and then removed to Newport, R. I., and in 1853 became mayor of that city. He wrote for periodicals and published several books.

CALVERT, a prosperous town of Texas, about 85 miles northeast of Austin. It contains manufacturing of cotton-seed oil, and is the business center of a fertile agricultural district.

CALX, a Latin term for quicklime. As quicklime is produced by burning limestone, the alchemists applied the term calx to the substance of a metal or mineral that remains after being subjected to extreme heat and calcination to the process.

CALYCANTHUS, a genus of *Calycanthaceæ*; a small order, of which only a few species are known, natives of North America and Japan. They are square-stemmed, aromatic shrubs, with purple flowers, which have the odor of strawberries. The most common species in the United States is *Calycanthus floridus*, or Carolina allspice.

CALYCIFLORÆ, a term introduced by De Candolle to include those natural orders of dicotyledons in which the sepals and petals are separate, as in *Thalamifloræ*, but in which the stamens, instead of being hypogynous, are perigynous or epigynous. It includes the *Leguminosæ rosaceæ*, *Saxifragaceæ*, and other related orders.

CALYDONIAN BOAR: in Grecian mythology, a frightful animal sent by the goddess Artemis to lay waste the fields of Ceneus, king of Calydon, because he had omitted a sacrifice to her. The king being absent on the Argonautic expedition, no one dared to face the monster, until Meleager, the son of Ceneus, with a band of heroes, pursued and slew him.

CALYMENE, a genus of the fossil order *Trilobites*, found in the Silurian rocks.

CALYPTRÆA, a genus of mollusks sometimes popularly known as chambered, cup-and-saucer, bonnet or slipper limpets. It is the typical genus of the family *Calyptroidæ*. The shapes vary considerably. Some ten living species are known.

mostly from warmer waters. See *Britannica*, Vol. XVI, p. 650.

CALYX: in botany, the external envelope of the flower. See *BOTANY*, *Britannica*, Vol. IV, p. 131.

CAM, or **GRANTA**, a river of England, which rises in Essex and flows northeast through Cambridge. It gives its name to the town of Cambridge, which stands upon it, and below which it is navigable.

CAMARILLA, a Spanish word, literally "a little chamber," signifies throughout Europe the influence exercised on the state by the favorites of a monarch in opposition to the advice of his legitimate ministers. It first obtained this meaning in the time of Ferdinand VII of Spain.

CAMAYEU and **МОНОХРОМЪ**, terms by which painting in one color is designated. The ancients painted both in gray and in red pictures of several tints, but where the natural colors of the objects are not copied, are said to be *en camayeu*. As one color generally prevails we speak of blue, red, yellow, green camayeu.

CAMBERWELL BEAUTY (*Vanessa Antiopa*), a butter-fly very common in the central and southern parts of Europe. The wings are of a deep purplish-brown color, with a band of black containing a row of blue spots around the brown and a pale yellow margin dappled with black specks. The colors are rich and velvety. The margin of the wings exhibits tooth-like angularities. The caterpillar is black with white dots and a row of red spots down the back, and is rough with soft spines. It feeds on the willow.

CAMBIST, an Italian word for money-changer, or one who is versed in the operation of exchange. The word is also used figuratively as the title of a book in which moneys, weights, measures, etc., of various nations are given in the equivalents of some particular one.

CAMBRIA, the ancient name of Wales, the *Britannia Secunda* of the Romans. The name is derived from that of Cimbri or Cymri, by which the Welsh have always called themselves.

CAMBRIC, a general term applied to the finest and thinnest of linen fabrics. It is said to be derived from *Cambray*, a city of France, formerly of Flanders, where the goods were first manufactured. Scotch cambric is really a muslin, being made of cotton with the fiber twisted very hard, to imitate real or linen cambric. See *CAMBRAY*, *Britannica*, Vol. IV, p. 726.

CAMBRIDGE, a village of Maryland, county-seat of Dorchester county, situated on the Choptank River, about 50 miles southeast of Annapolis. It is an important shipping-point for oysters, herring and shad; contains several canning factories and establishments for the manufacture of tobacco, flour and staves, and is the seat of two excellent academies.

CAMBRIDGE, a village of New York, about 35 miles northeast of Albany. It contains manufactures of machinery, flour, leather and lumber, and is the seat of Cambridge Washington Academy.

CAMBRIDGE, a village of Ohio, county-seat of Guernsey county, situated in an agricultural and mining region, about 60 miles north of Marietta. Coal is found in the vicinity, and the town contains important manufactures of flour, iron, pottery and salt.

CAMBRIDGE, an important and rapidly growing city of Massachusetts, and one of the county-seats of Middlesex county. See *Britannica*, Vol. IV, p. 732. The city comprises four distinct sections, each still bearing its original title—namely, Old Cambridge, North Cambridge, Cambridgeport, and East Cambridge. Old Cambridge, as its name implies, marks the spot where the city began its

growth. Harvard square is nearly in the center of this portion of the city. At the east end of this square still stands the famous Wadsworth House, built in 1726, in which the successive presidents of Harvard College lived for 120 years. Near this central spot is the old village cemetery, in which were buried many of the most eminent men in the early days of Cambridge. Cambridge Common contains about 20 acres. At the western end still stands a venerable elm, surrounded by an iron fence, with a plain granite slab, which records that "Under this tree Washington first took command of the American Army, July 3, 1775." North Cambridge extends in a northerly direction from Harvard University, and lying on the Charles River, is a point of much commercial importance. Cambridgeport lies between the end of West Boston Bridge and Old Cambridge, and abounds with manufacturing industries. East Cambridge, that section formerly known as Lechmere's Point, is opposite the northwestern portion of Boston. It is the most recently settled portion of the city, and contains the court-house, jail, house of correction, and other public buildings. The first printing office in America north of Mexico was established at Cambridge in 1639. Population in 1880, 52,669; in 1890, 69,837.

CAMBRIDGE CITY, a village of Indiana, situated on the Whitewater River, 15 miles west of Richmond. It contains extensive manufactories of railroad cars, machinery, furniture, sash and blinds, flour, lumber, and malt-products.

CAMBRIDGE GREENSAND, a name given to certain "coprolite beds" met with in Cambridgeshire, which were at one time supposed to represent the Upper Greensand. The beds in question are now ascertained to occur on the horizon of the base of the Chalk Marl. See *COPROLITES*, *Britannica*, Vol. VI, p. 353.

CAMBUSLANG, a large mining village of Lanarkshire, four miles southeast of Glasgow. Here a revival, known as the "Camb'slang Wark," was held under Whitefield in 1741. Population, 5,538.

CAMDEN, a city of New Jersey, on the Delaware River, opposite Philadelphia. It is an important railway city, seven railroads having their termini here—namely, Camden and Amboy, Camden and Burlington County, Camden and Atlantic, Philadelphia and Atlantic City, West Jersey, and Camden, Gloucester and Mt. Ephraim. The city has increased rapidly during the last 20 years, both in population and business; in part, however, by annexation of a portion of Newton. The water works which supply the city with water from the Delaware River are at Pavonia, about one mile north of Camden. Population in 1880, 41,659; in 1890, 58,274. See *Britannica*, Vol. IV, p. 734.

CAMDEN, a thriving town of Arkansas, county-seat of Ouachita county, situated at the head of low-water navigation on the Ouachita River. It is a shipping point for cotton, and an important center of trade. It contains several establishments for the manufacture of flour, iron and woolen goods.

CAMDEN, a flourishing village of Delaware, three miles south of Dover. It is the seat of an academy. The chief industry is the canning of fruits.

CAMDEN, a village of Maine, situated on the west shore of Penobscot Bay, about nine miles north of Rockland. It contains numerous manufactories of railroad cars, car-wheels, pumps, spikes, anchors and woolen goods, and is extensively engaged in commerce, ship-building, and the exportation of lime.

CAMDEN, a village of New York, about 18 miles northwest of Rome. It contains important manu-

factories of leather, furniture, woolen goods, rakes and iron.

CAMDEN, an old historical town of South Carolina, county-seat of Kershaw county. It is an important educational and trade-center. See *Britannica*, Vol. IV, p. 734.

CAMEL, a caisson-like apparatus for rendering a vessel navigable in shoal water. It was invented by the Russian engineer De Witte (1790-1854), and is often used between Kronstadt and St. Petersburg.

CAMELFORD, a village in the northwest of Cornwall, near the source of the Camel, 14 miles from Launceston. It lies in a high and hilly tract, and is said to have been the scene of a battle between King Arthur and his nephew Mordred, A. D. 542, in which both were slain. Population, 800.

CAMELOT, a steep hill of Somersetshire, England, near Ilchester, in the parish of Queen's Camel, identified by tradition with one of the capitals of the legendary King Arthur. There are some remains of remote antiquity in the vicinity.

CAMEL'S THORN (*Alhagi*), a genus of plants of the natural order *Leguminosae*, containing a number of herbaceous or half-shrubby species. These plants are of great importance on account of the food which they afford for camels, as they are natives chiefly of the deserts of the East. See *Britannica*, Vol. XV, p. 493.

CAMERLENGO ("chamberlin"), the cardinal having charge of the secular interests of the papacy.

CAMERON, JAMES, soldier, born in Maytown, Lancaster county, Pa., March 1, 1801, killed at the battle of Bull Run, July 21, 1861. He entered his brother Simon's printing office in Harrisburg in 1820; edited the Lancaster "Political Sentinel" in 1827; studied law; served as sutler in the Mexican war, and became colonel of the 79th New York regiment at the outbreak of the civil war.

CAMERON, JAMES DONALD, Senator and son of Simon Cameron, born in Middletown, Dauphin county, Pa., May 14, 1833. After graduating at Princeton he became successively clerk, cashier and president of the Middletown bank. From 1863 to 1874 he was president of the Pennsylvania railroad, and was influential in extending this road to Elmira, N. Y., after the war, thus making steam connection between the lakes and Chesapeake Bay. Mr. Cameron is also interested in coal, iron and manufacturing industries. Under President Grant he held the portfolio of war in 1876; in 1877 he resigned to take his father's place in the United States Senate. He was reelected Senator in 1879, 1885 and 1891.

CAMERON, JOHN HILLYARD, Canadian statesman, born in Beaucaire, Languedoc, France, April 14, 1817, died in Toronto, Nov. 14, 1876. He was educated at Kilkenny, College, Ireland, and in Toronto; entered the legal profession; was elected to the Canadian parliament in 1846, and appointed solicitor-general in the same year. He served for 16 years in the legislative body, and during that time was a prominent mover in a number of important bills, one of which secured better postal facilities between Canada, Great Britain and the United States. He was the author of several legal works, and was one of the commissioners appointed for the revision of the Statutes of Upper Canada in 1840, and the consolidation of the statutes in 1856.

CAMERON, MALCOLM, Canadian statesman, born at Three Rivers, Canada East, April 25, 1808, died in Ottawa, June 1, 1876. He was entirely self-educated, and rose by his own efforts from the position of stable-boy to positions of honor and profit under the Canadian government. He began his political career in 1836, as representative in the Upper

Canada Assembly and was successively inspector of revenue, cabinet officer, president of the council, commissioner of public works, postmaster-general and member of House of Commons from South Ontario.

CAMERON, SIMON, statesman, born in Lancaster county, Pa., March 8, 1799, died there June 26, 1889. He learned the printer's trade when only nine years of age, and in 1820 had risen to be editor of a newspaper in Doylestown, Pa. Two years later he edited another paper in Harrisburg. He held the office of adjutant-general for his State, and in 1845 was elected by the Democratic party as their representative in the United States Senate. In 1856, having become a member of the Republican party, he was sent to the United States Senate. When Abraham Lincoln was nominated for the Presidency, Senator Cameron was a favorite candidate for the first place on the ticket, and also for the second; but the Pennsylvania delegation was not agreed, and he failed of nomination. President Lincoln called him to his Cabinet as Secretary of War. When he served his second term in the Senate his loyalty was questioned on account of his advocacy of peace; but in the Cabinet he urged more aggressive measures than the President was prepared to sanction. He was in favor of arming fugitive slaves, and instructed Gen. Butler to this effect. In January, 1862, he resigned his position and was sent as minister to Russia, where he helped in securing the friendship of that nation at this trying period. He resigned in November, 1862, and four years later was returned to the United States Senate. He was elected to a fourth term, but resigned in his son's favor in 1877. During his political career he was practically the Republican dictator in his State, and was called the "Czar of Pennsylvania politics."

CAMERON, VERNEY LOVERT, C. B., African explorer, born at Radipole, near Weymouth, July 1, 1844. He entered the navy in 1857, and served in the Mediterranean, the West Indies, and the Red Sea, and on the East Coast of Africa, taking part in the Abyssinian expedition and in the suppression of the slave trade. In 1872 (see *Britannica*, Vol. I, p. 249), he was appointed to the command of an East-Coast expedition to relieve Livingstone; and, starting from Bagamoyo in March, 1873, in August, at Unyanyembe, he met Livingstone's followers bearing his remains to the coast (see *Britannica*, Vol. X, p. 194). After making arrangements for their safe arrival he proceeded to Ujiji, where he found some of Livingstone's papers and a map, which he forwarded to Zanzibar. He then made a survey of Lake Tanganyika, which he found to be disconnected with the Nile system. Taking a southerly route, he reached the Portuguese settlement of Benguela on the West Coast, Nov. 7, 1875, whence he returned to England. Created a C. B. and raised to the naval rank of commander in 1878, he traveled overland to India; and in 1882, with Sir Richard Burton, he visited the Gold Coast. Among his works are *Across Africa* (1877), and *Our Future Highway to India* (1880).

CAMERON, a village of Missouri, about forty miles west of Chillicothe. It is an important railroad and trade-center, and has excellent educational facilities.

CAMERONIAN REGIMENT, a name given to the 26th regiment of British infantry, which had its origin in a body of Cameronians. In 1689 the Convention at Edinburgh, taking advantage of the zeal and courage of the members of this religious body, induced a number of them to assist in the revolution, on the understanding that the special object of the corps was to recover and establish the work of Reformation in Scotland. The regiment, with the youthful Lord Angus as colonel and William

Cleland, the poet, as lieutenant-colonel and actual commander, was sent northwards to quell the insurrection. On Aug. 21, 1689, the Cameronians, 1,200 strong, defended themselves against 5,000 Highlanders, and although Cleland fell early in the fight, his work was accomplished; for, in Macaulay's words, "the Cameronians had finished the war." See CAMERON, RICHARD, *Britannica*, Vol. IV, p. 742.

CAMERONIANS, a religious body in Scotland, followers of Richard Cameron, officially called Reformed Presbyterians. In 1681 societies were organized bearing the names of the districts to which they belonged, for the purpose of defense against the oppression of the government and for the maintenance of worship. They refused to accept the indulgence granted to the Presbyterian clergy in the times of Charles II (see *Britannica*, Vol. XIX, p. 516), lest by accepting they should be understood to recognize his ecclesiastical authority. The political position of the Cameronians was very peculiar, since, declining to recognize any laws or institutions which they conceived to be inimical to those of the kingdom of Christ, they refused to take the oath of allegiance. In 1860 there was an attempt to prevent the members exercising the franchise, but in 1863 it was decided not to exercise discipline to the extent of suspension and expulsion on such questions. In consequence of this decision, to which the majority adhered, ten or twelve congregations seceded. In 1878 the larger body formally united with the Free Church. The principles of the Cameronians are now, therefore, distinctively represented by the few congregations which seceded in 1863. See RELIGIOUS DENOMINATIONS in the United States.

CAMEROON, a German colony on the West Coast of Africa, extending along 9° 8' east longitude from the Cross River to the mouth of the Rio del Rey, below 8° north latitude; the limits in the interior, which is almost unexplored, have not been fixed. The name is derived from the Cameroon River, which enters the Bight of Biafra opposite Fernando Po by an estuary over 20 miles wide; the stream is for a considerable distance nearly a mile broad, has at some seasons a current of 5 miles an hour, and its yellow waters may be traced far out at sea. The country is very fertile, abounding in ebony, redwood, and palm trees, and a variety of tropical fruits, while the production of cotton and ivory is very considerable. The climate is very trying to Europeans, and traders generally live in hulks and only store their goods on shore. The natives belong to the Bantu group. Their kings, Bell and Akway, practically wholesale merchants, made considerable trouble by their refusal to permit the natives of the interior to trade directly with Europeans. As England declined to assume the protectorate, the Germans were appealed to, and on July 14, 1884, the German flag was hoisted at Cameroon and a governor appointed.

CAMETA, a town of Brazil, on the left bank of the Tocantins, which joins the estuary of the Amazon from the south. It is 85 miles to the southwest of Para or Belem. It has a fertile district attached to it, which contains 20,500 inhabitants.

CAMLET, properly a fabric made from the hair of the Angora goat. It is also made wholly of wool, or of wool mixed with cotton or linen, and spun hard.

CAMOGGLIA, a town of Northern Italy, on the Gulf of Genoa, about 13 miles southeast of the city of that name. It has about 6,000 inhabitants, chiefly engaged in fishing.

CAMORRA, the name of a secret society in the former kingdom of Naples under the Bourbon government, the members of which were called Camorristi. It was first publicly known about 1820. It

had a central rendezvous in every large provincial town, and twelve such in the city of Naples; and for each of these sections there was a chief, with powers of absolute command, and a treasurer with charge of the common fund. This organization, partly political and partly of the nature of a standing vigilance committee, plundered and terrorized the country for many years. It was tolerated under King Ferdinand II for political reasons, but the government of Francis II endeavored to put down the society, and the police received instructions to seize and transport all known members of it. Those who remained entered into alliance with the Garibaldian committee, and essentially aided in the expulsion of the Bourbons. The organization still retains a nominal existence, but is of no importance.

CAMPANA, LA, a town of Andalusia, Spain, situated on the Madre-Viega, about 37 miles northeast of Seville. It has about 5,500 inhabitants, chiefly engaged in agricultural pursuits, and in weaving and brick-making.

CAMPANARIO, a town of Estremadura, Spain, 62 miles southeast of Badajoz. It has manufactories of linen and ropes, and a trade in the agricultural produce of the neighborhood. Population, 5,400.

CAMPANHIA, a town in the Brazilian province of Minas Geraes, 150 miles northwest of Rio de Janeiro. It is surrounded by bare hills, in which there has been much mining for gold, and large herds of cattle are reared on the lowlands. Population, 6,000.

CAMPANULA ("a little bell"), a genus of plants including the blue-bell or hare-bell, the Canterbury-bell, etc. See HARE-BELL, *Britannica*, Vol. XI, p. 478.

CAMPANULARIA, a common genus of hydroids and type of a family, *Campanulariæ* (see *Britannica*, Vol. XII, p. 561). The delicate stem bearing the colony of polyps may be simple or branched; the nutritive individuals are surrounded by transparent, bell-shaped sheaths, within which they may be retracted. The genus is common in North European seas and in the Mediterranean.

CAMPBELL, an ancient and illustrious Scottish family, to which genealogists have chosen to assign an Anglo-Norman origin, deriving its surname from the Latin *De Campo Bello*. According, however, to the Duke of Argyll, it is purely Celtic, of Scotch-Irish origin; and *Cambel*, as the name was always formerly written, is just the Celtic *cam beul*, "curved mouth." Sir Duncan Campbell, of Lochow, created Lord Campbell in 1445, and his descendants, the ducal house of Argyll, are noticed in *Britannica* under Argyllshire. From his younger son, Sir Colin Campbell of Glenorchy, are descended the earls and marquises of Breadalbane; and from the younger son of the second Earl of Argyll, who fell at Flodden in 1513, the earls of Cawdor (created 1827).

CAMPBELL, ANDREW, inventor, born near Trenton, N. J., June 14, 1821, died in Brooklyn, N. Y., 1890. He received only a common-school education, and was early obliged to care for himself. He learned carriage-making, invented a brush-drawer's vise, built the first omnibus of St. Louis; built the "Great Western" omnibus in 1846—the largest vehicle of the kind ever constructed; built the wooden bridge over Cedar River, Iowa, which was the longest single-span bridge of wood ever made (558 ft. between abutments), and in 1851 he turned his attention to the improvement of printing-presses. His first successful press was built by A. B. Taylor & Co. He went into their employ, became a practical printer, familiarized himself with the business, and invented many little devices; the endless bandfly used in the Bullock press was his invention. He built presses for Frank Leslie, Harper & Brothers, and J. C. Ayer & Co.; for the latter the machin-

built was the first super-imposing press, and with it 120 almanacs could be printed in a minute. He built for Frank Leslie the first automatic press. He also invented a very fine country-newspaper press. He was the originator of the first press which, in one continuous operation, printed, inserted, pasted, and folded a paper. He took out nearly fifty patents.

CAMPBELL, BARTLEY, dramatist, born in Allegheny City, Pa., Aug. 12, 1843, died in Middletown, N. Y., July 30, 1888. He began the study of law, which he relinquished and became a "Leader" reporter. He founded the "Evening Mail" of Pittsburgh in 1868, the "Southern Magazine" of New Orleans in 1867, and three years later was official reporter of the Louisiana House of Representatives. He took up the writing of dramatic pieces in 1871, and among his plays are the following: *Through Fire; Peril; Fate; The Virginian; On the Rhine*; an adaptation of the German comedy *Ultimo*, which he named *The Big Bonanza; Heroine in Rags; How Women Love; My Partner; The White Slave; My Geraldine*; and *Paquita*. *The Big Bonanza* netted a San Francisco theater \$16,000 in a month. *My Partner* achieved success in New York, being the first of Mr. Campbell's plays which gave satisfaction in that city. In 1886 the author became insane.

CAMPBELL, GEORGE WASHINGTON, statesman, born in Tennessee, in 1768, died in Nashville, Feb. 17, 1848. He graduated at Princeton in 1794; served in Congress from 1803 to 1809, and from 1811 to 1814; became secretary of the treasury in 1814, and was appointed minister to Russia in 1818. He was a member in 1831 of the French claims commission.

CAMPBELL, HELEN STUART, author, born in Lockport, N. Y., July 4, 1839. She was educated in Warren, R. I., and at Mrs. Cook's Seminary in Bloomfield, N. J. She began at an early age to contribute sketches to the newspapers, and made a study of the housekeeping problem, employments for women, and the condition of the poor in cities. She has written valuable articles on these subjects. Among her published books are: *The Ainslie Series; His Grandmothers; Six Sinners; Unto the Third and Fourth Generation; The Easiest Way in Housekeeping and Cooking; The Problem of the Poor; The American Girls' Home-Book of Work and Play; Under Green Apple Boughs; The What-to-do-Club; Mrs. Herndon's Income*; and *Miss Melinda's Opportunity*. She was literary editor of "The Continent" from 1881 to 1884, and in 1886 contributed a series of articles for the New York "Tribune" on the working-women of that city.

CAMPBELL ISLAND, a lonely spot of volcanic origin to the south of New Zealand, discovered in 1810. It was used as an observatory during the transit of Venus in 1874. Though it is mountainous and measures only 36 miles round, it has valuable harbors and a rich and rare flora.

CAMPBELL, JAMES, statesman, born in Philadelphia, Pa., in 1813; became a lawyer; was judge of the court of common pleas from 1841 to 1850; attorney-general of the State in 1852, and appointed post-master-general by President Pierce in 1853.

CAMPBELL, JOHN ARCHIBALD, jurist, born in Washington, Ga., June 24, 1811. He graduated at the State University when in his sixteenth year, and was admitted to the bar by special act of legislature, as, at the time he passed his legal examination, he was not twenty-one years old. Upon removing to Montgomery, Ala., he practiced law, and frequently sat in the legislature. President Pierce gave him the appointment of associate justice of the United States Supreme Court, and this office he held from 1853 to 1861. He believed in the right of secession, but opposed the civil war. Under the

Confederacy he was assistant secretary of war. The peace commission of February, 1865, which met at Fortress Monroe, numbered him as one of the Southern representatives. After the Confederacy had been abolished, Mr. Campbell was arrested and detained in Fort Pulaski; when discharged on parole he resumed the practice of law in New Orleans.

CAMPBELL, TIMOTHY J., of New York city, a lawyer, born in County Cavan, Ireland, in 1840. He came to America in 1845; received a common school education; became a printer, and was employed by several daily newspapers. In politics a Democrat, he was elected a member of the assembly from New York city in 1868, 1869, 1870, 1871, 1872, 1873, and 1875; studied law during his first term, and entered the profession in November, 1869. He was elected justice of the Fifth District civil court in New York city in 1875, and served six years. He was again elected a member of the assembly in 1883, and afterward a State Senator. He was elected a representative from the Eighth Congressional District of New York to the Forty-ninth Congress, to fill the vacancy caused by the resignation of S. S. Cox, and was reelected to the Fiftieth Congress. In 1890 he was elected from the same district to the Fifty-second Congress.

CAMPBELL, JOHN FRANCIS, of Islay, Scottish folk-loreist, born Dec. 29, 1822, died at Cannes, Feb. 17, 1885. Educated at Eton and the University of Edinburgh; he held offices at court, and was afterwards secretary to the light-house and coal commissions. Much of his life was spent in travel. He was an enthusiastic Highlander, a profound Gaelic scholar, and a man of singularly lovable nature. An obelisk was raised to his memory in 1887 on the summit of Cnoc-na-Dab, a hill in Islay, near his birthplace. Campbell's great work is his *Popular Tales of the West Highlands* (four volumes, Edinburgh, 1860-62), a very important contribution to the scientific study of folk-tales. He gave much attention also to scientific studies, and published several scientific works.

CAMPBELL, JOHN McLEOD, D. D., Scottish theologian, born at Kilninver, in Argyll, in 1800, died at Roseneath, Feb. 27, 1872. Sent to Glasgow University at the age of eleven, he was licensed to preach by the presbytery of Lorne in 1821, and was ordained minister of Row, near Helensburg, in 1825. His views on the personal assurance of salvation, and on the universality of the atonement, brought upon him a charge of heresy which led to his deposition by the general assembly in 1831. See *Britannica*, Vol. XXI, p. 538. Campbell bore this heavy trial with the greatest charity and patience. Refusing to form a new sect, he for two years labored in the Highlands as an evangelist, and for twenty-six years preached quietly without remuneration to a regular congregation that gathered round him in Glasgow. His health failing, the remainder of his life was spent in retirement. In 1868 his University gave him the degree of D. D., and in 1871 a testimonial and address were presented to him by men of nearly every religious denomination in Scotland. He was the author of three of the most valuable of modern English theological books: *Christ the Bread of Life* (1851), *The Nature of the Atonement* (1856), and *Thoughts on Revelation* (1862).

CAMPBELL, THOMAS, clergyman, born in Ireland, Feb. 1, 1763, died in Bethany, W. Va., Jan. 4, 1854. The Campbell's of Argyre were his ancestors. He studied at Glasgow University, and was trained for the ministry under the Scottish establishment. Soon after becoming a minister he joined the "seceders," and soon sailed for the United States. He identified himself with the associate synod of North America, and assumed the care of destitute

churches in Western Pennsylvania. His son joined him in 1809, and thereafter the two were united in church-work. The elder Campbell labored to assist his son until blindness and the infirmities of age obliged him to give up work.

CAMPBELL, ALEXANDER, theologian, son of the preceding, born at Shane's Castle, county Antrim, Ireland, in June, 1786, died in Bethany, W. Va., March 4, 1866. He was educated at the Glasgow University; emigrated to the United States, and became pastor of a Presbyterian church in Washington county, Pa. The father and son became dissatisfied with Calvinistic doctrines, and in 1810 organized a church at Brush Run, Pa., whose creed was the Bible, and whose form of baptism was immersion. Alexander Campbell in 1827 organized the church which is variously called "Disciples of Christ," "Christians," "Church of Christ," and "Campbellites." The sect increased, in numbers, and in 1880 had a membership of 500,000. Its founder was in 1823 the editor of "The Christian Baptist," afterwards called "The Millennial Harbinger." Mr. Campbell believed slavery permissible to Christians, and according to Scriptural authority. He wrote much for the religious press, and published many religious books. He was a scholarly man, and the founder, and first president of Bethany College.

CAMP EQUIPAGE, a general name for all the tents, furniture, fittings, and utensils carried with an army, applicable to the domestic rather than to the war like wants of the soldier.

CAMPER, PETER (1722-89), anatomist, born at Leyden, May 11, 1722; studied there and in 1750 became professor of medicine at Francker; in 1755 at Amsterdam, and in 1765 at Groningen. In 1773 he resigned his post, and, on being elected a member of the State council in 1787, removed to The Hague, where he died, April 7, 1789. Camper was distinguished, not only for the services he rendered to anatomy, surgery, obstetrics, and medical jurisprudence, but also as a promoter of fine arts. His work on the connection of anatomy with the art of drawing was an important contribution to the theory of art.

CAMPHELENE, an artificial variety of camphor obtained from turpentine, by acting thereon with the dry vapor of hydrochloric acid, and keeping the whole at a low temperature by immersing the vessel in a freezing mixture. A solid substance is produced which separates in white crystalline prisms, and has the taste and agreeable aromatic smell of common natural camphor.

CAMPHEINE, a term applied in commerce to purified oil of turpentine, obtained by carefully distilling the oil over quicklime, or by rectifying it over dry chloride of lime to render it quite free from rosin.

CAMPINAS, SAN CARLOS DE, a town of Brazil, situated on a fertile plain, 44 miles northwest of São Paulo. There are large coffee and sugar plantations in the surrounding district. Population, 12,000.

CAMPION, the common name of plants belonging to the genera *Lychnis* and *Silene*, as moss-campion, meadow-campion, etc.

CAMP-MEETINGS, gatherings of devout persons held usually in thinly populated districts, and generally continued for a week or more, with a view of securing prolonged and uninterrupted religious exercises. Assemblies of like kind have been more or less usual at various periods in the history of the Christian Church; but it was in connection with Methodism in America that such meetings became especially prominent. The practice of holding such meetings originated in 1799, and is still common.

CAMPOBELLO, an island belonging to New Brunswick. It is situated off the coast of Maine, about two miles from Eastport. It is a popular summer resort. Lead and coal are found in the island. The chief industry is fishing.

CAMPO DE CRIPTANA, a town of Spain in the province of, and about 50 miles northeast of the city of Ciudad Real. It has manufactories of coarse cloths, and some trade in corn and fruits. Population, 5,255.

CAMPOS, SAO SALVADOR DOS, a town in the Brazilian province of Rio de Janeiro, situated on the Parahyba, which is navigable for small craft to this point, 30 miles from its mouth. It has fine wharves, and considerable trade in coffee, sugar, brandy, and timber. Population, 15,000.

CAMPO SANTO, HOLY FIELD, the Italian and Spanish name for a cemetery or burying-ground, especially for one inclosed by an arcade.

CAMPO-FORMIO, a village of Northern Italy, six miles southwest of Udine, celebrated for the treaty of peace here concluded, Oct. 17, 1797, between Austria and the French Republic. See *Britannica*, Vol. III, p. 131; Vol. X, p. 610; Vol. XIII, p. 485; Vol. XVII, p. 200.

CAMPVERE, a fortified town of the Netherlands, in the province of Zealand, in Walcheren Island, 4 miles northeast of Middleburg. It has a port on the Veersche Gat, a tract of water separating Walcheren from North Beveland. The town is now in a state of deplorable decay, but it still possesses remnants of its early prosperity. It has one calico factory. Population, 900.

CAMTOOS, or GAMTOOS, a river of the east division of Cape Colony, Africa, two hundred miles in length. It rises in the Nieuwveld mountains, and flows through the inland district of Beaufort, falling into the inlet of the sea which is immediately to the west of Algoa Bay.

CAMUS, ARMAND GASTON, a prominent character in the French Revolution, born at Paris in 1740, died in 1804. On account of his superior knowledge in ecclesiastical law he was elected advocate-general of the French clergy. He was a zealous and ascetic Jansenist, and possessed of extraordinary firmness of character. In 1789 he was elected to the States-General. He gained possession of and published the so called *Red Book*, giving accounts of court expenditure, which was highly disadvantageous to the court and its ministers. In 1793, when he was commissioned to make prisoners of Dumouriez and other generals suspected of treason, he was taken prisoner with his colleagues and delivered to the Austrians. After an imprisonment of two years and a half, he was exchanged for the daughter of Louis XVI. On his return to Paris he was elected to the Council of Five Hundred, became its president in 1796, resigned a year later, and devoted his time to literature.

CAMWOOD, or BARWOOD, a dye-wood which yields a brilliant but not permanent red (see *Britannica*, Vol. VII, p. 576). It is the wood of *Baphia nitida*, a tree of the natural order *Leguminosæ*, sub-order *Cæsalpinieæ*, a native of Angola and Sierra Leone.

CANADA, DOMINION OF, a colonial government under the sovereignty of the British Empire. For its history, geography, government, productions, commerce and earlier statistics, see *Britannica*, Vol. IV, pp. 765-82.

A portion of the North-western Territories were, in 1882, divided into four districts—Assiniboia, 95,000 sq. m.; Saskatchewan, 114,000 sq. m.; Alberta, 100,000 sq. m.; and Athabasca, 122,000 sq. m. The district of Keewatin, between Manitoba and Ontario, and stretching north to Hudson's Bay,

was created in 1876 out of the Territories, and erected into a separate government under the Lieutenant-Governor of Manitoba; it has an area as at first defined of about 450,000 square miles, but part of it at least is now included in the territory recently awarded to Ontario.

The official census of April 3, 1881 (the latest taken of the whole Dominion to the date of this writing), gave area and population of the several provinces as follows:

Political Divisions.	Square miles	Total Pop.	Density per sq. mile.
Prince Edward Island.....	2,133	108,391	54
Nova Scotia.....	30,907	440,572	22
New Brunswick.....	37,174	321,233	13
Quebec.....	188,688	1,359,027	7
Ontario.....	201,733	1,923,228	19
Manitoba.....	128,200	65,954	0.5
British Columbia.....	341,305	49,459	0.14
Territories and Arctic Islands..	2,665,252	56,446	0.02
Total.....	3,470,392	4,324,810	1.24

To the above area should be added 140,000 square miles for lakes, rivers, etc., giving a total area of 3,610,257 square miles. An estimate for 1890 makes a total population of over five millions.

A census of Manitoba taken in 1886 showed that the population was 108,640. If allowance is made for the territory which was taken from Manitoba and added to Keewatin and Ontario in 1883 (the area in 1881 was 123,200 square miles), the rate of increase since that year has been 74.49 per cent.

The district of Keewatin, between Manitoba and Ontario, and stretching north to Hudson Bay, was created in 1876 out of the Territories, and erected into a separate government under the Lieutenant-Governor of Manitoba; a portion of Manitoba was added in 1883, and it has now an area of about 400,000 square miles.

The number of immigrants who arrived in Canada in 1885 was 105,096; in 1886, 122,581; in 1887, 175,579; in 1888, 174,474; and in 1889, 176,462. These numbers are inclusive of those who arrived from the United States.

Except in British Columbia, all the provinces of the Dominion have one or more universities and several colleges, which prepare for university degrees. There are in all about 16 degree-granting bodies in the Dominion, with about 24 colleges attended by about 7,000 students. In 1888 there were 15,139 public schools, and 869 high and superior schools, attended by over a million of pupils.

The total actual receipts for the financial year ending June 30, 1889, were \$71,147,964, and the total expenditures the same. The total public debt of the Dominion July 1, 1890, was \$282,993,751, and the net debt \$233,375,641.

The active militia includes the volunteer and the marine militia. The reserve militia consists of all the men between the ages of 18 and 60 not serving in the active militia of the time being, with certain exemptions. The number of men to be drilled annually is limited to 45,000, and the period of drill to 10 days every year. On Jan. 1, 1890, the active militia consisted of 36,598 officers and men, comprising 43 troops of cavalry, 18 batteries of field artillery, 43 of garrison artillery, 3 companies of engineers, and 640 companies of infantry and rifles. There were also nine permanent corps and schools of instruction, the strength of which is limited to 1,000 men, viz, one school of cavalry, three of artillery, four of infantry, and one mounted infantry. There is also a royal military college at Kingston, founded in 1875,

since which time 74 cadets have received commissions in the imperial army. A small-arms ammunition factory is in operation in Quebec. There is at present no active marine militia, the naval defenses of the country being under the care of the imperial authorities.

The trade of the Dominion is chiefly with the United States and Great Britain. The total wheat crop in 1888 was estimated at 33,000,000 bushels, of which 1,081,169 bushels were exported. In 1889 the total wheat crop of Manitoba was, owing to the dry season, not much over 7,000,000 bushels. The only complete agricultural returns are from the province of Ontario, and the average produce per acre from 1883 to 1889 inclusive was: Fall wheat, 19.4; spring wheat, 15.7; barley, 26.1; oats, 35.3; rye, 16.4; peas, 20.4; corn, 64.9; potatoes, 118.7. Cheese is becoming an important farm production, the export being nearly 270 per cent. more in 1888 than in 1874. In 1888 there were in the Northwest Territories 115 ranches, comprising 3,113,878 acres.

In 1888, according to government returns, the lumber production in Canada reached a total of 1,688,453,768 feet board measure, the dues on which were \$2,500,000.

The total value of the produce of the fisheries in 1889 reached \$17,655,226. Of the total yield in 1889, cod was valued at \$3,618,240; herrings, \$2,498,357; lobsters, \$1,484,488; salmon, \$3,141,925; whitefish \$685,096. Of the total yield in the same year, \$6,346,722 belonged to Nova Scotia; \$3,067,039 to New Brunswick; \$1,876,194 to Quebec; \$888,431 to Prince Edward Island; \$3,348,068 to British Columbia; \$1,963,123 to Ontario; and \$167,679 to Manitoba and the Northwest Territories.

The chief mining districts of Canada are Nova Scotia, British Columbia, Quebec, Ontario, and the Northwest Territories. The total value of the mineral products in 1888 was \$16,500,000. The principal product is coal, of which 2,658,134 tons, valued at \$5,259,832, were mined in 1888. Among the other minerals produced were gold, \$1,098,610; iron, \$1,592,931; petroleum, \$755,571; bricks, \$1,036,746; building stone, \$641,712; copper, \$667,543; silver, \$395,377.

The railway returns in January, 1891, showed a total of 12,628 miles of railway in operation and 26,616 miles of telegraphs. Shipping cleared during the previous year, 16,054,221 tons, with an average annual increase of 1,000,000 tons. The sea-going trade was done by vessels, with a total register of 9,296,601 tons. In 1889, of her foreign trade 26 per cent. was carried in Canadian bottoms. The vessel tonnage owned by Canada was 1,089,642 tons. The postal service included 7,338 post-offices.

Among enterprising projects engaging public attention in Canada for several years was that of revolutionizing the carrying trade between the old and new world. The project was to build a railway from Winnipeg in Manitoba to Fort Churchill, on the western coast of Hudson Bay, and to connect there with steamers which would navigate Hudson Strait, and by sailing along a circle of the earth much shorter than the parallels of latitude away to the south, abbreviate very greatly the length of the ocean voyage. The project was sanctioned five years ago by the legislature of Manitoba, and with the aid of a liberal provincial subsidy the work was begun. The road was to be 650 miles in length, stretching away to the northward till the shore of the great inland sea was reached. Of this distance 350 miles would lie through a fairly fertile country, which would yield some local traffic, but the other 400 miles would traverse a region suitable only to support the wandering Esquimaux and reindeer. With this subsidy 45 miles of the road were built, and the project placed upon the market. The grain of the American continent was to be stored in elevators at Fort Churchill, and thence transferred to Europe. The Dominion government was appealed to for aid. It decided, before granting the aid asked for, to send an expedition to Hudson Bay in order to determine whether the proposed route through Hudson Strait and the Bay and the building of a port at Fort Churchill were feasible. The *Alert*, of Arctic fame, was fitted out, and under command of Lieutenant Gordon, of the Royal Navy, sailed from Halifax on the voyage of inquiry. Three trips were made in as many years. The first two failed of their object by reason of the obstruction of large fields of ice in the Strait and Bay. In the third, after great difficulty and peril,

Fort Churchill was reached; but the report of the commander on his final return was so discouraging to the hopes of the projectors of the new line that the whole project for the present seems to be abandoned.

The chief public events during the year 1890 were the elections in six provinces, resulting as follows (Jan. 20): New Brunswick, 22 Government, 16 Opposition, 3 Independents, sustaining Blair coalition ministry; (30), Prince Edward Island, 18 Conservatives, 12 Liberals, sustaining the McLeod ministry; (May 21), Nova Scotia, 27 Liberals, 17 Conservatives, sustaining the Fielding ministry; (June 5), Ontario, 55 Liberals, 36 Conservatives, sustaining the Mowat ministry; (13), British Columbia, the Robson ministry receiving 8 majority; (17), Quebec, 73 Liberals, 27 Conservatives, sustaining the Mercier ministry. In Ontario the Equal Rights Association, which favored the abolition of Roman Catholic schools, opposed the government. In Manitoba the government stopped printing official reports in French, and the legislature passed a bill abolishing Roman Catholic separate schools and setting up a uniform public school system. In the Dominion parliament at Ottawa, in February, several days' debate on a motion to abolish French as the official language in the N. W. Territories resulted in adoption, by 149 votes to 50, of the motion of Sir John Thompson, leaving the matter to be settled by the people of the territories.

Early in 1891 the Dominion government dissolved parliament, and the new elections, held March 5, resulted in the success of the government party (the Conservatives) by a decreased majority. The members of the new parliament were classified as follows: Conservatives, or Government, 117; Liberals, or Opposition, 95; re-elections to be held, 3; total seats, 215.

During the last few years two important international questions of grave interest engaged the attention of the Dominion government—one of them being the right of Canada to participate in the seal fisheries of Bering Sea. The United States claimed to have secured, in the purchase of Alaska from Russia, the exclusive right to those fisheries, a right which Russia had previously claimed and had effectually maintained. In 1887, the British schooner *Sayward*, immediately hailing from Canadian ports, was seized by a United States vessel for seal fishing in Bering Sea, 59 miles from land, and was condemned to confiscation by the District Court of Alaska. The motion of its owner for an appeal to the United States Supreme Court was denied on the ground of a defect in the Alaska statute, which failed to give the Supreme Court jurisdiction over appeals from the Alaska District. Later, however, the Alaska court consented to the appeal. In January, 1891, the case was withdrawn from the Supreme Court at the request of the owners of the schooner, and application for a writ was made prohibiting the sale of the vessel. This application was presented by the Attorney-General of Canada, acting in the name of the government of Canada and the government of Great Britain. Considerable feeling was the result of the effort to take the case out of the hands of the Executive and treaty-making department of the Washington government, especially as the British government had not consented to be bound by the decision of the U. S. Supreme Court. Subsequently, however, a friendly correspondence between the interested governments resulted in an agreement to submit the question at issue to arbitration.

The other question of special interest in Canada and in the United States is that growing out of the fishery treaties between the two countries. A new treaty recently formulated by the executive governments of Great Britain and the United States, relating to the fishery question, failed through the non-approval of the United States Senate. See TREATIES, in these Revisions and Additions.

CANADA BALSAM. See BALSAM, Britannica, Vol. III, p. 293.

CANADIAN RIVER, a river rising in the north-eastern part of New Mexico, and flowing generally eastward through Texas and Indian Territory to the Arkansas. Its length is about 900 miles, but it is rather shallow and not important for navigation. Its largest tributary is the Rio Nutria.

CANAJOHARIE, a village of New York, situated on the south bank of the Mohawk, opposite Palatine bridge, 55 miles west of Albany. It is the seat of an academy, and contains manufactories of paper bags, malt, and lumber.

CANAL DOVER, a village of Ohio, situated on the Tuscarawas River, about a hundred miles north of Marietta. It contains manufactories of iron, flour, and leather.

CANAMINA, a town of Dahomey, Africa, about 12 miles south of the capital, Abomey. It is situated in the midst of a cultivated plain. Population, 10,500.

CANARIUM, a genus of trees of the natural order *Burseraceæ*, natives of the southeastern parts

of Asia, the Malayan archipelago, etc., one species of which is the source of the elemi of commerce. The fruit is a drupe, the kernel of which is eaten both raw and roasted, and in some places bread is made of it. An oil expressed from it is used both for the table and for lamps.

CANARY GRASS (*Phalaris Canariensis*), a native of the Canary Islands. The seed is much used, under the name of canary-seed as food for cage-birds, and is, on that account, cultivated to some extent in the South of Europe. A fine flour is prepared from canary-seed, which is used as food in the Canary Islands, in Barbary and in Italy.

CANASTER, the name given to a rush-basket in which tobacco is placed in Spanish America.

CANASTOTA, a village of New York, about 30 miles west of Utica. It is the seat of an academy and of a high school, and contains manufactories of cutlery astronomical instruments, and salt. Mineral springs occur within the town.

CANBY, EDWARD RICHARD SPRIGG, soldier, born in Kentucky in 1817, killed in Siskiyou county, Cal., April 11, 1873. He graduated in the class of 1839 from the U. S. Military School; served as quartermaster in Florida from 1839 to 1842; assisted in the removal of the Indians of Florida to the Indian Territory, and was a soldier in the Mexican war from 1846 to 1848. For his services in this campaign he received the brevets of major and lieutenant-colonel, and in 1851 was promoted to the full rank of captain. As major of the 10th United States Infantry he was engaged in frontier duty (1855-56), and at the beginning of the civil war commanded the Department of New Mexico as brigadier-general of volunteers. He was on special duty in the war department at the Capital (1863-64), and during July of 1863 assisted in quelling the draft riots in New York city. He commanded in Western Mississippi from 1864 to 1865, and received the surrender of Generals R. Taylor and E. K. Smith's forces. In March, 1865, Gen. Canby received the brevets of brigadier and major-general in the regular army, and in 1866 received the full rank of brigadier-general. He was subsequently a member of the special commission for deciding claims on the war department, and was afterwards in command of the Department of the Columbia. During the winter of 1872-73 he was engaged in making terms with the Modocs, and was treacherously shot while conferring with them regarding a treaty of peace.

CAN-CAN, an ungraceful dance, something of the nature of a quadrille, but accompanied by violent leaps and indecorous contortions of the body, practiced in French dancing-saloons. The earlier and usual meaning of the word in French is noise, racket, scandal; and is derived, oddly enough, from the Latin conjunction *quamquam*, "although,"—a great squabble having arisen in the French mediæval law-schools as to the pronunciation of this word.

CANCELLARIA, or LATTICE-SHELL, a large genus of gastropods (snails) in the order *Prosobranchia*, and not far removed from the cone-shells. There are 115 living species and many fossils in the Tertiary strata.

CANCER, the fourth of the 12 constellations of the zodiac. It contains 83 stars, of which the principal is *Acubens*, a star of the third magnitude. In the divisions of the ecliptic, the sign called Cancer occupies a place between 90° and 120° from the vernal equinox, but owing to the precession the sign and the constellation have not coincided for nearly 2,000 years.

CANCER ROOT, or BEECH DROPS (*Epiphegus Virginiana*), a parasitic plant of the natural order

Orobanchææ, a native of North America, growing almost exclusively on the exposed roots of beech trees. The whole plant is powerfully astringent. The root is brownish, spongy, and very bitter and nauseous in taste. It acquired at one time the reputation of being a cure for cancer.

CANCIONERO, (Sp., Port., *cancioneiro*, song-book); in general, a collection of lyrical pieces by one or more authors; in particular, the designation of collections of the poetic guilds which flourished in the Middle Ages at the courts of Spain and Portugal. The oldest of these works is that of Don Dinaz, of Portugal (1279-1325), and his court, a manuscript copy of which is in the Vatican; the best edition is the *Cancioneiro Portuguez* of Theophilo Braga. The earliest *Cancioneiro General* was published about the end of the 15th century (2d and enlarged edition, Valencia, 1511). The term is also sometimes applied to a collection of poems by various authors on one subject, such as the *Vita Christi* (Saragossa, 1492).

CANCURUM ORIS and CANCRUM NASI, known also as *noma*, *water-cancer*, and *water-canker*, a peculiar form of mortification or gangrene, arising apparently from defective nutrition. It is called *cancrum oris* or *cancrum nasi*, according as it attacks the walls of the buccal or nasal cavities. The disease seldom occurs except in ill-fed, delicate children, and frequently follows some other serious disease, such as measles, fever, etc. The sores are very fetid destructive ulcerations, spreading rapidly by a gangrenous process. Cases are rare in this country, and most of those recorded are described by foreign writers.

CANDIDATE: among the Romans, a suitor for the office of consul, quaestor, prætor, etc., so named because, in appearing before the people, he wore a white (*candida*) toga without a tunic. His dress was chosen partly as an ostentation of humility, and partly as it served to display wounds received in battle. In the early Christian Church newly baptized converts were styled candidates, on account of the white garment worn during eight days after baptism. A broader signification is now attached to the word, an applicant for any office whatever, religious or secular, being termed a candidate.

CANDLEBERRY, WAX MYRTLE, or BAYBERRY, a small tree or shrub (*Myrica cerifera*) indigenous to the United States. It has evergreen leaves sprinkled with resinous dots. The berries, which are about the size of peppercorns, are covered with greenish-white wax, which is collected by boiling the berries and skimming off the wax, which is afterwards melted and refined. A bushel of berries will yield from four to five pounds of wax. It is used chiefly for candles.

CANDLE-FISH (*Thaleichthys pacificus*, Britannica, Vol. XXI, p. 224), a fish of the family *Salmonidæ*, nearly allied to the smelt. It resembles the smelt in form, is of a dusky color, and attains a length of nearly a foot. It inhabits the Pacific Ocean near the western shores of America, from Vancouver's Island northwards, and is common in the bay of San Francisco. Probably the fattest or oiliest of fishes, it is used by the Indians not only as an article of food, but for the manufacture of oil called eulachon-oil, proposed as a substitute for cod-liver oil in medicine. When dried it may be burned as a lamp. It is also known as *eulachon*, or *oulachon*.

CANDLE-NUT, a tree of the natural order *Euphorbiacææ*, a native of the South Sea Islands, Java, Madagascar, etc., which produces a heart-shaped nut with a very hard shell and a kernel which is edible when roasted. There is procured from the nut an excellent bland oil, which is used both for

food and as a lamp oil. The lamp black used for tattooing is obtained from the shell of the candle-nut.

CANDYS, a loose gown worn by the Medes and Persians over their other garments. It was made of woolen cloth, of purple or some other brilliant color, and had wide sleeves. In the sculptures at Persepolis nearly all the personages are represented as so attired. A gown of a similar kind is still worn by orientals.

CANDYTUFT (*Iberis*), a genus of plants of the natural order *Cruciferaæ*. The species are chiefly found in the countries surrounding the Mediterranean Sea. The name candytuft is supposed to be derived from that of the island of Candia, and Iberis from Iberia, Spain. Some species are slightly shrubby, some are herbaceous perennials, and some annuals. Some are familiar ornaments of our flower gardens.

CANE. See Britannica, Vol. IV, p. 805.

CANE, or KEN, a river which rises in Bundelcund, and after a northeast course of 230 miles enters the Jumna. It is too rapid and turbulent for navigation. It is remarkable for the beauty of its pebbles.

CANELLA, a small tree common in the West Indies, where it is often called wild cinnamon. The whole tree is aromatic, and its flowers are extremely fragrant. The bark of the young branches is known in commerce as *Whitewood Bark*, and forms an article of considerable export from the Bahamas. It has an aromatic fragrance, regarded as intermediate between that of cinnamon and that of cloves, and has a sharp, bitter, pungent taste.

CANELONES, a fertile department of Uruguay. Area, 1,827 square miles. Population, 64,974. Capital, Guadelupe, 30 miles north of Monte Video by rail. Population, 3,000.

CANES VENATICI, a constellation of the Northern hemisphere, known generally as the greyhounds of Hevelius. The dogs are distinguished by the names of Asterion and Chara. On the celestial globe, they are represented as being held in leash by Boötes, and apparently pursuing Ursa Major round the pole of the heavens.

CANG, CANQUE, or KEA, an instrument of degrading punishment in use in China. It consists of a large wooden collar fitting close around the neck, usually weighing from 50 to 60 pounds. Over the part where the cang fastens are pasted slips of paper, on which the mandarin places his seal, so that the culprit may not be relieved until the full term of his sentence has expired. On it is also inscribed in large letters, the offense and the duration of the punishment. The criminal, having been paraded through the streets by the police, is left exposed in some thoroughfare in the city. As he is incapable of defending himself he is often abused in the most cruel manner, or may be allowed to starve.

CANGAS DE ONIS, a town of Asturias, Spain, 35 miles from Oviedo. In its vicinity are the interesting monastic structures of Cavadonga, and the cave where the Goths, headed by Pelaya, fled and hid after the battle of Guadalete in 711, and from which in 718 they issued and annihilated the Moorish invaders. Population, 1,600.

CANICULAR DAYS, or DOG DAYS. Canicular was an old name of Canis Minor, and was also used to denote Sirius, or the Dog-star. From the heliacal rising of this star the ancients reckoned their dog-days, which were 40 in number—20 before and 20 after the rising of the star.

CANIDÆ, a family or section of Carnivora, the dog tribe, (see CANIDÆ, Britannica, Vol. VII, p. 324), divided by Professor Huxley into two parallel series: *Thoid* or *Lupine* types—for example, dogs, wolves,

jackals; and *Alopecoid* or *Vulpine* types—for example, fox, fennec, lycaon or Cape hunting dog, and the primitive *Otocyon*. Distinctive characters are noted under MAMMALIA (see Britannica, Vol. XV, pp. 438-39).

CANIS MAJOR (Lat., *larger dog*), a constellation of the Southern hemisphere, below the feet of Orion. It contains Sirius, the brightest of all the stars, and its place may be found by means of this star, which is on the continuation of the line through the belt of Orion. It contains 31 stars.

CANIS MINOR (Lat., *smaller dog*), is a constellation of the Southern hemisphere. It is near Canis Major, and just below Gemini. Procyon, of the first magnitude, is its principal star, and lies in a direct line between Sirius and Pollux. It contains 14 stars.

CANISTEO, a village of New York, situated on the Canisteo River, 55 miles west of Elmira. It contains manufactories of flour, leather, chairs and lumber, and is the seat of an academy.

CANKER, a disease of plants, especially fatal to fruit trees. It is a kind of gangrene, usually beginning in the young shoots and branches, and gradually proceeding towards the trunk, killing the tree in the course of a few years. Varieties of fruit trees which have been long propagated by grafting and budding are most liable. It is sometimes cured by *heading down* the tree, and thus causing it to throw out new branches.

CANKER, a term applied to various diseases of animals, characterized by their chronic nature, and consisting chiefly in ulcerations, suppuration and the development of fungoid excrescences in the parts affected.

CANNA, one of the islands of the Hebrides, off the west coast of Scotland, four and one-half miles long by one mile broad. The surface stands 800 feet above the sea, and consists of trap, which has overflowed thin laminae of coal and shale. The island has a hill of basalt, called Compass Hill, which reverses the magnetic needle. Population, 119.

CANNABINACEÆ, a sub-order of *Urticaceæ*, containing only two plants, both of them valuable, the *hemp* and the *hop*.

CANNELTON, a village of Indiana, county-seat of Perry county, situated on the Ohio River, 70 miles above Evansville. It is an important coaling station for steamboats, and manufactures cotton goods, flour, pottery, chairs, paper, lumber and drain-tiles.

CANON, or **CANYON**, the name given in western North America to a deep gorge or river ravine between high precipitous cliffs. One of the best examples is the far-famed cañon of the Colorado. This use of the word is peculiar to the Western United States.

CANNOCK, a town of Staffordshire, eight miles northwest of Walsall. It is the seat of important iron industries. Population, 17,125.

CANNON-BALL TREE (*Couropita Guianensis*), a large tree of tropical America; the fruit is large, about the size of a 36-pound shot, nearly round, and is sweet and wholesome. The hard woody shell of the fruit is used for drinking-vessels.

CANNON. See GUNS and GUNNERY, in these Revisions and Additions.

CANON CITY, a village of Colorado, county-seat of Fremont county, situated in a rich mining district, below the Grand Cañon of the Arkansas. It is the seat of an academy, and of the Colorado penitentiary. It is a favorite health resort, having several medicinal springs. The surrounding country is rich in copper, silver, coal, iron, marble, limestone and oil.

CANNULA, a term applied to small tubes of different kinds used in surgery; especially to a sheath inclosing a trocar, or perforator, along with which it is introduced into a cavity or tumor containing a fluid. The sharp instrument being withdrawn the tube remains to evacuate the fluid. The term is also applied to the tube which is inserted into the windpipe after the operation of tracheotomy.

CANON: in music, a kind of fugue, in which not merely a certain period or phrase is to be imitated or answered, but the whole of the first part with which the canon begins is imitated throughout by all the other parts. See Music, in Britannica, Vol. XVII, p. 82, for its connection with the Round or Catch.

CANON OF SCRIPTURE. See Britannica, Vol. V, pp. 1-15.

CANONESS (*canonica*), a title given at the close of the 8th century to a class of women living in common under a somewhat laxer rule than that of nuns, and originating in the Frank empire in imitation of the chapters of canons then recently instituted. Their occupations were chiefly education of girls, transcription and embellishment of church office-books, and embroidery of vestments. The advantages of such institutions as asylums in a rough age were soon visible; and, as with many the religious motive had little to do with entrance, a distinction was made between canonesses regular and secular. The secular canonesses were for the most part members of princely or noble houses, and retained none of the rule save the common dormitory and the recitation of the hours in choir. At the Reformation some chapters adopted the new opinions, and subsist to the present day as Protestant foundations, admitting to membership only ladies of noble birth or daughters of distinguished members of the military and civil services, whose sole obligation is celibacy during membership.

CANONICUS, Indian chief, born about 1665, died June 4, 1647. When the Pilgrim fathers landed in America he was king of the Narragansett tribe, numbering about 3,000 warriors. At first disposed to be hostile, he sent the governor of the colony a bundle of arrows tied with a snake skin. The plucky governor returned the skin filled with powder and shot, and Canonicus deemed it best to be friendly with the settlers. The land on which the city of Providence stands was given to Roger Williams by this chief. Canonicus preserved friendly relations with the white people, and his tribe for many years after his death followed his example; but in King Phillip's war there was a general uprising, and the Narragansetts fought the settlers, and as a result were exterminated.

CANONSBURG, an educational town of Pennsylvania, 22 miles southwest of Pittsburgh. It is the seat of Jefferson College and of the Pennsylvania Reform School.

CANON WREN, a troglodyte bird of the genus *Catherpes*, found in the cañons and other precipitous and rocky places of the southwestern parts of America.

CANOPIIC VASES (named from Canopus, a city of ancient Egypt), vases used by Egyptian priests to contain the viscera of embalmed bodies. They were arranged in a series of four: the first contained the stomach and larger intestines; the second, the smaller intestines; the third, the lungs and heart; and the fourth, the liver and gall-bladder; and each had on its lid the head of the particular deity who was supposed to preside over the contents. See POTTERY, Britannica, Vol. XIX, p. 603.

CANOSSA, a town in Italy, near Reggio; celebrated as the place where the Emperor Henry IV

stood three days bare-headed and bare-footed outside the castle waiting to be admitted to the presence of Pope Gregory VII. See *Britannica*, Vol. X, p. 488; Vol. XI, pp. 667-68.

CANOVAS DEL CASTILLO, ANTONIO, a Spanish historian and premier, born at Malaga in 1830. See *Britannica*, Vol. XXII, p. 362.

CANROBERT, FRANÇOIS CERTAIN, marshal of France, born in 1809, educated at St. Cyr, and in 1828 entered the army. He served in Algeria, in the Crimea, against the Austrians, and in the Franco-German war. In 1856 he was created a marshal of France.

CANSO, CAPE, the eastern extremity of Nova Scotia, at the entrance of Chedabucto Bay. Canso Strait, a passage 17 miles in length and $2\frac{1}{2}$ in average breadth, separates Nova Scotia from the island of Cape Breton.

CANT: on shipboard, a name given to such timbers, near the bow and stern, as lie obliquely to the line of keel. It is also a general term for anything sloping, inclined or turned aside. "Canting" is to turn anything over, or out of its proper position.

CANTABLE, or CANTILENA: in music, a term placed over passages of easy and flowing melody, which lie chiefly in the middle region of the voice. In this style the finest effects can be produced by the singer in swelling, sustained sound, etc.

CANTEEN, a term applied to a shop in a barrack where soldiers may purchase necessaries at first cost, to a refreshment house in a barrack for the use of the soldiers, to the vessel used by soldiers for carrying water, or whatever beverage may be obtainable while on a march or in the field, and to a box containing the utensils required in preparing and serving food or in caring for the wounded. See *Britannica*, Vol. I, p. 668.

CANTICLES, Book of. See *Britannica*, Vol. V, pp. 32-36.

CANTILEVER, a large bracket used in architecture for supporting cornices, balconies, and even stairs. Cantilevers are often highly ornamented.

CANTON, a city of Ohio, and county-seat of Stark county (see *Britannica*, Vol. V, p. 39). Canton is the seat of extensive manufactories, including the works of the Wrought Iron Bridge Company, and Agricultural Machine Works. It is situated in a rich agricultural district, which furnishes wheat, corn and oats for export. Coal is also an article of export. Its population has increased from 12,258 in 1880 to 26,327 in 1890.

CANTON, a city of Illinois, about 25 miles west of Peoria. It contains important coal mines, an extensive meat-packing establishment, and important manufactories of iron, agricultural implements, wagon and cigars.

CANTON, a manufacturing town of Massachusetts, situated on the Neponset River, fourteen miles south of Boston. Within the township are extensive manufactories of machinery, sewing-silk and cotton and woolen goods.

CANTON, Missouri, the county-seat of Lewis county, an important shipping station for the surrounding country, being conveniently situated on a railroad and on the Mississippi River. Christian University is here located.

CANTON, a manufacturing town, county-seat of St. Lawrence county, N. Y., situated on Grass River and on the Rome, Watertown and Ogdensburg Railroad. Canton Academy and the St. Lawrence University are two of the institutions here located.

CANTON, a town of South Dakota, county-seat of Lincoln county, situated on the Sioux River, about seventy miles north of Sioux City. It is the seat of Normanna College. It has a good water-power, and contains extensive manufactories.

CANTON, in heraldry, occupies a corner of the shield. It is one of the nine honorable ordinaries, and of great esteem.

CANTON: in geography, a division of territory, constituting a separate government or state, as in Switzerland. In France a canton is a subdivision of an arrondissement.

CANTON'S PHOSPHORUS, or PYROPHORUS, is obtained by heating in a close vessel three parts oyster-shells and one part sublimed sulphur, when the sulphuret of calcium is formed, which takes fire when exposed to or thrown into the air.

CANTU, CESARE, an Italian author, born at Brivio in 1807, educated at Sondrio, where he was appointed professor of belles-lettres. Having been imprisoned in 1833 for the offense of expressing liberal tendencies in a historical work on Lombardy, he spent his leisure hours in describing the sorrows of a prisoner in the form of an historical romance, *Margherita Pusterla*. His great work, *Storia Universale* (85 vols., 1836-42), has been followed by many others on history and literature, as well as by some of a lighter character.

CANUN, a Turkish musical instrument, strung with gut-strings. It is thrummed with the fingers, on which are thimbles of tortoise-shell pointed with pieces of cocoa-nut, forming plectra for striking the strings.

CANVAS-BACK DUCK (FULIGULA VALLISNERIA), a North American duck highly esteemed for the delicacy of its flesh. See *POCHARD, Britannica*, Vol. XIX, p. 252.

CAP: in ship-building, a strong, thick block of wood fixed near the top of the mast. It has a hole to receive the upper end of the lower mast, and another to receive the lower end of the topmast with eyebolts to aid in hoisting the topmast. There is also a cap of smaller size at the point of junction between the topmast and the top-gallant-mast. When made of iron, the cap is called a "crance."

CAPACITY, LEGAL, the power to alter one's rights or duties by the exercise of free-will, or responsibility to punishment for one's acts. Civil capacity depends on age and mental condition. But civil incapacity is often imposed as a punishment on persons of full age and undoubted mental capacity. Convicts and persons attainted are placed under a general civil incapacity, and partial incapacities are also imposed as punishments. The disabilities attaching to married women have been largely removed by recent legislation both in Great Britain and in the United States. For supposed political reasons aliens were for a long time debarred from ordinary civil rights, and they are still properly excluded from political rights until they are naturalized and adopt the obligations of a citizen. Different tests of capacity are applied to different transactions, as in contracts and testaments.

CAP-A-PIE, a term applied, in the military language of the Middle Ages, to a knight or soldier armed from head to foot, with armor for defense and weapons for attack.

CAPARISONED, dressed in caparisons. A war-horse completely furnished for the field is said to be caparisoned.

CAPE ANN, the eastern point of Essex county, Mass. Valuable quarries of syenite are here opened on a rocky headland. On Thatcher's Island, the most northern limit of Massachusetts Bay, are two stone light-houses.

CAPE CANAVERAL, a point of land on the eastern coast of Florida, on which there is a tall light-house for warning seamen off the dangerous shoals that surround the cape.

CAPE CHARLES, the southern point of the "Eastern Shore" peninsula which separates the

Atlantic from Chesapeake Bay. Near the cape, on Smith's Island, is a light-house.

CAPE COD, properly a narrow peninsula of Massachusetts, in form somewhat like the letter L. It is 65 miles in length, and forms the southeast boundary of Cape Cod Bay. The northern extremity is marked by a revolving light, 155 feet above the sea.

CAPE ELIZABETH, a summer resort of Maine and a suburb of Portland. It has a State reform school, important manufactories and a dry-dock.

CAPE FAREWELL, the most southern point of Greenland.

CAPE FEAR, the southern point of Smith's Island, North Carolina, on the Atlantic Ocean.

CAPE FEAR RIVER, a river formed by the junction of the Haw and Deep Rivers at Haywood, Chatham county, N. C. It flows southeast, and enters the Atlantic near Cape Fear. Including its branches it has a length of 200 miles, 120 of which are navigable.

CAPE FLATTERY, the most westerly point of the United States outside Alaska. It is situated on the northwestern coast of Washington.

CAPE FLORIDA, the south point of Key Biscayne, 330 miles southeast of St. Augustine.

CAPE FOULWEATHER, or **YAQUINA HEAD**, the western point of Oregon, in Tullamook county. It has a brick light-house.

CAPE GIRARDEAU, a city of Girardeau county, Mo. It has a normal school, a female academy and St. Vincent's College. It exports cotton, and among its manufactures are plows and mineral paints.

CAPE HATTERAS, the eastern point of North Carolina. It is a long, low, sandy bank separated from the main land by Pamlico Sound. Navigation along the coast is very dangerous, and a light-house 190 feet high has here been erected.

CAPE HENLÖPEN, the point of land on the east coast of Delaware, at the entrance to Delaware Bay, opposite Cape May. It has a stone light-house.

CAPE HENRY, a cape opposite Cape Charles, at the entrance to Chesapeake Bay, in Virginia. It has a light-house.

CAPE HORN, a dangerous, rocky, dismal island, the extreme southern point of America.

CAPEL, **THOMAS JOHN**, **MONSIGNORE**, an eminent English Roman Catholic prelate, born at Brompton in 1836. He is the founder of several educational and ecclesiastical institutions. He lectured in the United States in 1883.

CAPE LA HAGUE, a promontory of France, forming the northwest extremity of the peninsula of Cotentin in the department of Manche. It juts into the English Channel opposite the Island of Alderney.

CAPE LA HOGUE, often confounded with Cape la Hague, and situated on the east side of the same peninsula. Here the French were defeated by the united English and Dutch fleets in 1692.

CAPE OF GOOD HOPE (Cape Colony). See Britannica, Vol. V, pp. 41-50. The latest official returns up to 1891 give the area of the whole colony as 213,638 square miles, with a population of 1,250,000. The capital, Cape Town, has a population of 60,000; Port Elizabeth, the chief commercial port, has 18,000; Grahamstown, the capital of the eastern province, 10,000; Kimberly, the seat of the diamond trade, 25,000. Whites number about a third of the entire population, and the greater number of them are of Dutch descent. The number of registered electors in 1890 was 78,916. The right of suffrage is limited to occupiers of property worth \$250, or receiving \$250 salary, or \$125 salary with board and lodging. There is a university at Cape

Town (Royal Charter, 1877), and there are a large number of state-aided elementary schools, besides private and religious institutions. For defense there is a force of Cape Mounted Rifles, 769; Volunteers, 4,000; and every able-bodied man between 18 and 50 is liable to be called out for military service. There are 1,693 miles of railway in operation, which is government property. There are 8,981 miles of telegraph wires in operation. About 84,000,000 acres are in occupation, of which 600,000 are under cultivation. Vineyards occupy 20,000 acres, producing 4,500,000 gallons of wine, and 1,000,000 gallons of brandy. Ostriches number 25,000; sheep, 11,000,000; cattle, 1,112,000; goats, 3,000,000. The wheat crop of 1890 amounted to about 1,700,000 bushels other grain 3,000,000 bushels, tobacco 3,000,000 pounds, aloes 340,000 pounds, and dried fruit 2,500,000 pounds. Cotton and rice are grown in limited quantities. The principal exports are wool, Angora hair, ostrich feathers, sheep and goat-skins, diamonds, wines, spirits, copper ore and aloes. The exports of wool in 1890 amounted to \$7,903,045, and diamonds over \$20,000,000. The colony has been gradually enlarged by annexations, the latest of which are Griqualand West, annexed in 1880; the various Transkeian territories, 1875-87; and Wal-fisch Bay, 1884.

CAPELIN, or **CAPLIN** (*Mallotus villosus*), the only species of a genus belonging to the salmon family, and nearly related to the smelt (see Britannica, Vol. XXI, pp. 221-224). It is one of the smallest members of the family, lives on the sea-bottom of the northern coast of the Atlantic, comes to the surface to spawn, and furnishes one of the most important parts of the cod's food in northern regions. Vast shoals occur periodically off Newfoundland. The capelin is much used as bait in the cod fishery; it is eaten fresh in Iceland, and is sometimes imported in dried form into Great Britain. Its flavor is pleasant, and suggests affinity with herring.

CAPELLA, a bright star of the first magnitude, on the left shoulder of the northern constellation of Auriga, in front of the Great Bear, nearly in a line with the two northernmost of the seven stars forming Charles' Wain.

CAPE LOOKOUT, the southeast extremity of the islands adjacent to Carteret county, N. C. Its light-house is 150 feet high.

CAPE MAY, a famous watering place of New Jersey, on an island in the Atlantic, 81 miles by rail from Philadelphia, with which it has daily communication by steamboats during the summer.

CAPE MENDOCINO, a lofty headland, the most western point of California. It has a light-house 423 feet high.

CAPEN, **NAHUM**, author and publisher, born in Canton, Mass., April 1, 1804, died in Dorchester in 1886. He edited the "Massachusetts State Record" from 1847 to 1851, wrote for the press, published the *Republic of the United States*, and, at the time of his death, had a *History of Democracy* nearly completed. He was among the first to urge the passage of an international copyright bill. The census board at Washington sprang from a letter of his published by the United States Senate. The system of collecting letters from street boxes originated with him while postmaster of Boston (1857-1861).

CAPE NORTH, the most northerly point of Europe, on the Magerö Island, north of Norway.

CAPE OF GOOD HOPE, a lofty promontory, the southern extremity of Africa. It rises 1,000 feet above sea level, and terminates the range of Table Mountains. It was discovered by Bartholomew Diaz in 1486, and first doubled by Vasco de Gama in 1497.

CAPE PRINCE OF WALES, a point in Alaska on Bering Strait, opposite East Cape in Asia. It is the most westerly point of America.

CAPE RACE, the southeastern point of Newfoundland, extending into the Atlantic. It is a dangerous point on account of the dense fogs there prevalent. A light-house 180 feet high has here been built, and all vessels sailing between Great Britain and the northeastern part of North America are taxed for its maintenance.

CAPE RIVER, or **RIO DE SEGOVIA** (properly *Vauks*, or *Wanz*), a large river of Nicaragua, which, after a generally northeast course of about 300 miles, empties into the Carribbean Sea. It is navigable for a considerable distance from the sea, but the upper part of its course is obstructed by cataracts and shallows.

CAPE SABLE, the southernmost point of Florida.

CAPE SAN LUCAS, the southern extremity of Lower California.

CAPE ST. ROQUE, a promontory of Brazil, the most eastern in America, with the exception of Cape St. Augustine.

CAPE ST. VINCENT, the southwestern extremity of Portugal. Near this point the Spanish fleet was defeated by the British navy in 1797.

CAPE TRAFALGAR, a headland of Spain, between Cadiz and Gibraltar, on the Atlantic coast. Near this cape a famous battle was fought, Oct. 21, 1805, between the English and the French and Spanish fleets, in which the English were victorious, but suffered the loss of their commander, Lord Nelson.

CAPE VERD, the most westerly headland in Africa, projecting into the Atlantic Ocean between the rivers Gambia and Senegal, in latitude 14° 43' north, and longitude 17° 34' west. It was discovered by the Portuguese about 1445, and is said to have derived its name from a group of gigantic baobab trees which adorns its summit.

CAPE VINCENT, a summer resort of New York, situated on the St. Lawrence River, opposite Kingston, Ont. Shingles and flour are here manufactured. The place is a port of entry.

CAPIAS. See *Britannica*, Vol. XXIV, pp. 695-96.

CAPILLAIRE, a syrup prepared by adding sugar and orange-flower water to an infusion of the Maidenhair fern, and formerly used as a pectoral in chronic catarrhs; any syrup flavored with orange-flower.

CAPITA, DISTRIBUTION PER, a familiar expression in the law relating to wills and succession. It means that where the persons claiming under a will consist of, for example, three families of grandchildren, the estate or fund is divided equally among all the grandchildren (whatever the size of the family), and not equally among the three families. The opposite principle of division, namely, among families, is called *distribution per stirpes*. Testators frequently fail to make their meaning clear on this point.

CAPITAL. See *Britannica*, Vol. V, p. 71-73.

CAPITAL: in fortification, an imaginary line dividing a defense work into two similar and equal parts.

CAPITAL, in geography, is the principal city or town of a country, where the legislature meets and the chief legal courts are held.

CAPITAL ACCOUNT, a name given to what concerns the capital stock of a railway or other public company. In authorizing a railway company, Parliament, Congress, or State legislatures give power to raise so much money by shares, and so much by borrowing. This money forms the capital of the company, and constitutes the *capital ac-*

count. On this fund the directors of the company make drafts to pay for the land, and all the works connected with the line, as also rails, locomotives, carriages, and in short everything involved in perfecting the railway up to the point of working. After the railway is opened all working expenses and renewals of line and plant should be charged to revenue account, but extensions of the line and additional plant should be charged to capital account. The same principle applies to all joint-stock companies. It is of the utmost importance that these two accounts be kept quite distinct.

CAPITAL PUNISHMENT (Lat., *pena capitalis*), a penalty relating to the head, affecting the head, or life, as without the head there can be no life; hence involving the forfeiture of life. All the more serious offenses against society, and frequently very trivial ones, were, in many parts of the world, punishable with death until comparatively recent times. As a penalty for murder it has prevailed from the earliest ages in all parts of the world. In the primitive state of the social organization, at least in the earliest condition of which we have any record, retaliation (*lex talionis*) was the common method of punishment. The right of individual revenge not only existed in the savage state of mankind, but also has been recognized and tolerated for many ages, even after laws had been enacted for the restraint of crime; and not only this, but with very many nations the rule of retaliation became established and recognized in a very large degree. It provided following not only the ancient savage procedure, but also the Mosaic permission, that the punishment should be the same in kind as the crime. Under the Hebrew law it was enacted that punishment should invariably be "an eye for an eye; a tooth for a tooth; a life for a life," and any person belonging to the family of the slain had the legal privilege of pursuing the murderer and taking the customary vengeance. The methods permitted by law for producing death were four: the sword, strangling, fire and stoning. Lest punishment might be too precipitate, or improperly administered, the criminal, especially if he were able to present the plea of justifiable killing, might flee and endeavor to reach one of the established "cities of refuge," where he would at least be temporarily safe.

The Hebrew polity being theocratic, many offenses were punished capitally as violations of the national faith. Among them are to be particularly noted—desecration of the Sabbath; blasphemy, idolatry, witchcraft, cursing, offerings to Moloch; disobedience to parents; murder, adultery; incest and kidnaping a free person. The "avenger of blood" was a person having such a right of carrying out private vengeance that he superseded any public officer who might otherwise have authority in the premises.

The Hebrews undoubtedly adopted this custom from the Egyptians; for when Moses fled the country after he had killed an Egyptian and buried him in the sands to avoid detection, he was after forty years informed that those who sought his life were dead; hence there was no fear in his returning to the land where his people dwelt.

In Greece, under the rule of Draco, a system of laws was prescribed which fixed death for certain offenses, some of them extremely trivial—as stealing from a dwelling-house an amount equivalent to about \$10 of American money. Draco claimed that those guilty of such a crime deserved death. The greater crimes could not be visited by any severer punishment, and therefore above a certain limit, of which the above cited instance is a specimen, death was invariably the penalty. The crimes

ordinarily punished by death, or for which death was prescribed by law, were sacrilege; disrespect for the popular faith; the non-observance of established religious rites; treason; murder, or attempt to murder; and incendiarism. Socrates was accused of spreading disbelief in the national religion, and notwithstanding his eminence as a teacher and a scholar, the ordinary administration of justice demanded his death, and he was condemned to drink poison. Such infamous results of basely conceived laws had a necessary reaction. Modifications were inaugurated, and the Athenian code became eventually very mild.

Among the principal methods of capital punishment crucifixion occupies a prominent place. This peculiar mode is traditionally ascribed to Semiramis, and was practiced by the Egyptians, the Carthaginians, the Persians, the Assyrians, Scythians, Indians, Greeks, Macedonians, ancient Germans, and Romans. Whether it was practiced by the ancient Jews or Hebrews is a matter of dispute.

In Japan, the criminal, especially if he be high in rank, is condemned to take his own life in the presence of officials, by the method known as *harikari*—a peculiar kind of disemboweling process; while in China the victim is usually beheaded.

In the Twelve Tables of ancient Rome, into which the *decemvirs* condensed the laws, there was very great severity, the statutes going so far as to pronounce the penalty of death against writers of libels, etc. The execution of the laws in all their rigor was only prevented by the laws previously passed during the consulate of Valerius Poplicola, and known as the Valerian laws. Crucifixion, one of the popular methods of punishment in the nation in all parts of the Empire, was abolished by Constantine in the latter part of his reign.

In ancient Germany private retaliation was permitted, and continued long after the country became a part of the Roman Empire. In the greater part of modern Germany beheading is the mode of execution adopted. In Austria hanging is the legal method.

Among the Anglo-Saxons associations were often formed by men of the same class for mutual protection, and any member of the society was pledged to pursue a murderer until the full completion of the *lex talionis*.

In the history of England the benefit of clergy was for a long time denied by statutory enactment to those condemned to death—until, indeed, a comparatively recent time. Blackstone enumerates 160 different offenses incurring the death penalty without benefit of clergy, four-fifths of which had been prescribed during the reigns of the first three Georges; but the terrible list was gradually reduced to two—treason and murder. In England, Scotland and Ireland, until within a generation or so, the rack, the gibbet, decapitation, quartering, disemboweling and burning were practiced. Happily, all but the gibbet have been abolished, or have gone into disuse owing to the advancement of civilization.

It is to be noted that in France the guillotine is still used, and in Spain the garrote, which is undoubtedly the quickest and most complete method where capital punishment is required.

The crimes which at various periods have been punishable by death in the United States are treason, murder, arson, piracy, robbery of the mail with jeopardy to the life of the person in charge thereof, rescuing a person convicted of a capital offense when on the way to execution, burning a vessel of war, or destroying a vessel owned by private parties. Treason and murder are punishable

with death in most of the States. Rape, arson and robbery when attended with special villainy are included. Within the United States so-called "witches" were punished by burning at the stake, and this at a period so recent as to produce in the reader a thrill of horror. The stake has been abolished, and hanging remains as capital penalty, only in some of the States. In William Penn's code of laws for Pennsylvania, capital punishment was prescribed for two crimes only—treason and murder. Since that time some of the States have abolished capital punishment, and substituted instead imprisonment for life. In New York in 1888, the condemnation to hanging was superseded by condemnation to "electrocution," or death by electricity.

In the armies of the world, desertion, conviction as a spy, and the act of secretly communicating intelligence to the enemy are all regarded as capital offenses, and punishable by either being shot or hanged—the latter being regarded as the more disgraceful mode of execution.

In many of the navies of the world the culprit, if he be an officer, is shot; if a common seaman he is usually hanged at the yard-arm.

The tendency in the present century has been to limit capital punishment to the greatest crimes only; and the more intelligent the nations become under the influence of Christian civilization, the more prevalent becomes the opinion that it would be well to abolish the death penalty altogether. One great argument in favor of this is that in all ages, our own not excepted, many persons have suffered the death penalty who were afterward found to have been wholly innocent of the crimes imputed to them.

CAPNOMANCY, a divination by smoke practiced by the ancient Greeks. They threw grains of jasmine or poppy on the burning coals, and watched the motions, and density of the smoke that rose from them, or they watched the smoke of sacrifices. If the smoke was thin and ascended in a right line, the augury was good. It was also believed that the inhalation of the smoke gave the priests prophetic powers.

CAPPAGH BROWN, a bituminous earth, which yields pigments of various shades of brown. The coloring matters are oxide of manganese and iron. The cappagh browns are transparent and permanent. The name is derived from Cappagh in Ireland.

CAPPARIDEE, a natural order of exogenous plants, allied to *Cruciferae*, and including about 350 known species, mostly natives of tropical and subtropical countries. Many of the species possess stimulant properties, while some are poisonous. One of the most interesting plants of the order is the *Sirivák*, a bush or small tree of Africa, the small berries of which have a pungent taste like pepper. When dried they constitute an important ingredient in the food of the natives, and the roots when burned yield considerable salt.

CAPPEL, a village of Switzerland in the canton of Zurich, 10 miles southwest of the city of that name. Here the reformer Zwingli was killed in a conflict with troops of the Roman Catholic cantons, in 1531. See *Britannica*, Vol. XXIV, p. 838.

CAPRICCIO: in art, a term applied to a picture or other work which designedly violates the ordinary rules of composition. Foliated ornaments, with cupids or other figures appearing in them in situations not strictly natural, are capriccios. In music *capriccio* is a free composition, not conforming to rule as to form or figure. Locatelli, at the beginning of the 18th century, composed capriccios for the violin. The most celebrated capriccio of mod-

ern times is Mendelssohn's B minor capriccio for pianoforte and orchestra.

CAPRICORNUS, the *Goat*, a southern constellation and the tenth sign of the zodiac. It is usually represented as having the fore-part of a goat, but the hinder-part of a fish. The ancients regarded it as the harbinger of good fortune, and as marking the southern tropic or winter solstice, wherefore they called it the "Southern Gate of the Sun."

CAPRIDÆ, a term used by some naturalists to denote the sheep and goat family, but by others to include antelopes, their persistent horns being regarded as the great distinction between them and the *Cervidæ*, or deer family.

CAPRIFICATION, a practice of great antiquity, still followed in some localities, of hanging the branches of the so-called "goat-fig" or caprificus in the cultivated trees, for the purpose of effecting the fertilization of the edible fig. The goat-fig has male flowers, producing pollen, and female flowers, which the eggs of a parasitic insect, *Blastophaga grossorum*, turn into galls. The edible fig-tree has normal female flowers, which are not adapted to become galls. Hence, when the male and insect-containing female flowers of the wild-fig are hung on the edible fig-tree, the gall-insect escaping from the orifice covers itself with pollen, and flying to the normal female fig-flowers fertilizes them, causing the production of the proper figs.

CAPRIFOLIACÆ, a natural order of exogenous plants, consisting of shrubs and herbaceous plants, which have opposite leaves without stipules, and flowers disposed in corymbs, in heads or in whorls. The fruit is generally a berry. The order is very nearly related to *Cinchonacæ*. More than 200 species are known, chiefly natives of the temperate and colder regions of the Northern hemisphere. To this order belong the honeysuckle, elder, snow-berry, etc.

CAPRIMULGIDÆ, a family of birds of the order *Insectores* and tribe *Fissirostres*, nearly allied to the *Hirundinidæ*, or swallow tribe. They are insectivorous, have very long wings, short legs, and toes united at the base by a membrane. The family includes the whip-poor-will and night-hawk of America, and many other species widely distributed over the globe.

CAPSALI, a seaport town of the Ionian Islands, capital of Cerigo, built upon a narrow ridge terminating in a precipitous rock near the south end of the island. It has an excellent harbor. Population, 5,000.

CAPSICINE, an alkaloid, the active principle in capsicum or cayenne pepper, from which it is obtained. It is a thick liquid of a reddish color, and possesses strong acrid properties.

CAPSULE: in medicine, a word given by French anatomists to parts which bear no analogy to one another. Strictly speaking, a capsule is a small casing, envelope, covering, etc., thin and membranous; a membrane or ligament inclosing some part or organ, as in a bag or sac; a sacular investment, as the capsule of the kidney; the capsule of the crystalline lens of the eye; the capsule of the joint of the hip. The capsule of the kidney is a smooth, fibrous membrane, closely investing the kidney and forming its outer coat; the capsule of the lens is a transparent, elastic, brittle, and structureless membrane inclosing the lens of the eye; the "external capsule" is a layer of white nervous substance between the *claustrum* and the *putamen* of the brain; the "internal capsule" is a layer of nerve-fibers passing upward from the *crura cerebri* to the *cortex* between the *caudate nucleus* and the *optic thalamus* on the one side, and the *lenticular nucleus* on the other. The word has also been ex-

tensively used for a small gelatinous case or envelope, in which nauseous medicines are wont to be inclosed, to aid in their being swallowed. Certain medicines are so offensive to the taste, and consequently so apt to sicken the stomach, that it is highly desirable to administer them in such a way as to prevent their contact with the tongue and palate. This object is fully accomplished by the use of *capsules*. They are made principally of gelatin, and of such thickness that before the nauseating medicine can be dissolved it is swallowed, and its unpleasant taste avoided. In botany a capsule is a dry syncarpous fruit, opening either by valves, as in the rhododendron, or by pores near the summit, as seen in the poppy and snap dragon.

CAPTAIN (MILITARY), originally a head or leader, irrespective of the number of men under him, but now the commander of a company, whether of infantry, cavalry, or artillery. In the German army, where the infantry companies consist of 250 men each, the captain is a mounted officer; in the British and United States armies he marches on foot with his men, who look to him for everything, both in barracks and in the field. In cavalry regiments the captain also deals individually with his men when in barracks, but in the field he works under the leader of the squadron of which his troop forms half. The badge of rank in the British army is two stars on each shoulder-strap; in the United States army, two bars.

CAPTION: in law, the formal title of an indictment or a deposition, which shows the authority under which it is executed, and such other particulars as are necessary to render it legal and valid. Prior to 1837 caption was the name given in Scotland to the formal warrant to apprehend a debtor or other defaulting obligant, which was given in the bill chamber after letters of horning had been executed.

CAPTURE. See **CONTRABAND**, *Britannica*, Vol. VI, pp. 320-322.

CAPUCHIN MONKEY, a name given to several species of the genus *Cebus*, of South American monkeys, which have the head covered with short hair, so disposed as to resemble the cowl of a capuchin, the face being almost naked, or only covered with a little down.

CAPUCHINS. See *Britannica*, Vol. V, pp. 79, 80.

CAPUDAN-PASHA, the High Admiral of Turkey. He has the entire command of the navy, and the management of all naval affairs. The port of Pera, contiguous to the arsenal, the Turkish island in the archipelago, and a number of seaports and maritime districts are under him, even in their civil administration.

CAPULETS and **MONTAGUES**, the English spelling of the names of the Cappelletti and Montecchi, two noble families of Northern Italy, according to tradition of Verona, chiefly memorable from their connection with the legend on which Shakespeare has founded his tragedy of *Romeo and Juliet*. They both belonged to the Ghibelline faction, as we see from a reference in canto VI of Dante's *Purgatorio*. The first publication in which the essential incidents of Shakespeare's play appear is a novel by Luigi da Porto, printed at Venice in 1595. There is evidence that an English play founded on the same incidents appeared soon after, and that before Shakespeare's time the story was so well known in England that it had supplied subjects for tapestries.

CAPUT MORTUUM VITRIOLI, the name given by the alchemists to the red powder which remains in the retorts when green vitriol or the sulphate of iron is calcined.

CAPYBARA. See *Britannica*, Vol. V, p. 80.

CARACARA EAGLE, a genus of birds of prey, natives of America, regarded as a connecting link between eagles and vultures; agreeing with the former in their strong hooked bill and claws, and with the latter in their naked face and propensity to prey on carrion.

CARACCA, LA, a village of Andalusia, Spain, one of the chief naval arsenals of the kingdom, situated four miles southeast of Cadiz. It has been completely detached from the main land by artificial means; it is defended by four forts, and is altogether very complete as an arsenal. See CADIZ, *Britannica*, Vol. IV, p. 627.

CARABIDÆ, a tribe of beetles, or coleopterous insects, of the section *Pentamera*. See COLEOPTERA, *Britannica*, Vol. VI, p. 129.

CARACCILO, PRINCE FRANCESCO (1752-99), born in 1752 of a noble Neapolitan family. He had risen to the supreme command of King Ferdinand's navy, when, in December, 1798, he fled with him before the French from Naples to Palermo. Learning, however of the intended confiscation of the estates of all absentees, he obtained permission to return to Naples, where he entered the service of the "Parthenopeian Republic," and was placed at the head of its marine. For two months he ably directed the operations of the revolutionists, and not until their cause seemed hopeless, though before the capitulation, did he quit the capital. He was captured in peasant disguise, and June 29, 1799, was brought on board Nelson's flagship, tried by a court-martial of Neapolitan officers, and hanged from the yard-arm of a Neapolitan frigate.

CARADOC SANDSTONE, and **BALA BEDS**, a division of the Lower Silurian system developed in Shropshire, England. They consist of sandstones, grits, and slates, with occasional beds of limestone. See *Britannica*, Vol. X, p. 332, for a full account of the numerous fossils obtained from this formation.

CARAFFA, the name of an ancient and famous Neapolitan family, to which several cardinals and Pope Paul IV belonged. Carlo Caraffa, nephew of Paul IV, was born in 1517, fought in the Netherlands, joined the Knights of Malta, and was made cardinal by his uncle. Paul subsequently banished the cardinal and his brothers from Rome for extortion, and in 1561 Pope Pius IV caused him to be put to death.

CARAGLIO, a town of the Sardinian states in the province of Coni, six miles west of the city of that name. It is situated on the Grana, and has manufactories of silk. Population, 7,000.

CARAMBOLA, or **COROMANDEL GOOSEBERRY**, the fruit of *Averrhoa Carambola*, a small East Indian evergreen tree, belonging to the natural order *Oxalidaceæ*. It resembles the acid fruit of *A. Bilimbi*, and is often cultivated.

CARAMEL, the name applied to the dark brown and nearly tasteless substance produced on the application of heat to sugar. It is likewise formed during the roasting of all materials containing sugar, such as coffee, malt, etc., and is one cause of the dark color of porter and infusions of coffee.

CARAMNASSA, a river in the sub-presidency of Bengal. After a course of 150 miles it enters the Ganges about 50 miles from its mouth. It is crossed by a stone bridge, which has three wide arches, and which forms part of the grand road from Calcutta to Delhi. It is subject to floods, and has been known to rise 25 feet in one night.

CARANA RESIN, a resinous substance of the tropical parts of America. Its properties and uses resemble those of *tacamahac*. It is entirely soluble in alcohol, and melts at a slight heat.

CARANJA, an island four miles long and two miles broad, on the east side of the harbor of Bombay, separated from the main land by a narrow channel. The island is comparatively level and fertile.

CARAPA, a genus of plants of the natural order *Meliaceæ*, found in tropical America and in Africa. *C. Guianensis* is a fine large tree, whose wood, called carapa-wood, or crab-wood, is used for making furniture, and also for the spars of ships; its bark is a febrifuge, and its seeds yield a lamp-oil, called carap-oil, or crab-oil. The African species, *C. Touloucouna*, yields an oil called coondi, kundah, or tallicoona, which is used by the natives for anointing their bodies, its bitterness protecting them from the bites of insects. The oil of the South American carapa is sometimes used for the same purpose. See *Britannica*, Vol. XVII, p. 746.

CARAPACE, the dorsal shield or buckler of chelonian reptiles (tortoises and turtles), and of crabs, lobsters, etc.

CARAT, a term applied by goldsmiths and assayers to the 24th part of a troy pound, ounce, or any other weight, as a means of stating the proportion of pure gold contained in any alloy of gold with other metals. Thus, pure gold being considered as 24 carats fine, gold containing two parts of alloy is called 22 carats fine, or 22-carat gold. The carat used in this sense has, therefore, no absolute weight; it merely denotes a ratio. The gold used by jewelers is seldom over 18 carats fine, except in wedding-rings, the standard fineness of which is 22 carats. The so-called gold used for jewels, watch-cases, etc., varies from eight or nine to 18 carats fine. The jewelry carat, used as a unit for weighing diamonds and other precious stones, is quite different. It has a fixed weight, equal to 3.16 troy grains, and is divided into quarters, or "carat grains," eighths, sixteenths, etc. These carat grains are thus less than troy grains, and therefore the jeweler has to keep a separate set of diamond weights. This weight was fixed in 1877 by a syndicate of Amsterdam, London, and Paris jewelers at 205 milligrams, and is known as the *Amsterdam* or *diamond carat*.

CARAVAGGIO, a town of Lombardy, Italy, about 24 miles from Milan. Population, 5,880. Three famous painters were born here—Fermo Stella, Pollidoro Caldara (see *Britannica*, Vol. V, p. 83), and Michel Angelo Amerighi (see *Britannica*, Vol. V, p. 82). In the neighborhood is a sanctuary of the Madonna, built from designs of Pellegrini.

CARBAZOTIC, **CHEYSOLEPIC**, or **PICRIC ACID**, a substance of great importance in dyeing. It is a combination of nitric or sulphuric acid with carbonic acid. See *Britannica*, Vol. V, p. 85.

CARBIDES, formerly termed carburets, the compounds of carbon with the various metals. The carbides of iron are the most important, and it is to the addition of carbon, in one way or another, that we are indebted for the valuable properties of cast-iron and steel.

CARBINE, a light kind of musket, named probably from the carabins (see next article). The American carbine has a barrel 22 inches in length, and weighs $7\frac{1}{2}$ pounds. It is simple in construction, and has a great range.

CARBINEERS, soldiers armed with carbines, and said to have derived their designation from the Arabs, among whom the *Carabins* were light horsemen, stationed at outposts to harass the enemy, defend narrow passages, etc.

CARBOHYDROGENS, a term applied to a series of compounds belonging to organic chemistry, which are composed of carbon and hydrogen in such proportions that the various members of the

group differ from one another in definite and regular numbers of atoms of carbon and hydrogen.

CARBON, a village of Wyoming, about 80 miles northwest of Laramie. It is the trade center of a rich mining district, and is almost exclusively engaged in business tributary to the mining interests of the surrounding country.

CARBONADO, or **BLACK DIAMOND**, an amorphous variety of carbon, brown or black in color, found in Brazil in connection with pure diamonds, and extensively used in diamond drills.

CARBONATED or **ACIDULOUS WATERS**. See **ÆRATED WATERS**, *Britannica*, Vol. I, p. 184.

CARBONDALE, a city and railroad junction of Jackson county, Ill. The Southern Illinois Normal University is located here. The trade of the city is principally in building-stone, tobacco, cotton, lumber and farm products.

CARBONDALE, a city and railroad junction of Osage county, Kan. Coal is mined here.

CARBONDALE, a city of Pennsylvania, on the Lackawanna River, 16 miles north-northeast of Scranton, and on the Delaware and Hudson Railroad, at the south terminus of the Jefferson ranch Railroad. Here are extensive anthracite coal mine owned by the Delaware and Hudson Canal Company. The population of the city was, in 1880, 7,714; in 1890, 10,826. See *Britannica*, Vol. V, p. 89.

CARBONIC OXID, or **OXIDE**. See **CARBON**, **OXIDES** of, *Britannica*, Vol. V, p. 87.

CARBURETED HYDROGEN, a term in chemistry applied to several compounds of carbon and hydrogen. Thus light carbureted or monocarbureted hydrogen is the gaseous compound popularly known as marsh gas and fire-damp, and is the principal constituent of coal-gas. Heavy carbureted or bi-carbureted hydrogen is otherwise known as olefiant gas.

CARCANET, a jeweled chain or necklace. Venice was famous for the manufacture of carcanets in the 15th century.

CARCANO, GIULIO, born in Milan, Italy, in 1812, was brought to public notice in 1835 by his novel, *Ida della Torre*. He was banished in 1849; but on the establishment of national independence he was appointed inspector of schools, and has since held several important offices under the government. He is a poet and novelist of much merit. One of his principal works is a very faithful translation into Italian of the dramatic writings of Shakespeare.

CARCASS: in military pyrotechny, a hollow case of iron, filled with combustibles. It is fired from a mortar. Its chief use is to ignite the enemy's buildings, and to give sufficient light to aim the shot and shells. Carcasses were first used by one of the princely ecclesiastics, the Bishop of Munster, when he fought against the Duke of Luxembourg at Groll, in 1672.

CARCHEMISH, an ancient city on the Upper Euphrates, northeast of the modern Aleppo. It was long the northern capital of the Hittites, and a city of great importance. It has been identified by George Smith with Jerablûs or Jerabis.

CARDBOARD, a stiff compact pasteboard made by pasting together several layers of paper, according to the thickness and quality required. *Bristol-board*, used by artists, is made entirely of white paper; ordinary cardboard of fine white paper outside, with one or more sheets of coarse cartridge paper between.

CARDIA, the upper orifice of the stomach, called, on account of its vicinity to the heart, by the same Greek name, *cardia*, and probably hardly distinguished from it in the early times of Greek medicine.

CARDIAC MEDICINES, stomachic and stimulating remedies; cordials, so called from their action on the heart through the stomach.

CARDIFF, a village of New York, situated on Onondaga Creek, chiefly notable for being the place of the pretended discovery of the "Cardiff Giant," a statue carved in Chicago from a block of Iowa gypsum, and then buried at Cardiff. When dug up it was exhibited as a petrified giant.

CARDIGAN BAY, a semi-circular bend of St. George's Channel, on the west coast of Wales, 54 miles wide from north to south, and 35 miles long, with a sweep of coast of 130 miles. Almost all the harbors on the coast are obstructed by bars. A great part of Cardigan Bay is said to have been once dry land, protected, as Holland now is, by dikes and dams, and containing 16 towns. The land is said to have been submerged about A. D. 520.

CARDINAL BIRD, also called cardinal grosbeak, and Virginia nightingale, one of the finest songbirds of America, belonging to the family *Fringillidæ*. The general color of the male is red, the head being vermilion, and only a small portion of the plumage around the base of the bill being black. The feathers of the crown are long, and erected into a conical crest, like a red cap. The cardinal bird abounds in Texas, Florida and the Southern States generally, migrating northwards in the spring as far as Massachusetts. Its loud, clear, sweet and varied song is to be heard chiefly in the morning and evening.

CARDINIA, a genus of fossil conchiferæ, containing 85 species, which extend from the Silurian to the Inferior Oolite. They have an oval or oblong shell, attenuated posteriorly, and marked with lines of growth, and an external ligament. They occur abundantly in valuable layers of clay-ironstone called "mussel-bands."

CARDINAL VIRTUES: in ancient philosophy, the virtues of justice, prudence, temperance, and fortitude; so called because the whole of human virtue was supposed to hinge or turn upon them. The cardinal virtues were regarded by the Church as the moral, in distinction from the theological virtues, faith, hope, and charity.

CARDINGTON, a village of Ohio, on the Olen-tangy River, 40 miles north of Columbus. It contains manufactories of flour and woollens.

CARDITIS, or inflammation of the heart, a form of disease of very rare occurrence if the term be limited in its application to cases of true acute inflammation of the muscular structure of the heart itself. *Carditis*, however, was formerly understood in a wider sense, so as to include certain forms of disease of the external and internal lining membrane of the heart. See *Britannica*, Vol. XI, p. 554.

CARDOON, a vegetable. See *Britannica*, Vol. XII, p. 280.

CARDUCCI, GIOSUÈ, generally regarded by his countrymen as the foremost of contemporary Italian poets, was born in 1836 at Val di Castello, near Pietrasanta, in the province of Pisa. His youth was spent in study, and at the age of 25 he was appointed to a professorship in the University of Pisa, from which he was transferred in 1860 to a chair in the University of Bologna. He has been throughout his life a staunch Republican, and in 1867 was for a short time suspended from his professorship for having signed an address to the patriot Mazzini. In 1876 he was returned to the Italian parliament as member for Lugo di Romagna. His earliest poems, *Juvenilia* and *Levia Gravia*, contrast strongly with his later works. Signs of a transition in sentiment and in style appeared in the *Decennalia*, which dealt mainly with political events of the years 1860-70. The change became complete in the *Nuove Poesie* in which he gave expression to the most advanced

political views. These poems are remarkable for the sustained power and dignity of the language and the frequent nobility of the thought. The *Odi Barbare*, written in meters borrowed from Horace, are very popular with Italians; but to foreign critics Carducci seems in these pieces to have erred in the rejection of rhyme.

CARDWELL, EDWARD, VISCOUNT, English statesman, born in Liverpool, July 24, 1813, died Feb. 15, 1886. He was educated at Oxford, where he became professor of Ancient History. He was elected to Parliament in 1842 as a member of the party known as Peelites, and was president of the board of trade from 1852 to 1855. In 1855 he was returned to Parliament for Oxford. He became secretary for Ireland in 1859, and secretary of state for the colonies in April, 1864, but resigned with his colleagues in June, 1866. In December, 1868, he entered the cabinet of Gladstone as secretary of state for war, and while occupying this position introduced important reforms in the army. Cardwell was raised to the peerage in 1874.

CARE, or CARLE SUNDAY, the Sunday before Palm Sunday, said to be so called because it was the practice in many places to eat gray peas, called carlings, which were steeped all night in water, and fried the next day in butter. This practice apparently had its more immediate origin in the custom of the Roman Catholic church of eating hallowed beans at this time. The beans are described in some religious books as symbolical of confession, and their steeping before use of meditation. It appears to have been adopted from a heathen custom.

CAREENING: the operation of heaving down a ship on one side, in order to expose the other side for cleaning by the process of breaming. In seaphrase, a vessel is said to "careen" when she leans over very much through press of sail.

CARÈME, MARIA, ANTONIN, French cook and author, born in 1784 in Paris, died there in 1833. He wrote *Les Dejeuners de l'Empereur Napoléon*, *La Cuisine Française*, and other works connected with his craft. As Talleyrand's cook he played an important part at the Congress of Vienna.

CARET, a mark (A) used in writing, indicating that something has been omitted, and interlined. Derived from the Latin *careo*, "I am wanting."

CAREX, a genus of plants of the natural order *Cyperaceæ*, commonly known as sedges, of which the species are very numerous. They are all of a grassy or rush-like appearance, and have some value in the economy of Nature as forming the principal part of vegetation of swamps, which they assist in converting into fertile ground.

CAREY, HENRY CHARLES, leading political economist of America, son of Mathew Carey, born in Philadelphia, Pa., Dec. 15, 1793, died there Oct. 13, 1879. At the age of 21 he became a partner in his father's business, and later was head of the publishing house. He was the originator of the system of trade sales between book dealers. In 1835 he retired from business, and devoted himself to scholarly pursuits. He was the founder of a school of political economy. At first he was a free-trader, but he came to believe protection the best present policy for the government. His first work was *The Principles of Political Economy*. He afterwards wrote *The Credit System of France, Great Britain, and the United States; The Past, the Present and the Future; Principles of Social Science; Letters on International Copyright; The Way to Outdo England Without Fighting Her; Miscellaneous Works; and The Unity of Law*. See *Britannica*, Vol. XIX, pp. 384, 385.

CAREY, MATHEW, publisher, born in Ireland, Jan. 28, 1760, died in Philadelphia, Pa., Sept. 16, 1839. He

was well educated, and selected as his life-work the printing and book selling business. Among his first pamphlets was an inflammatory address to Irish Catholics, which obliged him to flee to Paris to escape trouble. Here he made the acquaintance of Benjamin Franklin. He returned after a year to Ireland, where he established the "Volunteer's Journal," a newspaper very bold in tone, which became a political power. In 1784 an attack on Parliament brought on a suit for libel, and he was imprisoned. He sailed to the United States after his liberation, and within two months had started a newspaper, "The Pennsylvania Herald;" in this first appeared accurate reports of legislative deliberations. For six years he published "The American Museum." The yellow fever epidemic of 1793 showed him to be a philanthropist, and afterwards he wrote a history of the epidemic. He founded the Hibernian Society, and assisted in the formation of the first American Sunday-school Society. He published in 1814 the *Olive Branch, or Faults on Both Sides, Federal and Democratic*, a work designed to conciliate the different factions in the United States which disagreed on the subject of the war of 1812. He issued in 1820 the *New Olive Branch*, and two years later appeared his well-known work, *Essays on Political Economy*, which was followed by a series of tracts advocating the protective system as necessary for the good of all classes.

CAREY, a village of Ohio, 16 miles southwest of Tiffin. It contains manufactories of lumber and iron.

CARIACOU, or VIRGINIAN DEER, a species of deer found in all parts of North America. It is of variable color, light reddish brown in spring, slaty blue in autumn and dull brown in winter. The horns of the adult male are of moderate size, bent strongly backward and then suddenly forward, so as to bring their tips nearly above the nose. The fawn is profusely decked with white spots arranged in lines.

CARIBBEE BARK, or PITON BARK, the bark of *Erostemma Caribæum*, a small tree of the West Indies and of Mexico, belonging to the natural order *Cinchonaceæ*. It is one of the barks sometimes substituted for the cinchona barks.

CARINARIA, a remarkable genus of gasteropodous mollusks, of the order called *Heteropoda* or *Nucleobranchiata*, having a thin shell, in form somewhat like that of a limpet. The shells of some of the species have been denominated Venus's Slipper. The body is gelatinous, and so transparent that much of its interior organization can be seen. The species are all marine. See *Britannica*, Vol. XVI, p. 654.

CARISSA, a genus of plants of the natural order *Apocynaceæ*. *Carissa Carandas* is a thorny shrub, much used for fences in India. The fruit, called carandas, is a berry about the size of a small plum, and is used for tarts and preserves.

CARLÉN, EMILIA SCHMIDT FLYGARE, a well-known Swedish novelist, born at Strömstad, Aug. 8, 1807, died at Onfön, Dalecarlia, in 1883. Her first novel, *Waldemar Klein*, appeared in 1838. She was then a widow, having been married in 1827 to M. Flygare. In 1841, she was again married to J. G. Carlén, a lawyer and a poet. Her literary productiveness was remarkable; many of her works have been translated into English, French and German, and largely circulated both in Europe and America.

CARLETON, SIR GUY, Lord Dorchester, a British soldier, born in Strabane, Ireland, Sept. 3, 1724, died at Maidenhead, England, Nov. 10, 1808. He fought gallantly at Louisburg, Québec, Belle Isle and Havana. From 1772 to 1775 he governed Québec.

He led the expedition which invaded New York in 1776 and in 1781, was appointed commander-in-chief of the British army in place of Sir Henry Clinton.

CARLETON, THOMAS, brother of the preceding, and also a soldier, born in 1736, died in Ramsgate, England, Feb. 2, 1817. He served in Wolfe's regiment in 1755, was appointed quartermaster of the army in Canada, was with his brother in the naval conflict with Benedict Arnold on Lake Champlain, was appointed lieutenant-governor of New Brunswick, and in 1784 governor and commander-in-chief of Nova Scotia and Canada. He remained in America 19 years; for 14 years after his return to England he retained those offices, the administration being carried on by his deputies. He was advanced in military rank, and in 1803 he was made a general in the British army.

CARLETON, WILL, author, born in Hudson, Mich., Oct. 21, 1845. He graduated at Hillsdale in 1869, visited Europe in 1878 and in 1885, and is well known by his ballads of rural life. He has lectured in England, Canada and some parts of the United States. His collections of published poems are entitled: *Farm Ballads; Farm Legends; Young Folks' Centennial Rhymes; Farm Festivals and City Ballads*.

CARLINE THISTLE (*Carlina*), a genus of plants of the natural order *Compositæ*. The name is said to be derived from a legend, that an angel showed the root of one of the species to Charlemagne as a remedy for a plague. This species, *C. acaulis*, grows on hills and mountains in the middle latitudes of Europe. It has a very short stem and very large heads of flowers.

CARLINGS: in ship-building, small beams laid fore and aft, and resting upon the main or deck beams. These, with other pieces called "ledges," laid at right angles to them, form a framework by which the deck is supported.

CARLINVILLE, a city in Illinois, the county-seat of Macoupin county. Blackburn University is here located, and there is also a theological seminary. Coal is found here.

CARLISLE, JOHN GRIFFIN, an American statesman, born in Campbell county, Ky., Sept. 5, 1835; taught school in the county, and afterwards at Covington; was admitted to the bar in 1858, and was a member of the House of Representatives from 1859 to 1861. He was elected to the State Senate in 1866, and reelected in 1869; he was also a delegate at large from Kentucky to the National Democratic Convention in 1863. He resigned his seat in the Senate in June, 1871, and was the same year elected lieutenant-governor, serving until September, 1875. The year following he was alternate presidential elector for the State at large. He was a member of consecutive Congresses from the 45th to the 51st, both inclusive, and was Speaker in the 48th, 49th and 50th Congresses. In 1890 he was elected to the United States Senate as a Democrat, to fill the unexpired term of James B. Beck, deceased, taking his seat May 26, of the same year. His service will end March 3, 1895.

CARLISLE SPRINGS, a village of Pennsylvania, four miles north of Carlisle. It is noted for its mineral spring, and is a favorite summer resort.

CARLISTS, the name given to the supporters of the Spanish pretender, Don Maria Isador Carlos de Bourbon. See SPAIN, Britannica, Vol. XXII, pp. 345, 346.

CARLSON, FREDERICK, born in Upland, Sweden, in 1811. In early life he traveled extensively, studying in different universities, and in 1837 became tutor to the prince royal. He has held

many offices under the government. His literary fame rests upon his historical works, the chief of which is *A History of Sweden*.

CARLUDOVICA PALMATA, the screw pine, a small tropical tree of the order *Pandanaceæ*, found in South America. From its leaves are plaited the best quality of Panama hats. Each hat is made from a single leaf, and has no joints.

CARLYLE, a village in Illinois, county-seat of Clinton county, on the Kaskaskia River, about 50 miles east of St. Louis. It contains important manufactories of iron, wagons and plows, and it is seat of a seminary for young ladies.

CARLYLE, ALEXANDER, Scottish Presbyterian ecclesiastic, born Jan. 26, 1722, at Prestonpans, East Lothian (of which parish his father was minister), died at Inveresk, Aug. 25, 1805. He was educated at the Universities of Edinburgh, Glasgow and Leyden, and in 1748 was ordained minister of Inveresk. With Robertson, the historian, he helped to lead the moderate party in the church of Scotland, and enjoyed in succession the highest honors of his connection, being sent to London as the accredited agent of his church, appointed moderator of the General Assembly and dean of the chapel-royal. Carlyle was a man of imposing presence, and of a singularly genial, sagacious and liberal nature. Throughout his long life-time he enjoyed the intimate friendship of some of the most notable men of his time, as Hume, Adam Smith, Smollett and John Home. His *Autobiography*, a charming picture of the social habits of a bygone age, was published in 1860, edited and completed by the Scotch historian, John Hill Burton.

CARLYLE, THOMAS (1795-1881), a British essayist and historian, born at Ecclefechan, a small market town, of Dumfriesshire, Scotland, Dec. 4, 1795. He was the second son of James Carlyle, stonemason, a man of great physical and moral strength, who, though in humble circumstances, was able to give his sons an excellent Scottish education. Thomas received his elementary instruction from his father and mother. His home-teaching was supplemented by attendance at the Ecclefechan school, whence he proceeded in 1805 to Annan Academy, and in 1809 entered Edinburgh University. Except in geometry, his college curriculum was not remarkable, and even in the mathematical class he took no prize. In 1813 he began a fitful preparation for the ministry, which, however, was soon abandoned.

In 1814 Carlyle became mathematical master of Annan Academy, in 1816 assistant teacher at Kirkcaldy, and two years later removed to Edinburgh, where he engaged in private teaching. An introduction to Dr. Brewster led to his writing articles for the *Edinburgh Encyclopædia*, and subsequently to his translating Legendre's *Elements of Geometry*. At the beginning of the session of 1819 he enrolled in the class of Scots Law; but he found law as uncongenial a study as divinity. In 1822, while engaged as a private tutor, he arranged to write a *Life of Schiller* for the "London Magazine," and a translation of the *Wilhelm Meister* of Goethe for an Edinburgh publisher.

In 1824 Carlyle paid his first visit to London, where he remained some months, superintending the publication in book form of his *Life of Schiller*. At this time he made the acquaintance of Coleridge, Thomas Campbell, Cunningham, Procter and other eminent literary men. In the spring of 1825 he removed to a farm near Mainhill, which he had leased, his brother attending to the farming while he himself translated German romances. His marriage with Miss Welsh took place in 1826, and

they at once settled in Edinburgh. Here Carlyle completed four volumes of translations, which were published under the title of *German Romances*, and became a contributor to the "Edinburgh Review."

In 1828 the Carlyles removed to Mrs. Carlyle's property of Craigenputtock, and there they lived for about six years. During this period Carlyle subsisted by writing for a number of reviews. He also wrote a *History of German Literature*, the best parts of which were subsequently published in the form of essays, and in 1833-34 there appeared by instalments, in "Fraser's Magazine," *Sartor Resartus*, his most characteristic work. Carlyle's quiet life at Craigenputtock was varied by occasional visits to Edinburgh, and by a residence of six months in London, during which time he made the acquaintance of John Stuart Mill and John Sterling.

In 1834 Carlyle resolved to try his fortune in London, and in the summer of that year established himself in the house at Chelsea in which he lived till the day of his death. Here he settled down to the writing of his *French Revolution*, which appeared in 1837. During the years 1837-40 he lectured to considerable yet select audiences, and his yearly earnings from these lectures maintained him and his wife till the *French Revolution* not only established his reputation as a literary genius of the highest order, but placed him beyond the possibility of want. In 1838 appeared *Sartor Resartus* in book-form, and the first edition of his *Miscellanies*. In 1845 he published *Cromwell's Letters and Speeches*, perhaps the most successful of all his works, inasmuch as it completely revolutionized the public estimate of its subject. In 1851 he published a biography of his friend John Sterling. From this time Carlyle gave himself up entirely to his largest work, the *History of Friedrich the Second, Called Frederick the Great*, the first two volumes of which were published in 1858, and which was concluded in 1865.

In November, 1865, Carlyle was elected Lord Rector of Edinburgh University, and in the following April the ceremony of his installation took place amid extraordinary demonstrations of enthusiasm. A few days later news reached him in Dumfries of the death of Mrs. Carlyle. His grief developed into remorse when he discovered from certain of her letters and her journal that, during a period of their married life, his unconscious want of consideration for her had caused her much misery. It has also been demonstrated by the *Letters and Memorials of Jane Welsh Carlyle* that at one time they were somewhat estranged. These *Memorials* are of note as proving Mrs. Carlyle to have been one of the keenest critics, most brilliant letter-writers and most accomplished women of her time. Carlyle wrote no important work after his wife's death. In 1874 he was offered and accepted the Prussian Order of Merit in recognition of his having written the life of Frederick the Great, who founded the order. In the same year Disraeli offered him the Grand Cross of the Bath (with the alternative of a baronetcy) and a pension, but he declined both. He died at his house in Chelsea, Feb. 5, 1881. A burial in Westminster Abbey was offered, but, in accordance with his own wish, he was laid in the churchyard of Ecclefechan beside his kindred.

Of Carlyle's position in literature it may be said without risk of contradiction, that, for good or evil, he exerted a greater influence on British literature during the middle of the 19th century, and, through that literature, on the ethical, religious, and political beliefs of his time, than any of his contemporaries.

CARMAGNOLE, the name of a popular song and dance which was notorious as the accompaniment of many excesses in the French Revolution. It became popular in the South of France, where it was possibly named after Carmagnola in Italy. Fashion soon adopted the word, which was next applied to a sort of jacket worn as a symbol of patriotism. With the Reign of Terror both the song and jacket, associated with so many dismal recollections, disappeared.

CARMEL, a village of New York, county-seat of Putnam county, 55 miles north of New York city. It is the seat of Drew Seminary for Young Ladies.

CARMEL, Knights of the Order of Our Lady of Mount, instituted by Henry IV of France. The order consisted of 100 gentlemen, all French, who were to attend the king in his wars, and had considerable revenues assigned to them. The order was confirmed by bull by Pope Paul V, in 1607. The great master was created by the king putting about his neck a tawny ribbon, suspending a cross of gold, with the cloak of the order, and granting him power to raise 100 knights. None were admitted but those who had four descents of nobility, both by father and mother.

CARMEN, SYLVA, the pseudonym of Elizabeth, Queen of Roumania, born Dec. 29, 1848, the daughter of Prince Herman of Wied Neuwied and Maria of Nassau, and married King (then Prince) Charles of Roumania in 1869. Since the death of her only child, in 1874, she has devoted much time to literature. Two poems, printed privately at Leipsig in 1880, were followed by *Sturme* (Bonn, 1881), *Leidens Erdengang* (Berlin, 1882); translated into English as *Pilgrim Sorrow*, by Helen Zimmern, 1884, *Jehovah* (Leipsig, 1882), *Ein Gebet* (Berlin, 1882), *Pensées d'une Reine* (Paris, 1882), and *Pelesch-Marchen* (Leipsig, 1883). During the war of 1877-78 she endeared herself to her people by her devotion to the wounded soldiers, and since that time has interested herself in establishing and fostering the national women's industries.

CARMI, a city of Illinois, county-seat of White county, situated at the head of navigation on the Little Wabash, about 100 miles northeast of Cairo. It contains a number of flour-mills and manufactories of woollens and iron.

CARMINATIVES, medicines to relieve flatulence and pain in the bowels, such as cardamoms, peppermint, ginger, and other stimulating aromatics.

CARMÖE, OR KARMÖE, an island of Norway, at the entrance of the Bukke Fiord, in the North Sea, 20 miles northwest of Stavanger. It has a population of 8,400, who are principally engaged in the fisheries and in cattle-rearing.

CARNAHUBA PALM, OR CARNAUBA PALM, a very beautiful species of palm, a native of Brazil. It attains a height of 20 to 40 feet, and its timber is used in Brazil for a great variety of purposes. The fruit is black, and about the size of an olive. It is sweet, and is eaten raw and also prepared in various ways. Scales of wax cover the under side of the leaves, and drop off when the fallen and withered leaves are shaken. Being collected in this way, the wax is melted into masses, and forms an important article of commerce. See WAX, Britannica, Vol. XXIV, p. 459.

CARNARIA, the name given by Cuvier to the flesh-eaters, or third order of mammals. Cuvier at first included the marsupial quadrupeds in this order, but afterwards, recognizing more fully the great importance of the characteristic from which they derive their name, constituted them into a distinct order; the remaining *Carnaria* being divided into *Cheiroptera*, *Insectivora*, and *Carnivora*.

CARNARVON, HENRY HOWARD MOLYNEUX HERBERT, EARL OF (1831-90), born in 1831, died Jan. 28, 1890. He was educated at Oxford, and succeeded his father as fourth earl in 1849. He entered the Upper House as a Conservative, and in 1866 accepted from Lord Derby the office of colonial secretary, but resigned in 1867. On Disraeli's return to power in 1874, Lord Carnarvon resumed office as colonial secretary—once more, however, to resign in January, 1878, in consequence of the dispatch of the British fleet to the Dardanelles. During the brief Conservative administration of 1885-88 he was Lord-Lieutenant of Ireland, and his negotiations with Mr. Parnell gave rise, two years later, to considerable controversy. He was author of *The Druses of Mount Lebanon* (1860); *Reminiscences of Athens and the Morea* (1869); and translations of the *Agamemnon* (1879), and the *Odyssey* (1886).

CARNATIONS, flesh-tints in painting. The art of producing the real color of flesh, from the rarity with which it is acquired by artists, would seem to be one of the most difficult branches of coloring.

CARNATION: in botany, a double-flowering variety of the clove pink. It is a native of the south of Europe, and in its wild state is single-flowering, and of a lilac-purple color.

CARNEGIE, ANDREW, manufacturer, born in Dunfermline, Scotland, Nov. 25, 1835. His father was a weaver, who, in the hope of bettering his family, came to the United States, where the son found employment at Pittsburgh, Pa., in tending a small stationary engine. Dissatisfied with this, the boy became telegrapher for the Atlantic and Ohio Company. While in the employ of the superintendent of the telegraph lines he met the inventor of the sleeping-car, Mr. Woodruff, and, seeing the value of the invention, engaged in the enterprise of getting it into use. This venture laid the foundation for his immense fortune. He became superintendent of the Pittsburgh division of the Pennsylvania railroad; was at one time a member of an oil syndicate which realized \$1,000,000 annually in cash dividends; established, in company with others, a rolling-mill, and in the extension of this last-mentioned enterprise Mr. Carnegie has become the controller of the largest system of iron and steel-works in the world. He has owned and controlled 18 English newspapers. Mr. Carnegie frequently writes on the labor question, and is the author of *An American Four-in-Hand in Britain; Round the World; Triumphant Democracy; or, Fifty Years' March of the Republic*. Besides carrying on immense business enterprises, Mr. Carnegie has established generous charities. His native country has been remembered in the gift of \$250,000 for a free library in Edinburgh, and in the erection (1879) of extensive swimming baths and the gift of \$40,000 to establish a free library for the use of the citizens of Dunfermline. Bellevue Hospital, in New York city has been endowed with \$50,000 for a Carnegie laboratory; Pittsburgh, Pa., has received \$500,000 for a free library, while Allegheny City has been given half that amount for a music hall and library. Mr. Carnegie has established free libraries for the use of his employes at several places.

CARNIFE FERRY, the place in Nicholas county, W. Va., where a fierce battle was fought between the Federals and Confederates, Sept. 10, 1861.

CARNOCHAN, JOHN MURRAY, surgeon, born in Savannah, Ga., July 4, 1817, died in New York city, Oct. 28, 1887. He was educated in the University of Edinburgh, and was fitted for the medical profession by studying with Dr. Valentine Mott, of New York, and by attending lectures in London, Paris, and Edinburgh. He became an eminent surgeon, and being possessed of great skill and steady nerves,

he performed many remarkable and delicate surgical operations. For many years he was professor in the New York Medical College.

CARNOT, LAZARE HIPPOLYTE, a son of the celebrated French statesman and mathematician, born at St. Omer in 1801, died in 1888. He was a radical republican of much note. His principal literary works were memoirs of his father, and an able work on *Saint-Simonism*.

CARNOT, MARIE-FRANÇOIS SADI, son of Lazare Hippolyte, born at Limoges in 1837. He became a leader of the strict republicans; was a member of the National Assembly in 1871; of the Chamber of Deputies in 1876; and was successively secretary of the Chamber, under secretary and minister of public works, and minister of finance. He became president of France in 1887.

CARO, ELME MARIE, French philosopher, born at Poitiers, March 4, 1828, died July 13, 1887. He studied at the Ecole Normale, of Paris, at Angers, and Douai; in 1857 became a lecturer at the Ecole Normale, and, ten years later, professor at the Sorbonne. In 1876 he was elected to the French Academy. Caro's Wednesday lectures at the Sorbonne were exceedingly popular. His chief works are: *Le Mysticisme au XVIII^e Siècle* (1852-54); *L'Idée de Dieu et ses nouveaux Critiques* (1864); *Le Materialisme et la Science* (1868); *Le Pessimisme au XIX^e Siècle* (1878); *La Philosophie de Gœthe* (2d ed. 1880); *George Sand in Les Grands Écrivains Français, and Mélanges et Portraits* (1888).

CAROL-TREE. See LOCUST-TREE, Britannica, Vol. XIV, p. 767. See also Vol. III, p. 460, and Vol. V, p. 628.

CARPACCIO, VITTORE (1450-1522), a painter of the early Venetian school, born in Istria about 1450. In 1490-95 he painted nine subjects from the life of St. Ursula, which are now preserved in the Accademia of Venice. About 1494 he executed another work now in the same collection. *The Patriarch of Grado Casting Out a Devil*, which possesses much antiquarian interest, from its accurately detailed view of the Rialto. His next great series of works was the nine subjects from the lives of the Saviour, and Saints Jerome, George, Tryphonius, (1502-08), painted for the school of San Giorgio de Schiavoni, and still preserved there. In 1510 he executed the *Presentation in the Temple*, now in the Accademia, which is usually regarded as his masterpiece. His latest dated works, at Pirano and Pozzale, are inscribed 1519; and he is believed to have died about 1522.

CARPEL: in botany, a simple pistil or one of the several parts of a compound pistil. See Britannica, Vol. IV, p. 141.

CARPENTER, MARY, an English philanthropist, born at Exeter, April 3, 1807, died June 14, 1877. Trained as a teacher, she took an active part in the movement for the reformation of neglected children, and besides advocating their cause in her writings, she founded a ragged school at Bristol in 1846, and several reformatories, one of which, the Red Lodge Reformatory, she superintended. She promoted the Industrial Schools Act of 1857, and some of her proposals were adopted in the amended acts of 1865 and 1866. In the prosecution of her philanthropic labors she visited India four times, had an interview with the Queen in 1868 in connection with her work, and in 1870 instituted the National Indian Association, whose journal she edited. She attended at Darmstadt a congress on women's work, as a guest of the Princess Alice, and visited America in 1873. Her plan of day-feeding industrial schools in connection with school boards was adopted in 1876. Besides her reformatory writings she published *Our Convicts* (1864), *The Last*

Days of the Rajah Rammohun Roy (1866), and *Six Months in India*.

CARPENTER, MATTHEW HALE, Senator, born in Moretown, Vt., Dec. 22, 1824, died in Washington, D. C., Feb. 24, 1881. He studied military science at West Point for two years, then went to Vermont, where he read law with Paul Dillingham, who afterwards became governor. Mr. Carpenter was in the office of Rufus Choate in 1847, but the following year he removed to Beloit, Wisconsin. He was engaged in the *quo warranto* proceedings against Gov. William A. Barstow, of Wisconsin, and was the successful lawyer in vindicating the government reconstruction acts of 1867, in the McCordle case of 1868, when Jeremiah S. Black was opposing counsel. This was a test case, and the most important ever tried up to that time before the U. S. Supreme Court. From 1869 to 1881 he served in the U. S. Senate with the exception of one term. Senator Carpenter was a war Democrat, but in the particular tenets of his political faith disagreed with many of his party. He opposed the fugitive slave law, advocated emancipation, and the enfranchisement of the slaves, and believed that the State and government should control railroads and other semi-public organizations.

CARPENTER, PHILIP PEARSALL, naturalist, born in Bristol, England, Nov. 4, 1819, died in Montreal, Can., May 24, 1877. Educated in Edinburgh University and the Manchester new college, he became a Unitarian minister and held several pastorates, becoming widely known for his benevolence. For years he studied conchology and became an authority on this subject. He catalogued the Mazatlan shells of the British Museum and arranged collections of shells for the Smithsonian and other American institutions. He presented valuable collections of shells to the British Museum and to McGill University.

CARPENTER, WILLIAM BENJAMIN, C. B., an English physiologist (1813-85), eldest brother of Mary Carpenter, born at Exeter, Oct. 29, 1813, died Nov. 19, 1885. He was educated at Bristol, passed some time in the West Indies, and afterwards studied medicine at Bristol, London, and Edinburgh. His graduation thesis (1839) on the nervous system of invertebrate animals prepared the way for his *Principles of General and Comparative Physiology*, one of the earliest works giving a general view of the science of life. Removing to London in 1844, he was appointed Fullerian Professor of Physiology at the Royal Institution, lecturer or professor at the London Hospital and University College (1849), examiner at the University of London, and its registrar (1856). He also edited (1847-52), the *British and Foreign Medico-Chirurgical Review* and a *Popular Cyclopædia of Science*. On his retirement in 1879 he received the distinction of C. B. While vice-president of the Royal Society he secured government aid in the investigations in marine zoology.

Carpenter and his colleagues made three voyages to the North Atlantic and Mediterranean. He made valuable researches on the *Foraminifera*; on the *Eozoön Canadense*; on leather-stars and crinoids. His deep-sea explorations led him to advocate the doctrine of vertical ocean circulation sustained by opposition of temperature only, independent of and distinct from the horizontal currents produced by winds. See ATLANTIC, Britannica, Vol. III, pp. 22-24.

Carpenter received medals from the Royal and Geological Societies, and was corresponding member of the Institute of France (1873). The more important of his writings are: *Principles of Human Physiology* (7th ed., 1869); *Principles of Mental Physi-*

ology; Animal Physiology; Manual of Physiology; Zoology and Instincts of Animals; Microscope and its Revelations (5th ed., 1875); *Introduction to the Study of the Foraminifera; Physiology of Temperance* (1870); *Mesmerism and Spiritualism* (1877).

CARPENTER BEE, a name given to the different species of hymenopterous insects of the genus *Xylocopa*, so called because they excavate their nests in wood. In general appearance they resemble common bumble-bees. *X. violacea*, a very large bee with deep violet wings, is found in Southern and Middle Europe; the species are numerous in Asia, Africa, and America. They usually construct their nests in partially decayed wood, cutting out a hole a foot or more in length, which they divide into a number of chambers by partitions of glued saw-dust, the roof of each chamber as it is made forming the floor of the one above. In each of these cells an egg is deposited with a store of honey and pollen.

CARPENTER, SHIP'S, an officer of a ship whose duty it is to attend to necessary repairs of hull, masts and spars. During battle he watches for shot-holes, and is prepared with plugs to stop them up. He makes a daily return to the senior-lieutenant of each day's work, and is expected to be always able to report as to the ship's qualities. He is assisted by a carpenter's mate, and a carpenter's crew.

CARPET-BAGGER, a term applied after the American civil war of 1861-65 to political adventurers from the Northern States, who, taking advantage of the disorganized state of affairs in the South, tried to gain control of the public offices and to exert an influence over negro voters for their own selfish ends. The term implied that they had no property in the district save the contents of their carpet-bags.

CARPET-MAKING, See Britannica, Vol. V, pp. 127-31.

CARPINO, a town of Italy in the province of Foggia, twenty-two miles northeast of San Savero. Population, about 6,000.

CARPOLITES, a generic term applied to fossil fruits. One hundred species of such fruits have been described, seventy of which belong to the Carboniferous system.

CARR, EUGENE A., soldier, born in Erie county, N. Y., March 20, 1830. In 1850 he graduated at the U. S. Military Academy, and up to 1861 was engaged in expeditions against the Western Indians. During the civil war he served under Hunter, Halleck, and Curtis; fighting in Arkansas, Missouri, Mississippi, and being present at the battles of Wilson's Creek, Pea Ridge, Vicksburg, Port Gibson, Champion Hill, Edwards' Station, Black River Bridge, Little Rock, Clarendon and Camden. At the close of the war he was brevetted major-general U. S. A., and since that time has been on frontier duty, where he was engaged against the Apache Indians.

CARR, JOSEPH B., soldier, born in Albany, N. Y., August 16, 1828. In 1849 he entered the militia, and on the outbreak of the civil war his regiment was the first to encamp in the State of Virginia. In 1862 he was made brigadier-general of volunteers. He was present at the battles of Malvern Hill, Fredericksburg, Chancellorsville, and Gettysburg, and during the latter part of the war served on the defenses of James River. For meritorious service he was promoted to the rank of major-general. He was mustered out of service at the close of the war, and became a manufacturer of chain-cable. He was Secretary of State in New York in 1881 and 1883, and was the Republican candidate for lieutenant-governor in 1885.

CARR, SIR ROBERT, born in Northumberland, England, died in Bristol, June 1, 1667. He was one of the royal commissioners of New England appointed by Charles II in 1664. The colonists resisted the interference of the commissioners, and at New Amsterdam the Dutch settlers fought the English fleet. The commissioners conquered the Dutch and re-named the town, calling it New York, in honor of the Duke of York. Fort Orange surrendered to Sir Robert and his associates, and was given the name of Albany. The Swedes and Dutch along the Delaware River were forced to acknowledge the English authority, but the commissioners had some trouble with the people of Boston. In Casco, Maine, the inhabitants received the royal representatives very kindly, and a new government was instituted, which acknowledged the authority of the commission. Having accomplished his mission Sir Robert returned to England, and died the day after his arrival.

CARRERA, JOSÉ MIGUEL, a Chilian soldier, born in Santiago de Chili, July 19, 1782, died in Mendoza, Argentine Republic, Sept. 1, 1815. He was educated in Madrid, fought the French, and came to Chili upon hearing of the revolution, and became sufficiently popular with the chiefs to depose Rosas and to assume the government. He was proclaimed dictator and general July 19, 1812. By acts of severity he managed to keep control of the government till Nov. 27, 1813, when he was deposed. The following year he raised a rebellion, but the Spaniards routed him, and he fled to Mendoza. In 1815 he fell into the hands of his enemies and was executed.

CARRERA, RAFAEL, president of Guatemala, born in the city of Guatemala in 1814, died April 14, 1865. He was of Indian and negro descent, and began life as a drummer boy and herder in 1829. When Guatemala revolted in 1839 Carrera commanded 6,000 Indian mountaineers in the war which followed. He grew in favor with the aristocratic and clerical party, and was able to reinstate as ruler Rivera Paz, and soon became commander-in-chief of the army. Morazán, who had been president, was forced to abandon Guatemala, with the army which had supported him, and Carrera became president on March 21, 1847. He ruled for a year, then resigned and went to Mexico. Wars called him home, and, after defeating the enemies of Guatemala, he was reelected president in October, 1851. In 1854 he was chosen president for life. Carrera opposed the plan for a confederation of the Central American States. He was an ignorant man, the foe of order and civilization. He administered the government with considerable severity.

CARRIAGE. See *Britannica*, Vol. V, pp. 134-37.

CARRICAL, or **KARICAL**, a French port within the limits of Tanjore, a district of the presidency of Madras. The town and territory contain 63 square miles, and about 50,000 inhabitants.

CARRICK, the southern division of Ayrshire. The Prince of Wales is Earl of Carrick.

CARRICK-ON-SHANNON, the capital of County Leitrim, Ireland, on the Shannon, 98 miles northwest of Dublin by rail.

CARRICK'S FORD, a place in West Virginia, on the Cheat River, in George Tucker county, where the Confederates under Gen. Garnett were routed from their position by General Grant's forces. The engagement took place July 13, 1861. General Garnett was killed.

CARRIER. See *Britannica*, Vol. V, pp. 138-39.

CARRIER, Common, one who, for hire, undertakes the conveyance of goods or passengers. See *Britannica*, Vol. V, pp. 138-39. There is an im-

portant distinction between a *common carrier* and a *private carrier*. A common carrier is bound by law to serve the public generally without favoritism or discrimination, and is held responsible for the safe delivery of all property delivered to his care. Railway companies, steamboat lines, express companies, and other carriers have endeavored to escape or limit this liability by incorporating in the bill of lading a contract to the effect that in case of loss or damage to property in transit the carrier should not be liable beyond a certain sum. But the American courts have held that, in so far as this provision seeks to avoid liability for injury resulting from the negligence of the carrier or its employes, it is against public policy, and therefore void. It seems, therefore, well settled that in case of damage occasioned by negligence the carrier must respond for all losses sustained. On the other hand, the law exempts the carrier from liability for injury occasioned by the "act of God," or by such agencies as human foresight and prudence cannot successfully guard against. Deception or misrepresentations by the owner of the goods, as undervaluation, etc., will also avoid or limit the carrier's liability.

CARRIER PIGEON, a variety of domestic pigeon trained to convey written messages from one place to another. See *DOVE*, *Britannica*, Vol. VII, pp. 379-80.

CARRIERE, MORTZ, German philosophical writer, born at Griedel, in Hesse, March 5, 1817, studied at Giessen, Göttingen and Berlin, and in 1853 became professor of philosophy at Munich. He is one of the founders of the modern school of thought which endeavors to reconcile Deism and Pantheism. His important work, *Die Kunst im Zusammenhang der Kulturentwicklung und die Ideale der Menschheit* (5 vols., 1863-74), was so popular that a third edition was commenced in 1876. He has also published *Die Sittliche Weltordnung* (1877), a thoughtful monograph on Cromwell, and works on *Æsthetics*.

CARRINGTON, HENRY BEEBE, soldier, born in Wallingford, Conn., March 2, 1824. In 1845 he graduated from Yale, taught for three following years in Irving Institute, N. Y., then studied law at New Haven and again engaged in teaching, being an instructor in the Ladies' Collegiate Institute of New Haven. He removed to Columbus, Ohio, practiced law, engaged in the anti-slavery movement, and helped organize the State militia. When President Lincoln issued the first call for troops, Carrington, who was adjutant-general of the State, placed nine regiments of militia in western Virginia. During the war he was for most of the time engaged in raising and drilling troops, and he was promoted brigadier-general of volunteers. He was mustered out of this service in 1865, and until 1870 served on military expeditions in Nebraska, Montana and Colorado, and became instructor of military science in Wabash College. The rest of his life has been given to literary pursuits. Among his publications are: *Russia as a Nation; American Classics; or, Incidents of Revolutionary Suffering; Crisis Thoughts; Ab-sa-ra-ka, Land of Massacre* (relating the adventures of his wife on the plains); *Battle Maps and Charts of the American Revolution; and Battles of the Bible*.

CARRION-CROW, or **BLACK VULTURE**, of America, a native of the southern part of the United States. It feeds entirely on carrion. The name is also applied to the common crow of Europe, which sometimes feeds on carrion.

CARRION-FLOWER, a name which has been given to the flowers of many species of *Stapelia*, on account of their odor, which resembles that of putrid meat. The species are natives of the Cape

of Good Hope. The flowers are large and often beautiful.

CARROLL, CHARLES, of Carrollton, born in Annapolis, Md., Sept. 20, 1737, died in Baltimore, Nov. 14, 1832. He was a descendant of powerful and royal families of Ireland. He was educated at the Roman Catholic schools of France and studied law in London. Returning to the United States in 1764, he took an active part in the politics of his native State; was elected to the Continental Congress in 1775, and the following year his name was affixed to the Declaration of Independence—signed as Charles Carroll, of Carrollton, because a relative bore the same name, and whatever responsibility was attached to the act he was willing to bear. Afterwards he served in the Maryland Senate, and in 1788 was the first Senator from Maryland to sit in the National Congress under the Constitution of the United States. From 1791–93 he was again in the United States Senate, and he subsequently served in the State Senate until 1801. He was the last surviving Signer of the Declaration of Independence.

CARROLL, JOHN, Roman Catholic archbishop, born in Upper Marlborough, Md., in 1735, died in Georgetown, D. C., in 1817. He was a cousin of Charles Carroll, of Carrollton; was educated at Roman Catholic schools in France, became a Jesuit priest, and engaged in the struggle of the people of his faith for religious toleration in America. He was the first bishop of his denomination in the United States, and in his official capacity did much for the upbuilding of colleges and other schools. He founded Georgetown College; helped establish St. John's College at Annapolis; laid the foundation of the Baltimore cathedral in 1806, and was created archbishop in 1808. He was the intimate friend of Benjamin Franklin, and officiated in 1803 at the marriage of Prince Jerome Bonaparte with Miss Elizabeth Patterson, of Baltimore.

CARROLL, SAMUEL SPRIGG, soldier, born in Washington, D. C., Sept. 21, 1832. In 1856 he graduated at the United States Military Academy. During the civil war he was engaged in the battles of Cedar Mountain, the Rapidan, Fredericksburg, Chancellorsville, Gettysburg, the Wilderness and Spottsylvania, where he was severely wounded. He was brevetted brigadier-general U. S. A., in 1865, and in 1869 was retired from the army as major-general.

CARROLLTON, a city of Illinois, county-seat of Greene county, 34 miles north of Alton. It contains manufactories of iron, machinery, carriages and flour.

CARROLLTON, a village of Kentucky, county-seat of Carroll county, situated on the Ohio River, at the mouth of the Kentucky. It is the seat of a seminary, and contains manufactories of cotton goods, woolen goods and flour.

CARROLLTOWN, county-seat of Carroll county, Mo. It contains flour mills and a woolen factory, and has a school building which cost \$40,000. It is the seat of a Roman Catholic convent.

CARRONADE, a short iron gun, long superseded, named after the Carron Iron Works, of Scotland, where it was first made. It is lighter than ordinary guns, and has a chamber for powder like mortars.

CARROT. See *Britannica*, Vol. I, p. 369, and Vol. XII, p. 280.

CARROUSEL, a species of knightly exercise which was very common in the courts of Europe. It was an imitation of the tournament, and for a time seems to have supplied its place. The name is now applied to a revolving contrivance, also called a "merry-go-round."

CARRUTHERS, WILLIAM A., novelist, born in Virginia about 1800, died in Savannah, Ga., about 1850. He was educated for the medical profession, but became famous as a writer of sketches and historical romances. Among his published works were: *The Cavaliers of Virginia: or, The Recluse of Jamestown*; *The Kentuckian in New York*; *The Knights of the Horse-Shoe: a Traditional Tale of the Cocked Hat Gentry in the Old Dominion*; and *A Life of Dr. Caldwell*. He also published an account of a perilous ascent of the Virginia Natural Bridge.

CARSE; a term applied in Scotland to low lands adjoining rivers. In Stirlingshire it is restricted to the level alluvial soils, which are only a few feet above the River Forth. In Perthshire it applies to the whole of the slightly undulating lands to the north of the Tay, which form the carse of Gowrie. Carse soils usually consist of argillaceous deposits, which produce crops of great luxuriance.

CARSON, CHRISTOPHER ("Kit Carson"), soldier, born in Madison county, Ky., Dec. 24, 1809, died at Fort Lynn, Colo., May 23, 1868. His boyhood was spent in what was then the wilderness of Missouri, and at the age of seventeen he joined a hunting party, and commenced a roving life on the plains. He served as guide for Gen. John C. Fremont in his explorations; became familiar with more Indian tribes than any man since his time, and could speak their language equally as well as his own; assisted in making treaties between the United States and the Indians; served the Government in New Mexico, Colorado and the Indian Territory during the Mexican and civil wars, and for his conduct in the latter was brevetted brigadier-general.

CARSON CITY, a city of Nevada, capital of the State and county-seat of Ormsby county. It is beautifully situated in the midst of grand and picturesque scenery on a plateau at the base of the Sierra Nevadas, about 15 miles south of Virginia City. It contains a United States branch mint, railroad shops and offices, various manufactories, and several mills for extracting gold and silver, which are found in the vicinity. Carson City was founded in 1858; its incorporation dates from 1876. Its schools are noted for their excellence.

CARSON RIVER, a stream of Nevada, 150 miles long. It rises in the Sierra Nevada Mountains, and flows northeast into Carson Lake, a body of water 15 miles long, which has no outlet.

CARSTENS, ASMUS JACOB, an eminent German artist, born near Schleswig in 1754, died at Rome in 1798. In 1762 he went to Copenhagen, where, in 1769, he produced his *Baldur's Death* and *Æolus* and *Ulysses*. He subsequently went to Berlin, where his great composition, the *Fall of the Angels*, with 200 figures, gained for him an appointment as professor in an academy, while his decoration of a saloon in the Dorville Palace obtained for him an introduction to the king and a pension. He also visited Rome, and devoted himself to the study of the works of Michel Angelo and Raphael. His *Visit of the Argonauts to the Centaur Chiron* was distinguished by purity of style, beauty of forms, and fine distribution of light.

CARTE-BLANCHE, a paper authenticated with a signature and intrusted to some one to be filled up as he may think best. Thus, in 1649, Charles II tried to save his father's life by sending from The Hague to the Parliament a signed carte-blanche to be filled up with any terms, which would be accepted as the price of his safety. The term is used figuratively of unrestricted power to act or decide in a particular manner.

CARTEL: during the time of war, an agreement between the belligerents for an exchange of prisoners. Sometimes the name is given to a ship com-

missioned to convey the exchanged prisoners or to carry messages to the enemy. A ship when thus employed must carry no cargo, ammunition, or implement of war, except one gun for signals.

CARTER, PETER, publisher and brother of Robert, born in Earliston, Berwickshire, Scotland, July 19, 1825. In 1832 he came to the United States with his parents; received a common school education, and in 1848 was admitted as partner in the publishing house of Robert Carter and Brothers. He has been connected with temperance, charitable and Sunday-school work, and has written a book concerning his travels in Scotland, and also story books for children.

CARTER, ROBERT, publisher, born near Abbotsford, Berwickshire, Scotland, Nov. 2, 1807, died in New York city, Dec. 28, 1889. His father was a weaver by trade, and the son had little opportunity for gratifying his love of study, being compelled to help in supporting the family. By diligently improving his opportunities, however, the lad acquired some education, and at the age of fifteen opened a night school in his father's cottage. He entered the University of Edinburgh, and made rapid progress, but in 1831 came to America, where his first occupation was school teaching in the city of New York. Here Hon. Schuyler Colfax was one of his pupils in Latin and Greek. In 1834 he became a book-seller, and in 1848 took into partnership his brothers Walter and Peter, and the present firm name, Robert Carter & Brothers, was adopted. Mr. Carter made it a rule to publish books that would do good, not only such as would sell readily. He was a Presbyterian in religious belief, and frequently a delegate to the Synod and the General Assembly.

CARTER, ROBERT, editor, born in Albany, N. Y., Feb. 5, 1819, died in Cambridge, Mass., Feb. 15, 1879. His education was obtained at the common schools and at a Jesuit college of Chambly, Canada. In 1841 he started, in company with James Russell Lowell, a magazine called "The Pioneer." Although the corps of writers was an unusually fine one, the venture was not a success, and but three numbers were issued. In 1847 he was a private secretary to the historian Prescott, and after the latter's death wrote an elaborate article concerning his habits and character. In 1851 he became editor of the Boston "Commonwealth," the organ of the Free-soil party. In 1855 Mr. Carter was one of the editors of the Boston "Telegraph;" the following year he edited the "Atlas;" from 1857-59 he was Washington correspondent for the New York "Tribune;" from 1864-69 he edited the Rochester "Democrat;" and from 1870-73 he edited "Appleton's Journal." Mr. Carter wrote important articles in the first edition of the *American Cyclopædia*; the articles on "Egypt," "Hindustan" and the history of the United States were written by him. He assisted in the revision of this cyclopædia. Mr. Carter traveled in Europe for his health; wrote *A Summer Cruise on the Coast of New England*, and at the time of his death left an incomplete volume of memoirs.

CARTER, SAMUEL POWHATAN, naval officer and soldier, born in Elizabethtown, Carter county, Tenn., Aug. 6, 1819. He studied at Princeton; served as midshipman in the navy; was promoted and assigned to the *Ohio*; was engaged off the Mexican coast during the Mexican war; was a member of the expedition which captured the barrier forts, near Canton, China (1856); was appointed instructor in seamanship at Annapolis the following year, and when the war broke out was transferred to the War Department for a time, and assigned to the task of organizing troops in Eastern Tennessee. He was assigned to active duty after-

wards, and while in the field was present at Zollicoffer's repulse at Wild Cat, Ky.; fought at Cumberland Gap; led the cavalry expedition which destroyed nearly 100 miles of railroad track in Tennessee; assisted at the siege of Knoxville; and held various commands up to 1866, when he was mustered out of service, having been brevetted major-general in the preceding year. Returning to the navy he commanded at the Annapolis Academy from 1869-72, and received several promotions, being commissioned commodore in 1878. He retired from the service three years later, and was made rear-admiral in 1882.

CARTERET, PHILIP, English navigator, sailed as lieutenant in Byron's voyage, and commanded the second vessel in Wallis's expedition to the Southern hemisphere (August, 1766). In the following April, while clearing the Strait of Magellan, Carteret's vessel was separated from the others by a hurricane, and he proceeded alone, discovering Pitcairn, Gloucester and a number of other small islands. He explored the strait between New Britain and New Zealand, and drew a map of the western coast of Celebes. He returned round the Cape of Good Hope to England March 20, 1769. His long voyage added much to the geographical knowledge of his time. He retired from active service in 1794 with the rank of rear-admiral, and died at Southampton, July 21, 1796.

CARTERSVILLE, a town of Georgia, county-seat of Bartow county. Gold and copper are found in the vicinity. It is a shipping point for pig-iron and cotton.

CARTESIAN DEVIL DIVER, or **BOTTLE IMP**, a philosophical toy, consisting of a small hollow figure, usually in the fancied form of a demon, with a hole near the top. This figure, filled partly with air and partly with water, floats in a tall glass vessel nearly full of water, and covered with an airtight piece of bladder or India-rubber. When this cover is pressed down, the air beneath is compressed, and water enters the floating figure until the air within is brought to an equal degree of compression. In consequence the figure sinks, not rising again till the pressure is removed.

CARTHAGE, a town of Illinois, county-seat of Hancock county, fifteen miles east of Keokuk. It is the seat of a Lutheran college and of a high school.

CARTHAGE, CAPE, a headland of North Africa, projecting into the Mediterranean. Traces of the ancient city of Carthage are found on it to the north of the Tunis lagoon.

CARTHAGE, a city and railroad center, and county-seat of Jasper county, Mo. It is located on Spring River in the midst of a rich lead-bearing section; has factories, schools, parks and a public library. In 1861 a battle was fought here on the morning of July 5, between the Confederate forces and General Siegel's army.

CARTHAGE, a railroad junction of Jefferson county, N. Y., on the Black River. Its extensive water-power is utilized in forges, foundries and manufactories, where leather, nails, furniture and machinery are made.

CARTHAGO, a ruined city of Central America, situated on a river of the same name. Down to 1841 it was the capital of Costa Rica, but being in that year destroyed by an earthquake, it was supplanted by San José. The volcano of the same name, doubtless connected with its overthrow, serves as a landmark to mariners.

CARTHAMINE, a dye obtained by a chemical process from safflower in crystals, which are insoluble in water and slightly soluble in alcohol or ether. When newly precipitated, it immediately

attaches itself to cotton or silk, dyeing it a beautiful red, which is changed to yellow on the addition of alkalies, and may be returned to red again on being treated with acids.

CARTIER, SIR GEORGE ETIENNE, BART., a Canadian statesman, born in St. Antoine, Quebec, Sept. 6, 1814, died in England, May 20, 1873. He was a lawyer who took an active part in the politics of Canada. He participated in the Lower Canada rebellion of 1837, and eleven years later was elected member of parliament. In 1857 he was attorney-general for Lower Canada, in which office he effected many reforms; he was a member the same year of Macdonald's reorganized cabinet, and of the Cartier-Macdonald ministry the following year. He was the leader of the French Canadian Conservatives in parliament.

CARTOUCH, a name once given to a wooden case containing 200 to 300 musket-balls, and eight or ten one-pound cannon balls, fired from a mortar or howitzer. The cartridge-box carried by the soldiers used to be called a cartouch in England, and still is in France.

CARTOUCHE, an oval or oblong figure on which the hieroglyphic characters and names of the Egyptian kings were sculptured. Cartouche is also used to signify a tablet either for ornament or to receive an inscription, so formed as to resemble a sheet of paper or parchment with the edges and ends rolled up. Cartouches are often seen on tombs.

CARTWRIGHT, PETER, clergyman, born in Amherst county, Va., Sept. 1, 1785, died near Pleasant Plains, Sangamon county, Ill., Sept. 25, 1872. His youth was spent in Logan county, Ky., then a region devoid of schools, churches and newspapers. Here he grew up a wild, reckless boy, but at the age of sixteen was converted, joined the Methodist Episcopal Church, was ordained to the ministry in 1803, and three years later became an elder. He became a powerful, and fearless preacher, noted for his eccentricities. A fund of ready wit added to his popularity. He was elected to the legislature of Illinois, and in 1846 was the Democratic candidate who opposed Abraham Lincoln in the contest for a seat in the U. S. Senate. He published several pamphlets, his *Controversy With the Devil* being the most famous.

CARTWRIGHT, SIR RICHARD JOHN, Canadian statesman, born in Kingston, Dec. 4, 1835. Entering parliament in 1863 as a Conservative, he became in 1870 a leader of the Liberals. He has introduced many reform motions in parliament, those bearing on the question of finance being the most important.

CARUCATE, formerly such an amount of land as one team of eight oxen could cultivate in a season. The quantity varied, averaging about one hundred acres.

CARUS, JULIUS VICTOR, a German zoölogist, born at Leipzig, Aug. 25, 1823. He studied medicine and surgery at Leipzig, subsequently at Würzburg and Freiburg, and in 1849 went to Oxford as keeper of the Museum of Comparative Anatomy. In 1851 he returned to Leipzig, and in 1853 was there placed in the chair of Comparative Anatomy. Carus lectured at Edinburgh for Wyville Thomson during his absence on the *Challenger* expedition. His writings, numerous and valuable, consist chiefly of monographs devoted to particular departments of zoölogy; the more general books are: *System der Thierischen Morphologie* (1853); *Handbuch der Zoologie* (1863); *Geschichte der Zoologie* (1872); and *Prodromus Faunæ Mediterraneæ* (1884).

CARVER, JOHN, governor of Plymouth colony, born in England about 1590, died in Plymouth,

Mass., April, 1621. He was a member of the Puritan company at Leyden, and was an agent sent to secure permission from the Virginia company to found a colony in America. Carver came over in the *Mayflower*, was elected governor by the Pilgrims while the ship was in the harbor of Provincetown, and was reelected in March, 1621, but died suddenly the following month. He ruled over the colony with much discretion.

CARY, ALICE, author, born near Cincinnati, O. April 20, 1820, died in New York city, Feb. 12, 1871. Her youth was spent where the opportunities for education and culture were very limited. At the age of 18 she began to write prose and verse for the press, and her work met with acceptance. In 1852 she removed to New York city, where she attained literary eminence. Among her published works are: *Clovernook Papers*; *Hagar: a Story of To-day*; *The Clovernook Children*; *Lyra, and Other Poems*; *Married, Not Mated*; *Pictures of Country Life*; *Lyrics and Hymns*; *The Bishop's Son*; *The Lover's Diary*; and *Snow-Berries*.

CARY, ANNIE LOUISE, singer, born in Wayne, Kennebec county, Me., Oct. 22, 1842. She graduated at the Female Seminary in Gorham, Me., in 1862, and in 1866 went to Italy for the purpose of having her voice trained by Giovanni Corsi, of Milan. She made her *début* in Italian opera in Copenhagen, and for the next few months sang in the principal European cities. In 1869, having further improved her voice by study at Baden-Baden and Paris, she came to America and sang in Steinway Hall, New York. For 12 years she sang in America with the exception of two winters (1875-76 and 1876-77) spent in Russia. In 1882 Miss Cary married Mr. Raymond, of New York, and retired from the stage.

CARY, PHOEBE, author, sister of Alice Cary, born near Cincinnati, Ohio, Sept. 24, 1824, died in Newport, R. I., July 31, 1871. Her life and her literary work were closely connected with her sister's. She began to write poetry at the age of 17, one of her first poems being the hymn so widely known, commencing: "One sweetly solemn thought." As mistress of the New York home she had less leisure for writing than her sister, and she attempted but little prose. The *Poems of Alice and Phoebe Cary* are mostly the work of Alice. Phoebe's lines are more buoyant and cheerful in tone than are her sister's. Her published works are: *Poems and Parodies*; *Poems of Faith, Hope and Love*; and a number of the hymns published by Rev. Dr. Deems, in *Hymns for All Christians*. Mary Clemmer Ames Hudson, an intimate friend of the sisters, published a memorial of them.

CARY, LOTT, negro slave, born in Charles City county, Va., in 1780, died in Monrovia, Africa, Nov. 8, 1828. He educated himself, displayed remarkable business ability as shipping clerk in a Richmond tobacco warehouse, purchased his freedom and that of his two children and emigrated to Monrovia, where he became a useful and prominent member of the colony, which he served as physician, counselor and pastor. An accidental explosion caused his death.

CARY, SAMUEL FENTON, Congressman, born in Cincinnati, Ohio, Feb. 18, 1814, graduated at the Miami University in 1835, and the Cincinnati law-school in 1837, served as Independent Republican in Congress from 1867 to 1869, and was the Republican who voted against the impeachment of President Johnson. In 1876 Peter Cooper and Senator Cary were the candidates on the National Greenback ticket.

CARYATIDES, a name given to female figures in Greek architecture when applied instead of

attaches itself to cotton or silk, dyeing it a beautiful red, which is changed to yellow on the addition of alkalies, and may be returned to red again on being treated with acids.

CARTIER, SIR GEORGE ETIENNE, BART., a Canadian statesman, born in St. Antoine, Quebec, Sept. 6, 1814, died in England, May 20, 1873. He was a lawyer who took an active part in the politics of Canada. He participated in the Lower Canada rebellion of 1837, and eleven years later was elected member of parliament. In 1857 he was attorney-general for Lower Canada, in which office he effected many reforms; he was a member the same year of Macdonald's reorganized cabinet, and of the Cartier-Macdonald ministry the following year. He was the leader of the French Canadian Conservatives in parliament.

CARTOUCH, a name once given to a wooden case containing 200 to 300 musket-balls, and eight or ten one-pound cannon balls, fired from a mortar or howitzer. The cartridge-box carried by the soldiers used to be called a cartouch in England, and still is in France.

CARTOUCHE, an oval or oblong figure on which the hieroglyphic characters and names of the Egyptian kings were sculptured. Cartouche is also used to signify a tablet either for ornament or to receive an inscription, so formed as to resemble a sheet of paper or parchment with the edges and ends rolled up. Cartouches are often seen on tombs.

CARTWRIGHT, PETER, clergyman, born in Amherst county, Va., Sept. 1, 1785, died near Pleasant Plains, Sangamon county, Ill., Sept. 25, 1872. His youth was spent in Logan county, Ky., then a region devoid of schools, churches and newspapers. Here he grew up a wild, reckless boy, but at the age of sixteen was converted, joined the Methodist Episcopal Church, was ordained to the ministry in 1803, and three years later became an elder. He became a powerful, and fearless preacher, noted for his eccentricities. A fund of ready wit added to his popularity. He was elected to the legislature of Illinois, and in 1846 was the Democratic candidate who opposed Abraham Lincoln in the contest for a seat in the U. S. Senate. He published several pamphlets, his *Controversy With the Devil* being the most famous.

CARTWRIGHT, SIR RICHARD JOHN, Canadian statesman, born in Kingston, Dec. 4, 1835. Entering parliament in 1863 as a Conservative, he became in 1870 a leader of the Liberals. He has introduced many reform motions in parliament, those bearing on the question of finance being the most important.

CARUCATE, formerly such an amount of land as one team of eight oxen could cultivate in a season. The quantity varied, averaging about six hundred acres.

CARUS, JULIUS VICTOR, a German zoologist, born at Leipzig, Aug. 25, 1823. He studied medicine and surgery at Leipzig, subsequently at Würzburg and Freiburg, and in 1849 went to Göttingen, where he was placed in the Museum of Comparative Anatomy. He returned to Leipzig in 1851, and was placed in the Museum of Comparative Anatomy. He lectured on comparative anatomy during his stay at Leipzig.

Mass., April, 1621. He was a member of the Puritan company at Leyden, and was an agent sent to secure permission from the Virginia company to found a colony in America. Carver came over in the *Mayflower*, was elected governor by the Pilgrims while the ship was in the harbor of Provincetown, and was reelected in March, 1621, but died suddenly the following month. He ruled over the colony with much discretion.

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columns to support an entablature. See Britannica, Vol. II, pp. 407, 461.

CARYOCAR, a genus of large trees of the natural order *Ternstroemiaceæ*, natives of the tropical parts of America. It yields a good timber for ship-building, and produces the delicious nuts called *butternuts*. Its flowers are large and of a purplish-red color. The fruit is a sort of drupe, the fleshy part of which consists of a butter-like substance, which is used in cookery instead of butter.

CARYOPHYLLACEÆ, a natural order of exogenous plants, containing upwards of 1,000 known species, mostly herbaceous, distributed all over the world. Most of them are inconspicuous weeds, but many produce beautiful flowers, and are found a favorite in many gardens, as the pink, carnations, sweet-Williams, etc. A few contain saponine, and afford a substitute for soap.

CARYOPSIS: in botany, a fruit in which the seed and pericarp are so incorporated as to be inseparable and even undistinguishable. The grain of the fruit of grasses, as wheat, barley, rye, maize, etc., is a caryopsis.

CASABIANCA, LOUIS (1755-98), a French naval officer, born at Bastia about 1755, sat in the National Convention of 1792, and in 1798 was captain of the flagship *L'Orient* in the expedition to Egypt. He was mortally wounded at the battle of the Nile, Aug. 1, 1798; the ship caught fire; his ten-year-old son would not leave him, and both perished in the final explosion.

CASAMASSIMA, a town of Italy, in the province of Bari, 14 miles southeast of the city of that name. It has a convent and two abbeys, and the vicinity produces wine and almonds. Population, 5,600.

CASANOVA, FRANCIS, a celebrated painter of battle-scenes and landscapes, born of Venetian parents in London in 1732, died at Briel in 1805. He was educated in Italy and took up his abode in Dresden. He afterwards went to Vienna, and painted for the Empress Catharine her victory over the Turks.

CASAREEP, or **CASSIRIPE**, a sauce or condiment made from the juice of the bitter cassava or manioc root. It is in highest esteem in Guiana, where it is employed to flavor almost every dish. It is the basis of the favorite West Indian dish called *pepperhot*. See Britannica, Vol. V, p. 182.

CASCARILLA, a name given in South America to many different kinds of bitter medicinal barks which form articles of commerce.

CASCO BAY, a body of water, 20 miles long, inclosing about three hundred islands. The city of Portland, Me., is at the western end of the bay.

CASE, AUGUSTUS LUDLOW, rear-admiral U. S. N., born in Newburg, N. Y., Feb. 3, 1813, entered the navy as midshipman in 1828, was promoted through the several grades until 1872, when he was made rear-admiral, and in 1875 was placed on the retired list. He served during the Mexican war, the civil war, and in 1865 was appointed fleet captain of the European squadron. In 1874 the combined European, North Atlantic, and South Atlantic squadrons, which at the time of the *Virginus* difficulties were grouped in the harbor of Key West, were under his command.

CASEMATE, originally a loopholed gallery excavated in a bastion, through which artillery could fire upon an enemy who had gained possession of the ditch. As defense from shells became more important, the term was subsequently applied to a bomb-proof vault in a fortress for the security of the defenders, without direct reference to the annoyance of the enemy.

CASERNE, a barrack or building for the accommodation of the soldiers forming the garrison of a fortified town or post.

CASEY, LYMAN R., an American statesman of North Dakota, was born in York, N. Y., in 1837, and when young removed to Michigan, where he was in the hardware business for many years. He retired from business, traveled and studied for five years, and settled in Dakota in 1882. He is secretary and general manager of the Casey-Carrington Land Company, chairman of the North Dakota Committee on Irrigation, and has held no public office except that of commissioner of Foster county. Elected to the United States Senate as a Republican, Nov. 21, 1889, under the provisions of the act of Congress admitting North Dakota and other States into the Union, he took his seat Dec. 2, 1889. His term of service will expire March 3, 1898.

CASEY, SILAS (1807-82), American soldier, born at Greenwich, R. I., July 12, 1807, graduated at West Point in 1826, served on the frontier in the Florida war, in the war with Mexico and in the civil war. He drilled volunteers at the national capital, fought at Fair Oaks, and presided over the board which examined officers for colored troops. At the close of the war he was brevetted major-general U. S. A., and was retired from the service in 1868. He was the author of a book on Military Tactics.

CASEY, SILAS, JR., commander U. S. N., born in Rhode Island, Sept. 11, 1841, graduated at the Naval Academy in 1860, and rose successively to the positions of lieutenant, lieutenant-commander, and in 1874 commander. He took part in the first attack on Fort Sumter and in other engagements in Charleston harbor. In 1886 he commanded the receiving ship *Dale*.

CASHIERING, a punishment for officers in the army and navy. It is more severe than dismissal from service, inasmuch as it disqualifies from entering the public service in any capacity, while dismissal does not.

CASIA, or **POET'S CASIA**, a South European shrub, *Osyris alba*, of the natural order *Santalaceæ*, having small white flowers and red drupes. It has been much admired for its modest beauty. The name is varied in spelling from *Cassia*, a name to which this plant is in no respect entitled.

CASINO (a little house), a place for social reunions. The name is usually applied to a place where musical or dancing *soirées* are held, containing conversation room, billiard room, refreshment room, etc.

CASOLI, a town of Italy, in the province of Chieti, situated on a hill 17 miles south of the city of Chieti. Population, about 6,000.

CASPARI, KARL PAUL, a Norwegian exegete and church historian, born at Dessau in 1814, became professor of theology at Christiania in 1857. His Arabic grammar (4th ed., 1875) is in high repute, and his contributions to the study of the Old Testament include works on Obadiah, Isaiah, Micah and Daniel. Besides his *Kirchenhistorische Anekdoten* (1883), he published at Christiania *Quellen zur Geschichte des Taufsymbols und der Glaubensregel* (2 vols., 1866-69), extensions of which appeared in 1876 and 1879.

CASSANDRA, a peninsula in the province of Roumelia, European Turkey, situated between the Gulfs of Salonica and Cassandra. The ancient name of this headland was Pallene. Grain of a superior quality is raised here, and silk-worms are extensively reared; wool, honey and wax are also produced.

CASSATION, COURT OF. In the law of France, the act of annulling the decision of a court or judicial tribunal is called cassation; and the function of cassation, as regards the judgments of all the other courts, is assigned to a special tribunal called the

court of cassation, which may thus be regarded, in a certain sense, as the last and highest court of France.

CASSELL, JOHN, founder of the English publishing firm of Cassell & Co., the son of a Manchester innkeeper, born Jan. 23, 1817, died April 2, 1865. He had no early educational advantages, but fitted himself for his later work by careful self-culture while employed as an apprentice joiner. He went to London in 1836, where he was for some time established as a tea and coffee merchant. Turning his attention to literary work, he issued his "Working Man's Friend" (1750); "Illustrated Exhibitor" (1851); *Popular Educator* (1852), the most popular of all his works, which in a revised form is still on sale; and "Family Paper" (1853). In 1859 he entered into partnership with Messrs. Petter & Galpin, and before his death he shared in the prosperity of one of the largest publishing houses of modern times.

CASSELL, PAUL, a German author and divine, born in Silesia in 1827. He was a Jew, but became a Christian in 1855, while engaged in literary work at Erfurt. He became a member of the Prussian parliament in 1866, but soon renounced politics for theology. His writings are mostly historical and Biblical.

CASSELTON, a thriving town of North Dakota, situated in the fertile wheat producing valley of the Red River of the North, about 25 miles west of Fargo.

CASSICAN, a bird of the genus *Cassicus*, allied to the starling and more closely to the hangnests. They are all American birds of gregarious habits, feeding on fruit and insects and exhibiting surprising skill in the construction of their pouch-like nests.

CASSIDARIA, a genus of gastropod mollusks, family *Cassidae*. The shell is roughly oval, with a wide mouth, a fairly long siphon canal, and without a closing lid. There are six modern Mediterranean species, and five times as many extinct in the Upper Chalk and Tertiary strata.

CASSIDY, WILLIAM, journalist, born in Albany, N. Y., Aug. 12, 1815, died there Jan. 23, 1873. He was a graduate of Union College in 1834; studied law and was admitted to the bar, and in 1840-42 was State Librarian. In 1843 he became editor of the Albany "Atlas," a Democratic daily. In 1856 the "Atlas" and "Argus" were consolidated, and he became editor.

In 1865 the paper was called the "Argus." Mr. Cassidy from 1868 till 1873 was secretary of the Democratic State committee, and framed the celebrated anti-slavery plank which suffered defeat at the convention at Herkimer. In 1872 Governor Hoffman appointed him as one of a committee of 16 to revise the constitution.

CASSIOPEIA, a beautiful constellation of the Northern hemisphere, supposed to represent the wife of Cepheus sitting in a chair with a branch in her hand. In 1672 there appeared in this constellation a new star, which was brighter than Venus. The star gradually diminished in luster, and in March, 1674, it disappeared.

CASSIQUIARE, a river of Venezuela, South America. It is about 100 yards in breadth, which gradually increases until at its union with the Rio Negro it attains a width of 600 yards. By means of this singular river water communication is established through the Amazon, Orinoco, and their affluents, between the interior of Brazil and the Caracas in Venezuela.

CASSIS, a French liquor prepared from black currants.

CASSIUS, PURPLE OF, a coloring substance of very ancient use, which is prepared by adding a

mixed solution of protochloride and bichloride of tin gradually to a solution of chloride of gold, when a more or less abundant precipitate of double stannate of gold and tin is thrown down. Purple of cassius is employed by the potter to communicate a rich purple or rose tint to fine china, and it also imparts the red color to *Bohemian glass*.

CASSOCK, a long, loose coat, worn by the Episcopal and Catholic clergy. It has a single upright collar, and reaches to the feet. Its common color is black for all orders of the clergy. In the Anglican church, on state occasions, the bishops frequently wear purple. In the Roman Catholic church cassocks vary in color according to the dignity of the wearer, priests wearing black, bishops purple, cardinals scarlet, and the pope white.

CASSOPOLIS, a village of Michigan, county-seat of Cass county. It contains manufactories of lumber, iron, sash, blinds, and furniture.

CAST, CASTING LINE: in angling, a gut-line on which artificial flies are fastened. It is made up of several lengths of gut, knotted together, from two to four yards long. The flies are attached at intervals of about two feet, and the line with its flies is called a *cast*.

CASTANET, a musical instrument of percussion in form of two hollow nut-shells, which are bound together by a band, slung over the thumb and struck by the fingers to produce a thrilling sound in keeping with the rhythm of the music. Castanets were introduced into Spain by the Moors, where they retain the name of castanulas, from their resemblance to the form of the chestnut. They are now widely introduced among other nations, with some variations in form, and are used in the ballet and in the opera.

CASTEGGIO, a town of Piedmont, Northern Italy, five miles northeast of Voghera. It was an important military position as early as the times of the Gallic and Punic wars. Some Roman antiquities still remain, and numerous curious inscriptions and coins have been found. Population, 3,200.

CASTELAR, EMILIO, an eminent Spanish statesman and orator, born in 1832. He joined the revolutionary Republicans in 1868, and, being condemned to death, fled to France. On the abdication of King Amadeo he became minister for foreign affairs, and afterwards President of the Cortes, and President of the Republic in 1873. Since the restoration of monarchy he has devoted himself more to literary pursuits than to politics.

CASTELLAMONTÉ, a town of Northern Italy, in the province of Turin, 10 miles southwest of Ivrea. It has an old castle, manufactories of earthenware, and a trade in the agricultural produce of the district. Population, 5,660.

CASTELLAN, or CHATELAIN, a name given during the Middle Ages to the keeper of a castle, or *burg*.

CASTELLANA, a town of Italy, in the province of Bari, 25 miles southeast of the city of that name. Population, 9,700.

CASTELLANETA, a town of South Italy, in the province of Lecce. It has several convents and a cathedral. Cotton is grown in the district. Population, 7,600.

CASTELLAZZO, a town of North Italy, about five miles southwest of Alessandria. Population, 6,500.

CASTELLEONÉ, a town of Lombardy, North Italy, situated near the Oglio. It is surrounded by old walls, and has a population of about 6,000.

CASTELLIO, SEBASTIEN, a French theologian, born at Dauphiné in 1515. About 1540 he was invited to Geneva by Calvin, and appointed Humanity Professor, but having the misfortune afterwards to differ from the Reformer in religious opinion, he

was banished from the city, and went to Basel, where he spent the rest of his life in extreme poverty. Among his various writings may be mentioned *De Hereticis*, etc., a treatise which argues against the right of the magistrate to punish heretical opinions; a Latin version of the Old and New Testaments; and a posthumous work, in dialogue, on predestination, election, free-will and faith.

CASTELNUOVO, a seaport town of Dalmatia, Austria, situated near the western entrance of the Gulf of Cattaro. It is surrounded by walls, and defended by two forts and a citadel. It has manufactories of brass, and a trade in the produce of the district, which is fertile. Population, 7,000.

CASTIGLIONE, LAKE OF, a lagoon of Tuscany, in the province of Siena. It lies to the north of Grosseto, and has a length of about 10 miles, with a breadth of one to three miles. Receiving the waters of the Bruna and other rivers, it discharges its waters by a short canal into the Mediterranean.

CASTILLA, RAMON, a Peruvian soldier, born in Tarapacá, Aug. 30, 1797, died in Tiviliche, May 25, 1867. He was brigadier-general of the army of Peru in 1834; was engaged in several insurrections; overthrew the government of Vivanco, and became president of Peru from 1845 to 1851; overcame his successor and ruled from 1854 to 1862, during which period he abolished slavery and other abuses, but allowed corruption, and after laying down his authority in 1862 was in 1867, the year of his death, again engaged in insurrection against the Peruvian ruler.

CASTILLION, a town of France in the department of Gironde, situated on the right bank of the Dordogne, 26 miles east of Bordeaux. It has manufactories of cotton and woolen yarns, nails and cordage. Population, about 4,000.

CASTINE, a town of Maine, situated on the east side of Penobscot Bay, at the mouth of the Penobscot River. It is a port of entry, has an excellent harbor, and is chiefly engaged in ship-building and in the manufacture of cordage, brick and furniture. It is the seat of a State normal school.

CASTING—VOTE, the decisive vote of a presiding officer, when the votes cast by the members of the assembly or house are equally divided. All the officers of a deliberative body are ordinarily members of the assembly, and as such are entitled to participate in the proceedings. The presiding officer does not usually engage in the debate, and votes only when the assembly is equally divided. In some legislative bodies, the presiding officer is not a member; as, for example, in the Senate of the United States; the Senate of New York, and in some other States. The Speaker of the House of Representatives is a member of that body; but the presiding officer of the Senate is not a member of the Senate. The Constitution specially provides that the Vice-President of the United States shall be President of the Senate, but shall have no vote unless the members are equally divided. The same rule is held with reference to the Speaker of the British House of Commons. Neither of these presiding officers are members of the body over which they preside, yet each one holds under the Constitution the casting-vote when there is a tie. If the presiding officer be a member of the body, he may give the casting vote, although he has, by already voting as a member created the tie. Under British parliamentary usage, the governor, in the time of Hastings, had only one vote in council, and in case of an equal division a casting vote, thus seeming to grant him under the exception a double vote.

CASTLE, FREDERICK ALBERT, physician, born in Fabius, N. Y., April 29, 1842. He studied at the

Albany Medical College, made a good record as surgeon in the navy, graduated from Bellevue Hospital Medical College in 1866, settled in New York city, where he is known as a lecturer on the diseases of women and children, the author of medical papers, and the editor of the "American Druggist."

CASTLEFORD, a town in the West Riding of Yorkshire, on the Aire, 10 miles southeast of Leeds. It was formerly a Roman station, and is now the seat of extensive glass-works, manufacturing especially large quantities of bottles. Population, 10,530.

CASTLEMAINE, a town of Victoria, 77 miles northwest of Melbourne by rail. The gold diggings here were among the first discovered in Australia. Population, 5,787.

CASTLE ROCK, a town of Colorado, county-seat of Douglas county, situated near the famous castle rock, about 30 miles south of Denver. The chief industries are dairying and cattle raising.

CASTLES, in heraldry, are often given as charges in the shields of persons who have reduced, or been the first to mount, the walls of a castle in an assault.

CASTLETON, a village of Rutland county, Vt., on Castleton River. A railroad passes through the place. There is here a State normal school, and also manufactories of marbelized slate and agricultural implements.

CASTOREUM, a substance secreted in two glandular sacs in the beaver, and at one time held in the highest repute in medicine, but now chiefly used by perfumers.

CASTRAMETATION, the art of encamping; and a camp is the result of that art.

CASTRI, a village of modern Greece, in the government of Phocis, situated on the south declivity of Mount Parnassus, and worthy of notice, as occupying a portion of the site of the ancient Delphi. The famous Castalian spring, now called the Fountain of St. John, is situated between 200 and 300 yards to the east of the village.

CASTRO, JUAN, the assumed name of a Cuban poet, who was born near Matanzas in 1790, of slave parents, but learned to read and write, and developed marked poetical genius. Some gentlemen purchased his freedom and assisted him in publishing his poems. He published an autobiography, which vividly portrays slave-life in Cuba. The finest of his poems, which are in Spanish, is entitled *The Clock That Gains*.

CASTRO, a seaport town of Asiatic Turkey, capital of the island of Mitylene, situated on the east coast, about 55 miles northwest of Smyrna. It is surrounded with walls and defended by a castle. Population, 6,500.

CASTUERA, a town of Estremadura, Spain, 68 miles southeast of Badajoz. It is situated on the right bank of the Guadalefra, and has manufactories of brick, earthenware, etc., and a trade in agricultural products. Population, 5,690.

CASUAL POOR, persons temporarily relieved without being admitted to the roll of permanent paupers.

CASUARINA, a genus of trees of the natural order *Amentaceæ*, and of the sub-order *Casuarinææ*. The trees are almost exclusively Australian, having a very peculiar appearance, their branches being long, slender, wiry, drooping and green, jointed with very small scale-like sheaths instead of leaves. They resemble arborescent *Equisetaceæ*. Some of the trees are large and produce timber of excellent quality, often called *beef-wood* from its resemblance in color to raw beef.

CASUS BELLII, or a cause of war, the reason alleged by one power for going to war with another.

It is found impossible to reduce these causes or reasons to any definite code, because an ambitious or aggressive power has no difficulty in making a reason to declare to others without acknowledging the real ground.

CASWELL, ALEXIS, educator, born in Taunton, Mass., Jan. 29, 1799, died in Providence, R. I., Jan. 8, 1877. He was at the head of the class which graduated at Brown University in 1822. The following year he became an instructor in Columbian University, remaining four years, and then becoming pastor of a Baptist church in Halifax, N. S., having pursued theological studies during his teaching. He taught for a year in Waterville College, was called in 1828 to the First Baptist church of Providence, R. I., and about this time was called to the chair of Mathematics and Natural Philosophy at Brown University. This he occupied for 35 years, resigning in 1863, but was chosen to serve as president of the University five years later, and held this position four years. He founded the alumni association, was connected with Newton theological institution, president of the Baptist Missionary Union for two years, a trustee and for two years the president of the Rhode Island Hospital, and connected with various other literary and scientific associations.

CASWELL, RICHARD, soldier, born in Maryland, Aug. 3, 1729, died in Fayetteville, N. C., Nov. 20, 1789. He was a member of the legal profession; was in the colonial assembly from 1754 to 1771; a delegate to Congress (1774-75); governor of North Carolina from 1777 to 1779; and was engaged in the war of the Revolution, reaching the rank of major-general. He became comptroller-general in 1782, governor from 1784 to 1786, Senator in 1789, and member and presiding officer of the convention which ratified the Federal Constitution in 1789.

CAT: on shipboard, a name for many of the ropes or lines employed. A *cat-fall* is a rope for heaving up the anchor from the water's level to the bow; it works through *cat-blocks*, and is connected with the *cat-head*. *Cat-harpings* are small ropes for tightening the shrouds.

CAT, or CAT-CASTLE: in the military engineering of the Middle Ages, a kind of movable tower to cover the sappers as they advanced to a besieged place. The garrison sometimes poured down burning pitch and boiling oil from the walls upon the *cat*.

CATABROSA, a genus of grasses formerly included in *Aira*. *Catabrosa aquatica* grows in very moist situations, and is only cultivated in irrigated meadows or on the banks of rivers subject to be overflowed by high tides. Its foliage is peculiarly sweet and much relished by cattle. Its foliage and seeds also afford much food to water-fowl and to some kinds of fish, particularly carp. Its leaves often float, and its stalks seldom rise more than a foot or 15 inches above the surface of the water. It abounds throughout Europe and in the torrid regions of South America.

CATACLYSMAL ACTION, a term applied by geologists to the effects of certain deluges, or other sudden and violent physical action of great extent, supposed to have swept over certain countries. In this way they account for various phenomena which cannot be attributed to the gradual action of ice or that of moderate currents.

CATAFALCO, or CATAFALQUE, a temporary structure of carpentry, intended to represent a tomb or cenotaph, and adorned with sculpture and painting. It was employed in funeral ceremonies. The most magnificent catafalco ever made was that used at the interment of Michel Angelo at Florence.

CATALANI, ANGELICA (1780-1849), a highly celebrated Italian singer, born at Sinigaglia in 1780, and educated in the convent of St. Lucien, near Rome. She made her first public appearance at Venice in her 16th year, and experienced a succession of triumphs in every country in Europe for more than 30 years. In 1830 she purchased a villa in Florence, where she gave free instructions to girls who had a talent for singing. In 1849 she repaired with her two daughters to Paris, where she died of cholera on the 13th of June.

CATALAUNIAN, the ancient name of the wide plain surrounding Chalons-sur-Marne, in the old province of Champagne, France, celebrated as the field of battle where the West Goths and the forces under the Roman general Aëtius gained a victory over Attila, A. D. 451. A wild tradition tells that three days after the fight the ghosts of the fallen myriads appeared on the plain, and renewed the conflict.

CATALDO, SAN, a town of Sicily, in the province of Caltanissetta, five miles west of the town of that name. There are productive sulphur mines in its vicinity. Population, 10,000.

CATALPA, a genus of hardy trees, order *Bignoniaceæ*, of which two species, *C. bignonioides* and *C. speciosa*, are natives of the United States, and are common in cultivation as ornamental trees. The *cat-alpa* has large simple leaves, terminal panicles of showy flowers, and long pods with winged seeds. Its wood is light and soft, but exceedingly durable, and is used for fence-posts, railway sleepers, etc. *C. longissima* of the West Indies yields excellent timber known as French oak, and the bark is a source of tannin. The Japanese *catalpas* are small and unimportant.

CATALYSIS, a term applied in chemical physics to a force supposed to be exerted by one substance upon a second, whereby the latter is subjected to change or decomposition, while the former, or acting substance, remains comparatively unaltered, and does not combine with it.

CATAMARAN is a raft formed of three planks lashed together, the middle one serving as a keel, and the other two for the sides. These simple vessels are used by the natives of Madras to maintain communication between ships and the shore, ordinary boats being rendered unsafe by the surf. By the adoption of a similar construction on a larger scale, some of the *catamarans* are made large and strong enough to carry goods, and even artillery. *Catamarans* are also used along the sea shore of the West Indies, and on the coasts of South America.

CATAPLASM, an application to diseased or painful parts, for the purpose of promoting suppuration, relieving pain, and stimulating or soothing the skin according to circumstances. A *cataplasm* may be composed of any moist pulpy substance of sufficient consistence to retain the water without soaking through the thin muslin covering in which it is wrapped. The flaxseed poultice is the most easily made, and is the most satisfactory of all soothing applications.

CATARRHINA, a division of quadrumanous mammals, including those old-world monkeys and apes which have the nostrils close together and turned downward. This section includes the Barbary ape, gorilla, chimpanzee, orang, etc.

CATASAUQUA, a railroad town of Lehigh county, Pa., situated on the Lehigh River. It contains blast-furnaces, rolling-mills, machine-shops and manufactories of fire-brick and railroad cars.

CATAWBA, or GREAT CATAWBA, a river of North Carolina, 250 miles in length. It rises in McDowell county, flows eastward, enters South Carolina at

Rocky Mount, below which place it is called the Wateree River.

CATCHFLY, a common name of several plants of the natural order *Caryophyllaceæ*, which, being clammy in consequence of a peculiar exudation on the calyx, on the joints of the stem, etc., often prove fatal to insects settling upon them.

CATCHPOLE: in England, a sheriff's officer or bailiff, whose duty it is to make arrests. In various places a long pole was in use for catching or holding criminals by the neck, having at the end of it an iron collar with a V-shaped opening, occasionally armed with spikes on the inside.

CATE, WILLIAM H., of Jonesborough, Ark., a lawyer and planter, born in Rutherford county, Tenn., Nov. 11, 1839. He graduated from the University at Knoxville, Tenn., in 1857; was a teacher in the West and South, and served in the Confederate army during the war of the Rebellion. He settled at Jonesborough, Ark., in 1865, and entered the profession of law in 1866. In politics he was a Democrat, and was elected a member of the State legislatures of 1871 and 1873. He was prosecuting attorney of the second circuit in 1878, and elected judge of that circuit in 1884. He was declared elected a Democratic Representative from the First Congressional District of Arkansas to the 51st Congress, but the House of Representatives decided that he was not entitled to the seat. He was elected from the same district to the 52d Congress in 1890.

CATENIPORA, or **HALYSITES**, a genus of fossil lamelliferous corals peculiar to Palæozoic strata. The cells are terminal and oval, arranged like a loose net-work of chains, hence called "chain coral." Vertical anastomosing lamellæ united the cells together, and formed a hemispherical polypidom, sometimes of great size.

CATERINA, SANTA, a town of Sicily in the province of Caltanissetta, situated on a hill near the river Salso. It has manufactories of fine earthenware, and in the neighborhood are found jaspers and agates. Population, about 6,000.

CATESBY, MARK, naturalist, born about 1679, in London, died there Dec. 23, 1749. He traveled in North America from 1710 to 1719, and from 1722 to 1726, and published *Natural History of Carolina, Florida and the Bahama Islands* (2 vols., 1731-43); *Hortus Bratanno-Americanus*; and a work on the fishes, reptiles and insects of the Isle of Providence.

CATESBY ROBERT (1573-1605), a Northamptonshire Catholic, born in 1573, of good fortune and lineage, being sixth in descent from Richard III's Catesby, who was hanged three days after Bosworth. Robert, however, had suffered much as a recusant both by fines and imprisonment, when in 1604 he engaged in the gunpowder plot. He was killed in the defense of Holbeache House, Nov. 8, 1605.

CATHA, a genus of plants belonging to the natural order *Celastraceæ*, chiefly natives of Africa. *C. edulis*, the *khat* or *kafta* of the Arabs, is a shrub highly valued by them, as its leaves and twigs are used in the preparation of a beverage possessing properties analogous to those of tea and coffee.

CATHARTICS, a name originally for all medicines supposed to purify the system from the matter of disease, which was generally presumed by the ancients to exist in all cases of fever and acute diseases and to require to be separated or thrown off by the different excretions of the body. The principal cathartics are aloes, colocynth, rhubarb, scammony, jalap, senna, epsom and other salts.

CATHARTIDÆ. See **VULPINE**, *Britannica*, Vol. XXIV, pp. 301, 302. See also under **BIRDS**, *Britannica*, Vol. III, pp. 699-778.

CATHARTINE, or **BITTER OF SENNA**, the essential principle in senna, which possesses laxative or purgative properties. It can be isolated as a yellowish-red uncrystallizable solid, which is deliquescent, soluble in water and alcohol, but insoluble in ether. It has a very bitter nauseous taste, and a characteristic odor.

CATHCART, WILLIAM SCHAW, first Earl Cathcart, a British general and diplomatist, son of the ninth Baron Cathcart of Cathcart, Renfrewshire, born Sept. 17, 1755, died June 17, 1843. He was educated at Eton and Glasgow, and admitted an advocate in 1773. He entered the army in 1774, took a prominent part in the American war, and fought with distinction in Flanders and North Germany. In 1803 he was made commander-in-chief in Ireland. In 1807 he commanded the land forces coöperating with the fleet in the attack on Copenhagen, and for his services was made a British peer, with the title of viscount, and received a vote of thanks from both Houses of Parliament. In 1814 he was raised to the rank of earl.

CATHELINEAU, JACQUES, general of the army in La Vendée in the west of France. He was born at Pin-en-Mauges in 1759, died at St. Florent in 1793. Horrified at the atrocities and despotic acts of the Convention, he placed himself in opposition to it and soon collected around him a body of loyal peasantry, whom he led against and defeated the Republicans in several conflicts. After the victory of Saumur he was appointed commander-in-chief. He died from the effect of a wound received while making an attack upon Nantes.

CATHETER, a name applied to a tubular instrument introduced through the urethra into the bladder to draw off the urine when its discharge is arrested by disease or accident, and also to those used for injecting air or fluids into the Eustachian tube. The Eustachian catheter is generally made of metal or vulcanite, six or seven inches in length with the last inch or less slightly curved. It is introduced into the Eustachian tube along the floor of the nose, and air or fluid, as may be necessary, forced along it by an India-rubber bag, which can be attached to it.

CATHOLICOS, the title of the patriarchs or chief ecclesiastics in the hierarchy of the Armenian church.

CATKIN: in botany, a spike of numerous small unisexual flowers, destitute of calyx and corolla, and furnished with scale-like bracts instead. Examples are found in the willow, oak, alder, birch, etc.

CATLETTSBURG, the county seat of Boyd county, Ky., located at a railroad junction on the Ohio River, at the mouth of the Big Sandy. A State normal school is located here, and the town has a large lumber trade and several manufactories.

CATMINT, or **CATNIP** (*Nepeta cataria*), a plant of the natural order *Labiata*, widely diffused throughout Europe, Asia and North America. It has erect stems, two or three feet high, dense whorls of many whitish flowers, and stalked heart-shaped, velvety leaves, whitish and downy beneath, and its fragrance is very attractive to cats.

CATOPTRICS, that division of geometrical optics which treats of the phenomena of light incident upon the surfaces of bodies, and reflected therefrom.

CATOPROMANCY, a divination practiced by the ancients. It was generally believed that the healthy appearance of a sick person's face in a mirror under water betokened recovery, while a ghastly look indicated certain death. A more modern superstition attached to the looking-glass is that ill-luck will result from the breaking of one.

CATRON, JOHN, jurist, born in Wythe county, Va., in 1778, died in Nashville, Tenn., May 30, 1865.

He practiced law in Tennessee; served under Gen. Jackson in the war of 1812; was elected State attorney; chosen a Supreme Court judge, and was chief justice from 1830 to 1836. In 1837 he became associate justice of the United States Supreme Court, retaining the office up to his death. Judge Catron was a Democrat, a fervent Unionist, and for his opinions on secession was for a time compelled to leave the State.

CATSKILL, a village of New York, county-seat of Greene county, situated on the right bank of the Hudson, 35 miles below Albany. It is the seat of an academy, and contains a variety of manufactories, including woolen goods and paper. In the vicinity are a number of stone-yards and large ice-houses.

CATTELL, ALEXANDER GILMORE, Senator, born in Salem, N. J., Feb. 12, 1816. He was elected to the legislature in 1840; to the United States Senate in 1866; served for two years as a civil service commissioner, being on the first commission ever appointed; was financial agent to London for the government (1873-74); and was engaged in important financial transactions.

CATTELL, WILLIAM CASSIDY, educator, born in Salem, N. J., Aug. 30, 1827. He graduated at Princeton College and Theological Seminary, became professor of Latin and Greek in Lafayette College in 1860, and for three years was pastor of the Pine Street Presbyterian Church at Harrisburg, Pa. In 1863 he became president of Lafayette College, in which capacity he made extensive improvements. He was a director of Princeton Theological Seminary, and at the present time (1891) is corresponding secretary of the Presbyterian Board of Ministerial Relief.

CAUB, a town of Nassau, North Germany, on the right bank of the Rhine, 21 miles northwest of Weisbaden. It has underground slate quarries. It is celebrated as the place where Blucher crossed the Rhine with his army in 1814.

CAUCHON, JOSEPH EDWARD, Canadian author, born in St. Rochs, Quebec, Dec. 31, 1816, died in Whitewood, Northwest Territory, Feb. 23, 1885. He founded in 1842 "Le Journal de Québec," which he conducted until his death. From 1844 till 1867 he represented the county of Montmorency in the Canadian assembly. Under the MacNab-Taché administration he held for two years the office of commissioner to the crown, and was at the same time member of the Executive Council. During the Cartier-Macdonald régime Mr. Cauchon was commissioner of public works. He was speaker of the Senate from 1867 to 1872; president of the Privy Council of Canada from 1875 to 1877, and minister of inland revenue till 1877, at which time he became governor of Manitoba.

CAUCHY, AUGUSTIN LOUIS, mathematician, born in Paris, Aug. 21, 1789, died May 23, 1857. He published in 1815 a *Mémoire sur la Théorie des Ondes*, which was afterwards made the basis of the undulatory theory of light. Between 1820 and 1830 he wrote several important treatises. From 1848 to 1852 he was professor of astronomy at Paris, but refused the oath of allegiance to Napoleon III, and subsequently lived in retirement.

CAUDA-GALLIA GRIT, the lowest sub-division of the Devonian system of North America. The name (literally, "cock's tail") is derived from the feathery forms of a common fossil, supposed to be a seaweed.

CAUDEBEC-LES-ELBEUF, a town of France in the department Seine-Inférieure, 12 miles south of Rouen. It has manufactories of cloth. Population, 10,700. Caudebec is also the name of a town in the same department, situated on the right bank

of the Seine, 26 miles east of Havre. It manufactures cotton, sail-cloth, leather, and soap. Population, 2,100.

CAULAINCOURT, ARMAND AUGUSTIN LOUIS DE, Duke of Vicenza, a French statesman, born at Caulaincourt in 1772, died at Paris in 1827. He entered the army at the age of 15, rapidly attained promotion, and as colonel of a regiment of carbiniers distinguished himself in the campaign of 1800. He was made a general of division in 1805, and shortly after created Duke of Vicenza. In 1807 he was appointed ambassador at St. Petersburg. Disputes having arisen between Alexander and Napoleon, Caulaincourt endeavored to restore amity and prevent war; but his proposals being rejected, he resigned his post in 1811, and accepted an appointment in the army of Spain. He was made minister for foreign affairs, and in this capacity attended the congress at Chatillon in 1814.

CAULOPTERIS, a generic name for the stems of fossil tree-ferns found in the Carboniferous and Triassic measures. They are hollow and covered with markings similar to the leaf-scars on recent tree-ferns.

CAURA, a considerable river of Venezuela in Guyana. It rises among the Sierras of the southern frontier, and flows northwest to the Orinoco. Length, about 150 miles.

CAUS, CAULX, or CAULS, SALOMON DE, French engineer, born at Dieppe in 1576, died in Paris, June 6, 1626. He spent the greater part of his life in England and Germany. He was in the service of the Prince of Wales in 1612, and of the elector palatine at Heidelberg from 1614 to 1620. Returning to France in 1623, he became engineer and architect to the king. His *Raisons des Forces Mouvantes*, etc., published at Frankfort in 1615, contained a description of an apparatus for forcing up water by a steam fountain, differing only in one detail from that of Della Porta. There is no reason to suppose that the apparatus was ever constructed; but, on the strength of the description, Arago has claimed for De Caus the invention of the steam-engine.

CAUSATION, the act of causing or producing; the act or agency by which an effect is produced.

CAUSE CÉLÈBRE, a convenient French term for a specially interesting and important legal trial, criminal or civil, such as the Douglas cause (1769-71), the Dred Scott case in the United States (1856), the Tichborne case (1871-74). There is a great French collection of *Causes Célèbres et intéressantes* (22 vols., 1737-45), by Gayot de Pitaval, with modern continuations.

CAUSERIE, a name applied to a somewhat short and informal essay on any subject in a newspaper or magazine. More familiar in manner and slighter in structure than the formal essay as usually understood, it is an excellent medium for a writer whose personality interests the reader as much as the value of his thoughts. The name owes its literary currency mainly to the famous *Causeries du Lundi* of Sainte-Beuve.

CAUSTIC: in medicine and in chemistry, the term applied to such substances as exert a corroding or disintegrating action on the skin and flesh. Lunar caustic is nitrate of silver, and common caustic is potash. When used as a caustic in medicine, the substance is fused and cast into moulds, which yield the caustic in small sticks the thickness of an ordinary lead pencil.

CAUTERETS, a fashionable French watering-place in the department of Hautes-Pyrenees, situated 3,250 feet above sea-level in the valley of the Laverdan, 42 miles southeast of Pau. The

permanent population is less than 2,000; but it is annually swelled in summer by 15,000 to 20,000 visitors, for whose accommodation numerous sumptuous hotels and bathing establishments have been built. It is a good center and guide-station for ascents among the Pyrenees. The sulphur springs, twenty-five in number, have been known from Roman times, though their modern reputation dates from the 16th century, when Margaret, sister of Francis I, held her literary court and wrote much of her *Heptameron* at Cauterets.

CAUTERY: in medicine, a term used of any substance which burns the tissues. The *actual cautery* is an instrument with a head or blade of steel, iron or platinum, which is heated in a fire or spirit-lamp. In the *thermo-cautery* (or Paquelin's cautery, from its inventor), the head or blade is made of hollow platinum, so arranged that a flame of benzole can be kept burning in its interior. The *galvano-cautery* consists essentially of a platinum wire, which can be heated to any required degree by passing a strong galvanic current through it.

CAUTION: in the law of Scotland, an obligation undertaken by a second party, whereby he binds himself, failing the primary obligant, to fulfill his obligation, whether it be of a pecuniary nature or otherwise. Cautionary obligations are thus essentially of an accessory nature, and cannot subsist apart from the principal obligation. Cautionary obligations are generally gratuitous, being for the most part undertaken from motives of friendship; but it is by no means uncommon for them to be entered into in consideration of a premium paid by the person guaranteed or by those interested in his fortunes. Judicial caution, in the law of Scotland, is of two kinds—for appearance, and for payment. If a creditor makes oath before a magistrate that he believes his debtor to be meditating flight, he may obtain a warrant for his apprehension; and should he succeed in proving the alleged intention to flee, he may compel him to find caution to abide the judgment of a court. The cautioner, or surety, undertakes that the defender shall appear to answer any action that may be brought within six months. There is also a form of judicial caution called *judicatum solvi*, given in cases of general loosing of arrestment of ships, in which the surety becomes liable for the whole debt.

CAUVERIPURAM, a town of the district of Coimbatore in the presidency of Madras, on the right bank of the Cauvery. It takes its name from the neighboring gorge of 30 miles in length, through the Eastern Ghats, along which the Cauvery finds a passage.

CAVÀ DEL TIRRENI, a town of Italy, situated in a valley, five and one-half miles northwest of Salerno by rail. It has manufactories of silk, woollens, cotton and linen. Population, 6,339. About a mile distant is the Benedictine monastery of the Trinity, celebrated for its archives.

CAVALCASELLE, GIOVANNI BATTISTA, Italian art writer, born at Legnago, Jan. 22, 1820, early visited the art-centers of Italy, and in 1846 went to Germany, where he met J. A. Crowe, with whom he returned to Italy. Banished for his share in the revolution of 1848, he accompanied Crowe to London, where their first joint work, *Early Flemish Painters* (1857; 3d edition, 1879), was published. Cavalcaselle returned to Italy in 1858, and in 1861 commenced with Crowe the *History of Painting in Italy* (London, five volumes, 1864-71). Other joint works are *Titian* (1876) and *Raphael* (1883). Cavalcaselle is head of the art department in the ministry of Public Instruction at Rome.

CAVALIER, in fortification, is a defense work constructed on the *terre-plein* or level ground of the

bastion. Its uses are to command any rising ground held by the enemy within cannon shot.

CAVALIER, a horseman; a knight. In 1641 the term "cavaliers" was applied to the Partisans of Charles I of England, in opposition to the Roundheads, or friends of the Parliament; and from a term of reproach it came later to be adopted as a title of honor, until, after 1679, it was superseded by "Tory."

CAVALLER-MAGGIORE, a town of North Italy, in the province of Cuneo, 24 miles northeast of Coni. Population, 5,300.

CAVALRY. See *Britannica*, Vol. V, pp. 261-63.

CAVATINA, a short form of operatic air, of a soft character, differing from the ordinary aria in consisting only in one part. The term is applied, however, to airs of any kind.

CAVEAT, a formal warning, entered in the books of a court or a public office, that no step shall be taken in a particular matter without notice to the person lodging the caveat, so that he may appear and object. Thus caveats are frequently entered at the Patent Office to prevent the unopposed granting of letters-patent.

CAVE SPRING, a railroad village of Floyd county, Ga. It has a large cave and a mineral spring, has a State asylum for deaf-mutes, and the Harn School for young men.

CAVY. See *Britannica*, Vol. V, p. 277.

CAWDOR, a village in Nairnshire, Scotland, five and one-half miles southwest of Nairn. Cawdor Castle, near by, is the seat of the Earl of Cawdor. It was founded in 1454, but is one of the three places which tradition has assigned as the scene of King Duncan's murder by Macbeth in 1040.

CAWK, a popular name for a massive variety of the mineral called *Heavy Spar*, or *Sulphate of Baryta*.

CAWKER CITY, a thriving town of Mitchell county, Kan., at the junction of two branches of Solomon River. It has a flour-mill, newspaper office, a high school, and United States land office.

CAXAMARQUILLA, a town in North Peru, province of Pataz, situated on the east bank of the Marañon. Population, 8,000.

CAYES, or **AUX-CAYES**, a seaport of Hayti, on the southwest coast, 95 miles southwest of Port-au-Prince. Population, 8,000.

CAYLEY, ARTHUR, English mathematician, born at Surrey in 1821. He was educated at King's College, London, and Trinity College, Cambridge, and graduated as senior wrangler, and first Smith's prizeman in 1842. Called to the bar at Lincoln's Inn in 1849, he was for a time established in business as a conveyancer. In 1863 he was elected first Sadlerian Professor of Pure Mathematics at Cambridge, and in 1875 was elected to a fellowship of Trinity College; was President of the Royal Astronomical Society (1872-73), and of the British Association at its Southport meeting in 1883, where his address on the ultimate possibilities of mathematics attracted much attention. In 1882 he gave a course of mathematical lectures at the Johns Hopkins University, Baltimore, and in the same year received the Copley medal of the Royal Society. He has received honorary degrees from Oxford, Dublin, and Leyden. His chief book is an *Elementary Treatise on Elliptic Functions* (1876); a 10-volume edition of his mathematical papers was begun in 1889.

CAYUGA, a village of New York, situated on the eastern shore of Cayuga Lake, which is here crossed by a railroad bridge about a mile long.

CAYUGA LAKE, a beautiful small sheet of water, which separates Cayuga and Seneca counties, N. Y. It is 38 miles long, from one to three miles wide, its greatest depth being 500 feet.

CAYUGAS. See INDIANS, AMERICAN, in these Revisions and Additions.

CAZENOVIA, an educational village of Madison county, N. Y., situated on a small lake 18 miles southwest of Syracuse. It has some manufactories, and is the seat of Central New York Conference Seminary.

CEBALLOS, José, Mexican soldier, born in the city of Durango, March 15, 1830. He commanded a regiment in the national army of Mexico during the administration of President Juarez, and was appointed brigadier-general; waged war on the bandit Losada; deposed, according to military orders, Camarena, governor of Jalisco, and then ruled over that State. When General Diaz became Mexican president, Ceballos plotted against him, but afterwards became one of his strong adherents, and returned to Mexico, where he was restored to rank, given the highest office after that of president—the governorship of the federal district—and chosen as senator. He manifested great enmity toward the newspapers, and several journalists have suffered imprisonment through his orders.

CECROPIA, a genus of *Artocarpacæ* *C. peltata*, the trumpet-tree of the West Indies and South America; has a hollow stem and branches, exhibiting merely membranous partitions at the nodes. The branches, these partitions being removed, are made into water-pipes and wind instruments. The wood is very light and is used to make floats for nets, and by the Indians in kindling fires by friction against a harder piece of wood. The bast yields a cordage fiber, and the outer bark is astringent; the fruit resembles a raspberry, the buds furnish a potherb, and the juice hardens into caoutchouc.

CEDAR, BASTARD BARBADOES (*Cedrela odorata*), a tree of the natural order *Cedrelacæ*, a native of the tropical parts of America; it is often upward of 80 feet high, with a trunk remarkable for its thickness. The wood has an agreeable fragrance, and being light and soft it is used for canoes and shingles. In France it is used in making black lead pencils. True Barbadoes cedar is *Juniper barbadensis*, and is of much less importance.

CEDAR-BERGEN, a mountain range in Cape Colony, stretching north and south on the east side of Olifant River Valley, in Clanwilliam division. The name is from the plantations of Cape cedar (*Widdringtonia juniperoides*), which are now, however, being fast destroyed. This is the only locality where this species is found.

CEDAR BIRD. See *Britannica*, Vol. XXIV, p. 461.

CEDAR CREEK, a river of Virginia, which gives name to a battle fought Oct. 19, 1864, between the Federals under Sheridan and the Confederates under Early.

CEDAR FALLS, a city of Iowa, situated on the Cedar River, 100 miles west of Dubuque. It is the seat of a State normal school, and contains a number of mills and various other manufacturing industries.

CEDAR KEYS, a seaport of Levy county, Fla. It is on the Gulf of Mexico, and its harbor is formed by several small islands, on one of which stands a light-house. The town has an ice factory, a large trade in lumber, oysters and pencil-wood, and has a very healthful climate.

CEDAR MOUNTAIN, a battlefield situated in Culpeper county, Va. The action took place Aug. 9, 1862, between the Confederate and Federal forces. It resulted in a severe defeat to the Union army.

CEDAR RAPIDS, a city of Iowa, on the Cedar River, 79 miles southwest of Dubuque, at the junction of the Chicago and Northwestern and the Burlington, Cedar Rapids and Northern railroads. It is

also the terminus of the Dubuque and Southwestern R. R. The Coe Collegiate Institute is situated here, and the city contains in addition a high school and numerous graded public schools. The rapid current of the river at this point provides ample water-power for flour mills and various manufactories of machinery, carriages, and agricultural implements. Population in 1880, 10,104; 1890, 17,997.

CEDAR SPRINGS, a village of South Carolina, about ninety miles northwest of Columbia. It is the seat of the State institution for the deaf, dumb and blind.

CEDILLA (Sp., Fr. *cédille*, It. *zediglia*; from *zeta*, the Greek name for *z*, because it has taken the place of *z* in such words as *leczon*, modern *leçon*), a mark placed under the letter *c* (thus *ç*), especially in French and Portuguese, where it is desired to give *c* the sound of *s* before the vowels *a, o, u*.

CECRELACEÆ, a natural order of exogenous plants, chiefly distinguished by the winged seeds, numerous in each cell of the fruit, which is a capsule. Most of the trees are valuable for their timber. To this order belong mahogany, satin-wood, toon, etc.

CEGLIE, a town in Southern Italy, 21 miles northeast of Taranto. It has a trade in grain, oil and fruit. Population, 13,865.

CELAKOVSKY, FRANZ LADISLAUS, Bohemian poet, and professor of Slav Philosophy, born in Strakonitz, March 7, 1799, died at Prague, Aug. 5, 1852. His principal works are *Echoes of Russian and Bohemian Folk-songs* (1833-40), and a cycle of love-songs and didactic and political poems (1840). He also translated the works of Herder, Goëthe, and Scott.

CELAYA, a town in the Mexican State of Guanajuato, situated on the Rio Laja, about 150 miles by rail northwest of the City of Mexico. It has several fine plazas, handsome churches, and manufactories of cotton and woolen clothes and saddlery.

CELINA, the county-seat of Mercer county, Ohio, situated at a railroad junction on the north-west bank of the Great Reservoir. It has several churches, banks and two planing-mills.

CELLS. See BACTERIA, in these Revisions and Additions.

CELLULOID, or PARKESINE, a substance consisting chiefly of a dried solution of gun-cotton (pyrox-ylin). A variety of it can be made with pyrox-ylin and camphor. It resembles ivory, horn, tortoise-shell, and hardened India-rubber. The pyrox-ylin is prepared by treating cellulose from such vegetable materials as cotton, rags, paper-maker's half-stuff, or paper itself, with a mixture of one part of strong nitric acid and four parts of strong sulphuric acid. The distillate obtained by distilling wood naphtha with chloride of lime is used as a solvent for the pyrox-ylin. When the excess of solvent is removed from the pyrox-ylin, it is mixed with a considerable quantity of castor oil or cotton-seed oil, and made into a paste between heated rollers. For a hard compound, the quantity of oil should be less than the pyrox-ylin. In a plastic condition celluloid can be spread on textile fabrics, or it may be made as hard as ivory, for which it is largely used as a substitute. Billiard balls, piano keys, and combs are made of it. It can be colored to represent amber, tortoise-shell, or malachite. In imitation of red coral it has been a great deal used for jewelry.

CELLULOSE: primarily, the essential constituent of the framework or wall membrane of all plant cells. It is a secretion from the contained protoplasm, but in the advancing growth of the plant the walls become incrustated with resin, coloring matter, etc. It composes the cells of wood as wa-

composes the cells of a honey-comb. It is changed to glucose by long boiling with dilute sulphuric acid. A substance resembling parchment is readily obtained by treating unsized paper with cold sulphuric acid. Cellulose is also said to exist in the tunics of *Ascidia*, and in other invertebrates. It is insoluble in water, alcohol, ether, dilute alkalis, and dilute acids. It is remarkable for its insolubility, being dissolvable, so far as at present known, only by an ammoniacal solution of oxide of copper, from which it may be again precipitated. It may be bleached by the action of chlorine water. Skeleton leaves, so often made in phantom bouquets, consist of nearly pure cellulose. They are usually prepared either (a) by boiling the leaves in a dilute solution of caustic soda, and bleaching by an immersion in a solution of hypochlorite of lime; or (b) by suspending the leaves in a mixture of nitric acid and chlorate of potassa for several days. It is isomeric with starch in its composition, and allied to starch, sugar, and inulin. Cotton, and bleached flax, as well as hemp, are nearly pure cellulose. With age it becomes largely transformed into lignin, suberin, or mucilage. In some filter paper, notably the Swedish, it is in almost a chemically pure state. Sugar and gum are nearly allied to it in composition. When pure it is fibrous or spongy, white, translucent and often silky. Under the microscope the fibrous varieties appear like spun glass. It is tough and extremely elastic, with a specific gravity of 1.5.

By dipping paper, or cotton, or linen fabrics in a copper ammonia solution of cellulose, and then passing the sheets between rolls, they are rendered water-proof. Several layers of such sheets of cloth or fiber pressed together form an artificial wood of enormous strength. A plastic mass of this material can be readily prepared suitable for the manufacture of water-pipes, gas-pipes, hats, clothing, boats, etc.

Cellulose, by reason of its peculiar properties, is being largely introduced into ship-building, as it is specially adapted for resisting blows, concussions, or perforations either above or below the water-line. Its component parts are carbon, hydrogen, and oxygen, and its scientific formula is given as $C_{12}H_{20}O_{16}$.

The material used for ship protection is usually made from the ground fiber of the cocoa nut with a small percentage of original fibers. It is extremely light, and has the property of rapidly swelling when wet. A cubic foot weighs about seven and a half to eight pounds. It is practically free from danger of fire, burning very slowly, and with great difficulty when compressed. In France experiments have been made by firing a ten-inch shot through a mattress of cellulose; but the fibers came together and swelled so rapidly that only three and a half gallons per minute of water passed through the aperture, and in a short time the aperture was closed entirely. Cellulose was first used in ship-building in 1884, but so rapidly did it obtain favor that in 1890 the French had introduced it into the construction of some forty vessels of their navy, and in the same year its use was ordered as a means of protection in the construction of ships in Russia, Holland, Japan, and Greece as well as in the American navy. Its cost is about one dollar a cubic foot, or approaching \$350 a ton.

CELT, the name by which certain weapons or implements of early inhabitants of Western Europe are known among archæologists. Celts are either of stone or bronze.

CEMETERY. See Britannica, Vol. V, pp. 328-32.

CENOTAPH, a monument which does not contain the remains of the deceased. Cenotaphs were

originally erected for those whose bones could not be found. Latterly, the name was applied to tombs built by a man during his life-time, for himself and members of his family,

CENSER, a vase or other sacred vessel used for burning perfumes. Censers were much used in the Hebrew service of the Temple. The censer, called also a *thurible*, is used in the Roman Catholic church at mass, vespers, and other offices. It is suspended by chains which are held in the hand, and is tossed in the air, so as to throw the smoke of the incense in all directions.

CENSUS. See Britannica, Vol. V, pp. 334-40.

CENT, the one hundredth part of a dollar. The Dutch cent is a copper coin. In the United States it is a coin of copper or copper and nickel, and is nearly equal to an English half-penny.

CENTAUREA, a genus of plants of the natural order *Compositæ*, sub-order *Cynaracææ*, containing numerous species of annual and perennial herbaceous plants, chiefly natives of temperate and cold regions. The corn-blue-bottle (*C. cyanus*), common in flower gardens, has flowers variously modified by cultivation. The generic name has its origin in an ancient legend concerning the cure of a centaur by one of these species.

CENTAURUS, the *Centaur*, a constellation in the Southern hemisphere, represented by a form half man and half horse. The stars in this constellation are 37 in number. See Britannica, Vol. II, p. 817.

CENTAURY, a genus of plants with pink or rose-colored flowers, of the natural order *Gentianeæ*, chiefly natives of the temperate parts of Europe and Asia. The American centaur (*Sabbatia angularis*) is extensively distributed throughout the United States and Canada.

CENTENARY, consisting of a hundred (Latin *centum*); a period of a hundred years, a term now usually employed to signify a commemoration of an event, as the birth of a great man; as, the centenary of Burns's birth, celebrated in 1859; the bi-centenary of Pope in 1888; the centenary of American Independence in 1876.

CENTERING, the framework upon which an arch, or vault of stone, brick, or iron is supported during its construction. The simplest form of centering is that used by masons and bricklayers for the arches of common windows and doors. This is merely a deal-board of the required shape, upon whose curved edge the bricks or stones of the arch are supported until they are keyed in. In building bridges or other structures where arches of great span are to be constructed, the centering is usually made of framed timbers, or timbers and iron combined.

CENTNER: in metallurgy, a weight of 100 lbs.; the pound is divided into thirty-two parts, or half-ounces, the half-ounce into two quarters, and each of these into two drams. In many European countries centner is a common name for a hundred-weight, but the centner of Germany, Austria, Sweden, Denmark, and Switzerland is now fixed at 50 kilos, or 110.23 pounds avoirdupois. The *cental* (100 pounds) of the United States and Great Britain is often called centner.

CENTOFANI, SILVESTRO, an eminent Italian writer, born near Pisa in 1794, died in 1880. He wrote several valuable works on philosophy and literary history.

CENTRAL CITY, the county-seat of Gilpin county, Colo., situated on a railroad among the Rocky Mountains. It has a fine school, and its prosperity is due to the gold mines in the vicinity.

CENTRAL FALLS, a village of Rhode Island, situated on the Blackstone River, about five miles

north of Providence. It contains a variety of important manufacturing and other industries.

CENTRALIA, a city and railroad junction of Marion county, Illinois. The Illinois Central R. R. Company has its machine shops here; there are also various manufactories. The fair grounds of Southern Illinois are located at Centralia.

CENTRALIZATION, a term which has come into general use for expressing a tendency to administer by the central government matters which would otherwise be under local management. The centralizing tendency has been a feature in most of the great states recorded in history. The Roman Empire was one of the most remarkable instances of centralization the world has ever seen.

CENTRAL FORCES, forces whose action is to cause a moving body to tend towards a fixed point called the center of force. By Newton's first law of motion, we know that every body continues in its state of rest or of uniform motion in a straight line except in so far as it is compelled by forces to change that state. From this we learn that, if the speed of a body changes, or if the line of motion be not straight, whether the speed be unaltered or not, some force must be acting. In the latter case the forces acting are called central forces.

CENTER OF GYRATION, the point at which, if the whole mass of a body rotating round an axis or point of suspension were collected, a given force applied would produce the same angular velocity as it would if applied at the same point to the body itself.

CENTER OF MAGNITUDE, or **FIGURE**, the point on which plane figures and curved surfaces would balance themselves, supposing their areas to have weight.

CENTER OF PERCUSSION. If a body receive a blow which makes it begin to rotate about a fixed axis without causing any pressure on the axis, the point in which the direction of the blow intersects the plane in which the fixed axis and the center of inertia lie is called the center of percussion. It is easily proven to be the same as the center of oscillation.

CENTER OF POPULATION. See **POPULATION**, in these Revisions and Additions.

CENTER OF PRESSURE of any surface immersed in a fluid is the point in which the resultant of the pressures of the fluid on the several points meets the surface. When the bottom of a vessel containing fluid, or when a plane immersed in fluid, is horizontal, the pressure on every point of it is the same, being that due to the weight of the column of fluid standing above the bottom or plane.

CENTREVILLE, a city and railroad junction, also the county-seat of Appanoose county, Iowa. It has several manufactories, and a handsome court-house; a stratum of fine coal underlies the town.

CENTREVILLE, a railroad town and the county-seat of Queen Anne Co., Md. It has a foundry, a fine academy, and is situated in a peach-growing section.

CENTRIFUGAL and **CENTRIPETAL** are terms used in botany to designate two different kinds of leaf development or inflorescence, the former term being applied when the development proceeds from the apex toward the base of the axis or leaf, and the latter when it is from the base upwards towards the apex.

CEPHALOPTERA, a genus of cartilaginous fishes of the Ray family, the type of the subfamily *Cephalopteridæ*. Among this genus is the devil-fish of the American seas.

CEPHEUS, a northern constellation containing 35 stars, the brightest being of the third magnitude.

CERAMBYX, a genus of coleopterous insects, included among those which, on account of the length of their antennæ, are usually known as long-horned beetles. To this tribe belong the musk-beetle, remarkable for its strong and agreeable odor.

CERAMIACEÆ, a sub-order of *Algæ*, consisting of seaweeds of a rose or purplish color. Many of them are delicate and beautiful. A considerable number furnish an agreeable article of food, as Irish moss, and possibly the edible birds' nests of the East are made of them.

CERAMIC, a term used to designate the department of plastic art which comprises all objects made of clay, such as vases, cups, bassi-relievi, and the like. See **POTTERY**, *Britannica*, Vol. XIX, p. 600.

CERASTES, or **HORNED VIPER**, a genus of serpents of the family *Viperidæ*, natives of Africa and India, having a scale above each eyelid developed into a spine or horn of considerable length. The tail is distinct from the body. *Cerastes vulgaris* of Northern Africa is a species which was known to the ancients, and is very venomous.

CERATE, a compound of wax with other oily and medicinal substances, in such proportions as to have the consistence of an ointment. Simple cerate is made by melting together equal parts of white wax and olive-oil.

CERATITES, a genus of *Ammonitidæ*, peculiar to, and characteristic of, the Trias, distinguished from the other members of the family by having the lobes of the sutures serrated, while the intervening curves directed toward the aperture are simple.

CERCARIA, a name formerly given to a supposed genus of *Entozoa*, but now generally known to be the young of *trematode worms*. These creatures consist of an oval body with a thread-like tail, and swim about with great activity, but exhibit a strong instinctive propensity to penetrate into the soft bodies of insect larvæ, by means of a spine-like weapon projecting from their head. Within the body which it enters, the cercaria loses all its spines, becomes encysted, and awaits its passive migration into an animal of higher kind, there to become a trematode worm.

CERCELEE, or **RECELEE**: in heraldry, a cross, circling or curling at the ends, like a ram's horn.

CERCOCEBUS, a genus of monkeys, natives of Asia and Africa, of the family *Cynopithecus*. They have large cheek-pouches, large callosities, and long tails. Some of the species of this genus are remarkable for their suppleness and agility.

CERDOCYON, a genus of *Canidæ*, apparently intermediate between dogs and foxes, natives of South America. Their aspect is thoroughly vulpine, as are also their manners. Some of them add to the dispositions of ordinary foxes a singular propensity to steal and secrete brilliant and gaudy objects. Some are natives of the coldest parts of South America, and have a rich fur.

CEREA, a town of North Italy, about nineteen miles southeast of Verona. Population, 5,930.

CEREALS, seeds, or any other grains used as food. The principal cereals are wheat, rye, oats, corn, buckwheat, rice, etc. See those topics in the several volumes of this work.

CEREBRATION, **UNCONSCIOUS**, a principle of action of the brain expounded by Dr. Carpenter in the fourth edition of his *Human Physiology*, published in 1853. The doctrine is the same as that of "latent thought," previously expounded in lectures by Sir W. Hamilton. The doctrine of unconscious cerebration as stated by Carpenter, Laycock, and others holds that as there can be no doubt that molecular changes in the cerebrum accompany all

our conscious mental processes, so similar changes may go on in the cerebrum without any consciousness on our part until the complete mental result is presented. It is based on the every-day experience that after one has been vainly trying to recall some name or incident, it will suddenly flash into the mind when one is thinking of some entirely different subject. According to Carpenter the cerebrum put in action by our consciousness has gone on working automatically but unconsciously, until the processes accompanying the mental operation of remembering the name or incident have been completed.

CEREBRINE, or **CEREBRIC ACID**, an organic acid of very complex composition, found in the liver, blood and nerves, but especially in the brain of animals.

CEREMONIES, MASTER OF THE: specifically, an officer of the royal household of England, who receives ambassadors and dignitaries. The name came to be used for the supreme authority on etiquette at public assemblies at Bath and elsewhere, and is now popularly applied to any person who regulates the forms to be observed by the company on a public occasion.

CEREMONY, almost any act, when performed in a regular, orderly, and formal manner, and when viewed not with reference to its object, but to the mode of its performance.

CEREOPSIS, a genus of birds of the family *Anatidae*, to which the New Holland goose belongs. They are natives of Australia, and are so named from the remarkable size of their cere.

CERES, a planetoid discovered by Piazzi at Palermo, Sicily, on the first day of the present century. It is the first discovered, and its magnitude is less than that of the moon. It presents the appearance of a star between the seventh and eighth magnitudes. See *Britannica*, Vol. II, p. 806.

CERITHIUM, a genus and the type of a family, *Cerithiidae*, of gasteropodous mollusca of the order *Pectinibranchiata*. The species are very numerous. Some are found in lakes and rivers, some in temperate climates, but most of them are tropical, and abound particularly in swamps.

CEROSTROTUM, or **CESTROTUM**, a species of encaustic painting upon horn or ivory, the lines of the design being burned in with the *cestrum*, or burning needle, and wax introduced in the furrows thus made.

CERRO GORDO, a plateau in Mexico, the most easterly on the route from Vera Cruz to the capital. Here April 18, 1847, the United States troops totally defeated the Mexicans.

CERRO LARGO, a department in the northeast of Uruguay, well watered, with large savannas and extensive forests. Area, 5,735 square miles; population, 86,000, chiefly engaged in cattle-raising. Capital, Cerro Largo, or Melo. Population, 5,000.

CERTHIADÆ, a family of birds, placed in the *Incesores* and tribe *Tenuirostres*. They live usually on the trunks and branches of trees, feeding on insects. The wall-creeper, and some others forming the genus *Certhia* are regarded as exhibiting the type of the family.

CERTIFICATE: in the law of England and of the United States, a written statement by a person having a public or official status concerning some matter within his knowledge and authority. In the United States, the word is commonly applied to any formal statement made by a public servant in the execution of his duty, as by a collector of taxes, a postmaster, etc.

CERTIFICATION: in the law of Scotland, the judicial assurance given to a party of the course to be followed by the judge in case he disobeys the

will of a summons, or other writ or order of the court.

CERTIORARI, the writ by which causes are removed from inferior courts of record into the higher or appellate court. Such removal is either before or after judgment in the inferior court. In the United States, certiorari is generally provided for by statute; but where no such provision is made, or no other mode of review of the proceedings of an inferior court has been provided by statute, any superior court exercising common-law jurisdiction has an inherent right to issue this writ.

CERTOSA DI PAVIA, LA, one of the most celebrated monasteries, situated in the neighborhood of Pavia. It was founded in 1396 by Giovanni Galeazzo Visconti, first Duke of Milan, to appease his conscience for the murder of his uncle. The church is a splendid structure in the form of a Latin cross.

CERUMEN, a wax-like substance secreted by certain glands lying in the external auditory canal, or the passage that leads from the external opening of the ear to the membrane of the tympanum. It acts as a lubricant. It possesses a peculiarly bitter taste, which is supposed to prevent insects from entering the auditory canal. It is popularly known as ear-wax.

CERVERA, a town of Spain, in the province of Barcelona, 28 miles east of the city of Lerida. It has manufactories of linen, woolen and cotton fabrics. Population, 5,300.

CERVIN MONT, a mountain of the Pennine Alps, about 40 miles northeast of Mont Blanc. Above an unbroken glacier line, 11,000 feet high, it rises in an inaccessible obelisk of rock, more than 3,000 feet higher. The total elevation of the mountain is 14,863 feet. The Col of Mont Cervin, used as a passage for horses and mules, has an elevation of 10,938 feet.

CERVINARA, a town of Italy, in the province of Principato Ultra, 12 miles northwest of Avellino. It has a trade in the produce of the district. Population, 6,328.

CESNOLA, LUIGI PALMA DI, archæologist, born near Turin, Italy, July 29, 1832. He served in the Sardinian army in 1849, in the Crimean war, and on the Union side in the American civil war, attaining the rank of colonel. He was afterwards appointed United States consul to Cyprus, where he made extensive collections of antiquities. These became the property of the Metropolitan Museum of Art (New York city) in 1873. On his return from Cyprus Col. Cesnola was appointed director of the museum. He has written a work entitled *Researches and Discoveries in Cyprus*.

CESSIO BONORUM, a process which the law of Scotland borrowed from that of Rome, and which also appears in most of the continental systems. On making a surrender of his estate to his creditors, the debtor was granted a judicial protection from imprisonment in respect of all debts then due by him.

CESTIUS, PYRAMID OF, a Roman monument of the Augustan age, situated close to the Porta San Paolo, partly within the walls of Aurelian. It is in the immediate vicinity of the cemetery where Protestants dying in Rome are buried. The pyramid is 125 feet high, 100 feet in width at the base, and the walls are 25 feet thick.

CESTRUM, the style or spatula used by the ancients in encaustic painting in wax and ivory.

CESTUS, a girdle worn by Greek and Roman women. The cestus of Venus was decorated with beautiful representations, and everything that could awaken love. *Cestus*, or more correctly *cestus*, is also the name given to a sort of boxing-glove worn

by the Greek and Roman pugilists. It was at first a mere leathern thong or bandage to strengthen the fist; but afterwards it was covered with knots and nails, and loaded with lead and iron, to increase the force of the blow.

CETEOSAURUS, or **CETIOSAURUS**, a genus of large dinosaurian reptiles belonging to the Jurassic system. The species attained a length of 50 or 60 feet, and were probably not less than 10 feet in height and of a bulk in proportion. They appear to have frequented the marshes and river-sides of the period, and to have been vegetable-feeders.

CETEWAYO, or **CETSHWAYO**. See under **ZULULAND**, *Britannica*, Vol. XXIV, pp. 827-29.

CETOTOLITES, a name given to fossil cetacean teeth and ear-bones, which occur in great abundance in the red crag of Suffolk, a member of the Pleiocene period. Superphosphate manures have been manufactured from it on an extensive scale.

CETRARO, a town of Italy in the province of Cosenza, situated on the Mediterranean. It has anchovy fisheries. Population, about 3,000.

CEYLON. See *Britannica*, Vol. V, pp. 359-70. The latest official returns (1891) give the area as 25,365 square miles; population, 2,850,000. The capital, Colombo, has a population of 120,000. Until recently the chief production for export has been coffee; but now more attention is paid to tea, cinchona, cocoanut and other palms. There are 182 miles of railway in operation. The total public revenue for 1889 was 15,299,877 rupees, and the total expenditures 14,906,281 rs. On January 1, 1890, the public debt of the colony amounted to \$11,048,635. This debt was incurred entirely for public works, including 182 miles of railway, the Colombo break-water, and the Colombo water-works. There are under cultivation 1,944,215 acres, of which 715,647 are devoted to rice and other grains; 71,554 to coffee; 207,413 to tea; 656,766 to cocoanut palms; 39,486 to Palmyra palms; 30,083 to cinchona; 17,433 to tobacco; 37,331 to cinnamon; and 716,000 under pasture. The live-stock of the island in 1889 included 5,891 horses, 1,037,216 cattle, 116,202 goats, and 75,375 sheep. Plumbago is a valuable mining product, and in 1889 there were 753 plumbago mines. The declared value of the imports during 1889 was 60,695,135 rs.; and of the exports, 46,924,505 rs.

CEZIMBRA, a town of Portugal, in the province of Estremadura, on a bay of the Atlantic, about 18 miles south of Lisbon. It has active fisheries. Population, 5,000.

CHABAS, **FRANÇOIS**, French Egyptologist, born Jan. 2, 1817, at Briangon, died at Versailles, May 17, 1882. At first engaged in commerce, he found time to become a linguist; but it was not until 1851 that he devoted himself to the study of hieroglyphics. The first results of his studies appeared in 1856, followed by a series of invaluable books and papers on two important periods of ancient Egyptian history—the conquest of the country by the Hyksos, and the time of their expulsion. Among the more important of his many books are: *Les Pasteurs en Égypte* (1868); *Histoire de la XIX Dynastie et Spécialement des Temps de l'Ézode* (1878), and *Études sur l'Antiquité Historique d'Après les Sources Égyptiennes* (2d ed., 1873). From 1873 to 1877 he edited "*L'Égyptologie*."

CHACONNE, an old dance, probably of Spanish or Moorish origin. The movement is slow, and the music a series of variations on a ground bass of eight bars' length.

CHAD, **St.**, born in Northumbria; became a pupil of St. Aidan, spent part of his youth in Ireland, and in 666 became bishop of York. Doubt having been cast on the validity of his consecration, he with-

drew in 669, but was immediately made bishop of Mercia, fixing the see at Lichfield. He died in 672, after a life eminent for humility and sanctity.

CHADBOURNE, **PAUL ANSEL**, educator, born in North Berwick, Me., Oct. 21, 1823, died in New York city, Feb. 23, 1883. He graduated at Williams College in 1848, and studied theology. He subsequently engaged in teaching, and was tutor at Williams in 1851. In 1853 he was licensed to preach, and in the same year was called to the chair of Chemistry and Botany at Williams; and when chosen to a similar chair in Boudoin, he performed the duties of both positions, and held two professorships in medical schools at the same time. He lectured at several colleges and institutes, and conducted scientific expeditions of Williams students to Newfoundland in 1855, to Florida in 1857, to Northern Europe and Iceland in 1859, and to Greenland in 1861. In 1857 he became president of the State Agricultural College of Massachusetts, and from 1867 to 1870 was president of Wisconsin University. In 1872 he was chosen president of Williams College, and the following year he again became president of the Massachusetts Agricultural College. He was a remarkable business man, took considerable part in politics, and was the author of several works, among which are: *Natural Theology; Instinct in Man and Animals*; and *Hope of the Righteous*. He edited "Public Service of the State of New York."

CHADWICK, **EDWIN**, **K. C. B.**, a social reformer, born at Manchester, Eng., Jan. 24, 1801, died July 5, 1890. He studied law, and was called to the bar in 1830. He early devoted his attention to questions of social, sanitary and political science, and was by Lord Grey's government appointed an assistant commissioner to inquire into the operation of the poor-laws. His report, published in 1833, commanded great attention, and laid the foundation of the later systems of government inspection. His report on interments in towns (1843) laid the foundation of later legislation on the subject. He took great interest in promoting competitive examinations for government offices, and in almost all questions of social economy, and was an active member of the Social Science Association.

CHADWICK, **JOHN WHITE**, clergyman, born in Marblehead, Mass., Oct. 19, 1840. He graduated in 1864 from the Harvard Divinity School, was chosen to the pastorate of the Second Unitarian church, of Brooklyn, N. Y., and became widely known for the radical doctrines preached by him, and his articles contributed to Unitarian periodicals. In the list of his published works are: *Life of N. A. Staples; A Book of Poems; The Bible of To-day; The Man Jesus; and A Daring Faith*.

CHÆTODON, a typical genus of a family of bony fishes, known as squamipennes. They are tropical fishes, abounding near coral reefs and are beautifully colored. About seventy species are found in the tropical Atlantic and Indo-Pacific waters. It has one dorsal fin and a moderately long snout, which in some species is used to draw animals from their crevices. It often gets false credit for catching insects by spouting water. The archer-fish is an allied genus.

CHAFER, a common name for beetles or coleopterous insects, which, either in the perfect or larval state, are destructive to plants, particularly those which devour the wood, bark or roots of trees. The word chafer is seldom used alone, but generally with some prefix, as rose-chafer, bark-chafer, etc.

CHAFFEE, **JEROME BUNTY**, Senator, born in Niagara county, N. Y., April 17, 1825, died in Salem Centre, Westchester county, N. Y., March 9, 1886. He lived in New York State for about twenty years, remov-

to Michigan, to St. Joseph, Mo., and in 1859 became one of the first settlers in Denver, Colo. Mining ventures brought him wealth, and he was prominent in organizing the territory. He represented it in Congress in 1876, and when it attained statehood he sat for it in the United States Senate. He was an Independent Republican, and chairman of the Republican national committee in 1884.

CHAGNY, an important railway junction and commercial center in the French department of Saone-et-Loire, on the Canal-du-Centre, 32 miles south of Dijon. As the key of the roads to the Loire district, it has been strongly fortified. Population, 4,291.

CHAGRIN FALLS, a village of Cuyahoga county, Ohio, on the Chagrin River. It has iron foundries, and various mills, where water-power is applied. It has good flagstone quarries.

CHAIN: in surveying, a measure 22 yards long, composed of 100 iron links.

CHAIN-MAIL, or **CHAIN-ARMOR**, an armor much used in the 12th and 13th centuries. It consisted of hammered iron links connected into the form of a garment. Such armor was much more flexible and convenient to the wearer than one formed of steel or brass plates, but was less fitted to bear the thrust of the lance.

CHAIN-SHOT, destructive missiles formerly used in naval warfare. They consisted of two balls connected by a piece of chain eight or ten inches in length, and were fired collectively from the gun. The chain enabled the balls to catch and destroy objects which otherwise might have escaped.

CHAINS: on shipboard, strong iron links or plates bolted at the lower end to the ship-timbers, and having a block or *dead-eye* at the upper end. Their purpose is to fasten down the shrouds tightly.

CHAIRS. See **FURNITURE**, Britannica, Vol. IX, pp. 849-50.

CHALAZA: in botany, a membrane which unites the nucleus and integuments at the base of an ovule. It is traversed by vessels which supply nourishment to the ovule. The cords which bind the yolk-bag of an egg to the lining membrane at the two ends of the shell, and keep it near the middle as it floats in the albumen, are also called *chalazæ*.

CHALCEDONY, a variety of quartz which constitutes the principal part of many agates, and is generally translucent. It is much used in jewelry and ornaments of all sorts. It occurs in old lavas and trap-rocks, and is found in all parts of the world where these exist. See Britannica, Vol. I, p. 277; Vol. XVI, p. 389; Vol. XVII, p. 776.

CHALCEDONYX, a name given to agates formed of cacholong, or a white opaque chalcedony, alternating with a grayish translucent chalcedony.

CHALCHIHUITL, the Indian name of a bluish-green stone, taken from a quarry near Santa Fé, and by some regarded as a species of turquoise, by others identified with jade. It was valued above gold by the ancient Mexicans, who fashioned it into beads and ornaments.

CHALCIDIDÆ, a small family of short-tongued lizards, natives of tropical America. See Britannica, Vol. XIV, p. 733.

CHALCOGRAPHY, a pedantic term used to signify engraving on copper.

CHALDER, an old Scotch dry measure containing nearly 12 quarters Winchester measure, or 16 bolls.

CHALDRON, a measure formerly used in England for selling coal. It contained 36 heaped bushels.

CHALET, the French-Swiss name for the wooden hut of the Swiss herdsmen on the mountains. The

term is also extended to Swiss dwelling-houses generally, and to picturesque and ornate villas built in imitation of them.

CHALEUR BAY, an inlet of the Gulf of St. Lawrence, Canada, having Quebec on the north and New Brunswick on the south. It measures 90 miles from east to west, is everywhere deep and well sheltered, and is much frequented for its mackerel fisheries.

CHALICE, an ancient name for an ordinary drinking-cup, but now only applied to the cup in which the wine of the holy sacrament is administered. Chalices are commonly made of silver, but it is not unusual for them to be of gold, or gilt and jeweled.

CHALKING THE DOOR, a mode of warning tenants to remove from burghal tenements, long known and still in use in Scotland. A burgh-officer, in presence of witnesses, chalks the most patent door forty days before Whitsunday, having made out an execution of "chalking," which must be subscribed by himself and two witnesses. The execution of chalking is a warrant under which decree of removal will be pronounced by the burgh court, in virtue of which the tenant may be ejected on the expiration of a charge of six days.

CHALKY ISLAND, in New Zealand, near the south extremity of Middle Island. It takes its name from being composed of a mass of white limestone.

CHALYBÆUS, a genus of birds remarkable for the brilliancy of their plumage. They are natives of New Guinea.

CHALYBEATE WATERS, waters which contain a considerable proportion of iron in solution.

CHAM, the pseudonym assumed by the caricaturist Amédée de Noé (1819-79), born at Paris in 1819. He studied art under Delaroche, and soon acquired a great reputation as a skillful and witty delineator of the humorous side of Parisian life. In 1884 he began his famous connection with the "Charivari," in which paper and in the "Journal des Pèlerinages" he continued to delight his fellow-citizens until close upon his death in 1879.

CHAMA, a genus of bivalve mollusks, found only in the seas of warm climates. The shell is generally thick, and is foliated with leaf-like projections.

CHAMÆROPS, a genus of palms with fan-shaped leaves, less exclusively tropical than palms in general. Its leaves are employed for various useful purposes, as for thatching, hats, cordage, chair-bottoms, brooms, pasteboard, paper, etc. See Britannica, Vol. XVIII, pp. 189-90.

CHAMALARI, a peak of the Himalayas, 23,944 feet high, between Thibet and Bhutan, 140 miles east of Mount Everest.

CHAMBERLAIN, a thriving city of South Dakota, county-seat of Brulé county, situated on the left bank of the Missouri River, in the midst of a fertile and well-settled district. It is an important center of trade and transportation.

CHAMBERLAIN, DANIEL HENRY, a governor of South Carolina, born in West Brookfield, Mass., June 23, 1835; graduated at Yale in 1862, and the Harvard law-school in 1863. The following year as lieutenant of a Massachusetts colored regiment he entered the army, serving in several of the Southern States. He engaged in cotton-planting in South Carolina after the war; was appointed delegate to the constitutional convention of 1868, and elected attorney-general of the State. In 1874 the Republicans elected him to the office of governor, and in 1876 he was reelected, but the result was opposed and questioned by the friends of the defeated candidate, Wade Hampton, and after holding office for

three months Gov. Chamberlain resigned and went to New York city, where he resumed his legal work.

CHAMBERLAIN, THE RIGHT HON. JOSEPH, M. P., born in London in July, 1836, and educated at University College. He joined the firm of Nettlefold, screw-makers of Birmingham, and for many years devoted himself almost entirely to business. Elected mayor of Birmingham in 1873, reelected in 1874 and again in 1875, his term of office was remarkable for the expeditious dispatch of corporate business. About this period his name was brought prominently before the public by several articles written by him for the "Fortnightly Review," in which he expressed very advanced political and educational views. In 1876 Mr. Chamberlain was elected M. P. for Birmingham without opposition, and from that date his career is to be traced in Parliament and on the public platform. On the return of the Liberals to power in 1880 he was appointed president of the Board of Trade, with a seat in the cabinet. His influence as a political leader increased rapidly outside the House, and on his exit from office in 1885 he was elected for the western division of Birmingham, and held the office of president of the Local Government Board until his divergence of views on the Irish policy of Mr. Gladstone caused his resignation (March, 1886). He was subsequently appointed British commissioner to the Conference at Washington for the settlement of the fishery disputes between Canada and the United States. He revisited the United States on the occasion of his marriage with Miss Endicott (Nov. 15, 1888). His speech in the House of Commons in February, 1890, on free education was the subject of much comment.

CHAMBERLAIN, JOSHUA LAWRENCE, soldier and educator, born in Brewer, Me., Sept. 8, 1828. He graduated at Bowdoin in 1852, and at Bangor theological seminary three years later. From 1856 to 1865 he held professorships in Bowdoin College with the exception of the time of the civil war, during which he served gallantly, being several times wounded, and was brevetted major-general. He was elected governor of Maine in 1866, and served till 1871, being then chosen president of Bowdoin College; this office he held till 1883. In 1876 he was elected major-general of the State militia.

CHAMBERS, CHARLES JULIUS, author, born at Bellefontaine, Ohio, Nov. 21, 1850, graduated at Cornell in 1870; became special correspondent in the West Indies, Europe, Canada and the United States for the "New York Herald," equipped a canoe expedition to Lake Itasca in 1872, and in 1875 simulated insanity, and was incarcerated for several weeks in an insane asylum for the purpose of ascertaining how such people are treated. He is a contributor to current literature, and has published *A Mad World*; *On a Margin*; and *Lovers Four and Maidens Five*.

CHAMBERS, WILLIAM, LL.D. (1800-83), publisher, born April 16, 1800, at Peebles. He received a fair elementary education, but owing to his father's misfortune his schooling terminated with his 13th year. The family migrated to Edinburgh in 1818, and next year William was apprenticed to a book-seller. When his five years were up he started business in a humble way for himself. Between 1825 and 1830 he wrote the *Book of Scotland*, and in conjunction with his brother Robert a *Gazetteer of Scotland*. His experience gained as a book-seller and printer resulted in the founding of "Chambers's Edinburgh Journal" in 1832. This was about six weeks in advance of the "Penny Magazine," and may be considered the pioneer of that class of cheap and popular periodicals, of a

wholesome kind now so generally diffused. At the end of the 14th number he united with his brother Robert in founding the business of William and Robert Chambers, in which they were associated in writing, editing, printing and publishing. W. & R. Chambers issued a series of works designed for popular instruction, including, besides the "Journal," *Information for the People*, two volumes; the "Educational Course" series; *Cyclopædia of English Literature*, two vols.; *Miscellany of Useful and Entertaining Tracts*, 20 vols.; *Papers for the People*, 12 vols.; and the *Encyclopædia*, 10 vols. (1859-68; new edition, 1888-92.)

In 1859 William founded and endowed an institution in his native town for purposes of social improvement. Twice elected Lord Provost of Edinburgh he occupied that office for four years, during which he promoted several important public acts, including one for the improvement of the older part of the city, which has resulted in a great diminution of the death-rate. He also carried out at his own cost a thorough restoration of St. Giles's Cathedral. He died May 20, 1883, having shortly before received the offer of a baronetcy. He was made LL.D. of Edinburgh in 1872. A statue has been erected to his memory in Edinburgh. Besides many contributions to the "Journal," he was author and editor of various volumes, and wrote the *Youths' Companion and Counsellor*, *Ailie Gilroy, Stories of Remarkable Persons*, and *Historical Sketch of St. Giles's Cathedral*.

CHAMBERS, TALBOT WILSON, Reformed Dutch clergyman, born in Carlisle, Feb. 25, 1819, graduated at Rutgers in 1834 and studied theology, being licensed to preach in 1838, and ordained to the pastorate of the 2d Reformed Dutch church in Somerville, N. J. In 1850 he became pastor of the Collegiate Dutch church of New York city. He was on the American committee which revised the Old Testament.

CHAMBERS, private rooms attached to most of the courts in which the judges and chief clerks transact a large amount of judicial business. Counsel attend in chambers only in important matters.

CHAMBERSBURG, a town of New Jersey, a suburb of Trenton. It is the seat of an academy, a hospital, and a convent.

CHAMBERSBURG, a town of Pennsylvania, county-seat of Franklin county, situated on the east bank of the Conococheague Creek, about 50 miles west of Harrisburg. It is the seat of Wilson College, and of a great variety of remanufacturing industries.

CHAMBERTIN, a famous red Burgundy wine obtained from a vineyard in the French department of Côte-d'Or, seven miles south of Dijon. It ranks among the chief red wines of the world.

CHAMBORD, HENRI COMTE DE, born in Paris in 1820, died 1883. See *Britannica*, Vol. IX, p. 620.

CHAMBRE ARDENTE (fiery chamber), a name given at different times in France to an extraordinary court of justice, probably on account of the severity of the punishments which it awarded, the most common being that of death by fire. In 1535 Francis I established an inquisitorial tribunal and a chambre ardente. Both were intended for the extirpation of heresy. The former searched out cases of heresy and instructed the processes, while the latter both pronounced and executed the final judgment.

CHAMELEON, a southern constellation within the antarctic polar circle, containing nine stars.

CHAMFERING: in architecture, an angle which is slightly pared off is said to be chamfered. Chamfers in Gothic architecture have frequently ornamental terminations of various kinds.

CHAMOND, Sr., a town of France, in the department of Loire. It is well built, has extensive manufactories of ribbons and stay-laces; also several silk mills, numerous iron furnaces and foundries. Population, 13,482.

CHAMORERIL, a lake of Ladakh, or Middle Thibet. It lies at a height of 15,000 feet above the sea, on the plateau between the upper waters of the Sulej and of the Indus, girt by mountains which rise 5,000 feet above its own level.

CHAMPAC, or CHAMPAK, an Indian tree, *Michelia champaca*, natural order *Magnoliaceæ*, possessing great beauty both of foliage and flowers, and held in high esteem by Brahmans and Buddhists. It is planted about their temples, and images of Buddha are made of its wood. Its beautiful yellow flowers and their sweet perfume are much celebrated in the poetry of the Hindoos. The timber of this and other species is useful and fragrant, and the bark and root are employed in native medicine.

CHAMPAIGN, a city and railroad center of Champaign county, Ill., situated 128 miles southwest of Chicago, in the midst of a rich agricultural region. It has a pretty park of 10 acres, and a young ladies' seminary.

CHAMPARTY, or CHAMPERTY (a Norman-French word, derived from *champipars*): in law, a bargain whereby the one party is to assist the other in recovering property, and is to share in the proceeds. All such bargains are illegal, and therefore null and void. More particularly, an agreement to advance funds or supply evidence or professional assistance, for remuneration contingent on success, and proportional to, or to be paid out of, property recovered, is illegal; so is a purchase by an attorney from his client of the subject-matter of a pending suit; so is every such purchase if the real object is only to enable the purchaser to maintain the suit. A man may, however, lawfully sell evidence, and may lawfully purchase an interest in property, though adverse claims exist which make litigation necessary for realizing that interest.

CHAMPFLEURY, the assumed name of Jules Fleury-Husson, French author, born at Laon, Sept. 10, 1821. In a number of early pieces for the theater, as well as later romances, he has achieved some distinction as a realistic writer. Works of greater value, however, are those on the history of caricature, of literature, and of art, from 1825 to 1840, and his *Bibliographie Ceramique* (1882).

CHAMPION. In the judicial combats of the Middle Ages women, children, priests and aged persons were allowed to appear in the lists by a representative, and such hired combatant was called a champion (see *Britannica*, Vol. XVII, p. 820). In the age of chivalry, it signified a knight who entered the lists on behalf of any one incapable of self-defense. In England the crown had its champion, who, mounted on horse back and armed to the teeth, challenged, at every coronation at Westminster, all who should deny the king to be the lawful sovereign.

CHAMPION HILLS, Hinds county, Miss., the scene of a severe conflict between General Grant's army and the Confederates under General Pemberton. It was fought May 16, 1863, and is sometimes called the battle of Baker's Creek.

CHAMPLAIN: in American geology, a term originally applied to a portion of the Paleozoic series of the State of New York, and subsequently given by Professor Dana to the period succeeding the glacial. The Champlain period is to some extent equivalent to the Post-glacial period of English geologists.

CHAMPLAIN LAKE, a narrow body of water 125 miles long, which forms part of the boundary be-

tween the States of New York and Vermont. It extends from Whitehall, N. Y., to Canada. Two important battles were waged upon this lake between the British and American forces. The dates of the battles are Oct. 13, 1776, and Sept. 11, 1814.

CHAMPLIN, JAMES TIFT, educator, born in Colchester, Conn., June 9, 1811, died in Portland, Me., March 15, 1882. He graduated with the first honor in the class of 1834 at Brown University, taught there for three years, was pastor of a Baptist church in Portland, Me., from 1838 to 1841; was called to a professorship of Waterville (now Colby University), and became president there in 1857, serving till 1873. He edited *Demosthenes on the Crown*; *Demosthenes's Select Orations*; *Æschines on the Crown*; and published educational works, such as the *Text-book of Intellectual Philosophy*; *First Principles of Ethics*, and *Constitution of the United States with Brief Comments*.

CHAMPLIN, JOHN DENISON, author, born in Stonington, Conn., Jan. 29, 1834, graduated at Yale in 1856, studied law, and went into practice in New York city. He was connected with the Bridgeport "Standard" and "The Sentinel," after which he wrote for periodicals, and in 1873 edited *Fox's Mission to Russia*. Two years later he was associate editor in the revision of the *American Cyclopædia*. Mr. Champlin wrote many instructive reference books for young people, and a description of a coaching trip in England with Andrew Carnegie in *Chronicle of the Coach*, and is editor of Scribner's art cyclopædias.

CHAMPLIN, STEPHEN, naval officer, born in South Kingston, R. I., Nov. 17, 1789, died in Buffalo, N. Y., Feb. 20, 1870. When 16 years of age he went to sea, and at 23 years of age engaged in the naval operations of the war of 1812. He commanded successively the ships *Scorpion*, the prize ships *Queen Charlotte* and *Detroit*, the *Tigress*, the schooner *Porcupine*, the receiving ship *Fulton*, and the *Michigan*. In 1855 he was placed on the retired list, and in 1862 promoted to the rank of commodore. He was the last survivor of the battle of Lake Erie.

CHAMPNEY, JAMES WELLS, artist, born in Boston, Mass., July 16, 1843, served for a short time as volunteer in the 45th Mass. regiment. He taught drawing, and has spent several seasons in Europe studying art, his first teacher being Edouard Frère, of Paris. He is a member of the American Watercolor Society, and an associate member of the National Academy. His paintings include: *Which is Umpire?* *Indian Summer*; *Boarding-School Green-Room*; *He Loves Me*; *Griselda*; and *Song Without Words*. His wife, Lizzie Williams (born in Ohio in 1850), is a clever writer, and the author of charming books. Besides the "Vassar Girl" series, she has written *In the Sky-Garden*; *All Around a Palette*, and *Sebia's Tangled Web*. Her husband has illustrated many of her books.

CHANAK-KALESSI, a town of Anatolia, situated on the Dardanelles, about 28 miles southwest of Gallipoli. It derives its name from its manufactures of crockery.

CHANCE: in its original and strict meaning, that which determines the cause of events in the absence of the law, ordinary causation, or providence. Strictly speaking, it is an idea which few would now be disposed to admit as corresponding to anything which really exists; the religious mind excluding it as inconsistent with the belief in the Divine government, and the philosophical mind rejecting it as inconsistent with a recognition of universal laws of causation. As a word, however, it has always been, and always will be, popularly accepted, and its use is correct so far as we overlook,

or choose for the moment to throw out of view, the more universal connection of events and regard them as their emergence, on a superficial view, appears to be determined. It is clear that chance, being only legitimate as an expression in popular parlance, is a term which is too indefinite to admit of any kind of measurement.

CHANCEL, the space in the church that is inclosed and railed off from the choir. The chancel was, and still is in some churches, separated from the nave by a screen of lattice-work, so as to prevent general access thereto.

CHANCELLORSVILLE, a village of Virginia, near the south bank of the Rappahannock, about 10 miles west of Fredericksburg. It was the scene of a severe battle fought May 2 and 3, 1863, in which the Union forces under General Hooker were defeated by the Confederates under General Robert E. Lee.

CHANCERY. See *Britannica*, Vol. V, pp. 389-90.

CHANDAUSI, a town of the North-West Provinces of India, 27 miles south of Moradabad. Population, 27,521.

CHANDERI, a town of Central India, 105 miles south of Gwalior. It is now an insignificant place; but its fort and many ruined buildings attest its strength and splendor in former times, when it is said to have contained 14,000 stone houses, 384 markets, 360 caravansaries and 12,000 mosques.

CHANDLER, CHARLES FREDERICK, chemist, born in Lancaster, Mass., Dec. 6, 1836. He pursued scientific studies at Harvard and at foreign universities, and on his return to America was for seven years professor of chemistry in Union College. He was then employed in the organization of the Columbia School of Mines in New York city. Since that time he has been connected with the college, holding the chair of chemistry in that institution and in the New York College of Pharmacy. He has also been chemist to the Metropolitan board of health, and in 1873 was appointed president. In the College of Physicians and Surgeons he was, in 1876, appointed professor of chemistry and medical jurisprudence. As officer of the board of health Mr. Chandler has given attention to the subject of food adulteration, has compelled the location of slaughter-houses to be along a narrow area on the river side, and has obtained the passage of the Tenement-house act, which provides that the plans for such buildings be submitted to the health board. Aside from the reformatory work which he has accomplished for New York city he has analyzed the waters of several springs, has lectured frequently, and has investigated the water supply of Albany, New York and other cities. He is a member of several scientific societies, both at home and in Europe. Reports of his investigations have been published, many of them appearing in the "American Chemist," a periodical established in 1870 by himself and his brother, William Henry Chandler. The latter is a well-known chemist, and has been professor of this science at Columbia School of Mines (1868-71), and at Lehigh University. He was a juror at the United States centennial exhibition of 1876, and at the Paris exhibition two years later.

CHANDLER, JOSEPH RIPLEY, philanthropist and diplomat, born in Kingston, Mass., Aug. 25, 1792, died in Philadelphia, Pa., July 10, 1880. For several years he taught a successful school in Philadelphia, and was connected with the "United States Gazette," which afterward became the "North American." From 1849 to 1851 he was a member of Congress, representing the Whig party. In 1858 he was sent by President Buchanan as minister to the Two Sicilies. He published an English gram-

mar and many addresses. He was interested in the subject of prison reform.

CHANDLER, ZACHARIAH, Senator, born in Bedford, N. H., Dec. 10, 1813, died in Chicago, Ill., Nov. 1, 1879. He received a common school education and went to Detroit, in 1833, where he established himself in the dry-goods business. His energy brought success, while the same spirit in political matters soon made him prominent as a Whig and an active supporter of the "under-ground railroad," of which Detroit was a terminus. In 1851 he was elected mayor of the city, and the following year was an unsuccessful candidate for the office of governor. In 1857 he succeeded Gen. Lewis Cass in the U. S. Senate, and remained in this official body till his death, with the intermission of the years between 1875 and 1879. Senator Chandler took an active part in debates of Congress, opposing the admission of Kansas under the Lecompton constitution, advocating the war in defense of the Union, and insisting that the short term of enlistment for the volunteers first called for was a mistake; he also favored a sweeping confiscation bill, the stern measures of which would deter wavering persons from taking arms against the Government. In 1874 President Grant offered him the position of Secretary of the Interior, which office he held till the election of Grant's successor. He was chairman of the Republican national committee in 1868 and in 1876.

CHANDORE, a town and fort in the district of Ahmednuggar, presidency of Bombay. The town is a flourishing place, with a population of 7,000.

CHANDOS, the name of an English family descended from a follower of William the Conqueror, the last representative in the direct male line being Sir John Chandos (died 1428), whose sister married Giles Brydges. Their descendant, Sir John Brydges, was lieutenant of the Tower under Queen Mary, and was created Baron Chandos in 1554. James Brydges (1673-1744), eighth Lord Chandos, sat in Parliament for Hereford from 1698 to 1714, and was created Duke of Chandos in 1719. In 1796 the title passed by marriage to the family of Grenville, the present dukes of Buckingham and Chandos.

CHANG AND ENG, Siamese twins, born in Bangaseau, Siam, April 15, 1811, died near Mount Airy, N. C., Jan. 17, 1874. Their bodies were joined by a fleshy band near the waist, and on this account they were exhibited by P. T. Barnum for many years as monstrosities. They earned nearly \$80,000 by exhibitions, and retired to North Carolina, where they became farmers. They married sisters, by whom they had children—Chang six, Eng five.

CHANGARNIER, NICHOLAS ANNE THÉODULE (1793-1877), a French general, born in 1793. He received his education at the military school of Saint-Cyr. In 1830 he went as lieutenant to Algeria, and after the proclamation of the Republic in 1848 he was appointed governor-general. Returning to Paris, he was appointed commander-in-chief of the garrison of Paris and of the National Guard. As a member of the Legislative Assembly he opposed the Bonapartists, and in 1851 he was arrested and sent to the fortress of Ham. He lived in exile till the Franco-Prussian war, when he offered his services to Louis Napoleon, and was made a general. In 1871 he returned to France, and died in 1877.

CHANG-CHOW, a city of China, in the province of Kiang-su, about 50 miles southeast of Nanking. Population, 360,000.

CHANGELING. It was at one time a popular superstition that beautiful and charming infants were taken from their cradles by fairies, who left instead stupid, ugly ones. The children so left were called *changelings*. As it was supposed that fairies

had no power to change children that had been christened, infants were carefully watched till that ceremony had been performed.

CHANG-SHA-FOO, a city of China, capital of the province of Hoo-nan on the Heng-Kiang, 50 miles south of its embouchure in Lake Tong-Ting-Hoo.

CHANK-SHELL (TSJANKA), the popular name of the shell of several species of *Turbinella*, a genus of gasteropod mollusks, natives of the East Indian Seas. These shells are obtained chiefly on the coasts of the south of India and Ceylon, and form a considerable article of trade to Calcutta.

CHANNEL, ENGLISH, that arm of the Atlantic Ocean which divides England from France, gradually narrowing to the Strait of Dover. The greatest river which falls into it is the Seine. It forms bays both on the English and the French coast, those on the French coast being the largest.

CHANNING, WALTER, physician, brother of Rev. William Ellery Channing, born in Newport, R. I., April 15, 1786, died in Boston, Mass., July 27, 1876. He studied at Harvard, but on account of a "rebellion" in 1807 did not graduate. He pursued the study of medicine in Boston, Philadelphia, Edinburgh, and London. In 1812 he began to practice in Boston, and from 1815 to 1854 occupied the chair of obstetrics and medical jurisprudence at Harvard. For nearly 20 years he was physician in the Massachusetts General Hospital. He has published poems, books of travel, and medical works.

CHANNING, WILLIAM ELLERY, JR., author, a son of Dr. Walter Channing, and nephew of William E. Channing, Sr., born in Boston, Mass., June 10, 1818, and studied at Harvard, but did not graduate; lived in a log hut in Illinois, removed to Cincinnati, where he was connected with the "Gazette," then came to Massachusetts, married Margaret Fuller's sister, and settled in Concord. He has published volumes of poetry and of prose, and has been on the staff of the New York "Tribune," and also of the New Bedford "Mercury."

CHANNING, WILLIAM HENRY, Unitarian clergyman and orator, son of Francis Dana Channing, and nephew of William Ellery Channing, born in Boston, May 25, 1810, died in London, Dec. 23, 1884. He graduated at Harvard in 1829, and at the Divinity School four years later. He held pastorates in Cincinnati, Boston, Rochester, and New York. As a platform speaker it is said he has never been surpassed. He was interested in Fourierism and other schemes for social reorganization. He wrote a memoir of his uncle, and was chief editor of the memoirs of Margaret Fuller Ossoli. The last years of his life were spent in England, and his eldest daughter is the wife of the poet Edwin Arnold.

CHANTILLY, a small village of Fairfax county, Va., 20 miles west of Washington, where during a severe thunder-storm a fierce battle took place between General Pope's forces and the Confederates commanded by "Stonewall" Jackson. It was fought Sept. 1, 1862, and Generals Phil. Kearney and I. I. Stevens were both killed.

CHANTRY, a term applied alike to endowments or benefices, to provide for the chanting of masses and to the chapels in which the chanting takes place. A chapel attached to a church, in which services for prayer, church meetings, etc., are held, is also called a chantry.

CHANZY, ANTOINE EUGENE ALFRED (1823-83), French general, born at Nouart (Ardennes), March 18, 1823, entered the artillery as a private, received a commission in the Zouaves in 1841, and served almost uninterruptedly in Africa till 1870. He was elected to the National Assembly, and narrowly escaped being shot by the Communists in 1871. In

1873-79 he was governor-general of Algeria. Chosen a life Senator in 1875, he was put forward for the presidency in 1879. He was ambassador at St. Petersburg from 1879 to 1881, and afterwards commanded the 6th army corps at Chalons, where he died Jan. 4, 1883.

CHAOS: in the ancient cosmogonies, that vacant infinite space out of which sprang all things that exist. Ovid represented it as that confused, shapeless mass out of which the universe was formed into a *kosmos*, or harmonious order.

CHAOS, or BIRD ISLANDS, the name given to several rocky islets situated at the entrance of Algoa Bay, South Africa.

CHAOU-CHOW-FOO, a city of China, and capital of a department of the same name in the province of Kwang-tung.

CHAOU-KING-FOO, a city and capital of a department of the same name, in the province of Kwang-tung.

CHAPALA, the largest lake in Mexico, with an area of about 1,300 square miles. It is an expansion of the Rio Grande de Santiago. Chapala lies on the table land of Jalisco, and contains numerous islands.

CHAP-BOOKS, tracts of a homely kind, which at one time formed the only popular literature of Great Britain and the American colonies. They were of a miscellaneous kind, including theological tracts, lives of heroes, martyrs, wonderful personages, fortune-telling, interpretations of dreams, stories of ghosts, witches, histories in verse, songs, ballads, etc. They were sold by chapmen, or peddlers—hence the designation.

CHAPEL, a word derived from *capa*, which originally signified a case, or chest, in which were contained the relics of a saint, and afterwards the place where the chest was kept. The term now signifies a building erected for the purpose of public worship, but not possessing the full privilege and characteristics of a church.

CHAPELLE, LA, the name of several places in France, the most important of which forms a northern suburb of Paris. Chemicals, salt, starch, liqueurs, etc., are manufactured. Population, 33,436.

CHAPERON, a hood or cape worn by Knights of the Garter when in full dress. A person who acts as a guide and protector to a lady at public places is called a chaperon, probably from this particular piece of dress having been used on such occasions. The name was also applied to devices which were placed on the heads of horses at pompous funerals.

CHAPIN, EDWIN HUBBELL, Universalist clergyman, born in Union Village, Washington county, N. Y., Dec. 29, 1814, died in New York city, Dec. 27, 1880. He graduated at Bennington Seminary, Vt., studied law in Troy, N. Y., edited "The Magazine and Advocate" in Utica, and studied for the ministry, being ordained in 1837. He preached afterwards at Richmond, Va., for three years; at Charlestown, Mass., for six years; at Boston, where he was the colleague of Hosea Ballou, and in 1848 became pastor of the Fourth Universalist church of New York city. Dr. Chapin was considered a powerful orator, and his services on public occasions were in great demand. In 1850 he was a delegate to the peace congress at Frankfort-on-the-Main. In 1872 he became editor of the "Christian Leader." Among his publications are: *Hours of Communion*; *Moral Aspects of City Life*; *True Manliness*; *Humanity in the City*; and *A Crown of Thorns: a Token for the Suffering*. The last mentioned was the most popular of his works.

CHAPLAIN, originally an ecclesiastic who accompanied an army and carried the relics of the

patron saint. It now signifies a clergyman employed to officiate at court, in the household of a nobleman or bishop, in prisons, with troops, for a legislative body, and on board ship. An army chaplain is a clergyman especially commissioned to do duty with troops. Chaplains are sent with the troops, and in peace are allotted to the various military stations. Their duties are to conduct divine service in camp or barracks, officiate at burials, baptisms, and churchings, visit the hospital and barrack-rooms, give religious instruction in the schools, and generally treat the soldiers and their families as their parishioners. In the United States army regimental chaplains and post-chaplains may be of any of the regular denominations. They mostly have the rank of captain. In the navy every large ship in commission has a chaplain, who performs divine service at stated times on ship-board, visits the sick sailors, and assists in maintaining moral discipline among the crew.

CHAPLEAU, JOSEPH ADOLPHE, Canadian statesman, born in Ste. Therese-de-Blainville, Terrebonne, Quebec, Nov. 9, 1840. He was admitted to the bar of Lower Canada in 1861, and soon made a brilliant reputation in the criminal courts. In 1867 he represented his county in the first legislature of the province of Quebec. He became Queen's counsel in 1873, held the office of solicitor-general in Mr. Oimet's cabinet, and two years later (1875) was champion speaker of the Conservatives, winning such success that he was called into the De Boucherville Ministry as provincial secretary and registrar. In 1878 Mr. Chapleau was elected leader of the party, and the following year became premier of Quebec and minister of agriculture and public works. He was invited to enter the Dominion cabinet, but for political reasons did not do so until the invitation was renewed in 1882, when he became member of the Privy Council and Secretary of State of Canada. The following month, August, he was elected to the House of Commons by his county. Mr. Chapleau is the finest orator among the French-Canadians, is leader of the party which opposes the ultramontanes, or *Castors*, has been professor of criminal jurisprudence, and is professor of international law in the Montreal section of Laval University.

CHAPLET, a garland or head-band of leaves and flowers. In heraldry a chaplet is always composed of four roses, the other parts being leaves.

CHAPMAN, a trader, but popularly applied in a more limited sense to a dealer in small articles, who travels as a peddler or attends markets. Our familiar *chap*, "a fellow," is an abbreviation of the name, which is derived from Anglo-Saxon *ceap*, "trade."

CHAPONE, HESTER, Mrs., English authoress, was born at Twywell, Northamptonshire, Oct. 27, 1727, died at Hadley, Dec. 25, 1801. She wrote a short romance in her tenth year, and after her mother's death her attention was divided between household duties and the study of French, Italian, Latin, music and drawing. She wrote for the "Rambler," "Adventurer," and "Gentleman's Magazine," and soon became known to a large literary circle; but she is now chiefly remembered by her *Letters on the Improvement of the Mind* (1772), which went through many editions.

CHAPPAQUA, a small village of Westchester county, N. Y., on the Harlem railroad, where Horace Greeley had his summer home. Here is a good boarding school under the control of the Society of Friends.

CHAPPED HANDS, a form of inflammation of the skin of the back of the hands, characterized by abnormal dryness and roughness. It is caused by ex-

posure to cold and moisture or strong soap, and can generally be prevented or cured by carefully drying the hands after washing, and applying lemon juice or vinegar, with perhaps glycerine, or vaseline.

CHAPPELL, WILLIAM, F. S. A., English author and publisher, was born Nov. 20, 1809, died in London, Aug. 20, 1888. He spent the greater part of his life in London, where he was for some years a member of a great music publishing house. His first work of importance was *A Collection of National English Airs* (2 vols., 1838-40). This work ultimately grew into the greater and entirely rewritten work, *Popular Music of the Olden Time* (2 vols., 1855-59). The first volume forms a complete collection of English airs, so far as known, down to the reign of Charles I; the second is rather a selection, containing, however, all the more interesting or important airs of later date. Mr. Chappell took a principal part in the foundation in 1840 of the Musical Antiquarian Society, and the Percy Society, and edited some of Dowland's songs for the former and several rare collections for the latter. He published papers in the *Archæologia*, contributed valuable notes to Hales and Furnivall's reprint of the *Percy Folio MS.* (1867-68), and annotated the first three volumes of the Ballad Society edition of *The Roxburghe Ballads*. Mr. Chappell published in 1874 the first volume of a *History of Music*.

CHAPRA, a town of Bengal, situated on the Gogra, near its confluence with the Ganges. It is capital of the district of Saran. Population, 51,670.

CHAPTER-HOUSE. See *Britannica*, Vol. II, p. 462.

CHAPULTEPEC, a rock two miles southwest of the City of Mexico, rising to a height of 150 feet, and crowned by a castle which was erected by the Spanish viceroy in 1785 on the site of the palace of Montezuma.

CHARACEÆ, aquatic plants, nearly allied to the *Algae*, and consisting of slender-jointed stems. They grow in stagnant waters, both fresh and salt, are always submerged, and often completely conceal muddy bottoms.

CHARACTER, that which is engraven on an object, either physically, by action of another external object or objects, or morally, by the passions, the affections, by good or evil fortune, and by what we designate generally as "circumstances." In art, the expression of character either in animate or inanimate objects, is, after correct delineation, the most important matter to be attended to.

CHARADRIADÆ, a large family of birds, of the order *Grallatores*, and tribe *Pressirostres*. Besides the plovers, the family includes the lapwings, oyster-catchers, sanderlings, etc.

CHARBON ROUGE, or RED CHARCOAL, a variety of charcoal obtained by subjecting wood to the action of heated air from furnaces, or of steam, which has been raised to a temperature of 572° F.

CHARCOAL BLACKS are made both from animal and vegetable substances. Those which are derived from vegetable substances, when mixed with white, are usually of a blue tint.

CHARENTE, a river in the west of France. This river gives its name to two departments, both remarkable for the productiveness of these vineyards.

CHARGE: in heraldry, a term given to the figures represented on a shield, and one thus adorned is said to be charged.

CHARGE: in military warfare, a sudden and impetuous attack on the enemy.

CHARGE: in military pyrotechny, sufficient combustible material for one firing or discharge. It is

also applicable to all kinds of firings, fireworks and explosions.

CHARGE, the exposition of the law made by the judge to the jury, in which he comments on the evidence and instructs the jury as to the application of the law to the facts.

CHARGÉ D'AFFAIRES, a fourth-class diplomatic agent, accredited, not to the sovereign, but to the department for foreign affairs; he also holds his credentials only from the minister.

CHARGER, a name sometimes given to a warrior accustomed to the din of battles, and reliable under circumstances of confusion and danger. See *Britannica*, Vol. XII, p. 191.

CHARTIES, in law, are grants or devises for the benefit of the poor or friendless, for public institutions, or for education or religious culture.

CHARTON, a city and the county-seat of Lucas county, Iowa, situated on the Chariton River and the Chicago, Burlington and Quincy railroad.

CHARITY, SISTERS OF, nuns who are devoted to the temporal and spiritual care of the poor and the sick.

CHARIVARI, a French term used to designate a wild tumult, and uproar produced by the beating of pans, kettles, dishes, mingled with hissing, whistling, etc., for the purpose of expressing a general dislike to the person against whom the mock serenade is directed.

CHARLATAN, a quack-doctor, or empiric, or in fact any one who makes loud pretensions to knowledge or skill which he does not possess.

CHARLES, ELIZABETH RUNDLE, writer of several well-known historical novels, born about 1826. Among her most popular works are the *Chronicles of the Schönberg-Cotta Family* and the *Diary of Kitty Trevelyan*.

CHARLES CITY, a railroad junction and the county-seat of Floyd county, Iowa, on the Cedar River. It has various manufactories, among which is one for furniture.

CHARLES'S WAIN, the constellation of *Ursa Major*, also popularly known as "the plow," and "the dipper."

CHARLESTON, a city and county-seat of Coles county, Ill., forty-eight miles west of Terre Haute. It has an infirmary and a medical college.

CHARLESTON, a city of South Carolina, and county-seat of Charleston county (see *Britannica*, Vol. V, p. 428-29). The trade of the city for the year 1889 amounted to \$80,000,000, an increase of \$4,000,000, over that of the previous year. The imports for 1889 were \$683,232 and exports \$13,807,673. Manufacturing industries numbered 360, with \$9,000,000 capital, producing \$13,742,879. The phosphate industry is the chief, the trade in phosphate fertilizers alone amounting to \$5,494,650, as against \$2,612,660 in 1887. The supply of water is obtained from three artesian wells, the third and largest of which was completed in 1889. The daily supply is 2,000,000 gallons. Public schools and libraries have advanced with the population and wealth of the city, and a new post office and custom house have been added to the public buildings. Population in 1880, 49,984; in 1890, 54,592.

CHARLESTON, OR KANAWHA COURT-HOUSE, the capital of West Virginia, and the county seat of Kanawha county, situated on the Elk and Kanawha Rivers. A large amount of manufacturing and shipping is done in this city. Ice, furniture, doors, blinds, wagons and iron fences are made; there are dry docks and ship-building yards, many fine public buildings, water, gas, and electric-light works. Great quantities of salt are daily manufactured, one furnace alone turning out 2,000 bushels daily. In 1869 this city was the State cap-

ital; in 1875 Wheeling became the capital; in 1885 Charleston was again made the capital.

CHARLESTOWN, a manufacturing town of Sullivan county, N. H., on the Connecticut River, fifty miles west of Concord. It has manufactories of boots, shoes, and lumber.

CHARLESTOWN, a railroad town and the county-seat of Jefferson county, W. Va. It is near Harper's Ferry. John Brown was tried and executed at Charlestown, Dec. 2, 1859.

CHARLOIS, a village of the Netherlands, situated on the Maas, about two miles southwest of Rotterdam. It is memorable on account of a terrible accident which occurred here in 1512. A religious procession, crossing the ice in defiance of magisterial prohibition, was precipitated into the Maas, and 8,000 lives were lost.

CHARLOTTE, a railroad city and county-seat of Eaton county, Mich. Lumber and flour are here manufactured.

CHARLOTTE, a city and county-seat of Mecklenburg county, N. C., situated on Sugar Creek, 110 miles north of Columbia, the capital of S. C. It is an important station of the Atlanta and Richmond Air-line Railroad, and terminus of the Charlotte, Columbia and Augusta, and the Atlantic, Tennessee and Ohio Railroads. The court-house is a substantial and commodious structure. The Biddle (Presbyterian) University was organized here in 1867. In 1838 a branch mint was established in Charlotte for the coinage of gold found in the vicinity. The principal manufactories are of carriages, machinery, cotton goods, agricultural implements, tobacco, and iron castings. Population in 1880, 7,094; in 1890, 11,555.

CHARLOTTE AMALIE, a town of the island of St. Thomas, the seat of government of the Danish West Indies. It has an excellent harbor, and an extensive trade. Population, 13,000.

CHARLOTTESVILLE, Virginia. See *Britannica*, Vol. V, p. 430.

CHARM, a form of words, generally in verse, supposed to possess some supernatural power, of a hurtful, a healing, or a protective kind.

CHARNEL HOUSE. See Vol. II, p. 462.

CHARNOCK, STEPHEN, born in London, England, in 1628, died in 1680. He was a Puritan divine. His principal literary work was a *Treatise on the Attributes of God*.

CHARON. See *Britannica*, Vol. V, p. 430. In the folklore of modern Greece, Charon still survives as a kind of shadowy representative of death and a mysterious under-world.

CHART, a marine or hydrographical map exhibiting a portion of a sea or other water, with the islands, coast of contiguous land, surroundings, currents, etc.

CHARTE, a charter or system of constitutional law, embodied in a single document. The first such charter in France is known as the *Grande Charte*, or the Charter of King John (1355). But the constitution to which the term *charte* is most frequently applied is that in which Louis XVIII solemnly acknowledged the rights of the nation on his restoration in 1814. This *charte* has ever since been considered the fundamental law of constitutional monarchy when that form of government has existed in France.

CHARTER. See *Britannica*, Vol. V, pp. 431-33.

CHARTER-HOUSE, a charitable hospital, chapel, and celebrated public school in London, founded in 1611 by Sir Thomas Sutton. It had been originally a Carthusian monastery. See *Britannica*, Vol. I p. 20; Vol. XIV, p. 835.

CHARTER PARTY. See *Britannica*, Vol. V, p. 433.

CHARTULARY, or **CARTULARY**, a collection of charters. As soon as a body, ecclesiastical or secular, possessed a considerable number of charters they were classified and copied into a book or roll, called a chartulary; the officer in the ancient Latin Church who had charge of the records was also called a cartulary.

CHARTERS TOWERS, a mining township of Northeast Queensland, Australia, situated on the northern spurs of the Towers Mountain, 820 miles northwest of Brisbane. It dates from the gold discovery here of 1871-72, and was incorporated in 1877. It has railway connection with Townsville on the coast. Population of town, 3,313; with district, 7,310.

CHASE: in a gun, the name given to the greater portion of the length between the muzzle and the trunnions.

CHASE, PHILANDER, P. E. bishop, born in Cornish, N. H., Dec. 14, 1775, died at Jubilee College, Ill., Sept. 20, 1852. He graduated in 1795 at Dartmouth College, and three years later was ordained priest of the Protestant Episcopal church. He held rectories in New Orleans, La., and in Hartford, Conn., and in 1817 undertook missionary work in Ohio, where for a time he preached for three churches and took charge of the Worthington Academy. He twice visited England, obtained funds for educational works and therewith erected Kenyon College, Gambier Theological Seminary, and Jubilee College—the latter in Illinois. In 1819 Mr. Chase was consecrated bishop of Ohio and in 1835 bishop of Illinois. Two volumes of *Reminiscences* and two works concerning Kenyon College are among his publications.

CHASE, PLINY EARLE, scientist, born at Worcester, Mass., Aug. 18, 1820, died Dec. 17, 1886. He graduated at Harvard in 1839, taught in Philadelphia, engaged in mercantile pursuits, but employed his leisure in scientific and philosophical pursuits. In 1871 he became professor of logic and philosophy in Haverford College, and further pursued his investigations in the fields of electricity, gravity, magnetism and kindred forces. His scientific papers were widely published, and he received the Magellanic gold medal of the American Philosophical Society in 1864.

CHASE, SALMON PORTLAND, statesman and jurist, born in Cornish, N. H., Jan. 13, 1808, died in New York city, May 7, 1873. His father was Ithamas Chase, and the stock to which he belonged was prolific in eminent men. When the boy was eight years old the family removed to Keene, N. H., and soon after the father died. An uncle who was bishop of Ohio in 1820 offered the boy a home, and educational advantages in the academy of which the uncle was principal. Here he spent three years, and in 1824 entered Dartmouth College, graduating in 1826. He then went to Washington, D. C., opened a classical school for boys, and meantime studied law under William Wirt. After receiving his license to practice he went (1830) to Cincinnati, where he opened a law office, and while waiting for clients edited the *Statutes of Ohio* with notes; this drew public attention, and in 1834 he was appointed solicitor of the U. S. bank in that city. He very soon connected himself with the anti-slavery party, and defended so many fugitive slaves that Kentuckians called him the "attorney-general for runaway negroes."

Mr. Chase defended Van Zandt, who was charged with harboring fugitive slaves. "Slavery is sectional, freedom is national," was the maxim of this jurist, and he felt called by providence to devote his time and means to the upbuilding of the party of constitutional freedom. Mr. Chase became ul-

timately a founder of the Republican party. In the Liberal and Free-Soil conventions from 1841-48, he was the leading spirit, and allied himself with whatever party would at the time further his aims. The Democrats in 1849 elected him to the U. S. Senate, and here he distinguished himself by his firm stand against slavery.

In 1850, seeing the attitude of the Democratic party on the slavery question Mr. Chase left it, and in 1855 was elected by the Whigs governor of Ohio; two years later he was reelected. At the Republican national convention which nominated Mr. Lincoln, he was a prominent candidate for the presidency. In 1861 he was again in the Senate, but President Lincoln called him to the cabinet as Secretary of the Treasury. In this office his duties were not arduous; the Government credit was below par; the treasury was empty, and in this state of finances a war must be carried on. Secretary Chase negotiated a loan for \$8,000,000, recommended confiscation of property belonging to those in rebellion, increase of duties, and a national currency with a system of national banking associations. Treasury notes, "greenbacks," were issued, and served to tide the government over the financial crisis.

The secretaryship was resigned by Mr. Chase in 1864, and a few months later the President nominated him as chief justice of the United States, and it was in this capacity that he presided at the impeachment of President Johnson in 1868. In 1864 his name had been brought forward as Republican nominee for the presidency, and in 1868 the Democratic party named him for the honor; but he did not command a large following at the convention.

CHASE, SAMUEL, Signer of the Declaration of Independence, born in Somerset county, Md., April 17, 1741, died June 19, 1811. He was a lawyer by profession, an ardent patriot, a member of the Continental Congress from 1774 to 1778, and was one of a committee sent by Congress to urge Canada to unite with the colonies in resistance to England. After the war he was the agent sent to recover from the bank of England money deposited there by Americans before the war. In 1788 he became member of the Maryland convention which adopted the Federal Constitution, and three years later chief justice of the General Court of Maryland. On the occasion of a riot in 1794 he ordered the arrest of two rioters and assisted in taking them to jail. For this act John Randolph secured his impeachment five years after, when he was an associate justice of the U. S. Supreme Court. The Senate acquitted him of the charge.

CHASE, THOMAS, educator, brother of Pliny Earle Chase, scientist, born in Worcester, Mass., June 16, 1827; graduated at Harvard in 1848, taught in the institution from 1850 to 1853, studied abroad; in 1855 became professor at Haverford College, near Philadelphia, and its president in 1875. He was one of the American revisers of the New Testament. He has edited and published works on the classics.

CHASIDIM. After the Babylonish captivity, the Jews, with regard to their observance of the law of Moses, were divided into two classes—*Chasidim* and *Zadikim*. When the Great Synagogue was commissioned by the Persian government to draw up a code of civil and religious laws for the emigrant Jews, several innovations were made on the Mosaic law. Those who accepted these innovations were styled Chasidim, while those who rejected them were styled Zadikim. See *ASSIRIANS*, *Britannica*, Vol. II, p. 729.

CHASING, the art of working raised or half-raised figures in gold, silver, bronze or other metal (see *Britannica*, Vol. VIII, p. 189). The art was known at a very early period, as may be inferred from the shield of Achilles, the ark of Cypselus, and other productions of this kind.

CHASKA, the county-seat of Carver county, Minn., on the left bank of the Minnesota River, thirty-two miles southwest of St. Paul. The Minnesota and St. Louis Railroad here forms a junction with the Hastings and Dakota Railroad, while on the opposite side of the river is the Chicago, St. Paul, Minneapolis and Omaha Railroad.

CHASLES, MICHEL, a French mathematician, born at Epernon in 1793, died in 1880. His principal works are a *History of Arithmetic*, and treatises on *Higher Geometry* and on *Conic Sections*.

CHASLES, PHILARETE (1798-1873), a French writer, born at Mainvilliers, near Chartres, Oct. 8, 1798. Early imbued with Rousseau's ideas by his father, he was apprenticed at fifteen to a Jacobin book-seller, with whom he was sent to jail after the restoration. Released by Chateaubriand's influence he went to England, where he found employment in a book-seller's shop, and during his seven years' residence laid the foundation of his large knowledge of English literature. After his return to France he contributed reviews of English books to the *Revue Encyclopédique*. In 1824 he published *Discours sur Jacques Auguste de Thou*, and in 1828 *Tableau de la Langue et Littérature Française, 1500-1610*. In 1837 Chasles became librarian of the Bibliothèque Mazarin, and in 1841 professor of Northern Languages at the Collège de France, which chair he filled until his death at Venice, July 18, 1873.

CHASSE, music composed in imitation of the chase, and produced chiefly by horns, occasionally combined with other wind instruments.

CHASSÉ, DAVID HENDRICK, BARON, a Dutch soldier, born in Thiel, in the Netherlands, in 1765, died in 1849. He began his military career at ten years of age. At sixteen he was lieutenant, and in 1787 became captain. He entered the French service, and for his fondness for bayonet charges Napoleon gave him the name of "General Bayonet." Louis Bonaparte made him a baron in 1809, and in 1815 he fought at the head of the Dutch forces against his old comrades, the French. As governor of Antwerp he defended the citadel bravely for three weeks against the Belgians and French. He died in 1849.

CHASSEPOT, ANTOINE ALPHONSE, a French inventor, born March 4, 1833. He was an employé in the Paris arsenal of St. Thomas, where he became an official in 1858, and in 1863 brought before the government the model of his rifle, adopted three years afterwards.

CHASSEURS, a name give to some light troops in several of the European armies. In 1815, battalions of chasseurs were enrolled in the French army. The name is now generally applied to one of a body of light troops designed for rapid movements.

CHASSEURS DE VINCENNES, one of the names given to a famous corps in the French army. In 1835, when certain improvements had been made in the French rifle, the Duke of Orleans ordered the formation of a company of riflemen, armed with new rifles. They proved so efficient that in 1838 a whole battalion was organized, which was called the *Chasseurs de Vincennes*.

CHASTELLUX, FRANCOIS JEAN, MARQUIS DE, a French author, born in Paris in 1734, died there Oct. 28, 1788. He served during the American Revolution under Rochambeau, securing the friend-

ship of Washington and Jefferson. He wrote *Travels in America*, and an *Essay on Public Happiness*, a work which denounced Christianity.

CHASUBLE, the uppermost garment worn by Roman Catholic priests, when robed for the celebration of the mass. See *Britannica*, Vol. VI, p. 462.

CHAT, a genus of birds of the thrush family. There are many species, chiefly African. The yellow-breasted chat of the United States is remarkable for the volubility and mimicry of its song. See *Wheatear Britannica*, Vol. XXIV, p. 537.

CHATEAU, a castle or a fortress in France. A manor house; a gentleman's country-seat; also a royal residence; as, the *château* of the Louvre. The distinctive French term for a fortified castle of the Middle Ages is *château-fort*.

CHATEAU-GONTIER, a town in the French department of Mayenne, situated on the Mayenne, 180 miles southwest of Paris by rail. It has linen and woolen manufactures. Population, 7,334.

CHATELAINE, the wife of the châtelain or castellan; the mistress of a castle or château. Also a chain worn by the castellan, depending from the girdle, to which the keys of the castle were attached. From this use of the term we have the application to a modern device consisting of an ornamental hook or clasp, worn by a lady at her waist, and having a chain attached for a watch, keys, trinkets, etc. Also applied to the trinkets themselves, and used adjectively, as *châtelaine* watch, belt, etc.

CHATHAM, a town and county-seat of Kent county, Ontario, on the Thames River, and the Great Western Railroad, 45 miles east of Detroit, Mich. It manufactures machinery and woolen goods, and has a large trade in lumber, potash, tobacco, soap, etc.

CHATHAM, a town of Barnstable county, Mass., on the Atlantic, at the southeastern point of Cape Cod. It is a summer resort, has good schools and two light-houses.

CHATHAM VILLAGE, CHATHAM FOUR CORNERS, a thriving village of Columbia county, N. Y. It has cotton and paper-mills, blast furnaces and machine shops. It is a junction for the Boston and Albany, the New York and Harlem, and the Harlem Extension Railroads.

CHATI, a small leopard-like cat (*Felis mitis*), found in South America.

CHATTAHOOCHEE, a river of Georgia, about 500 miles long, and navigable for small boats for 325 miles. It rises in the Blue Ridge, in the northeast part of the State, flows south, forming the boundary between Georgia and Alabama, and unites with Flint River to form the Appalachian.

CHATTEL, every species of property, movable or immovable, which is less than a freehold. Real chattels are interests which are annexed to or concern real estate; as, a lease for years of land. Personal chattels are properly things movable, which may be carried about by the owner; such as animals, household stuff, money, corn, jewels, furniture, garments and everything else that can be put in motion and transferred from one place to another. Chattels, whether real or personal, are treated as personal property in every respect, and in case of the death of the owner, usually belong to the executor or administrator and not to the heir at law.

CHATTANOOGA, a city of Tennessee, and county-seat of Hamilton county, located near the southern boundary of the State, on the south bank of the Tennessee River, at the mouth of a valley formed by Mission Ridge on the east and Lookout Mountain on the west. Although it received a city charter in 1851 its population in 1860 was only 2,545. The civil war wiped out the commerce and indus-

tries of the little city, and it became a great depot of war supplies. The surrounding hills, valleys and plains were camps, and hospitals and tents filled the town. But with the close of the war came a remarkable growth. In 1890 the city contained 300 manufacturing establishments; several large hotels; street railways, both horse and electric; gas and electric lights, water-works, large jobbing houses, and elegant private residences. Chattanooga has nine trunk lines of railway. The United States government has expended \$4,000,000 in removing obstructions from the Tennessee River, and the river traffic is immense. A new bridge of steel and iron, built by the county at a cost of \$225,000, now spans the river at this point, and is free for carriages and foot passengers. The city is supplied with water taken from the river above the city, pumped through 63 miles of mains, with a capacity of 20,000,000 gallons daily. The Grant Memorial University (Methodist) is located here, and includes a classical school, medical school, law school, theological school, and the preparatory departments. Other educational institutions are the Notre Dame de Lourdes, in charge of the Dominican Sisters, numerous public schools, and a commercial college. The great bend of the river, sweeping around the city, gives 11 miles of deep water front, and supplies unusual transportation facilities for the manufacturing and commercial establishments. Iron ore abounds in the vicinity, and 300 tons of iron are produced daily by the smelting and puddling works in the city. Population in 1880, 12,879; in 1890, 29,113.

CHATTEL MORTGAGE, a mortgage on personal property.

CHATTERER, a popular name applied to the birds of the family *Ampelidæ*, of the order *Insectores* and tribe *Dentirostræ*. They are found chiefly in the warmer regions. Some of them possess powers of song almost equal to those of the nightingale. See *WAXWING*, *Britannica*. Vol. XXIV, p. 460.

CHAUDFONTAINE, a village situated in the valley of the Vesdre, a few miles from Liège, in Belgium. Population, about 1,000.

CHAUMONOT, PIERRE JOSEPH MARIE, a Jesuit missionary, born near Chatillon-sur-Seine, France, in 1611, died near Quebec, Feb. 21, 1693. He labored among the Canadian Indians, and wrote a grammar of the Huron language.

CHAUNCEY, CHARLES, educator, born in Yardlebury, Hertfordshire, England, in 1592, died in 1672. He graduated at Cambridge in 1618, and afterwards taught Hebrew and Greek there. He became a clergyman, but so strong were his Puritan convictions that he was continually in trouble with the higher church authorities. In 1638 he found in New England the liberty of conscience denied in Old England. The church of Scituate called him to be its pastor, and here he remained for 12 years, at the end of which time he made ready to return to England to his old congregation of Ware; but Harvard College was just then without a president, and he accepted the office which was offered, serving acceptably up to the time of his death. He was the second president of Harvard, and held the office for 18 years.

CHAUNCEY, ISAAC, commodore U. S. N., born at Black Rock, Conn., Feb. 20, 1772, died in Washington, D. C., Jan. 27, 1840. At an early age he went to sea, and before he had completed his twentieth year he commanded a ship in the merchant service which belonged to John Jacob Astor. When the navy was organized in 1798, Chauncey was appointed lieutenant and rose to be captain in 1806. In the war with Tripoli he served with gallantry. During the war of 1812 Capt. Chauncey commanded

on the lakes, superintended the building of a fleet coöperated in the capture of York (Toronto), and put to flight the British fleet in York bay. After the war he commanded the Brooklyn navy-yard, negotiated a treaty with Algiers while commanding the Mediterranean squadron, and at the time of his death was president of the Board of Navy commissioners at Washington.

CHAUSSES: in the armor of the Middle Ages, defense pieces for the legs. Some were made of padded and quilted cloth and some of riveted plates.

CHAUTAUQUA, an unique summer resort in Chautauqua county, N. Y., on Chautauqua lake. It was formerly called Fair Point, and was a favorite place for Methodist camp-meetings, but in 1874 the grounds were purchased by the Chautauqua Sunday-school Assembly. Many lots have been purchased, upon which neat cottages have been erected; there are also numerous boarding-houses and hotels, and large pavilions for religious services and instruction. Each year, during July and August, summer schools of language and art are held there, popular lecturers being secured to address the large classes. Crowds of people annually throng the Chautauqua grounds. Sunday-school and temperance work, as well as Bible study, receive attention. The "Chautauqua Idea" has become popular, and there are branch "Chautauqua Assemblies" in many of the States and in Canada.

CHAUTAUQUA LAKE, in Chautauqua county, N. Y., a picturesque sheet of water, 18 miles long and three miles in breadth at its widest point. It is the highest navigable water in the United States, being 726 feet higher than Lake Erie. Steamers sail between Mayville and the flourishing town of Jamestown, which lies at the opposite end of the lake. The Indian name means "bag tied in the middle," and refers to the fancied shape of the lake.

CHAUTAUQUA LITERARY AND SCIENTIFIC CIRCLE, an incorporated institution for study and instruction, suggested and largely promoted, by Hon. Lewis Miller, of Akron, Ohio. It was organized in 1878, at Chautauqua, N. Y., with Lewis Miller as President of the Association, and Rev. John H. Vincent, D. D., LL. D. (now a bishop of the Methodist Episcopal Church) as chancellor of the faculty. The purpose of the Circle is to promote habits of reading and study in Nature, art, science, and in secular and sacred literature, in connection with the routine of daily life; to give college graduates a review of the college course; to secure for those whose educational advantages have been limited the college student's general outlook upon the world and life, and to develop the habit of close, connected, persistent thinking.

It endeavors to encourage individual study in lines and by text-books which shall be indicated; by local circles for mutual help and encouragement in such studies; by summer courses of lectures and "students' sessions" at Chautauqua, and by written reports of each year's work.

Any person may join the circle upon payment of the annual membership fee, which is fifty cents. No entrance examination is necessary. Persons may enter for one year, but the full course is four years, after which the graduate receives a diploma. The course of studies is directed from the center of the Circle, and may be pursued at home and in the local circles. Attendance at the summer meetings at Chautauqua, N. Y., is urged, but is not imperative. The meeting of 1890 began July 5 and closed August 25.

There are over fifty Chautauqua assemblies in the United States, Canada, Great Britain, Jap-

India, South America, Australasia, and South Africa, with a membership of half a million persons. All are modeled in organization and methods upon the original Chautauqua Assembly, but are independent in management. Dr. Jesse L. Hurlbut is Principal of the Faculty at Chautauqua, and A. M. Martin, of Pittsburgh, is Secretary. The general secretarial office is in Buffalo, N. Y., with Miss K. F. Kimball in charge.

CHAUVEAU, PIERRE JOSEPH OLIVIER, a Canadian statesman, born in Quebec, May 30, 1820. Educated at the seminary of Quebec, he afterwards studied law and was admitted to the bar in 1841, and three years later entered political life as a reform member for the county of Quebec. In 1851 he was solicitor-general for Lower Canada; in 1853 provincial secretary and member of the executive council; he was superintendent of education for his native city in 1855; and, after the confederation was elected to the Dominion House of Commons and the Quebec House of Assembly. He held the office of premier from 1867 to 1873, was speaker of the Senate in (1873-74), became president of Quebec harbor commission in 1876, and sheriff of Montreal in 1877. Mr. Chauveau has done much for the educational cause, and his writings in prose and poetry have been received with favor.

CHAUVENET, WILLIAM, an American mathematician, born at Milford, Pa., in 1819, died in 1870. He was one of the founders of the United States Naval Academy. He wrote many valuable works on mathematics, and originated numerous improvements in mathematical methods.

CHAY ROOT, CHOYA, or SAYAN, a perennial herbaceous plant of the natural order *Cinchonaceæ*, a native of India and Mexico. It is cultivated for the sake of its orange-colored roots, whose bark affords a beautiful red dye.

CHAYENPUR, a fortified town of Nepal, in the north of India. It is the chief town of a district which yields rice, wheat, cotton, butter, timber, spices, sugar, tobacco and pearls.

CHAZARS, a people of the Finnish stock known in the seventh century on the shores of the Caspian; in the ninth century their kingdom occupied the southeast of Russia from the Caspian and the Volga to the Dnieper. They were singularly tolerant of all religions; a large part of the nation adopted the Jewish faith from Jews who fled from the persecutions of Emperor Leo, and Cyril converted many to Christianity in the ninth century. The power of the Chazars was ultimately broken in the 12th century by the Byzantine emperors and the Russians.

CHAZY EPOCH, the name given by American geologists to that division of Silurian time during which the Chazy limestone of New York, Canada, etc., was formed.

CHEATHAM, BENJAMIN F., a soldier, born in Davidson county, Tenn., Oct. 20, 1820, died at Nashville, Tenn., Sept. 4, 1886. He achieved distinction as a captain and colonel of volunteers during the war between Mexico and the United States, at the conclusion of which he became major-general of the Tennessee militia. He pursued the occupation of farmer till 1861, at which time, under a call from the Governor of Tennessee, he enlisted in the military service of the State, was appointed a brigadier-general, and was soon afterward transferred with his command to the military service of the Confederate States, in which he continued till the close of the war, rising successively to the grades of major and lieutenant-general. He distinguished himself at the battle of Belmont in 1861, and commanded a division in Gen. Bragg's army in his campaign into Kentucky in 1862. He participated in the battles of

Perryville, Stone River, Chickamauga Missionary Ridge, Resaca, Marietta, in the battles near Atlanta, in the battle of Jonesboro, Ga., Franklin and Nashville, Tenn., in which he commanded an army corps as lieutenant-general, and also in the battle of Bentonville, N. C., soon after which he surrendered to the Federal forces with that portion of the Confederate army commanded by Gen. Joseph E. Johnston. At the conclusion of the war between the States he returned to the vocation of agriculturist.

In 1872 he was nominated by the Democratic State convention to represent the State at large in the United State Congress; but Andrew Johnson becoming an independent candidate for the same office the Democratic vote was thus divided between him and Cheatham, and the contest resulted in the election of Horace Maynard, the Republican candidate.

He was subsequently appointed superintendent of State prisons, in which capacity he served four years. In 1885 he was appointed by President Cleveland postmaster at Nashville, Tenn., and died in the incumbency of that office. He was noted for his sound practical judgment, great personal courage, and firm fealty to his friends. He was one of the most popular and successful commanders in that portion of the Confederate forces known as the "Army of Tennessee," which was first commanded by Gen. Albert Sidney Johnston and successively by Gens. Beauregard, Bragg, Joseph E. Johnston and J. B. Hood.

CHEBOYGAN, the county-seat of Cheboygan county, Mich., on a river of the same name and on Lake Huron. It has saw, planing and grist-mills; also a large grain trade.

CHECK, a fabric whose pattern consists of rectangular spaces like a chessboard.

CHECK, or CHEQUE. See Britannica, Vol. V, pp. 583-84.

CHECKY: in heraldry, when the field or any charge is composed of small squares of different tincture, generally metal and color, it is said to be checky.

CHEDDAR, a village in Somersetshire, two miles southeast of Axbridge, England, celebrated for the production of the Cheddarcheeses. Population, 2,200.

CHEESE-HOPPER the larvæ of *Tyrophagacasei*; a small dipterous fly of the family *Muscidae*, the same to which the house-fly, blow-fly, etc., belong. It lays its eggs in the crevices of cheese, the destined food of its larvæ, and is, therefore, a special pest of dairies.

CHEEVER, GEORGE BARRELL, clergyman and author, born in Hallowell, Me., April 17, 1807, died at Englewood, N. J., Oct. 1, 1890. He was a graduate of Bowdoin in 1825, of Andover seminary in 1830, and became pastor of a Congregational church in Boston. He was an active controversialist, writing against Unitarianism in *A Defense of the Orthodoxy of Cudworth*, against intemperance in an allegory entitled *Inquire at Deacon Gile's Distillery*, and against slavery, the operation of railroads on Sunday, the banishment of the Bible from public schools, and other questions of popular interest. His tract on temperance produced great excitement, and he was tried for libel and imprisoned. He traveled in Europe, and while there contributed letters to the "New York Observer;" on a second trip he was corresponding editor of the "New York Evangelist." In 1839 he became pastor of Allen street Presbyterian church in New York city, and from 1846 to 1870 had charge of the Church of the Puritans, which was organized for him. He was the writer of many books on religious, social and literary topics, his best work being *Lectures on the Pilgrim's Progress.*

CHEIROLEPIS, a genus of fossil ganoid fish peculiar to the Devonian measures, in which eight species have been found. They had minute scales and greatly developed pectoral and ventral fins.

CHEIROMANCY, or **PALMISTRY**, a form of divination that professes to read the destiny of an individual by the lineaments of the hand.

CHEIROTHERIUM, a name given to the animal which produced the peculiar hand-like impressions on the Triassic rocks in England and Germany.

CHEIRONECTES, a genus of marsupial quadrupeds, differing from the opossum chiefly in having webbed feet and aquatic habits. It is sometimes known as yapock from the South American river of that name. It is common in many rivers of Brazil and Guiana.

CHE-KEANG, a maritime province of China. See *Britannica*, Vol. V, p. 636.

CHELICERÆ, the biting organs forming the first pair of appendages in spiders, scorpions and other arachnida, and answering the same purpose as the mandibles of insects.

CHELIUS, **MAXIMILIAN**, born at Mannheim, Germany, in 1794, died in 1876. He was a physician and surgeon of distinguished ability. His *Handbook of Surgery* is a standard work, and has been translated into many languages.

CHELMSFORD, **FREDERIC THESIGER**, **BARON**, born in London in 1794, died Oct. 5, 1878. He was a midshipman in the navy, but studied law, and was called to the bar in 1818; was made solicitor-general in 1844, attorney-general in 1845 and 1852, and lord chancellor, with the title of Lord Chelmsford, in 1858 and in 1866.

CHELMSFORD, **FREDERICK AUGUSTUS THESIGER**, second Baron, born in 1827, entered the rifle brigade in 1844, became major in the Grenadier Guards in 1855, and served through the Crimean war, the Indian mutiny, and the Abyssinian campaign of 1868. He was adjutant-general in Bengal (1869-74), and commanded the forces in the Kaffir war of 1878 and in the Zulu war of 1879, having resigned the governorship of Cape Colony. Appointed lieutenant-general in 1882, he was made lieutenant of the Tower of London in 1884.

CHELONIA, an order of reptiles including the various forms of tortoise and turtle (see Bri-

tannica, Vol. XXIII, p. 455). Their distinctive characteristic is the more or less complete inclosure of the body by a dorsal and a ventral shield, of which the former is in part due to a modification of the vertebral spines and of the ribs. Within these shields the head, limbs and tail can be more or less retracted. The absence of teeth is also characteristic. The *Chelonia* include marine, freshwater, and terrestrial forms. The known living species number about 260, the majority occurring in warm countries; they are represented by numerous fossil forms from the Upper Jurassic onwards.

CHELSEA, a city of Massachusetts. For its historic description, see *Britannica*, Vol. V, p. 458. The manufactures of the city are many and important, the chief being an elastic-rubber factory, chemical works, factories for making sewing machines, brassware, linseed oil, safes, woolen goods, brushes and tools. Population in 1890, 27,909.

CHELSEA HOSPITAL, an asylum for old and disabled soldiers of the British army. The foundation stone was laid by Charles II in 1682, and the building, designed by Wren, was opened in 1692. The funds for its lands and buildings, and for many years the maintenance of its inmates, were derived chiefly by deductions from the pay of the troops themselves.

CHELYUSKIN, **CAPE**, formerly North-East Cape, and sometimes called Cape Severo, the most northerly point of Asia, on a peninsula of the same name. It is a low promontory, divided into two parts by a small bay; the latitude of the western part is 77° 36' 37" north, that of the eastern 77° 41' north. It is named after a Russian officer who led an expedition thus far in 1742; it was not revisited till 1878, when Nordenskjöld, in the *Vega*, spent the 19th and 20th of August here.

CHEMIC, the common name given to bleaching powder by those engaged in chemical works.

CHEMICAL AFFINITY, the name applied to that peculiar force which causes elementary atoms, or groups of atoms, to unite; or to the force by which the substances constituting a compound are held together.

CHEMICAL ANALYSIS. See *Britannica*, Vol. V, pp. 459-579. See also *Britannica*, Vol. I, pp. 795, 796.

CHEMISTRY, RECENT DISCOVERIES IN. (For general article on **CHEMISTRY**, see *Britannica*, Vol. V, pp. 459-579.) In recent years no less than thirty-one new elementary bodies have been discovered and announced to the learned world. Some have been buried as the result of scientific investigation, and concerning some of the survivors much is yet to be learned. The extreme rarity of the minerals in which the new elements have been detected; the excessively small percentages of the new ingredients, and the extraordinary difficulties attending their separation from known substances, combine to render the investigations laborious, protracted and costly. The extreme value, however, of some of the discoveries has caused an intense interest in the learned world, and chemists in every civilized nation have vied with one another to accomplish new and important results. The following is a list embracing some of the more important substances and compounds, and new uses of old substances and old compounds discovered:

ALUMINIUM, or **ALUMINUM**, a white metal, the base of alumina. In nature aluminium is not found in a separate or metallic state. It was formerly very rare and cost as much

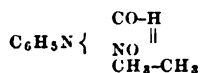
as gold, but as a result of recent discoveries the price has been greatly reduced. Until very late years it was imported from Greenland, being obtained from the mineral cryolite, a double fluoride of aluminium and sodium. Its chemical symbol is Al, and atomic weight 27. To Sir H. Davy is awarded the honor of its discovery, although it is claimed by some that Wöhler is entitled to the credit. As a mineral it is remarkably light, being but about one-third the weight of iron. Recent investigations have verified the fact that in combination with oxygen it forms the common earth alumina (Al_2O_3), the most abundant of the earths as diffused over the globe in the shape of clays, loams, and similar substances. It has also been discovered that it enters largely into the composition of a great number of minerals, principal among which are the feldspars, from whose decomposition are the many forms of clay (kaolin, etc.); also a large number of silicates, as the andalusite, cyanite, fibrolite, topaz, etc. In its various compounds it is estimated that it forms fully one-twelfth of the crust of the earth, and on account of its abundance, its lightness of weight, freedom from tarnish, ease in working, and its non-poisonous qualities, every effort is being made to reduce the cost of its production. It has heretofore been used, to a limited extent, by itself, and in alloys in many articles where great strength and extreme lightness were both required.

An alloy of nine parts of copper to one of aluminium resembles gold in luster and color, and is much used in the manufacture of cheap jewelry, ornamental work, and for various industrial purposes. Three per cent. of silver mixed with aluminium gives the alloy the color and brilliancy of pure silver, and while silver is tarnished by sulphureted hydrogen, the alloy remains unchanged. An alloy made of

gold, silver, copper, and for soft solder a little zinc is used in soldering bronze. While it can enter largely into the mechanic arts, it cannot be used for cooking utensils, because it dissolves easily in organic acids in the presence of chlorides. It has proved especially valuable in the manufacture of fine wire lace, certain surgical instruments, suture wire, dental plates, etc., and on account of its remarkable strength aluminum-brass has been selected by the government of the United States as the best material for the propeller blades of the war vessels in course of construction. It has also been found especially valuable for gun metal.

As an evidence of the remarkable advance that has been made in its production, as well as in lessening its price, it is officially stated that in 1885 the price of the metal was quoted at from 75 cts. to \$1.25 per Troy ounce. In that year works were established in Cleveland, Ohio, and Lockport, N. Y., where its manufacture was entered upon with so successful a result that its cost was reduced to prices varying from \$3 to \$4.50 per pound. In 1890, by reason of two chemical discoveries, it was found that the pure metal could be extracted from common clay, and, it is claimed, can be produced for less than \$300 a ton—a price less than that of copper. As a gauge of its lightness, it may be stated that a cubic foot of silver weighs four times as much, and a cubic foot of iron three times as much as a cubic foot of aluminum, and, with its extreme ductility and its tensile strength of 25,000 to 30,000 pounds per square inch, it is destined to occupy a highly important position in the arts. See *Britannica*, Vol. I, p. 647.

ANTIPYRINE.—An oxygenated alkaloid. As found in commerce it is an artificial organic base, in the form of a white crystalline powder, or in scales, remarkable for its ready solubility in water. It is produced by the action of phenylhydrazin on acetic ether, and the subsequent methylation of the product. Its composition corresponds to the formula $C_{10}H_{11}N_2O$, and its constitution may be indicated by the designation of Dimethylphenyloxyprazol or by Dimethylphenylpyrazolon; this constitution, according to the elaborate researches of its discoverer, Dr. Ludwig Knorr, of Germany (1890), is seen in the formula grouped as follows:



Its most characteristic reactions are those it gives with perchloride of iron and nitrate of soda; the former produces a deep reddish-brown color in the neutral solution, the latter an intense emerald green tint in the slightly acidulated solution. It gives an intense red coloration with chloride of iron. It is an extremely efficacious agent for the reduction of the morbid temperature in nearly all cases of febrile disorder, such as typhus, pneumonia, pulmonary phthisis, pleurisy, acute rheumatic gout and articular rheumatism, erysipelas, puerperal fever, scarlatina, inflammations, etc. It effects with high fever a reduction of temperature from three and a half to five and a half degrees without unpleasant after-effects. It is given in doses of fifteen and thirty grains, and is dissolved in water or wine before each administration. The duration of the effect lasts from seven to twenty hours.

AMIDOGEN.—A hypothetical radical, with the formula NH_2 . It is a clear and very mobile liquid, boiling at $87^\circ C$. The vapor, absorbing moisture and forming minute drops of the liquid hydrate, produces a white cloud in the air. Brought in contact with water, it dissolves with evolution of great heat. It attacks the skin in the most painful manner and rapidly destroys cork and caoutchouc.

BACTERIAL FERMENTATION.—It has been discovered that certain alkaloids which act as violent poisons are the immediate result or accompaniment of bacterial fermentation. Brieger in 1887 isolated an alkaloid, to which he gave the name *tetanine*, from the liquid used for cultivating a bacillus which has been supposed to cause tetanus traumaticus in animals. It remains to be determined whether the alkaloid is a secretion or other product of the life of the bacillus—in which case the bacillus would be the primary cause, and the tetanine the secondary or immediate cause of disease—or whether it is a direct result of chemical action in the cultivating liquid.

BRAN AS FOOD.—It has been recently proclaimed (1886) by Aimé Gerard, as the result of his investigations of the alimentary value of the several tissues of which the wheat grain is composed, that while a considerable proportion of the seed coats is digestible in man, the proportion of nutriment is very small, and the quality of the bread is greatly impaired by the presence of these substances. From an economical standpoint, flour mixed with its full complement of bran is not desirable for human food, as the bran can be more profitably utilized as cattle feed.

BROMIDE OF ETHYL.—A new anæsthetic, claimed to be far superior to ether or chloroform. It is highly indorsed by members of the medical profession for the reason that it does not influence the circulation, except sometimes to produce a slight increase in the rapidity of the heart's action, and in arterial pressure. Respiration is but little affected by it, and there is but little, if any, nausea or vomiting. It vaporizes readily and produces no irritation in the respiratory passages, and there is far less tendency on the part of the

patient to struggle, as is frequently the case when ether or chloroform is administered. Complete anæsthesia is accomplished in about one-third the time experienced in the use of ether and chloroform, and the recovery is much more rapid, two minutes being enough for its completion. The vapor is not inflammable, hence no danger attends its use in the presence of artificial lights.

BROMINE, as a chemical element, has received an immense impetus and is manufactured on a large scale from the mother-liquors obtained at Stassfurt in working the salts of potassium and magnesium. Immense quantities are also produced from similar liquors obtained in salt boiling in West Virginia, Ohio and Pennsylvania. Bromine is now being extensively used as a substitute for iodine alcoholic compounds in the manufacture of coal-tar dyes, and also to some extent in the production of various artificial dye stuffs. On account of its volatile nature, it is now generally shipped in a solid or liquid form, as bromide of iron or of ethyl.

CHOLESTERIN, $C_{26}H_{44}O$, a fatty substance, originally found in gall-stones, but now known to be present in the yolk of egg, the blood corpuscles, milk, and other animal fluids, as well as in peas, barley, rye, etc. It is soluble in alcohol and ether, and separates from its solutions in glistening nacreous scales.

CELLULOSE.—A substance especially abundant in Nature. It composes the cells of wood, as wax composes the cells of a honey-comb. It is the essential of the primary wall membrane of the cells, isomeric with starch in its composition, and allied to starch, sugar and inulin. Cotton and bleached flax, as well as hemp, are nearly pure cellulose. In some filter paper it has been produced almost absolutely pure. It is remarkable for its insolubility, being dissolvable only by an ammoniacal solution of copper. It has recently been brought into use in ship-building, as it is especially adapted for protection against blows, concussions, or perforations, either above or below the water-line. Its component parts are carbon, hydrogen, and oxygen, in the proportions in which they exist in the cellular tissues of all plants, woods included. The material as prepared for ship-building is usually made of the ground fiber of the cocoa-nut, with a small percentage of the original fibers. It is extremely light, and has the property of rapidly swelling when wet. A cubic foot of it, as ordinarily prepared, weighs but seven and a half to eight pounds. It is practically free from danger of fire, burning very slowly and with great difficulty when compressed. The French made experiments with it by firing a 10-inch shot through a cellulose mattress. The fibers came together so rapidly that only about three and a half gallons of water per minute passed through the aperture, and it soon closed entirely. Its use was begun in 1884, and up to 1890 it had been put into about forty vessels of the French navy, and into a number of the Russian, Dutch, Japanese, and Greek navies. In 1890 its use was ordered in the construction of the vessels of the American navy. The cost as prepared for use is about \$350 a ton, or about one dollar a cubic foot.

COCAINE.—A vegetable alkaloid ($C_{17}H_{21}NO_4$) obtained from the leaves of the coca (or coca, for which see *Britannica*, Vol. VI, pp. 684, 685), a small shrub growing in the mountains of Peru and Bolivia, but cultivated, after its wonderful properties became known, in other parts of South America. The principal source of the drug as a commercial product, at the present day, is the province of Yungas, in Bolivia. The leaves from which the drug is obtained are green, about two inches long; the blossoms white, and the berries red. The annual product is estimated at 40,000,000 pounds. The leaves, when macerated and treated with pure wine, produce one of the finest stimulants ever tried by persons exhausted by excessive mental work, or emotional excitement. Many attempts have been made in time past by chemists to extract the medicinal and chemical properties of the plant; but no success was actually reached until within late years, when an alkaloid was isolated which proved a thorough local anæsthetic, and to which was given the name *cocaine*. The drug of commerce forms colorless transparent prisms, is odorless, and has a bitter taste. It is only sparingly soluble in water, but freely soluble in ether, and is used as a local anæsthetic. As such it has proved especially valuable in operations on the more delicate organs of the body, as the eye, etc. Two per centage of cocaine added to ordinary cacao butter-pencils converts the latter into a remedy which gives almost instant relief to a chafed or irritated skin, to insect bites, etc. In 1889 cocaine was made artificially from benzoi-cogonine, by introducing into it the methyl group. Whether the new production possesses special therapeutic properties has not been ascertained, at least not announced.

The history of cocaine is a short one, but its strength as a drug and a poison places it in the front rank of drugs as the most deadly. So benign is its influence that few who begin its use suspect its power until the "cocaine habit" is formed, and the victim is rapidly becoming a wreck. Its distinctive feature is due to hyperæmia of the nerve centers; but as the effect is transient, reaction sets in with ever increasing power until the habit is fully formed and the victim is in the clutches of a terrible adversary with very little chance of hope for safety. As a stimulant it is justly regarded as far more powerful, rapid, and baneful in its effects than any known drug.

Beginning with 1885, when crude cocaine was first made in Peru, vast quantities were sent to the United States and to Europe. The advantages of exporting the crude alkaloid

rather than the leaves proved many and important. The principal source of supply for the United States is by the way of Hamburg.

CORROSION OF FRUIT CANS.—Acetic, tartaric, and citric acids dissolve more tin and lead (in some cases nearly, if not quite as much) from sheets of pure metal than from alloys. This has been especially noticed in the corrosion of fruit cans and tin-foil by the acids of the fruit inclosed in them. The action is very rapid; hence a can once opened should be emptied into glass or earthenware immediately. The solder of the tin cans contains a large amount of lead, and vegetable acids act on this as well as on the pure tin of the plate, the results proving often very deleterious. In an experiment on tin cans that had been emptied, it was found that acetic acid dissolved 0.4178 grams of tin, and 0.0117 grams of lead; tartaric acid dissolved 1.0430 grams of tin, and 0.0873 grams of lead; and citric acid, 0.6388 grams of tin, and 0.1559 grams of lead. In two weeks' time the tin was completely eaten off as far as the acids reached. The use of tin-foil for wrapping the so-called Neufchâtel and other soft cheese is regarded as reprehensible by chemists, so large a proportion of what is called tin-foil containing a large admixture of lead, sometimes as much as 75 to 80 per cent. This is readily dissolved by the acids in the cheese, and the lead is thereby received into the system.

CHOLESTERIN.—A substance ($C_{26}H_{44}O$) crystallizing in leaflets, with a mother-of-pearl luster and a fatty feel. It occurs in the blood and brain, in the yolks of eggs, and in the seeds of buds and plants. It has also been found as a fat occurring in the feathers of birds, and is present in considerable proportions in wool. It was, until 1887, regarded as of no value when occurring in feathers and wool, except as a combustible. Liebrich has experimented with it and produced an extremely pliant, soft mass, absorbable by the skin, and capable of being readily incorporated with various medicaments. It is now being manufactured commercially, and has come into general demand as a basis for salves and cosmetics.

CYANON.—A white powder which has a greenish-gray tint, and which, on the application of heat of about 400° F., explodes with great violence. It is produced by passing coal-gas through an alkaline solution of bi-cyanide of mercury. In its explosion there is produced a considerable quantity of soot and carbon, while the mercury is thrown out to a considerable distance, so that cyanon may be said to combine the qualities of both gunpowder and shot.

DECIPIUM.—A new element discovered by Delafontaine in 1878. Its oxide (DpO) has a molecular weight of 122. The nitrate gives an absorption spectrum of three bands in the blue and indigo.

DIAMONDS, ARTIFICIAL.—First produced in 1880 by Prof. Haunay, of Scotland, who heated lithium in a mixture of highly rectified bone-oil and paraffin-spirit for fourteen hours, and then allowed it to cool slowly. On opening the tube in which it had been enclosed and allowing the gas to escape, he found adhering in its upper part a hard, smooth mass which had to be removed with chisel. In pulverizing the mass transparent crystals of carbon, or diamonds, were found. Their purity was tested by burning a portion in oxygen with results indicating that their composition was 97.85 per cent. carbon. The remainder was found to be nitrogen, present in a chemical combination.

DRYING OILS.—When linseed oil is oxidized, it undergoes very marked changes in its physical properties; the color becomes darker, the oil more viscid, and there is an increase in weight, sometimes equaling eight per cent. The drying of the oil is due to its oxidation. Some carbon and hydrogen are also driven off. These changes likewise occur during the process of "boiling." According to Cloetz (1890), the carbon and hydrogen eliminated do not all pass off as carbonic acid and water, but partly as an irritating vapor resembling acrolein.

ECONOMICAL HEATING GAS.—Steam passed over coke or charcoal at a red heat causes a dissociation of the elements of the watery vapor. The hydrogen being set free, and the oxygen forming compounds with the carbon, an intense heat is generated. The mechanical apparatus for producing this effect is a hollow cylindrical body of wrought-iron terminated below by a cast-iron bottom having a hole in its center, and below this a second cylinder. In this lower cylinder the fire grate is lodged, the blast pipe opening into it below the fire grate. In the upper cylinder there is a coil of thick wrought-iron pipe with the upper ends of the coil turned outward at right angles, and passing gas-tight through the body of the generator. Various other mechanical features complete the heater. When a fire is lighted in the interior of the machine and water driven through the coil, the water reaches boiling point very quickly. The steam accumulating in the upper part of the coil becomes super-heated, and escaping by the small pipe with considerable force, carries with it by induction a stream of air, thus supplying the requisite oxygen for supporting combustion. The steam is decomposed in its passage over the incandescent coal, forming oxygen, carbon monoxide, and carbon anhydride. The gas produced is essentially a non-illuminating gas. It burns with a reddish-blue flame with neither smoke, soot nor deposit of any kind, the sole product being water and carbonic anhydride. In the city of London it is made in considerable quantities at about one-quarter the cost of ordinary illuminating gas. The problem appears to have been solved by Joshua Kidd, an English inventor, about the

year 1878. A popular name given to the machine is "The Water-Burning Stove."

EIKONOGEN.—A new photographic developer, a description of which was first given by Prof. Liveing in 1889. It gives in greater detail the more delicate features of the negative, and also improves the tone of the product. The name is a manufactured one, for the salt consists of the sodium salt of amido β naphthol - β sulphuric acid.

ERYTHROGEN, a compound of carbon bi-sulphuret, uniting directly with a metal without the intervention of oxygen, or any similar body. Experiments have resulted in producing a new pigment (porseillon), and a new explosive (cyanon).

EXPLOSIONS FROM OIL LAMPS.—Owing to the great number of accidents which have occurred since the advent of petroleum into common use, the attention of chemists has been directed to a study of the causes, resulting in many important discoveries, among which may be enumerated: (a) If a lamp whose reservoir is only partly full be carried or moved rapidly from one place to another, a mixture of vapor and air may escape, and, becoming ignited by the flame, suddenly explode. (b) A sudden cooling of the lamp, by its exposure to a draught, or by being forcibly blown upon for its extinguishment, may give an inrush of air which will increase the explosive properties. (c) The glass may be cracked by sudden cooling, and permit small quantities of oil to escape, but enough to produce an explosive mixture. There are two distinct tests for oil: (a) the flashing test, and (b) the burning test. The flashing test is by far the more important, as it is the inflammable vapor, evolved at atmospheric temperature, that causes most of the accidents. The burning point is the lowest point at which it takes fire, and the two points are quite independent of each other. Since crude naphtha is worth but two or three cents a gallon, while refined petroleum oil sells for 18 to 20 cents; and as great competition exists among refiners, there is a strong inducement to turn the heavier portions of the naphtha into the kerosene tank, so as to get a kerosene price for the adulterated mixture. The mixture is highly dangerous. Very many variations of the mixture of naphtha, and benzine, and petroleum, have been indulged in. Processes have been patented, and patent rights and territory have been sold to the uninitiated; secret processes for rendering gasoline, naphtha, and benzine non-explosive, have been advertised and sold; "liquid gas," "aurora oil," "petrolin," "safety gas," "puroline," "black diamond," "sepolin," "anchor oil," "sunlight non-explosive burning fluid," and a dozen more truth-sounding names have been put before the public, but in every instance there has been proved by chemical analysis an element of danger which demands the strictest legislation. No roots, nor gums, nor barks, nor salts, when turned indiscriminately into the benzine will prevent its explosive power.

EXPLOSIVE, A NEW.—A powder discovered by Prof. Reynolds in 1873. It consists of two substances that can be kept apart without risk, and mixed as required, to form a blasting or explosive agent. The ingredients are chloride of potassium, 75 parts; sulphurea, 25 parts. The compound is white powder, which can be ignited at a lower temperature than gunpowder, and leaves less residuum.

FUSEL-OIL IN BRANDY, MEASUREMENT OF.—Marquardt, in 1883, described to the scientific world a new method for the quantitative determination of fusel-oil in brandy. He extracted the oil with chloroform, and oxidized the product with bichromate of potash, then distilled, and treated with barium carbonate. The chloroform and the excess of barium carbonate were removed, and the baryta and barium chloride determined by means of nitric acid. The quantity of amylic alcohol or fusel-oil was calculated from the baryta.

GLASS-MAKING, IMPROVEMENTS IN.—So great has been the advance in procuring purer materials, that the coarser green glassware formerly in use is becoming a thing of the past, a colorless glass taking its place. The glass-pots formerly in use are being dispensed with by such improvements in the furnaces that the preparation of the glass is completed in the hearth itself, where, in three separate compartments, are accomplished the fusing, the "fining," and the bringing of it to the proper consistence for working. Plate-glass has been brought more and more into use, and very large plates have become familiar. Toughening processes are being constantly invented or discovered, resulting in a material of largely increased strength, and capacity for withstanding great mechanical stress and violent blows. Optical glass is made of marvelous size and clearness; telescope lenses of 30 inches and more in diameter having been made since 1880. That of the Lick Observatory has an object glass of 36 inches.

Tilghman's sand-blast for etching on glass is an important invention, on account of its simplicity and quickness, its efficiency in deep cutting, its applicability to sheets and wares of any size, and the delicacy of its operation in engraving minute figures of intricate designs.

GLUCOSE.—A group of sugars with the chemical formula $C_6H_{12}O_6$. In commercial usage glucose is the name of the thick syrup made from cornstarch, the name *grape sugar* being applied to the solid product from the same source. In chemistry, the term *glucose* is used to describe either substance. The *glucose* of commerce is thick and tenacious, of a slightly yellowish tint, although nearly colorless, and with a specific gravity at 20° C. or 68° Fahr. of 1.412. Its sweetness varies with different specimens. If the manufacture has been well conducted the grape sugar made from cornstarch is, when new, of a pure white color, but gradually assumes a

yellowish tint. It is hard and brittle, and dissolves more slowly in water than cane sugar. Of the two, cane sugar is the sweeter, while the grape sugar leaves a faint but perceptible bitter taste in the mouth.

Glucose occurs abundantly in sweet fruits. Chemists distinguish between two kinds, because of their action on polarized light, naming one *dextroglucose*, *dextrose*, or *grape sugar*, this form turning the plane of polarization to the right; and *levoglucose*, *levulose* or *fruit-sugar*, this latter form turning the plane of polarization to the left.

The manufacture of glucose has attained a very considerable magnitude in the United States. It is made at the factories from Indian corn by converting the starch in the grain, through the action of sulphuric acid, and is used principally for the manufacture of table-syrups, candies, also in brewing, and as food for bees, as well as in the making of artificial honey. A large percentage is also used in making cane-sugar. Bees store it away unchanged as honey. Great quantities are used in the preparation of condensed milk. The question has been raised as to the possible injurious effects caused by the use of sulphuric acid; but it has been abundantly proven that in its chemical composition, it is identical with the natural sugars of fruits and honey, which are universally accepted as wholesome.

GRASSES, AMERICAN.—A series of important experiments made under the direction of the Department of Agriculture, in Washington, of which a report was made in 1883, show by their analyses that American grasses are strikingly different in composition from similar German varieties, chiefly in that the content of nitrogen is smaller, and the amount of fiber diminished, while the amount of nitrogen free extract is larger, and the fat is slightly increased. The deduction is conclusive that the nutritive range of American grasses is much wider than in the German grasses. The American wild grasses are less nutritive than the cultivated sorts.

HYALINE.—A newly manufactured composition, described as horny, translucent, possessing great tensile strength, and having considerable elasticity. It is used as a substitute for celluloid, and can be worked, dyed, pressed, denitrated, and rendered incombustible, or fireproof. It is composed of about equal parts of gun-cotton and colophony, or shellac, copal, dammar, turpentine, or of any mixture of any of these resins.

HYDRAZINE.—A colorless stable gas with a formula of H_2N_2 . It is soluble in water, has a peculiar odor, and a strongly alkaline reaction. It attacks glass energetically, and rapidly destroys cork, and caoutchouc. Its taste, somewhat like that of ammonia, leaves a burning sensation on the tongue. It is an extremely strong reducing agent, and is, therefore, one of the most important factors yet discovered in chemical operations.

KEPHIR.—A fermented milk described by M. Strove, of Tiflis. What *koumiss* is to the inhabitants of southeastern Russia, *kephir* is to those of the northern Caucasus. In its preparation cow's, sheep's or goat's milk is fermented in leathern bottles with *kephir-grains*. These grains are the ferment proper, the leathern bottle not being deemed a necessity. During the fermentation the milk becomes very much changed. At a given stage the ferment-substance, or *kephir-grains* are removed, and dried in the sun, when they are ready for another service. An analysis of the dried grains gave:

Water.....	11.21
Fats.....	3.99
Soluble peptone substances.....	10.98
Protoids soluble in ammonia.....	10.32
Protoids soluble in potash.....	30.39
Insoluble.....	38.11

The insoluble residue exhibited under the microscope an intimate mixture of yeast-cells, and seemed to be the only active part of the *kephir-grains*. From this it is concluded that the fermentation of the milk is entirely due to *Saccharomyces Mycodermis*. The addition of a small quantity of "finished" drinkable *kephir* will start fermentation in fresh milk in the same manner as the *kephir-grains*.

IMPERIALINE.—An alkaloid obtained from the bulb of the poisonous plant Crown Imperial (*Fritillaria imperialis*). It is when first obtained, in the form of a yellow precipitate, but from the alcoholic solution crystallizes in short colorless needles with a composition of $C_{25}H_{30}NO_4$. The crystals are not readily soluble in water, but yield to ether, chloroform, and alcohol. A chloride has been obtained which makes bitter solutions with alcohol and water, and forms salts with platinum and gold. The discoverer was Dr. Fragner, of Prague.

IRON SURFACE PROTECTION OF.—A process for protecting from rust, invented in 1879 by M. Dodé. It consists in coating either by bath or brush, the surface of cast or wrought-iron, with a composition of borate of lead, oxide of copper, and spirits of turpentine. When dried the metal is passed through a furnace, heated from 500° to 700° F., according to the thickness of the articles under treatment, so as to bring them to a cherry-red heat. At this point a fusion of the metallic pigment takes place, and, entering the pores of the iron, gives a dark coating, which will not scale off, and resists the action of the atmosphere, gases, alkaline, and other vapors. The cost of the process, which is intended to take the place of painting and varnishing, is about one-half a cent per square foot. Another process, invented by Bown in

the same year, employs magnetic oxide, which is applied while the articles are hot. It is claimed that this process effectually protects iron from oxidation in any form.

LIGHT, DIRECT PRODUCTION OF.—Prof. Herts has demonstrated (1891): (a) That the medium which intervenes in the phenomena of electrical action is the same as that which is the seat of luminous phenomena; (b) that both species of perturbations are propagated under the same conditions, and with equal velocity; and (c) that there is identity of nature between certain electrical and luminous phenomena. Experiment has given the following results for the ratio of duty of different luminous sources which can be measured in this way as light, the total radiation being taken as unity:

Candle.....	0.00298
Petroleum lamp.....	0.00315
Gas light.....	0.00317
Oil lamp.....	0.00442
Incandescent electric lamp.....	0.06
Arc lamp.....	0.1

Thus the electric arc lamp which gives the highest duty of all, wastes nine-tenths of its energy in non-luminous, invisible heat rays. Experiments for quickening these rays are being energetically prosecuted.

LUMINOUSITY OF FLAME.—From careful experiments conducted by Heuman, that eminent scientist advanced the theory in 1878 that the luminosity of hydrocarbon flames is due to the presence of solid particles of incandescent carbon. The grounds on which his opinion is based are briefly stated as: (a) The increased luminosity which chlorine gives to weakly luminous or non-luminous flames is due to its well-known property of separating the carbon as such. (b) A rod held in a flame is smoked only on the lower side, the side opposed to the gas-stream. (c) A body held in a flame is smoked even when it is in a state of ignition. (d) These particles can be actually seen in the flame when it is made to strike against a second flame or an ignited surface, the particles aggregating together to form visible masses. (e) The luminous portion of a flame is not very transparent—no more so than the layer of smoke of the same thickness which rises above a flame fed with turpentine. (f) Flames which unquestionably owe their luminosity to the presence of solid particles give a shadow with sunlight, precisely as do hydrocarbon flames; while luminous flames composed of ignited gases and vapors give no such shadow in sunlight.

LUMINOUS GLASS.—A phosphorescent powder is mixed with the glass while in a fused state, in the proportion of five to twenty per cent. of mass of glass. After the composition has been duly puddled, or mixed, it is converted into different articles by the ordinary processes. While the material is still warm and plastic, it is sprinkled with the powder, which becomes readily incorporated into the surface of the article by pressure, and the constant effect of luminosity or iridescence is readily produced.

MANGANESE MINERAL, A NEW.—A hydrous sulphate of the Epsomite group discovered by Mr. Iles in Colorado in 1882. It is composed of loosely adhering, very friable, thick orthorhombic prisms, which frequently terminate in truncated pyramid, with a slightly glistening luster. The aqueous solution effervesces with sodium carbonate, and reddens blue litmus paper. Its hardness is from .75 to 1, and its specific gravity is 2.167.

MILNE.—A new explosive invented by Redtenbacher, of Austria, in 1866. It is a brownish-black powder, insensible to percussion and friction, and ignitable only by a spark at from 835° to 840° C. It is claimed that it contains the elements of ordinary powder, and can be employed as powder is, but made to produce effects comparable with those of dynamite.

MILK OF THE EGYPTIAN BUFFALO.—From experiments made by MM. Rappel and Richmond, of the Khedive Laboratory, Cairo, in 1891, the milk of the Egyptian buffalo (*Bos bubalus*) presents several characteristics distinguishing it from that of the cow. In Egypt the milk is extensively used by physicians for invalids, especially infants. The amount of fat is much greater than in cow's milk, the percentage varying from 5.15 to 7.35. The sugar, which appeared to be a hitherto undescribed variety, differing from milk sugar, was found to be of larger amount than that in cow's milk, the average percentage being 5.41. It was suggested that it be called *triphkose*. The fat was found to differ from that of cow's milk, in containing minute quantities of sulphur and phosphorus, and yielding four times as much caproic acid as butyric acid; whereas in cow's milk the quantity of caproic acid is only double that of butyric acid. The milk also contained citric acid.

NITRIFICATION.—Among the older chemists it was believed that a decaying organic body evolves more or less of its nitrogen in a free state, and that this while nascent combines with the oxygen of the air. This, however, is no longer regarded as a purely chemical process, but the work of a living organism comparable to the yeast plant. Among many modern chemists the agent is believed to be ozone. Yet it has been discovered that the temperature of boiling water suffices to destroy all power of nitrification. As a fact the process of nitrification is strictly limited to the range of temperature within which the vitality of the living ferment is confined.

OLIVE OIL, A NEW TEST OF.—According to Prof. Bichl, of Florence, cotton-seed oil can certainly be detected in olive

oil by the test of a one per cent. solution of nitrate of silver in absolute alcohol. The test was applied to a sample of pure olive oil, and a sample in equal quantity of the doubtful oil. The pure oil was not affected, but the mixed oil began to darken to a tint depending on the amount of the adulterant present.

OLEOMARGARINE.—The first manufacture of oleomargarine in the United States was by Paraf in 1873, and for a year or two the sales were light, the product not being as good as that made under Mège's method in Paris. Experiments toward improvement were begun by Dr. Mott, of New York, with excellent results. These were followed by others, especially by Mr. G. Harding, most of which were satisfactory. A new industry was thereby created, and factories for its production were built in several States, some of them with a capacity for producing 50,000 pounds of the material daily. In order to make this quantity 123,000 pounds of fat were required. A careful analysis shows from what it appears its constituents are:

Water	11.203
Butter solids	88.797
	100.

While the constituents of cream butter are:

Water	11.963
Butter solids	88.032
	100.

Oleomargarine has, under the microscope, identically the same appearance as butter made from cream, but has less of the volatile fats in it, and keeps sweet for a much longer period than dairy butter. In 1832 very strict laws were enacted by the State of New York in reference to the manufacture and sale of the article; and the example set by her was generally followed by other States. One important requirement of the law is that every package of oleomargarine sold shall be invariably marked "Oleomargarine," and a penalty is provided for its breach. In 1834 the manufacture was carried on on an enormous scale. Three factories in the State of New York alone turned out not less than 4,500 tons. Grave fears have from time to time been expressed that animal parasites, or diseases might be introduced into the human system by this substitute for butter, but analysis has failed to discover them; and, as the aim of the manufacturers is to produce a sweet and merchantable article, it would be against their interests to use poor materials. It may be said in truth that the discovery and invention of Mège, with the improvements which have since been made, have revolutionized the treatment of beef-fat, which was formerly converted into tallow. Large quantities of the manufactured product are annually shipped to England and other European countries, where it is put on the market as *butterine*, or *suine*. In some factories lard, as well as cotton-seed oil, is used as a substitute for oleomargarine in making artificial butter. Oleomargarine and lard are also used in making cheese from skimmed milk.

OXALOMOLYBDIC ACID.—A solid, crystallizing in large monoclinic prisms. It is nearly insoluble in strong nitric acid, but the crystals dissolve in water, yielding a colorless and strongly acid liquid. The crystals when dry are affected neither by sunshine nor dark. When moist and exposed to the sun's rays, they quickly become blue. If a piece of paper be immersed in the solution dried in the dark and exposed behind a photographic negative, a sharp print in blue is readily obtained by exposure to the sunlight, but the color will instantly disappear in contact with water. If, however, the paper with its blue markings be exposed to a gentle heat for a few minutes, the blue changes to black, and the characters are no longer destroyed by water.

OXYGEN, SOLIDIFICATION OF.—This was announced in 1886 as having been accomplished by Prof. Dewar. He allowed oxygen to expand in a partial vacuum, when an absorption of heat took place. The confined oxygen became like snow, and had a temperature of 200° C. (360° F.) below the freezing point of water.

OZONE, LIQUEFACTION OF.—This was accomplished by MM. Hautefeuille and Chappuis in 1880. In performing their experiment they ozonized oxygen to a greater extent than had ever before been done, by passing a silent electric discharge through it at a low temperature. The oxygen was then conducted into the capillary tube of a Cailletet's apparatus at a temperature of -28°. After a few strokes of the pump the gas in the tube became of an azure blue. The pressure was increased until under 95 atmospheres it became of a dark indigo blue. The pressure was suddenly removed, when the mist which indicates liquefaction was formed in the tube. The stability of a mixture of oxygen and ozone, rich in ozone, appears to be chiefly dependent on the temperature. Ozone is much more easily liquefied than oxygen, the latter requiring the pressure of 300 atmospheres at a temperature of -29°.

PAPPAINE.—A new digestive agent, derived from the juice of the common papaw tree (*Carica papaya*). The milky juice is slightly bitter and styptic, and free from tartness. It flows from incisions made in the bark and the green fruits, and is bottled and sent to market, either pure or with the addition of ten to twelve per cent. of alcohol to prevent fermentation. The most important property of papaine, and one which puts it in the rank of the most powerful digestive ferments, is its action on meats. One part will digest and transform into

soluble peptone from 250 to 300 parts of meat. Its solubility in different fluids allows it to be used in a great many pharmaceutical forms, and being a vegetable juice it can be preserved more readily than animal ferments. When dry it can be kept indefinitely. Attention was first called to its peculiar properties by M. Wurtz before the French Academy of Sciences in 1881.

PAPER MANUFACTURE.—Owing to the immense demand for paper, and the inability to secure a supply from rags, esparto, etc., much attention has of late years been given to its production from wood, the supply of which is practically inexhaustible. Various processes have been patented in the United States and Canada. Their result can be best summed up as follows: Wood or straw is cut in pieces, macerated with milk of lime, transferred to a digester after twenty-four hours, and saturated with sulphurous acid, with the simultaneous application of a pressure of five atmospheres, for one or two hours. Washings with water and further pressure is given, with treatment of three per cent. calcium chloride and one-half per cent. aluminum sulphate. The pulp begins to resemble cotton in appearance, and is employed for manufacturing the finer grades of paper at once. Pine, birch, beech, and hickory are stated as producing the finest "linen" paper stock. Pulp mills are abundant in many of the Northern and Western States, whence the pulp is shipped to other mills for final disposition.

PHILLIPPIUM.—An oxide discovered by M. Delafontaine, and described by him in 1878. The earth of the metal phillippia is yellow, like terbia, but its equivalent is lower. Phillippium crystallizes with great facility either by cooling or by spontaneous evaporation, in small, brilliant, rhomboidal prisms. In the spectroscope the concentrated solution of phillippium gives in the indigo blue a magnificent absorption band, very intense and rather broad, with well-defined edges.

PHOTOGRAPHY, COLORED, has received a great deal of attention—but see under PHOTOGRAPHY, IMPROVEMENTS IN.

PONSÉLION.—A scarlet powder of very brilliant tint. It rivals gold itself in resisting the effects of atmospheric influences, and like gold is only attacked by *aqua regia* and those fluids which generate chlorine. Nor does sulphureted hydrogen have any effect upon it, or any of the hydrosulphates, so that as a paint it is practically imperishable. It was first described in 1878. Its composition as given seems to consist of:

Mercury	1 atom=202
Sulphur	3 atoms= 48
Carbon	1 atom= 6
Hydrogen	1 atom= 1

Thus making its atomic equivalent equal.....277

PURIFYING WATER.—A method of purifying water was adopted in 1880 at the Royal Aquarium in London with most satisfactory results. The method of procedure is as follows: Receive the water in a "softening cistern," and expose it to a jet of lime-water. This coagulates the clay that is held in suspension, and causes the impurities to be deposited at the bottom. The water is afterward passed into a filter with a large surface, so arranged that it can be cleaned by mechanism in a few minutes. The cleansing usually takes place once a day. The filtering capacity is from 80 to 100 gallons of pure water an hour from each square foot of filter surface. The health of the occupants of the tanks was greatly improved as a result. The system immediately became popular, and was put into extensive use.

PYRIDINE.—A colorless liquid, derived from coal tar. Its symbol is C₅H₅N. It has a pungent odor, and its special use is in allaying asthmatic paroxysms, in accomplishing which it has proved extremely valuable.

RARE EARTHS.—Investigations of the spectra of various rare earths have led scientists to declare that there are elements whose existence is only revealed by the spectrum lines, and which still remain to be separated. Most valuable researches have been made by European physicists, and most interesting results are being constantly announced.

RUBERINE.—A new coloring matter extracted from the *Agaricus rosei*, a poisonous fungus, and first described by Dr. Phipson in 1862. It possesses interesting optical and chemical qualities. In color it is a beautiful rose-red, and when seen by transmitted light presents a very vivid blue fluorescence. In its spectrum it gives two wide and dark absorption bands in the green. It is soluble in water and alcohol, in solutions that are rose-red by transmission, and blue by reflection.

SAMARIUM.—A new metal found in samarskite, the molecular weight of whose oxide is less than 117. It was first discovered by M. Delafontaine in 1878, but not verified until by M. Lecoq in 1881. It is regarded as identical with the ββ described by Marignac.

SCANDIUM.—A metal discovered in 1879 by Nilson in erbia, which up to that time had been considered as the oxide of a single metal, erbium. It occurs only in minute quantities, and forms but one oxide, scandia (Sc₂O₃); it is a perfectly white, light, infusible powder. The strongest acids attack it with difficulty. Its specific gravity is 3.8, and its atomic weight 45.12.

SPECTROSCOPE, A NEW.—Recently devised (1888) by Krüss, based on the Bunsen and Kirchhoff instrument. So great is its power that spectrum measurements may be made between two colors whose wave-lengths differ only 0.000,000,000,015mm.

SULPHUREA.—A body discovered by Prof. Reynolds, and obtained principally from the waste products of gas manufacture. It is a compound, and with three times its weight of chlorate of potassium, it forms an explosive more powerful and much cleaner than gunpowder.

TEMPERATURE OF FLAMES.—By some very skillful experiments made by Rosetti in 1878 with his ingenious calorimeter, investigating the temperature of different flames, he is enabled to present to the scientific world the result of his investigations in the following table:

Locatelli lamp.....	920° C.
Stearine candle.....	940° C.
Petroleum lamp, with chimney.....	1,030° C.
Petroleum lamp without chimney.....	
Illuminating part.....	920° C.
Sooty envelope.....	780° C.
Alcohol lamp.....	1,170 to 1,180° C.
Bunsen burner.....	1,360° C.

THEOPHYLLINE.—A new base discovered in tea. It forms a well crystallized series of salts with the mineral acids, and with platinum, gold and mercury chlorides. It also yields with silver nitrate a silver substitution compound, which is readily soluble in nitric acid.

TYROTOXICON.—A poisonous substance found by Prof. Vaughn in certain kinds of cheese. From an alcoholic extract a residue was collected, which, like the aqueous extract, produced the symptoms of poisoning. The poison was separated by spontaneous evaporation in needle-shaped crystals, having a penetrating, old-cheesy odor, like that sometimes observed in poisonous sausages. When the crystals were allowed to stand exposed to the air at ordinary temperature, they decomposed with the formation of an organic acid. Tyrotoxin is soluble in water, alcohol, chloroform and ether. A few drops of an aqueous solution of the crystals placed upon the tongue produced the symptoms characteristic of poisonous cheese; dryness of the throat, nausea, vomiting and diarrhoea. The specimens of cheese secured for analysis gave, when freshly cut, various drops of a slightly opalescent fluid, which reddened litmus instantly and intensely.

WOOL, SILK AND COTTON, DETERMINING THEIR RESPECTIVE AMOUNTS IN TISSUES.—Four portions of cloth are taken, of equal weight. One is put aside, and the other three boiled in hydrochloric acid for the removal of the dyes and weighting materials. One of these boiled pieces is laid aside, and the other two exposed in a boiling solution of basic zinc chloride for the removal of the silk. One of these latter is laid aside, and the other boiled in soda-lye. All four are then heated in distilled water, and after 24 hours weighed. The difference between the first and second represents the dressing; that between the second and third gives the silk; that between the third and fourth, the vegetable fiber present; the remainder is wool.

YTTREBIUM.—A new element described by Marignac in 1878 as found in gadolite. The atomic weight of 131 was provisionally adopted, but in 1880 it was changed and declared to be 173.01.

New processes are being constantly developed; new minerals discovered; new compounds produced. The instances given in the foregoing list are but specimens of the immense progress made in the past decade. Chemical science is constantly developing, and in every direction. The immensity of the field makes it practically limitless, and the fascinations of the study are calling into rank the best mental power and learning in all the civilized countries. For additional information, see the topics severally as given in these volumes.

CHEMITYPE, the name given to the art of producing on a metal plate by a chemical process and engraving in relief.

CHEMNITZIA, a genus of gasteropodous mollusca. There are many recent species scattered all over the world. No less than 180 have been described, occurring throughout all the divisions of the fossiliferous strata from the Lower Silurian upwards.

CHEMULPO, a town on the west coast of Corea, 25 miles by road southwest of the capital, Seoul. It is one of the three treaty ports opened in 1883 to foreign commerce, the volume of which has since steadily advanced in spite of the drawbacks resulting from the great difference between high and low water here (33 feet), and the want of wharves. Since 1885 it has been connected by telegraph with Tientsin.

CHEMUNG PERIOD, the name given by American geologists to one of the principal divisions of Devonian time.

CHENAB, one of the five rivers which give name to the Punjab. It rises in the Kashmir range of the Himalayas, winds through the gorges of Jammu, and enters British territory in the Sialkot district. Its length is 755 miles.

CHENANGO RIVER, a river which rises in Oneida county, N. Y., flows southwest and enters the Susquehanna at Binghamton. It is 90 miles in length.

CHENEY, THESEUS APOLEON, historian, born in Leon, Cattaraugus county, N. Y., March 16, 1830, died in Starke, N. Y., Aug. 2, 1878. He was educated at Oberlin, and spent most of his life in studying and writing the history of Southern New York. To him belongs the honor of having suggested, in a speech at Conewango, N. Y., Aug. 20, 1864, the name "Republican" for the party then being formed.

CHENILLE (French, "caterpillar"), a thick velvety cord of silk or wool, used in ornamental sewing and manufactured trimmings. Also a popular name for *Dasya elegans*, a beautiful species of marine alga, having long cylindrical fronds, closely fringed with fine red filaments.

CHENONCEAUX, a famous French chateau, standing partly on an island in the Cher, partly on a bridge spanning the river, near a station 20 miles southeast of Tours. It was commenced in 1524 by Chancellor Thomas Bohier, continued by Diana of Poitiers, and completed by Catherine de' Medici, who richly embellished the building, and surrounded it with a beautiful park. It passed to the Condés, and afterwards to Madame Dupin, who was here visited by Montesquieu, Bolingbroke, Voltaire, Rousseau, Buffon and others. The castle is in excellent preservation, and possesses a fine chapel, a theater, and memorials of its former occupants in furniture, personal relics, and a collection of portraits.

CHENOPODIACEÆ, or SALSOLACEÆ, a natural order of exogenous plants, mostly herbaceous or half shrubby. There are about five hundred species, of which the beet and spinach are among the best known and most useful. Some of the species contain large quantities of alkaline salts. Some possess aromatic and medicinal qualities.

CHENOPODIUM, a genus of plants of the natural order *Chenopodiaceæ*. It includes various common weeds, such as goosefoot, pigweed, etc., which are eaten as greens when young. It is widely distributed in temperate regions. *C. anthelminticum*, the *wormseed* of the United States, has a strong and somewhat aromatic odor, and a reputation as a vermifuge.

CHER, a French river, flowing 200 miles northward and north-westward till it falls into the Loire below Tours. It is navigable from Vierzon.

CHERAW, a railroad junction in Chesterfield county, S. C., at the head of navigation on the Pedee River. This place was made a depot of supplies by the Confederates during the late war, but was captured by General Sherman's troops, March 3, 1865.

CHERBOULIEZ, VICTOR, an eminent French novelist, born at Geneva in 1829. Besides numerous popular works of fiction, he has published many volumes on literary and art criticism, and on politics.

CHERIMOYER, or CHIRIMOYA, a deliciously flavored fruit of Brazil and Peru. It belongs to the same genus as the *custard-apple*. Externally it is greenish, covered with small knobs and scales, the skin rather thick and tough. Internally it is white and juicy. The eatable part is soft like a custard, and forms almost the entire mass of fruit.

CHEROKEE, the county-seat of Cherokee county, Iowa, situated on a railroad and the Little Sioux River.

CHEROKEE INDIANS. See Vol. V, pp. 585-86. See also **INDIANS, AMERICAN**, in these Revisions and Additions.

CHERRY. See *Britannica*, Vol. V, p. 586.

CHERRY VALLEY, a village on a railroad in Otsego county, N. Y. On Oct. 11, 1778, nearly all the inhabitants were massacred by Indians and Tories, and the buildings were all burned.

CHERT, or **HORNSTONE**, a variety of quartz, always massive, and having a kind of granular appearance and structure. It is common in mountain limestone, oolite, and green-sand formations; sometimes forms rocks, and often contains petrifications. It passes into common quartz and chalcodony, also into flint and flinty slate. See *Britannica*, Vol. X, p. 239; Vol. XVI, p. 389.

CHERVIL (*ANTHRISCUS CEREFOLIUM*), a plant of the natural order *Umbelliferæ*, cultivated as a potherb, and used in the same manner as parsley. It is a native of Europe.

CHESAPEAKE BAY, in Maryland and Virginia, and dividing the former State into two parts. It is the largest inlet on the Atlantic coast of the United States, being 200 miles long, and from 4 to 40 broad. Its entrance, 12 miles wide, has on the north Cape Charles and on the south Cape Henry, both promontories being in Virginia. The bay has numerous arms, which receive many navigable rivers, such as the Susquehanna on the north, the Potomac, Rappahannock and York on the west, and the James on the southwest. This network of gulfs and estuaries, with its noble feeders, affords depth of water for ships of any burden.

CHESELDEN, **WILLIAM**, an English surgeon and anatomist, born at Somerby, near Melton-Mobray, in 1688, died at Bath, April 10, 1752. Having in 1711 established himself in London as a lecturer on anatomy, he was next year elected a Fellow of the Royal Society. He was afterwards appointed surgeon to St. Thomas's, St. George's, and Westminster hospitals, where he acquired great reputation in 1727, especially by his "lateral operation for the stone." In 1728 he operated on a young man born blind, and the successful result of the operation did much to develop the theory of vision.

CHESNEY, **FRANCIS RAWDON**, the explorer of the Euphrates, born at Annalong, in County Down, Ireland, in 1789, died Jan. 30, 1872. He was gazetted to the Royal Artillery in 1805. In 1829 he inspected the route for a Suez canal, which he proved to be practicable.

CHESS, or **CHEAT**, the *Bromus secalinus*, a troublesome graminaceous weed, which infests wheat-fields. There is an erroneous vulgar notion that wheat itself is often transmuted into chess.

CHEST, or **THORAX**: in anatomy, the part of the body which lies beneath the neck and above the abdomen, constituting the uppermost of the two divisions of the trunk, or that which contains the heart and lungs. The chest is somewhat conical in form. Its sides are rounded, but in front and behind they are flattened. The apex or upper end is truncated, sloping downwards and forwards. Of small size, it permits of the passage of the gullet, windpipe, certain large veins and nerves from the neck into the chest, and of certain large arteries out of the chest. The broad or lower end of the cone slopes downwards, and is shut in by the diaphragm—a large muscular partition, which projects upwards from the lower ribs, being convex towards the chest and concave towards the abdomen. In respiration the diaphragm descends by its own muscular contraction, while at the same time the ribs are drawn upwards and outwards by the intercostal muscles. The structures forming the walls of the chest are: (1) The backbone or spinal column; (2)

twelve pairs of ribs; (3) the sternum or breastbone; (4) the diaphragm; and (5) the intercostal muscles. The contents of the chest are the heart, the great arteries and veins, the lungs, the trachea, or windpipe, the bronchi, or branches of the trachea leading to the lungs, the œsophagus or gullet, and the thoracic duct, or general terminus of the lymphatic system of vessels, by which the chyle and lymph are discharged into the blood.

CHEST, MILITARY: a technical name for the money and negotiable securities carried with an army, and intended to defray the current expenses.

CHESTER, a coal-shipping city and county-seat of Randolph county, Ill., situated on the Mississippi River. It has a grain elevator, and flour and rolling mills.

CHESTER, a city of Pennsylvania, on the Delaware River, about 15 miles below Philadelphia (see *Britannica*, Vol. V, p. 606). The town was settled by the Swedes in 1643, and called Upland. It was incorporated in 1866. Ship-building is its chief industry, several thousand men being employed in the ship-yards. Population in 1880, 14,997; in 1890, 20,167.

CHESTER, a manufacturing town of Windsor county, Vt., on a railroad. It has an academy, and produces leather, furniture, lumber, boots and shoes.

CHESTER, JOSEPH LEMUEL, antiquarian, born in Norwich, Conn., April 30, 1821, died in London, England, May 28, 1882. He was a writer for the Philadelphia press, and in 1858 went to England and made researches in the genealogies of the early settlers of New England. Mr. Chester published, with notes, an abstract of the Westminster Abbey registers, and collected much valuable family history.

CHESTERFIELD INLET, a narrow gulf penetrating to the westward from the northwest of Hudson Bay, its extreme dimensions being 250 and 25 miles.

CHESTERTOWN, a railroad and seaport town, county-seat of Kent county, Md. It is on the west bank of the Chester River. Washington College is here.

CHESTNUT. See *Britannica*, Vol. V, p. 608.

CHESTOPA, a railroad center of Labette county, Kan., near the line of Indian Territory, situated on the Neosho River. The city has many mills, where flour and castor-oil are made. There are also schools, stock-yards, and also a foundry.

CHEVALIER, an honorary title given formerly to younger sons of French noble families. Brought up in comparative luxury and having very little money, they became frequently aristocratic parasites. The title was given by their partisans to the old and also to the young pretender.

CHEVALIER, MICHEL, a French political economist, born in Limoges, Jan. 13, 1806, died Nov. 23, 1879. In 1828 he edited the "Globe," and four years later was sent by Thiers to examine the canals and railroads of the United States. He was an advocate of free trade, a professor of political economy in the College of France, in 1841 chief engineer of mines, and in 1860 became a Senator. He wrote several books about America.

CHEVERUS, JEAN LOUIS ANNE MAGDELEINE LEFEBVRE DE, Roman Catholic prelate and philanthropist, born in Mayenne, France, Jan. 28, 1768, died in Bordeaux, July 19, 1836. He went to Boston in 1796, having suffered persecution in France, became famed for eloquence and also for his philanthropy during a yellow fever epidemic. In 1803 he founded the Church of the Holy Cross; in 1810 became the first bishop of Boston, and founded the Ursuline convent at Charlestown. Returning to France on account of ill health he was conse-

erated archbishop of Bordeaux in 1826, and cardinal nine years later.

CHEVES, LANGDON, statesman, born at Rocky River, S. C., Sept. 17, 1776, died in Columbia, S. C., June 25, 1857. He was a lawyer, and became eminent in his profession; served in Congress from 1811 to 1816; was Speaker of the House during one session, and in 1816 became judge of the superior court of South Carolina. While in Congress he voted against rechartering the United States Bank, but in 1819 he was elected its president, holding this position for three years. In 1822 Mr. Cheves became commissioner of claims under the Ghent treaty.

CHEVEREUL, MICHEL EUGÈNE, a French chemist, born at Angers, Aug. 31, 1786, died in 1889. He lectured at the College Charlemagne, and was appointed special professor of chemistry in charge of the dyeing department at the Gobelins. In 1826 he took his seat in the Academy of Sciences, and in 1830 became director of the Museum of Natural History. One of his earliest discoveries was that of margarine, oleine, and stearine in oils and fats. His studies in fatty bodies and his theory of saponification have opened up vast industries. Between the years 1828 and 1864 Chevreul studied colors, publishing important memoirs from time to time.

CHEVRON: in heraldry, one of the honorable ordinaries, representing the couples or rafters of a house, and supposed to betoken the accomplishment of some memorable work, or the completion of some business of importance.

CHEVRON: in architecture, a molding in the form of a succession of chevrons, otherwise called zigzag molding. In general it is characteristic of Norman architecture.

CHEVRONS are bands or stripes of braid, meeting at an angle on the coat sleeves of non-commissioned officers. The number of stripes indicating the rank of the bearer.

CHEYENNE, a city and the capital of the State of Wyoming, and county-seat of Laramie county, located in the southeastern part of the State, on Crow Creek, and on the eastern slope of Laramie Mountain, at an altitude of 6,041 feet above sea level. It was founded in 1887, and because of its rapid growth has been called the "Magic City of the Plains." It is an important railroad center, being on the Union Pacific, the Denver Pacific, the Cheyenne and Burlington, and the Cheyenne and Northern Railroads. The railroad shops of the Union Pacific Railroad, which are located here, are built of brick and stone, and cost between \$4,000,000 and \$5,000,000. The State capitol, which covers nearly three acres of ground, is built of native sandstone, and cost \$300,000. Public, private, and denominational schools and a public library provide ample educational facilities. Cheyenne owed its first settlement to the discovery of gold in the Black Hills, but its present prosperity is largely due to the growth and profits of the cattle trade. Population in 1880, 3,456; in 1890, 11,693.

CHEYENNE INDIANS, a warlike branch of the Algonquin stock, originally on the Red River of the North, later on the Cheyenne River in Wyo-

ming, and as far south as the Arkansas. They are now partially settled in Indian Territory.

CHEYNE, GEORGE, an eminent Scottish physician, born in Aberdeenshire in 1671, died at Bath in 1743. In 1700, after taking the degree of M. D., he repaired to London, where he practiced in winter, and in Bath in summer. In 1702 he published *A New Theory of Fevers*, and a work *On Fluxions*, which procured him admission into the Royal Society. Among his other works are: *Philosophical Principles of Natural Religion*; *Essay on Health and Long Life*, etc.

CHEYNE, THOMAS KELLY, English clergyman and Biblical critic, born in London, Sept. 18, 1841, and educated at Merchant Taylors' school and Worcester College, Oxford. He was rector of Tendring in Essex from 1881 to 1885, when he was appointed Oriel professor of the Interpretation of Holy Scripture at Oxford and Canon of Rochester. He was a member of the Old Testament Revision Company, and has contributed many articles on Biblical questions to the magazines and reviews. A critic of ripe scholarship and remarkable clearness in exposition, he has done much to advance Biblical science. His chief books are: *The Prophecies of Isaiah* (1880; 8d ed., 1885); *Exposition of Jeremiah and Lamentations* (1883); and *The Book of Psalms, or Praises of Israel* (1888).

CHIABRERA, GABRIELLO, an Italian poet, born at Savona, June 8, 1552, died Oct. 14, 1637. An enthusiastic student of Greek, he conceived a great admiration of Pindar, and strove not unsuccessfully to imitate him. He wrote several epics, bucolics, and dramatic poems.

CHIANA (in ancient times, *Clanis*), a river in Tuscany, formed by several streams from the Apennines, and falling into the Arno a few miles below Arezzo. Along with another river of the same name it waters the level Val di Chiana.

CHIANTI, an Italian mountain-range in the province of Siena, clothed with olive and mulberry trees and vines. The mountain gives name to an excellent red wine grown here.

CHIAPA, or CHIAPAS, a State in the southeast of Mexico, lying to the southwest of Yucatan. The highlands have an agreeable climate, but the lowlands are hot and sickly.

CHIAROS CURO, a kind of painting in which the effects of light and shade are produced without colors—for example, painting in black and white or by different shades of a single color, such as brown.

CHICA, a red substance, valuable as a dye-stuff, obtained by boiling the leaves of a species of *Bignonia*, a native of the banks of the Cassiquiare and the Orinoco. It is used in the United States to produce red and orange shades on cotton and wool.

CHICA, or MAIZE BEER, a fermented liquor made from maize or Indian corn. It is much used in some parts of South America.

CHICACOLE, a town of the district of Ganjam, in the Madras province, on the Languliya River, 567 miles northeast of Madras by the Grand Trunk Road. It has a reputation for muslins. Population, 16,355.

CHICAGO

CHICAGO, the chief city of Illinois, and the second in population and importance in the United States, is situated on the southwest shore of Lake Michigan and about 715 miles in a direct line from New York. The city is surrounded by a level prairie of rich soil in all directions from the shores of the lake. The early settlers found the location of the future metropolis but seven feet above the lake, and at this level built a large city, so rapidly did population increase after the first survey and sale of lots. But within the first quarter of a century it was discovered that proper drainage was impossible, and the citizens solved the problem by raising the grade of the city seven feet, being forced in some instances to lift large brick and stone buildings by jack-screws. The old Tremont House, then the leading hotel of the city, was so raised without interfering with the convenience of its guests. The original settlement was made at the mouth of a small river or estuary, which was known to the Indians under different names, called variously "Chacagua," "Eschikagow" and "Checagow." This river, from which the city takes its name, formerly flowed into the lake; but the necessities of a growing population led to the engineering feat of changing its course, and it now empties into the Illinois and Michigan canal. In 1839 there was created a Chicago sanitary district for the purpose of extending the work, and making such a channel as would form a navigable stream connecting Chicago with the Mississippi River. The influence of the lake is felt in making the climate of Chicago singularly healthful. In the spring the water of the lake is cold, and through the summer tempers the heat, while in winter it prevents very low temperature. The average death rate is smaller than in any other large city in the country. The streets mainly intersect each other at right angles. The river divides the city into three general divisions, known as North, South and West.

Chicago became an incorporated city March 4, 1837, comprising then an area of 1,070 square miles. Since that time there have been twelve additions, and it embraces in 1891 an area of 181.70 square miles. The first United States census was taken in Chicago in 1840, and showed a population of 4,497. In 1850 it was 16,859. In 1860 it was 100,306. In 1870 306,605. In 1880 608,185. In 1889 there were added large sections which had been practically within the city, and the population was given in the United States census as 1,098,576. The school census, however, showed a population of 1,208,069, which is believed to have been nearer the truth. Chicago has grown in area from 1836 to date, as follows:

Date.	Square Miles.
February 11, 1835, original town.....	2.55
March 4, 1837, there was added.....	8.15 making 10.70
February 16, 1847, there was added.....	3.33 making 14.03
February 12, 1853, there was added.....	3.90 making 17.93
February 18, 1863, there was added.....	6.48 making 24.41
February 27, 1864, there was added.....	11.35 making 35.79
May 16, 1887, there was added.....	1.00 making 36.79
November and December 5, 1887, there was added.....	7.15 making 43.94
July 29, 1889, there was added.....	128.24 making 172.18
April 16, 1890, village of Gano added....	2.00 making 174.18
1890, South Englewood added.....	2.98 making 177.16
1890, Washington Heights.....	2.80 making 179.96
1890, West Roseland.....	1.80 making 181.70

Of the present area 5.14 square miles are water, 176.56 land. LENGTH AND WIDTH OF CHICAGO.—The distance between north Seventy-first street, the northern city limits, and One Hundred and Thirty-ninth street, the southern city limits, is twenty-four miles. The city, at its broadest point, is 10.5

miles in width. State street has the greatest extension north and south, running from North avenue to the southern limits, eighteen miles; Eighty-seventh the greatest western extension, running the entire width of the city.

EDUCATION.—The public school system is under the control of a board of education, consisting of male and female members and appointed by the mayor. The board is divided nearly equally as to political preferences. The following statistics were compiled by the county superintendent of schools, and embrace items regarding both city and county:

Miscellaneous Items.	Chicago	County, excluding Chicago	Whole County.
No. ungraded schools.....	194	181	181
No. graded schools.....	11	57	251
No. high schools.....	206	16	16
Whole number schools.....	9.26	198	398
Children under 21 years.....	473,234	429,104	516,138
Between 6 and 21 years.....	289,438	281,171	317,504
No. in graded public schools.....	135,551	10,890	146,441
No. in district country schools.....	62,718	4,460	4,460
No. enrolled in private schools.....	198,264	8,996	66,609
Total in public and private schools.....	2,442	19,246	217,510
Average daily in public schools.....	2,442	11,415	8,251
No. teachers in public schools.....	1,164	145	1,309
No. teachers in private schools.....	2,599	36	2,635
No. unable to read or write.....	\$911,834	\$294,536	\$1,116,371
Principal of township funds.....	4,251,000	\$67,457	\$4,318,457
Total district tax levy.....	2,681,000	364,659	2,400,050
Bonded school debt.....	3,968,331	942,211	4,305,440
Estimated value township fund lands.....			

It will be noted that the estimated value of the school lands in Chicago is placed at nearly \$4,000,000. This is the remnant of the land granted to the city under the provisions of law which gave to each township a mile square of land for school purposes. Speaking of the alienation of this land by sale the following appears in Andreas' recently published history of Chicago:

"The mania for speculation which prevailed in 1833 induced the authorities to sell the school lands of the State, wherever it was possible to do so. A public sale was carried on in Chicago from October 30, for five days, at which 140 city blocks were disposed of, being all but four blocks of the school section. The sum realized was \$38,619.47, which was placed at 10 per cent. interest. In the light of present knowledge, which demonstrates the unwise policy pursued concerning the sale of the Chicago school lands, and the conversion of what might now be an unparalleled fund, had the title of this section remained vested in the school board, into a fixed cash sum, it is but just to the memory of a faithful and honorable public servant, Col. Hamilton, school commissioner in 1833, to state that the sale was not his own work. A petition, signed by 95 residents of Chicago, the leading citizens of the place, urged him to that course; and it was in compliance with that formal demand that the sale was ordered. Those men deemed it advisable to convert unproductive property into a stated sum, drawing 10 per cent. interest, payable in advance. Acting upon the will of the overwhelming majority, Col. Hamilton caused the property to be disposed of, as has already been stated, and thereby obtained a productive fund of nearly \$39,000."

The same authority refers to the inadequacy of the accommodations provided for the increasing number of children enrolled as of school age.

Chicago and its suburbs are rich in universities and colleges. Aside from the Northwestern and its branches at Evanston, are the medical colleges, theological seminaries, training schools, and the recently established University of

Chicago, with an endowment fund sufficient to insure exceptional advantages in all departments.

Summary of receipts and expenditures in districts by reports of township treasurers for 1889-1890:

RECEIPTS.	Chicago.	Excluding Chicago.	Whole County.
Balance in hands township treasurer, July 1.	\$82,874	\$405,374	\$1,297,749
State, county and township funds distributed by trustees.	469,947	2,981	484,378
Special district taxes received.	2,581,566	375,350	2,956,906
District bonds issued.	310,508	44,574	44,574
Temporary loans and other sources.		81,768	342,372
Total	4,346,682	878,999	5,125,682
EXPENDITURES.			
Paid to teachers	2,091,779	284,511	2,376,290
New school houses.	683,273	56,175	739,448
School sites and grounds.	83,790	12,864	96,654
Repairs and improvements.	241,116	30,381	271,506
School furniture and apparatus.	48,245	11,504	59,749
Laboraries.	3,822	9,591	13,413
Paid district clerks.	77,577	2,208	79,785
Paid on district bonds	27,500	4,680	32,180
Paid in interest on district bonds.	105,583	30,486	136,069
Miscellaneous	131,657	211,139	342,796
Total	\$3,787,222	\$785,413	\$4,572,635
Balance in treasurer's hands due district.	469,460	366,566	636,026
Total	\$4,246,682	\$878,499	\$5,125,682

CHARITABLE INSTITUTIONS.—The principal charitable institutions aside from the asylums and hospitals supported by the county are: The Nursery and Half Orphan Asylum, Protestant Orphan Asylum, Reform and Industrial School, Erring Woman's Refuge, Foundling's Home, Good Samaritan Industrial Home, Home for the Friendless, Old People's Home, Soldier's Home, St. Joseph's Orphan Asylum (Catholic), Lutheran Orphan Asylum, Washington Home (temperance), all these institutions have been liberally endowed. In addition to these are 21 hospitals and nearly 250 benevolent associations and societies. To these must be added 980 secret societies, all engaged in charitable works, and 423 churches with their missions and charities.

MILEAGE OF STREETS.—The mileage of streets laid out within the city is as follows:

Old city, including sections 25, 35 and 36, 40, 13.	} 853.87 miles.
Sections 25, 40, 13.	
Annexed parts of former town of Cicero	
Former city of Lake View	131.58 "
Former town of Jefferson	242.28 "
Former village of Hyde Park	541.94 "
Former town of Lake	347.09 "
Gano, Washington Heights, West Roseland and part of Calumet.	119.00 "
Total	2,235.71 "
Boulevards laid out (taken from Park Commissioner's report)	50.00 "
Viaduct approaches	1.15 "
Grand total	2,286.86 "

THE CHICAGO FIRE.—Much of the architectural beauty of Chicago is due directly to the great fire which in 1871 devastated the city. The fire broke out Sunday night, October 8. Tradition says it was caused by the upsetting of Mrs. O'Leary's lamp by a cow in a stable on Jefferson street on the West Side. History agrees as to the location. The fire crossed the river at Van Buren street, and soon swept through the business portion of the city. The wind was high, but was probably increased in its effect by the terrible heat, and the buildings deemed most fire-proof melted before it like tinder. The court-house bell tolled the fire alarm until the last

moment, and the watchman was forced to flee for his life. At about half-past three the fire had crossed to the North Side, having practically destroyed the business portion of the city, including the principal hotels, railway depots, elevators, board of trade building and many churches and other public buildings. By night the North Side was a smouldering mass of ruins, and its inhabitants had been forced to take refuge on the lake shore and open prairies. A single house was left standing in the center of the burnt district. It was the old homestead of W. B. Ogden, and stood in the center of a block facing what is now Washington Square. The burned district was bounded by Twelfth street on the south, by Lake Michigan on the east, on the west by Halsted street and by Fullerton avenue on the north. It embraced an area of three and one-third square miles, destroyed 17,450 buildings, made 98,500 persons homeless. Of the number of lives lost only an estimate can be made, but it is known to have exceeded 200. The pecuniary loss by the fire has been estimated at upwards of \$190,000,000, of which \$44,000,000 was recovered by insurance. Before the ruins had fairly cooled the citizens were at work on the task of rebuilding their city. Within the first year many fine buildings were erected, and within the next decade almost every trace of the calamity had been removed, Chicago being more beautiful in consequence. It was about this time that the study of architecture had led to the establishment of practically an American school, of which the best examples are to be found in Chicago.

Another conflagration occurred there three years later, and destroyed eighteen blocks south of State street that had escaped in 1871. It resulted in the extension of the fire limits, most of the buildings burned having been of wood and deemed a constant menace to the newer portions of the city.

GOVERNMENT AND FINANCES.—Chicago's city government consists of a mayor and common council of 68 members, the city being divided into 34 districts or wards which are represented in the council by two aldermen each, and one alderman is elected every year. The common council controls all appropriations and levies of taxes and expenditures, but the State constitution limits the amount of the city's bonded indebtedness to 5 per cent. on the total taxable valuation of the property. The tax levy of 1840 was \$4,721.85; that of 1890 was on a valuation of \$170,553,264 of real estate, and \$48,800,514 of personal property.

THE PARK SYSTEM.—The area covered by the parks of Chicago, exclusive of the boulevards which are under the control of the different boards of park commissioners, embraces 1,974.61 acres. The system is divided into three general divisions, called the South Park, the North Park, and the West Park. The commissioners of the South Park board are appointed by the judges of the circuit court, those of the other boards by the governor. The funds are derived from a direct tax upon the three divisions of the city. There are also a number of small parks under the direct control of the city. The following gives the area of parks and public squares belonging to the city:

Parks and Public Squares.	Acres.
Aldine Square	1.44
Campbell Park	05
Congress Park	07
Dearborn Park	1.43
Douglas Park	179.79
Douglas Monument Square	2.03
Ellis Park	3.23
Gage Park	20.00
Garfield Park	185.57
Groveland Park	3.4
Holstein Park	2.3
Humboldt Park	200.63
Jackson Park	566.00
Jefferson Park (City)	5.5
Jefferson Park (Jefferson)	5.00
Lake Front Park	41.00
Lincoln Park	250.00
Logan Square	4.25
Midway Plaisance	80.00
Oak Park	.25
Sheets Park	1.00
Union Park	14.00
Union Square	.05
Vernon Park	4.00
Washington Park	371.00
Washington Square	2.25
Wicker Park	4.00
Woodlawn	3.86
Total	1,974.61

Visitors remark the wonderful progress made in decorating the public parks, and the extent to which the floral display

is carried. Conservatories are maintained at each, and in the seasons the gardens are filled with beautiful flora.

The park system was laid out with the view of having each of the larger ones connected by means of boulevards surrounding the city. These are not entirely completed, but there are many miles of smooth drives in the system. The approaches to the South parks are deemed the finest roadways on the continent. They are each 200 feet wide, and are called "Grand" and "Drexel" boulevards. The latter has in summer a continual stretch of floral decorations along the center, and is rapidly being lined with beautiful residences. Though these parks have entailed a large expenditure, in value they greatly exceed the entire bonded indebtedness of the municipality. There has recently been inaugurated an addition to what is known as the Lake Shore Drive, one of the boulevards connecting the park system, in the building of the Sheridan road. This is to extend from the northern end of the Lake Shore Drive northward along the shore of Lake Michigan to Fort Sheridan, about 25 miles north of Chicago.

LIBRARIES.—Chicago is rapidly becoming rich in its libraries. Aside from its private collections, there are many open to the public, well-filled and being steadily increased, under the supervision of competent librarians. Among the most important of these are: *The Public Library*, containing something over 150,000 volumes, and circulating more books than any other library in the country; *The Newberry*, which is now in temporary quarters pending the erection of the building provided for in the founder's will. This new building is to have a capacity for 1,000,000 books. It is to be located on what has long been known as the "Ogden Block," on which stood the only building left on the north side by the fire of 1871. It is to be a reference library, circulating no books. It is free to the public, and even in its temporary quarters are facilities for the use of the books already gathered. It was founded by the late Walter L. Newberry, one of the early settlers who profited largely by the rise in land values as the city grew in population; The John Crerar library, to which the late John Crerar left an endowment of \$2,000,000; the Chicago Athenaeum library, at 18 to 26 Van Buren street; the Armour Mission; Chicago branch of the I. T. & M. Society; at 26 College Place; Chicago Historical Society; Hyde Park Lyceum; Illinois Tract Society; Pullman; Union Catholic; Western New Church; Wheeler; Ravenswood.

POLICE AND FIRE DEPARTMENTS.—The police department is under the control of the mayor, under whose appointment it is conducted by a superintendent, a secretary, with rank of lieutenant; a chief clerk, with rank of captain; five inspectors commanding as many divisions. There are 35 stations, including the central station at the City Hall. There are 18 captains of precincts; 50 lieutenants; 50 patrol sergeants and 74 desk sergeants, the total force numbering, officers and men, 1,870. There are also 20 matrons employed at the principal stations for the care of females and children when arrested.

Amount appropriated for maintenance in 1890 was for salaries, \$2,244,176.25; for new buildings and sites, \$66,900; for supplies, \$180,000; total, \$2,491,076.25. Estimated cost for 1891, for salaries, \$3,775,573; for new sites and buildings, \$123,900; miscellaneous supplies, \$190,000.

The Patrol wagon system had its origin in Chicago, and is here worked to perfection. The wagons with a full complement of officers may be called from the conveniently located boxes or from any telephone station. The response is surprisingly quick at any hour of the day or night. There are also two regular ambulances, which act in connection with the patrol wagons of the force. The Policemen's Benevolent Fund pays large sums annually to widows and for sick benefits and funeral expenses. The fund was established and is maintained by a percentage of certain municipal revenues by sale of lost and stolen property unclaimed, and by fines imposed upon the members. This fund receives two per centum of all moneys received for licenses for saloons and dramshops; 75 per cent. of dog tax; 25 per cent. of licenses from pawnshops and second-hand dealers and junk dealers; all the moneys received as fines for carrying concealed weapons, and 50 per cent. on all costs collected for the violation of city ordinances.

Of its fire department Chicago is justly proud, it being admitted the best in the country. There are 1,000 miles of wire in the fire alarm system, and 791 boxes; 62 engine companies, of which three are marine companies, having fire-boats for service along the water front. There are also 21 hook and ladder companies, and nine hose companies. The department has one water tower, 90 apparatus stations, an extensive repair shop, 367 horses. Notwithstanding the large increase in the territorial limits of the city the proportion of losses for 1890 showed a favorable balance over that of the year before. The headquarters are in the City Hall. The organization is as follows: Fire marshal and chief of brigade; assistant fire marshal and department inspector; assistant fire marshal and department secretary; fire inspector; 13 chiefs of battalion. Each engine and hose company is commanded by a captain and lieutenant. The total force is 914, and the expenditures for the year 1890 were \$1,278,337.41.

The fireman's pension fund receives from the city one per cent. of all moneys received from licenses, and the firemen are retired on half pay after continuous service of 20 years. The firemen have also a benevolent society for the care of widows and orphans.

VIADUCTS AND BRIDGES.—Chicago River being navigable, and dividing the city into three parts, a large number of

bridges have been necessary. More than 40 now span the river, in addition to which are two tunnels under its bed, and one more in process of construction. Nearly all the bridges are of new and improved construction, built of steel and turned by machinery driven by steam. One of these bridges, the Adams street, presents the novel feature of being reversible while the east end is two feet three inches lower than the west end, the turn-table track being laid at a grade of 1 to 115. The two tunnels now operated are under the river at La Salle and Washington streets, and are both used by the cable system of street railroads.

Railroads enter the city at or near grade, and this has required the construction of viaducts, of which 35 have been built—one extending from Clark street to Wabash avenue costing upwards of \$209,000.

ELECTRIC LIGHTING.—Chicago has undertaken the task of lighting its streets by electricity by means of a plant owned and operated by the municipality. The experiment has been regarded with much interest, and the reports of the superintendent give ground for belief in its final success. Since the commencement of the work there has been expended for construction and maintenance \$566,877.72, which includes the erection of four power houses and two for experimental stations, which later have been abandoned. The superintendent shows in his last report (Dec., 1890) the following as relative figures of cost:

Cost of 900 2,000 C. P. arc lights, \$88.....	\$74,700.00
Cost of 3,621 C. P. gas lights, \$30.....	72,400.00
Total candle power 900 2,000 C. P. arc lights.....	1,800,000.00
Total candle power 3,621 gas lights, 20 C. P.....	72,420.00
Cost per candle power for arc lights.....	.04
Cost per candle power for gas light.....	1.00

The system owned by the city now comprises—

Power stations.....	4
125 horse power high speed engines.....	13
300 horse power Corliss engine.....	1
100 horse power tubular boilers, heaters, pumps, etc....	6
125 horse power tubular boilers, heaters, pumps, etc....	15
Double carbon lamps.....	1,929
Lamp posts and hoods.....	929
60 light high tension dynamos.....	4
60 light low tension dynamos.....	4
35 light high tension dynamos.....	11
35 light low tension dynamos.....	6
30 light low tension dynamos.....	14
Miles of electric light cable.....	169
Number of feet of underground conduit.....	12,109
Number of feet of iron pipe laid underground.....	500,614
Number of manholes.....	248
Number of handholes.....	125

ESTIMATED EXPENSE FOR MAINTENANCE OF EXISTING LIGHTS AND PROPOSED EXTENSIONS OF ELECTRIC LIGHT SYSTEM.

Maintenance of 1,128 arc lights, \$88.....	\$98,624.00
Lamps, dynamos, hoods, posts, switches, power, labor, iron pipe, cable, to add 196 lamps to District No. 1, increasing it to 500 light plant.....	71,736.00
Lamps, dynamos, hoods, posts, switches, power, labor, iron pipe, cable, to add 179 lamps to District No. 4, increasing it to 400 light plant.....	65,514.00
Lamps, dynamos, hoods, posts, switches, power, labor, iron pipe, cable, to add 204 lamps to District No. 6, increasing it to 500 light plant.....	74,664.00
Lamps, dynamos, hoods, posts, switches, power, labor, iron pipe, cable, to add 192 lamps to District No. 8, increasing it to 300 light plant.....	70,272.00
Total.....	\$375,810.00

WATER SUPPLY.—Chicago draws its water supply from Lake Michigan. The average temperature of the lake water as taken at one of the cribs during the year 1890 was: January, 32.0; February, 32.0; March, 35.4; April, 48.3; May, 51.9; June, 54.9; July, 65.9; August, 60.3; October, 50.6; November, 43.0; December, 37.5.

At the pumping works near the lake are the main pumps which draw the water from a well at the inshore end of a tunnel reaching out to a "crib" two miles from shore. This crib is an iron structure nine feet in diameter and extending down 81 feet below the bottom of the lake, and connecting with two tunnels leading to separate pumping works on shore. Water is admitted into the crib from the surface, regulated by a gate. The first tunnel constructed from this point is five feet in diameter, and leads to the Chicago avenue pumping works, where there are four double and two single engines, giving a daily average of 50,000,000 gallons under a head of about 105 feet. The second tunnel is seven feet in diameter, and extends under the lake and city to the West Side pumping works, where there are four pumping engines with a daily capacity of about 61,000,000 gallons, under a head of 106 feet. Still another tunnel is in process of construction to increase the water supply in proportion to the increase of population. Water from this source will be available before the close of the year 1892, and in season for the rush of people to the city the following year.

There are several central pumping works. The first is near the lake at the southern end of the Lake Shore Drive. West

Side works are at the corner of Blue Island avenue and Twenty-second street. Central pumping station on West Harrison street between Desplaines and Halsted streets.
COST OF WATER WORKS.—The Total cost of the Chicago water system is as follows:

Cost up to May 6, 1861, when the works were transferred from the Board of Water Commissioners to the Board of Public Works..... \$1,020,160.21

EXPENDITURES SINCE 1861.

Cost of water pipe laid (including labor).....	\$7,812,132.37
Cost of North pumping works.....	918,573.14
Cost of West pumping works.....	896,849.37
Cost of first lake tunnel.....	464,866.37
Cost of second lake tunnel.....	415,709.36
Cost of lake crib protection.....	149,431.63
Cost of new lake tunnel.....	232,466.19
Cost of land tunnel to west pumping works.....	542,912.63
Cost of new land tunnel.....	254,894.38
Cost of lake tunnel crib.....	70,319.10
Cost of lake shore inlet.....	42,871.17
Cost of new lake shore inlet.....	84,474.17
Cost of water works shop.....	25,551.78
Cost of water works stock.....	29,318.00
Cost of water reservoir fence.....	1,702.37
Cost of addition to stable.....	1,019.48
Cost of real estate for sites of new pumping works.....	206,972.35
Cost on account of Central pumping works.....	235,150.11
Cost on account of South Side pumping works.....	141,743.46
Cost on account of new lake crib.....	192,262.65
Cost on account of breakwater.....	28,181.93

Total cost of the water works to Dec. 31, 1889..... \$13,772,562.25
 Amount expended in 1890..... 1,250,000.00
 Total cost to Dec. 31, 1890..... \$15,022,562.25

The water supply of the Hyde Park and Lake districts, recently added to the city, is taken through a five-foot tunnel nearly a mile long and is pumped through the district by two 12,000,000 horizontal and one 6,000,000 vertical Gaskill engines; one horizontal 3,000,000 Knowles engine, two 3,000,000 Cope and Maxwell engines, and one high-duty engine. The plant is located at the foot of 68th street, near the South Shore station of the South Chicago branch of the Illinois Central Railroad. In the Lake View district, at the northern extremity of the city, the water is drawn through a 24-inch pipe and an 18-inch pipe, and is pumped by one 12,000,000 Gaskill engine, one 5,000,000 Worthington low-duty engine, and one 3,000,000 Vergennes geared engine. A new lake tunnel for this district is in process of construction. When completed it will be six feet in diameter and two miles long.

STREET CAR LINES.—For the old horse cars there have been substituted in the three divisions of the city the cable system of transportation. On the South Side the lines run from Lake street, the northern limit, to Hyde Park, something over six miles. The property of this company has grown within the last 18 years from less than 25 miles of track to over 150, and from 60 cars to 1,250. Its revenue has increased from \$600,000 to nearly \$3,500,000 a year. During the period named there has not been a single strike on the line, nor trouble between employers and employed. During the year 1890 this road carried 68,734,969 passengers, for which it received \$3,486,748. After paying all expenses and interest, the net earnings were equal to 18.37 per cent. of the capital. The growth of this company will be understood by the fact that the increase of the daily earnings for the year 1890 over 1889 was over \$1,500. The company operates horse cars on some portions of the line. The cost of operating a car per mile by cable was 9.650 cents; the same by horses, 21.985 cents. The net earnings of the road have been as follows: In 1886, \$619,253; 1887, \$686,259; 1888, \$683,328; 1889, \$45,339; 1890, \$1,139,097. During 1890 the equipment of the road was increased by the addition of 100 open cars. The present equipment consists of 222 "grip" cars and 1,028 passenger cars.

On the North Side the cable system is of more recent construction, and its operation is attended with more difficulty because of the necessity of crossing the Chicago River through the tunnel. The earnings of the company in 1890 were \$1,972,172. Net earnings, \$863,399. Increase over 1889, \$381,656. These lines are being rapidly extended northward to the limits of the city in that direction. The same company has recently opened a cable system on the West Side. Its gross receipts in this section were \$3,663,381; operating expenses, \$2,202,067; net income, \$1,460,613. Dividends on the stock were about 7 per cent. The cost of carrying passengers was 2.98 cents each, which was a decrease of .04 cents for the year. It is stated that the average cost of running a horse car a mile in this city has been 18 cents. By cable the cost is much less. Each of the companies named operate lines of street cars drawn by horses, but all are intending to substitute the cable system wherever practicable.

STEAM RAILWAYS.—Chicago is the greatest railway center in the world. It is the common saying that all roads lead to Chicago, and this has been the necessity of railroad construction in the West and Northwest. The following lines of railway now have their termini in Chicago: Atchison, To-

peka and Santa Fé; Baltimore and Ohio; Chicago and Erie; Chicago and Alton; Chicago and Eastern Illinois; Chicago and Grand Trunk; Chicago and Northern Pacific; Chicago and Northwestern; Chicago, Burlington and Quincy; Chicago, Milwaukee and St. Paul; Chicago, Rock Island and Pacific; Chicago, St. Louis and Pittsburgh; Chicago, St. Paul and Kansas City; Cleveland, Cincinnati, Chicago and St. Louis (The "Big Four"); Illinois Central; Lake Shore and Michigan Southern; Louisville, New Albany and Chicago (The Monon Route); Michigan Central; Pittsburgh, Fort Wayne and Chicago; Wabash.

TRADE AND COMMERCE.—The increase in the trade of Chicago has been equal to its growth in population. The following are the figures given by careful statisticians for the "Chicago Tribune" for the years named:

Year.	In Currency.	In Gold.
1890	\$1,380,000,000	\$1,380,000,000
1889	1,177,000,000	1,177,000,000
1870	439,000,000	377,000,000
1860	97,000,000	97,000,000
1850	20,000,000	20,000,000

PRODUCE—RECEIPTS AND SHIPMENTS FOR TWO YEARS.—The following table gives receipts and shipments of flour, grain, live-stock and produce at Chicago for the past two years:

Articles.	Receipts.		Shipments.	
	1890.	1889.	1890.	1889.
Flour, Brls.....	4,358,068	4,400,535	4,134,586	3,919,454
Wheat, Bu.....	13,300,699	18,762,646	11,979,733	16,139,515
Corn, Bu.....	81,117,251	79,980,691	90,556,109	83,361,318
Oats, Bu.....	64,470,560	49,301,943	70,733,945	50,471,896
Rye, Bu.....	3,916,720	2,905,964	3,374,383	2,901,306
Barley, Bu.....	15,131,971	12,534,538	9,470,221	8,139,109
Grass Seed, Lbs.....	72,054,109	84,599,331	59,213,085	84,961,097
Floaxeed, Bu.....	6,214,947	4,501,266	6,524,573	3,754,079
Broom Corn, Lbs.....	14,504,238	13,595,238	15,385,573	18,989,524
Currd Meats, Lbs.....	300,196,241	279,317,996	883,801,466	788,975,653
Cured Meats, Casus.....	30,324	28,509	1,767,051	1,505,474
Dressed Beef, Lbs.....	109,704,834	99,952,997	964,134,307	959,727,149
Beef, Pkgs.....	2,702	2,254	144,386	136,957
Lard, Lbs.....	77,986	54,608	389,786	424,139
Pork, Lbs.....	147,075,317	99,902,957	471,910,129	385,838,737
Cheese, Lbs.....	67,288,560	61,089,296	68,839,865	47,435,900
Butter, Lbs.....	140,558,680	156,315,945	150,088,947	157,425,005
D. Hogs, No.....	13,273	18,461	129,341	129,341
Live Hogs, No.....	7,682,218	5,998,526	1,991,580	1,780,659
Sheep, No.....	8,492,590	8,028,231	1,264,373	1,264,373
Cattle, No.....	2,177,215	1,892,469	968,594	711,315
Hides, Lbs.....	101,115,466	101,115,466	199,088,622	208,811,269
Wool, Lbs.....	59,284,570	28,839,182	39,009,151	43,206,573
Coal, Tons.....	4,566,848	4,653,378	731,151	647,564
Lumber, M.....	1,980,781	1,909,448	789,767	789,767
Shingles, M.....	515,475	683,565	813,655	168,468
Salt, Brls.....	1,394,547	1,309,313	1,063,523	1,061,909
Hay, Tons.....	170,068	206,275	967,205	75,263

CHICAGO STOCK YARDS.—The Chicago Stock Yards are now within the city limits, though located in what was known as the town of Lake, about five and one-half miles south of the court-house. The Union Stock Yards were organized in 1855. The plant, which covers about 400 acres, cost about \$4,000,000, and the cost of the various packing companies located there is stated to be over \$10,000,000. The following is the number of carloads of live-stock brought to the city for the past three years by the railroads: 1888—210,797; 1889—265,116; 1890—311,563.

LIVE-STOCK TRANSACTIONS.—The following gives the business at the Union Stock Yards during the year 1890, compared with the transactions of the year 1889: Cattle, 3,484,280; calves, 175,025; hogs, 7,663,323; sheep, 2,133,667; horses, 101,566.

The valuation of the stock was \$231,344,879 for the year, and for the years since 1866 to 1889 the sum of \$3,307,931,448.

THE LUMBER TRADE.—Chicago is the lumber mart of the West, and probably the largest market in the country. The city sales for 1890 amounting to upwards of 2,050,000,000 feet, of which only about 850,000,000 was used outside of Chicago.

BOARD OF TRADE.—Chicago's Board of Trade is known throughout the commercial world. Something of the speculation on this board may be gleaned from the following figures from its annual reports, showing the monthly clearings and totals:

Date.	1890.	1889.
January	\$3,090,090.00	\$3,677,053.00
February	2,363,103.75	6,991,001.25
March	2,814,618.00	6,078,957.00
April	8,753,605.75	6,564,766.75
May	10,017,336.25	4,584,955.00
June	6,433,276.25	3,472,982.50
July	7,302,114.50	3,779,494.83
August	13,651,411.25	3,262,478.75
September	3,939,287.50	3,933,817.50
October	6,470,851.25	3,517,875.07
November	3,489,613.75	2,424,917.42
December	6,699,850.00	2,174,781.25
Totals	\$86,607,157.25	\$55,463,080.75

Total balances last year were \$28,190,093.56, against \$18,763,093.56 in 1889, and \$30,153,835.15 for 1888. The clearings last year were more than \$31,000,000 greater than in 1889.

LAKE COMMERCE.—The statement of the clearances from this inland harbor is hardly to be believed when compared with those of seaport towns. The following table shows the growth of Chicago's lake commerce since the year 1883, being the arrivals and clearances of vessels and their tonnage:

Year.	Arrivals.		Clearances.		Total.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1883	11,208	3,555,586	11,271	3,743,574	22,479	7,299,160
1884	10,513	3,451,367	10,640	3,489,666	21,153	6,971,623
1885	9,246	3,347,647	9,210	3,364,169	19,756	6,711,816
1886	10,180	3,546,309	10,267	3,594,549	20,447	7,140,858
1887	10,928	3,868,465	10,920	3,989,615	21,748	7,858,080
1888	10,158	3,980,921	10,308	4,134,064	20,466	8,124,985
1889	9,252	4,417,415	9,462	4,408,634	19,014	8,821,049
1890	9,188	4,344,502	9,284	4,439,652	18,472	8,774,154

The following table affords comparison with the tonnage of the ports named:

DISTRICTS ON THE SEABOARD.

Districts.	Arrivals.	Clearances.	Total.
Baltimore, Md	1,756	2,156	3,912
Boston, Mass	3,171	3,389	6,560
New York, N. Y.	7,571	7,712	15,283
New Orleans, La.	1,040	987	2,027
Philadelphia, Pa.	1,806	1,943	3,749
Portland, Me.	2,758	698	3,456
San Francisco, Cal.	1,181	1,597	2,778
Total	19,283	18,473	37,756
Chicago, Ill.	11,300	11,401	22,701

MANUFACTURES.—In manufactures Chicago has increased as rapidly as in population. The returns for the year 1890 show an increase of over a hundred firms. The figures for the two years were, for 1889, 3,130, and for 1890, 3,260. The capital employed in 1890 was \$190,000,000, an increase of \$22,000,000 over the previous year. The following tables present a fair showing of the growth of various industries:

Articles.	No.	Capital.	Workers.	Product.
Principal bakeries	35	\$1,400,000	770	\$3,300,000
Flour mills	3	1,000,000	110	2,000,000
Meal and feed mills	3	250,000	100	1,500,000
Coffee and spice mills	12	3,000,000	750	11,000,000
Baking powder, etc.	10	2,500,000	450	3,500,000
Confectionery	8	750,000	1,200	3,000,000
Preserved, canned goods	18	400,000	500	1,900,000
Vinegar and Pickles	20	550,000	300	3,000,000
Sugar refinery	1	300,000	475	2,500,000
Totals, 1890	110	\$10,150,000	4,655	\$31,700,000
Totals, 1889	98	7,610,000	4,500	27,500,000

The wages paid in 1890 were \$2,523,000, against \$2,489,000 for 1889.

Drinks and Tobacco.	No.	Capital.	Workers.	Product.
Breweries	43	\$11,500,000	2,200	\$12,790,000
Malthouses	32	6,000,000	600	4,400,000
Distillers and rectifiers	72	5,000,000	950	18,072,000
Tobacco and snuff	23	910,000	800	2,600,000
Cigars and cigarettes	990	1,750,000	2,500	6,925,000
Totals	1,160	\$25,160,000	7,050	\$44,787,000
Totals, 1889	1,149	22,550,000	5,700	28,223,000

The amount paid in wages was \$4,368,000, against \$3,550,000 for 1889.

Brass, Copper, etc.	No.	Capital.	Workers.	Product.
Brass, cop'r. and pl'b's' sup.	25	\$750,000	1,700	\$3,200,000
Tin, st'm'd, & sh't met'l-ware	34	3,000,000	2,700	6,500,000
Jewelry manufactures	30	750,000	500	2,250,000
Watch case and tools	9	300,000	475	2,250,000
Optical goods	4	60,000	60	370,000
Tel. and electric'l supplies	4	1,500,000	2,000	3,250,000
Sm., ref. & iron & brass wks	10	1,300,000	900	24,000,000
Miscellaneous	35	600,000	800	2,700,000
Totals	141	\$8,260,000	9,135	\$46,420,000
Totals, 1889	130	6,210,000	7,280	37,300,000

The amount of wages paid in 1890 was \$5,750,000, against \$4,600,000 for 1889.

Brick, Stone, etc.	No.	Capital.	Work-ers.	Product.
Brickyards.....	66	\$2,500,000	3,300	\$4,300,000
Cut stone contractors.....	60	1,500,000	2,000	2,500,000
Marble and granite works..	32	830,000	600	2,800,000
Gravel rofers.....	35	225,000	500	1,150,000
Lime kilns.....	6	225,000	370	450,000
Terra-cotta.....	1	100,000	450	600,000
Stained glass factories.....	14	300,000	400	900,000
Totals, 1890.....	214	\$5,680,000	7,520	\$12,600,000
Totals, 1889.....	194	4,975,000	6,820	10,700,000

The amount of wages paid was about \$3,200,000, against \$2,900,000 in 1889.

Iron and Wood.	No.	Capital.	Work-ers.	Product.
Wagons and carriages.....	70	\$2,500,000	2,500	\$3,750,000
Agricultural implements....	4	5,500,000	4,700	16,000,000
Car and bridge builders...	4	3,750,000	6,000	18,000,000
Elevators.....	8	1,250,000	1,000	3,750,000
Sewing machines and cases	6	700,000	1,000	1,500,000
Totals, 1890.....	92	\$13,700,000	15,200	\$42,000,000
Totals, 1889.....	81	11,850,000	13,000	35,400,000

The wages of the year were estimated at \$18,000,000, an increase of \$2,000,000 over the amount for the previous year.

Chemicals.	No.	Capital.	Work-ers.	Product.
Chemical works.....	6	\$700,000	250	\$1,750,000
White lead and paint.....	26	1,500,000	1,200	4,000,000
White lead corrodors.....	2	1,800,000	250	1,600,000
Varnish.....	6	400,000	110	1,150,000
Axle grease.....	1	500,000	25	1,000,000
Glue, fertilizers, etc.....	4	5,000,000	1,000	2,000,000
Soap.....	8	1,600,000	1,000	5,000,000
Candles.....	2	500,000	125	800,000
Linseed oil and cake.....	8	2,000,000	210	4,000,000
Soda, mineral waters, etc.	18	720,000	580	2,000,000
Ink.....	3	100,000	150	250,000
Totals, 1890.....	84	\$14,320,000	4,900	\$28,550,000
Totals, 1889.....	82	12,375,000	4,400	19,475,000

The wages paid in 1889 and 1890 were estimated at \$2,208,000 and \$2,460,000.

Iron Manufactures.	No.	Capital.	Work-ers.	Product.
Rolling mills.....	6	\$25,000,000	15,000	\$22,275,000
Foundries.....	60	3,500,000	5,000	12,000,000
Mach., mall, iron, etc.....	67	2,800,000	3,400	9,800,000
Boiler works.....	22	600,000	1,500	2,800,000
Carwheel works.....	7	1,600,000	1,700	5,500,000
Stoves, furnaces, ranges.....	22	1,750,000	2,000	3,200,000
Steam fitting and heating.	12	600,000	800	2,700,000
Gal. iron, tin, slate roof'g.	70	600,000	1,000	1,700,000
Barbed wire, wireworks....	10	150,000	200	350,000
Miscellaneous.....	45	4,000,000	4,000	9,000,000
Totals, 1890.....	321	\$40,600,000	34,600	\$69,325,000
Totals, 1889.....	290	34,200,000	26,800	61,450,000

The amount of wages paid in 1890 is estimated at \$18,500,000, as compared with \$15,600,000 for 1889.

Meats.	1890.	1889.
January and February.....	1,063,000	650,000
Summer months.....	3,132,000	2,294,000
November and December.....	1,968,000	1,116,000
Total for year.....	5,613,000	4,060,000
Value of animals.....	\$51,920,000	\$43,920,000
Value of product.....	58,400,000	50,050,000

Packing.	1890.	1889.
Number of companies.....	75	75
Capital.....	\$17,000,000	\$14,000,000
Workers.....	24,500	22,000
Wages paid.....	\$13,585,000	\$12,100,000
Value of product.....	187,275,000	112,000,000

Leather.	No.	Capital.	Work-ers.	Product.
Tanners and curriers.....	19	\$5,000,000	1,800	\$6,500,000
Boot, shoe & slipper mfrs....	50	4,000,000	5,000	13,000,000
Saddle and harness mfrs....	3	400,000	400	2,000,000
Trunk manufacturers.....	9	800,000	500	1,600,000
Hose, leather-belt'g mfrs..	3	275,000	275	900,000
Totals, 1890.....	84	\$10,475,000	7,975	\$24,000,000
Totals, 1889.....	81	9,825,000	7,350	19,975,000

The amount of wages paid was approximately \$5,340,000, against \$4,920,000 for 1889.

Printing, etc.	No.	Capital.	Work-ers.	Product.
Prt'g, bind'g, newspapers....	240	\$4,400,000	6,000	\$20,000,000
Lithographing houses.....	7	230,000	440	600,000
Electrotyping, stereotyp'ng	15	800,000	500	900,000
Type-founders.....	4	600,000	400	800,000
Printers' ink factories.....	3	62,000	20	77,000
Printers' supplies, presses.	3	400,000	300	475,000
Printers' furniture, etc.....	2	30,000	40	100,000
Book-binderies.....	11	300,000	1,500	960,000
Totals, 1890.....	265	\$6,322,000	9,200	\$30,912,000
Totals, 1889.....	277	5,490,000	8,070	19,730,000

The estimated amount of wages paid in 1889 was \$5,100,000; in 1890, \$5,800,000.

Textiles.	No.	Capital.	Work-ers.	Product.
Men's and boy's clothing...	50	\$10,000,000	14,000	\$20,000,000
Colored shirts, overalls, etc.	25	2,000,000	22,500	3,750,000
Men's neckwear.....	6	400,000	1,200	1,500,000
White shirts.....	40	340,000	930	1,700,000
Furs.....	10	700,000	400	800,000
Cloaks and suitings.....	18	2,600,000	6,000	8,500,000
Cloak and dress trimmings	4	283,000	480	400,000
Children's caps, etc., of lace and plush.....	3	50,000	250	175,000
Millinery.....	9	350,000	1,300	1,500,000
Totals, 1890.....	165	\$16,723,000	26,960	\$38,325,000
Totals, 1889.....	151	14,265,000	23,785	32,000,000

The estimated amount of wages paid was \$3,700,000 against \$7,360,000 for 1889.

Miscellaneous.	No.	Capital.	Workers.	Product.
Toy and bicycle factories.	5	\$450,000	1,000	\$1,300,000
Sign-makers	30	120,000	415	715,000
Brushes (not brm.)	16	275,000	350	650,000
Brooms.	1	50,000	250	250,000
Feather-dusters	5	72,000	250	250,000
Show-cases.	10	70,000	130	300,000
Glass	1	100,000	200	200,000
Corks.	2	100,000	90	175,000
Paper boxes	11	170,000	800	800,000
Sails, awnings, etc.	12	400,000	350	1,500,000
Shipyards	3	300,000	200	350,000
Perfumer.	3	170,000	200	650,000
Totals, 1890	98	\$2,277,000	4,235	\$7,140,000
Totals, 1889	95	2,210,000	3,920	6,660,000

The wages paid approximate \$2,053,000 against \$1,000,900 for 1889.

BANKING INTERESTS.—Chicago banks rank high in the financial world. The capital of the national banks of this city in 1890 was \$16,100,000, and their surplus and profits \$10,343,119. The bank clearings for 1890 were \$4,093,145,904, being nearly ten times the amount in 1886.

BOOK PUBLISHING.—Chicago is rapidly becoming a book publishing center. In bound books the production has exceeded 8,500,000 copies, and of books in paper covers nearly 3,000,000. A heavy proportion of this product was shipped to Eastern markets. One bindery has a daily capacity of 15,000 volumes.

CHICAGO POSTOFFICE.—The Chicago postoffice has eleven carrier stations and 22 sub-postal stations at different parts of the city. The force employed consists of about 650 regular carriers, 200 substitutes, 687 regular clerks and 60 substitutes, making a total of nearly 1,600 employes. The revenue of the office has increased from \$1,930,363 in 1885 to \$3,126,840 in 1890. The disbursements have increased during the same period from \$726,860 to \$1,131,474. It is estimated that in 1895 the revenues will reach upwards of \$5,000,000. This is based upon the rate of increase in New York; but if the expectations regarding the influence of the world's fair and the growth of the city shall be realized, the increase will be much greater.

JOBGING AND WHOLESALE BUSINESS.—The following are the figures of this trade for the years named:

	1890.	1889.
Dry goods and carpets	\$93,730,000	\$87,600,000
Groceries	56,700,000	54,000,000
Lumber	36,900,000	36,000,000
Manufactured iron	15,580,000	15,580,000
Clothing	21,500,000	21,500,000
Boots and shoes	25,900,000	23,600,000
Drugs and chemicals	7,100,000	6,800,000
Crockery and glassware	5,500,000	5,100,000
Hats and caps	7,000,000	6,000,000
Millinery	7,000,000	6,000,000
Tobacco and cigars	10,850,000	6,890,000
Fresh and salt fish, oysters, salmon.	5,460,000	5,140,000
Oils	4,000,000	4,000,000
Dried fruits	4,300,000	3,500,000
Building materials	4,468,000	3,650,000
Furs	1,500,000	500,000
Carriages	1,850,000	1,640,000
Pianos, organs, musical instruments.	7,200,000	6,825,000
Music books and sheet music	575,000	520,000
Books, stationery and wall paper	22,000,000	20,700,000
Paper	25,500,000	25,000,000
Paper stock	5,000,000	5,500,000
Pig iron	20,035,000	16,200,000
Coal	25,075,000	23,250,000
Hardware and cutlery	17,500,000	15,500,000
Wooden and willow ware	3,162,000	2,275,000
Liquors	13,800,000	11,500,000
Jewelry, watches and diamonds	20,400,000	17,000,000
Leather and findings	2,520,000	2,400,000
Pig lead and copper	5,666,000	3,760,000
Iron ore	4,000,000	2,000,000
Miscellaneous	5,085,000	5,085,000
Totals	\$486,600,000	\$448,165,000
Do. in 1888		437,500,000
Do. in 1887		449,000,000
Do. in 1886		408,000,000
Do. in 1885		380,000,000
The increase of \$38,835,000 from 1889 is 8½ per cent.		

GRAIN STORAGE CAPACITY.—The following table shows the regular grain warehouses of the city of Chicago:

GRAIN WAREHOUSES.

Name of Elevator.	Proprietors.	Receive From	Capacity, Bushels.				
Central A	Central Elevator Co	I. C. R. R.	1,000,000				
Central B			1,500,000				
C. B. & Q. A.			1,250,000				
Do. B			800,000				
Do. C			1,500,000				
Do. D	Dole & Co	C. B. & Q.	1,800,000				
Do. D anx			1,200,000				
Rock Island A			Chas. Counselman & Co.	C. R. I. & P.	1,250,000		
Rock Island B					Congdon & Co.	C. R. I. & P.	1,000,000
Galena							700,000
Air Line	City of Chicago Grain Elevators, Limited.	C. & N. W.	700,000				
Fulton			C. M. & St. P.	400,000			
St. Paul				900,000			
City				1,000,000			
Union				800,000			
Iowa				R. R. & Canal	W. St. P. & P.	1,500,000	
National						C. & N. W.	1,000,000
Chicago & St. Louis							1,000,000
Wabash				Chicago Elevator Co	Various R. R.	1,500,000	
Indiana						1,500,000	
Pacific B	Chicago & Pacific Elevator Co.	C. M. & St. P.		1,000,000			
Illinois River	Illinois River Elevator Co.	Canal	175,000				
Alton	G. A. Seaverns	R. R. & Canal	1,100,000				
Alton B			500,000				
Santa Fé	Santa Fé Elevator Co.	A. T. & S. Fé R. R.	1,500,000				
Armour Elevator	Armour Elevator Co.	C. M. & St. P. R. R.	2,000,000				
Neeley's Elevator	Illinois T. & S. Bank	R. R. & Canal	700,000				
Total			28,675,000				

CHICKADEE (*Parus montanus* or *atricapillus*), a North American titmouse, of sober black and gray plumage, and active habits. It is fond of pine-trees, feeds on insect larvæ, has a hardy constitution, and remains through the winter.

CHICKAHOMINY, a river of Virginia, which flows within five miles of Richmond, and enters the James, after a southeasterly course of 90 miles.

CHICKAMAUGA, a tributary of the Tennessee River, rising in Georgia, and flowing northwest into Tennessee, in which State the Confederate General Bragg defeated Rosecrans in a battle fought on the banks of the stream, Sept. 19 and 20, 1863.

CHICKAREE, a popular name of the red or Hudson Bay squirrel, *Sciurus hudsonius*, which inhabits British America and the northern part of the United States.

CHICKASAW INDIANS. See Britannica, Vol. V, p. 614. See also INDIANS, AMERICAN, in these Revisions and Additions.

CHICKEN-POX, a contagious febrile disease, generally appearing in children, and bearing some resemblance to a very mild form of small pox. It is a disease of little or no danger, the fever being hardly perceptible, and never lasting long.

CHICKERING, JONAS, piano manufacturer, born in New Ipswich, N. H., April 5, 1797, died in Boston, Mass., Dec. 8, 1853. He was the son of a blacksmith, began business life as a cabinet-maker, and became noted for the number and excellence of the pianos which he manufactured. His factory in Boston grew to be very extensive. Mr. Chickering patented many improvements in pianos and was noted for his business enterprise, public spirit and benevolence. After his death the business passed into the hands of his three sons; the eldest, Thomas Edward (born in Boston, Oct. 22, 1824, died there Feb. 14, 1871), succeeded his father as head of the firm, and distinguished himself in the civil war. Charles Frank, second son (born in Boston, Jan. 20, 1827, died in New York city, March 23, 1891), after receiving his education entered his father's factory. He represented his father at the World's Fair in London in 1851, and made many improvements in the manufacture of pianos.

CHICK-PEA (*Cicer arietinum*, a genus of plants of the natural order *Leguminosæ*, sub-order *Papilionacæ*). It grows wild in the countries around the Mediterranean Sea and in many parts of the East, producing a short, puffy pod containing seeds which abound in farina and are used as food. They are an important article in French cookery, and have been cultivated at a very early period in Egypt, Syria, India, etc. When roasted it is the common *parched pulse* of the East. In great heat, drops exude from this plant, which, on drying, leave crystals of almost pure oxalic acid.

CHICKWEED (*Stellaria media*), one of the most common weeds of gardens and cultivated fields. Cage-birds are very fond of both its leaves and seeds.

CHICO, a town of California, former county-seat of Butte county, situated on Chico Creek, ninety-five miles north of Sacramento. It is the trade-center of a fertile district, and an important shipping-point for lumber. It is the seat of an academy, and contains a variety of manufactories.

CHICOPEE, a city of Massachusetts (see Britannica, Vol. V, p. 614). Among the principal industries are the cotton mills of the Dwight Company, with a capital of \$2,000,000. The Chicopee River affords ample water power for the numerous mills and manufactories. There is a convent of the Sacred Heart, a high school, and several churches, and

national and savings banks. Population in 1880, 11,516; in 1890, 14,007.

CHICKORY. See Britannica, Vol. V, pp. 614, 615.

CHIEF: in heraldry, an honorable ordinary formed by a horizontal line, and occupying the upper part of the escutcheon. Any object borne in the upper or chief part of the shield is said to be *in chief*, though the chief be not divided off from the rest of the field as a separate portion.

CHIEMSEE, a lake of Upper Bavaria, the largest in the country. It lies about forty-two miles southeast of Munich. It is twelve miles in length and nine miles in breadth, and is situated at an elevation of more than 1,500 feet above the sea.

CHIFF-CHAFF (*Sylvia hippolais*), a small species of warbler, of very wide distribution. Its general color is brown; the under parts lighter. Its song consists merely of a frequent repetition of two notes resembling the syllables chiff-chaff.

CHIGNECTO BAY, an inlet at the head of the Bay of Fundy, in British North America. It separates Nova Scotia from New Brunswick, is thirty miles long and eight broad, and has an isthmus only fourteen miles in width between it and Northumberland Strait, in the Gulf of St. Lawrence.

CHIGNON (Fr., originally the "nape of the neck"), a general term for a woman's hair when gathered up into a roll on the back of the head and neck. The term is more particularly applied to such a roll when the hair is arranged over a pad, or combined with false hair to make it very large.

CHIHUAHUA, the largest State of Mexico, bounded on the north and northeast by New Mexico and Texas; has an area of 83,746 square miles, and a population of about 226,000. In the east is the *Bolson de Mapima*, a vast desert of sand and alkali plains; in the south and west the surface is mountainous, and there are numerous rivers. The State is better adapted for stock-raising than for agriculture; the fertile districts are mainly confined to the valleys and river-courses. Cotton is grown in the south. The silver mines were for centuries among the richest in Mexico, and though many are now abandoned mining is still the chief industry. The State is traversed by the Mexican Central Railway. The capital, Chihuahua, 225 miles south of El Paso by rail, rises like an oasis in the desert, among roses and orange-groves. It is well built, and is the center of considerable trade with Texas. Founded in 1691; population, 12,116.

CHILBLAINS, localized inflammations of the skin which occur in cold weather, and affect the hands and feet, more rarely the ears or nose. They are at first bright red, but as they disappear assume a purplish tinge. Sometimes they break and give rise to ulcers, which are slow to heal. They occur most frequently in young people, affect women more often than men, and are generally associated with weak health and a sluggish circulation. They are often extremely irritable and painful, especially when the affected part has been chilled and is quickly warmed again.

CHILD, LYDIA MARIA, author, born in Medford, Mass., Feb. 11, 1802, died in Wayland, Mass., Oct. 20, 1880. She was the daughter of Richard Francis, and the wife of David L. Child, journalist. At the age of seventeen she wrote her first novel, and five years afterward became editor of the "Juvenile Miscellany." The following year she married. William Lloyd Garrison interested Mr. and Mrs. Child in the subject of slavery, and soon after Mrs. Child began to write on the question. For her action in befriending so unpopular a cause she was for a time socially ostracized. From 1840 to 1843 she edited the "National Anti-Slavery Standard" in New York city, and the following year

assisted her husband to edit the paper. When John Brown was a prisoner at Harper's Ferry, she sent a letter offering her services as nurse. Mr. Brown declined, but asked her aid for his family, and she responded to the request. Mrs. Child was the author of many books, among which were: *The History of Women; Letters from New York; Fact and Fiction; Looking Toward Sunset; and The Progress of Religious Ideas.*

CHILD, SIR JOSIAH (1630-99), an eminent London merchant, and writer on commerce and political economy. His principal work is entitled, *Brief Observations Concerning Trade and the Interests of Money*, published in 1690.

CHILDERMAS, or HOLY INNOCENTS' DAY, observed in the Roman Catholic and Anglican churches on the 28th of December, to commemorate the slaughter of the children by order of Herod.

CHILDERS, HUGH, an English statesman, born in London in 1827. He went to Australia about 1850, and was a member of the government until 1857. He became a lord of the admiralty in 1864; chancellor of the duchy of Lancaster in 1872; secretary of war in 1880; chancellor of the exchequer in 1882; and home secretary in 1886.

CHILDREN, SOCIETY FOR THE PREVENTION OF CRUELTY TO, a society organized in the city of New York in 1874 by Henry Berg and his associates, and chartered under the laws of the State of New York. Its purpose is specially stated in its name. Up to Jan. 1, 1891, the society had investigated 53,784 complaints, involving 161,936 children; 18,480 cases were prosecuted, resulting in 17,477 convictions, and the relief of 28,950 children. The present chief officers (1891) are: Eldridge T. Gerry, president and counsel; Courtland V. Anable, attorney; and E. F. Jenkins, secretary and superintendent; with vice-presidents, and a board of fourteen additional directors. There were in 1891 about 300 other similar societies in the world, of which there were in the United States ninety-six, all organized since the parent society in New York was founded.

CHILDS, GEORGE W., an American publisher and philanthropist, born at Baltimore in 1829. He became a partner in a publishing house in Philadelphia in 1849; and in 1864 he bought the "Public Ledger" of that city, with which his name has been since identified.

CHILL, or CHILE (Republica de Chile). See Britannica, Vol. V, pp. 616-24. For the purposes of local government the republic is now divided into provinces, presided over by intendants; and the provinces into departments, with gobernadores as chief officers. According to the rearrangement of 1887 there are twenty-three provinces, subdivided into sixty-eight departments and one territory. The Senate, of thirty-seven members, is elected by the provinces for six years; the chamber, of 109 members, by the departments for three years, by electors possessing a small property qualification. The latest census, that of Nov. 26, 1885, gives the area of the republic as 293,970, and the population as 2,665,926. The estimated population in 1890 was 2,715,400, including about 50,000 American Indians and Auricanians. The capital is Santiago, with a population of 236,412. The revenue of the republic for 1889 was 46,000,000 pesos, and the expenditures 53,000,000 pesos. The imports for 1889 amounted to 65,090,013 p., and the exports to 65,963,100 p. The public debt of Chili Jan. 1, 1889, was 93,817,955 p. Tobacco-growing and the production of raw silk have been attempted of late years, but only with indifferent success. About 1,500,000 of the population are engaged in agriculture. Chili produces annually about 21,000,000 bushels of

wheat; 24,000,000 gallons of wine; 40,000,000 tons of copper; 335,000 lbs. of silver; 1,000 lbs. of gold; and 10,000,000 tons of coal. A large amount of capital is also employed in the nitrate industry, the production of nitrate in 1888 amounting to 800,000 tons. By an act passed in 1887 the army is limited to 5,885 men. Besides this regular army there is a national guard, composed of citizens, numbering 48,530 men.

The Chilian navy consisted in 1890 of two iron-clads, each of 2,033 tons; a monitor of 1,130 tons; two corvettes of 1,101 tons; one corvette of 1,075 tons; two gun-boats of 660 and 775 tons; a cruiser of 3,000 tons; another of 465 tons; 10 torpedo-boats of from 40 to 400 horse-power. At this writing (1891) two cruisers of 2,080 tons each are building in France, and two torpedo-boats are building in England. There is a good naval college in Valparaiso. The expenses of the national armament are paid out of the revenue from nitrate.

In 1890 there were published in Chili 400 daily, weekly, monthly or intermittent periodicals. The presidential term of office is for five years; and the president cannot be reelected until after an interval of one term. For the last six terms he has practically named his own successor—a fact which caused great criticism, and created a powerful party against the administration. Early in 1891, large number, including a majority of the naval forces, began an insurrection for the overthrow of the government, and it has gone forward constantly increasing in strength until this writing (April 1, 1891), at which date there seems little promise for the survival of the governmental administration.

CHILI SALT PETER, a commercial name applied to the nitrate of soda.

CHILLICOTHE, a city of Missouri, county-seat of Livingston county, about seventy-five miles east of St. Joseph. It is the chief town of the Grand River Valley, and has manufactories of machinery, lumber, and flour, and is the seat of an academy.

CHILLICOTHE, a city of Ohio, and county-seat of Ross county (see Britannica, Vol. V, p. 624). The Ohio Canal, and the Marietta and Cincinnati, and Sciota Valley Railroads pass through the city. The court-house is a fine stone edifice. There is also a high school, public library, and numerous manufactories of carriages, paper, machinery and farming implements. Population in 1880, 10,938; in 1890, 11,256.

CHILLON, a celebrated castle and fortress of Switzerland, in the canton of Vaud. It is situated on the east end of the Lake of Geneva, on an isolated rock, almost entirely surrounded by deep water, and is connected with the shore by a wooden bridge. The castle is said to have been built in 1238, by Amadeus IV of Savoy. It long served as a state prison, but is now used as a magazine for military stores.

CHIMBORAZO, "Mountain of Snow," a conical peak of the Andes, in Ecuador, 20,517 feet above the sea. The first successful attempt to reach the summit was in 1880, when Whymper twice made the ascent. See Britannica, Vol. VII, p. 645.

CHIMESE, a bishop's upper robe, to which the lawn-sleeves are attached. That of Anglican bishops is of black satin, that of English Roman Catholics is of purple silk.

CHIMNEY. See Britannica, Vol. IV, p. 466.

CHINA, the great empire of Eastern Asia. For its history, topography, productions, government, and religion, see Britannica, Vol. V, pp. 626-72. The area in 1891 was reported as 4,179,559 square miles, and the population as 404,180,000, including dependencies; the population of China proper was

estimated at 383,000,000, and the number of square miles at 1,297,999. The reigning emperor, Tsait-ien, born in 1871, who succeeded to the throne Jan. 22, 1875, at the death of Tung-chi, rules under the style of Kwangsu, and is the ninth emperor of the Manchu dynasty. The late emperor, dying suddenly in the eighteenth year of his age, did not designate a successor, and it was in consequence of arrangements directed by the empress dowager that the infant son of Prince Ch'un was made the nominal occupant of the throne. There were two dowager empresses concerned in the arrangements—the eastern and the western. The western still lives, and has lately withdrawn from power. Having become of age the young emperor nominally assumed government in 1887, but did not assume full control until February, 1889, when the other empress dowager withdrew. He was married Feb. 26, 1889.

No official reports are made of the receipts and expenditures of the government. The annual average estimates, however, place the amount at about \$125,000,000, the income being derived from taxes on land, grain, salt, and customs duties. The expenditure of the government is mainly for the army. China had no foreign debt until the beginning of 1875, when it contracted a debt of about \$3,000,000, secured by the customs revenue. Since that date it has increased the debt as follows: In 1878, about \$8,000,000; in 1884, about \$7,000,000; in 1886, about \$12,000,000; and in 1887, about \$1,250,000. The total external debt was estimated on Jan. 1, 1891, at \$20,000,000.

Its army statistics in 1891 were reported as follows: (1) The Eight Banners, including Manchus, Mongols, and Chinese reached a total of 323,800. Of these 100,000 are supposed to be reviewed by the emperor at Peking once a year. (2) The Ying Ping or national army, having 6,459 officers and 650,000 privates. The pay of the infantry is from \$1 to \$2 per month, and the cavalry receive about \$5 per month, out of which each man must feed his horse, and replace it if the one originally supplied by the government is not forthcoming. China has lately acquired a considerable navy, the ships of which are of an advanced type.

In the eighteen provinces there are now 8,000 offices for post-carts, and scattered over the whole of the Chinese territories are 2,040 offices for runners. There are also numerous private postal couriers.

CHINA BARK, a name of cinchona bark, often to be met in books, and in common use on the continent. It is derived, not from the empire of China, but from *Kina* or *Quina*, the Peruvian name of cinchona.

CHINA ROOT, the root or rhizome of *Smilax China*, a climbing shrubby plant, closely allied to sarsaparilla; it is a native of India, China, and Japan.

CHINCH-BUG, a hemipterous insect whose attack is very destructive to wheat and other crops, especially in the valley of the Mississippi. In 1864 it was estimated that the total damage caused to the crops of the United States by this pest was \$100,000,000.

CHINCHILLA. See *Britannica*, Vol. V, pp. 673, 74.

CHINCHON, a town of Spain, in the province of Madrid. It has manufactories of linen, leather and earthenware. Population, 6,400.

CHINESE WHITE, the name given to white oxide of zinc, used in the arts as a pigment in place of the preparations of white lead. It changes very little either by atmospheric action or by mixture with other pigments.

CHINI, a village of the Punjab, one mile from the right bank of the Sutlej. It is remarkable for the excellent grapes it produces.

CHINTZ, a highly glazed printed calico, with a pattern in many colors on a white or light-colored ground. It is chiefly used for covering furniture, and is frequently called *furniture-print*.

CHINOOKS, a tribe of Indians, now nearly extinct, on the Columbia River, on the west coast of North America. Their language was very difficult to learn and pronounce, and this led to the formation of the *Chinook jargon*, a trader's *lingua Franca*, consisting of words from French and English as well as Chinook and other Indian languages.

CHIOCOCCA, a genus of tropical and sub-tropical plants, of the natural order *Cinchonaceæ*, of which two species in particular, *C. anguifuga* and *C. densifolia*, enjoy a high reputation in their native country, Brazil, as cures for snake-bites.

CHIPMUNK (*Tamias striatus*), a kind of squirrel common in North America. The genus includes only a few species, often called ground squirrels, and distinguished from the common *Sciurus* by the possession of spacious cheek-pouches, by the longer snout but shorter tail and ears, and by the constant absence of the first upper molars. They are of active disposition, and live in underground burrows.

CHIPPEWA, a small Canadian village and port of entry in Welland county, Ontario, and on the Niagara River, 3 miles above the falls. An important battle was fought here July 5, 1814, between the British troops under Maj. Gen. Rial and the American army led by General Scott, but commanded by General Brown. The Americans were victorious.

CHIPPEWA FALLS, a flourishing city and railroad junction of Wisconsin. It is located on Chippewa River, and is the county-seat of Chippewa county. The city has water, gas, and electric light works. Here are several mills, and lumber is extensively manufactured.

CHIPPEWAY INDIANS (written also *Chippewa*, *Ochipwe*, and *Ojibbeway*), a numerous tribe of American Indians, belonging to the Algonquin stock, and now settled on a reservation in northern Minnesota, and in various districts in Canada.

CHIQUEHIQUI PALM (*Leopoldinia Piassaba*), one of the palms which yield the Piassaba fiber, used for making brushes. It grows in swampy places on the banks of the Rio Negro and other rivers of Brazil. The leaves are much used for thatching. From a remarkable covering of the stem there is obtained a fiber which has long been used for cables of canoes on the Amazon and other rivers.

CHIQUEMULA, Isthmus of, in Central America. Its breadth from the Caribbean Sea to the Pacific is about 150 miles. The greatest elevation does not exceed 2,000 feet.

CHIQUEQUIRA, the largest town in the department of Boyaca, Colombia, situated near the Suarez, 30 miles west of Tunja. An Indian place of pilgrimage before the conquest, it is still visited by a large number of pilgrims annually. Population, 13,000.

CHIRATA, or **CHIRETTA** (*Ophelia Chirata*), a plant belonging to the natural order *Gentianæ*, and possessing properties similar to those of the common gentian. It is a native of the mountains of the north of India. The whole plant is intensely bitter, and has been long used for medicinal purposes, especially in India.

CHIRRA POONJEE, a town in the northeast of India. It stands on the Cossya hills, at the height of 4,200 feet above the sea. The vicinity abounds in mines of coal and iron.

CHIRIQUI, a division of the department of Panama, Colombia; area, 6,500 square miles; population, 43,000. Also a lagoon 90 miles long and 50 in width, with a depth of water for the largest ships on the north coast of Central America, and a river flowing towards the north, the latitude and longitude of its mouth being 9° N., and 82° 30' E.

CHISELHURST, a village in Kent, 11 miles south-east of London. Sir Nicholas Bacon was a native of Chiselhurst. Camden Park estate (now built over) was the residence of Camden, the antiquary. Napoleon III died at Camden Place in 1873; his remains and those of the Prince Imperial were removed to Farnborough in January, 1888. There are here an orphanage and a governesses' benevolent institution.

CHITALDRUG, the chief town of the district of the same name, in Mysore, India, situated 126 miles northwest of Bangalore. It has manufactories of coarse blankets and cotton cloth. The military cantonments have been abandoned on account of their unhealthfulness. Population, 4,271. The district of Chitaldrug is the least populous in the Mysore states, and is remarkable for its low, rainfall and arid, stony soil. Area, 4,871 square miles; population, 376,310.

CHITIN, an organic substance which forms most of the hard parts of crustaceans and insects. It is an amorphous, white substance, containing nitrogen, but free from sulphur. It is unaffected by digestive ferments, by water, hot or cold, by alcohol or ether. It may, however, be dissolved by strong mineral acids (hydrochloric or sulphuric), and prepared from the cleaned exoskeleton of a lobster, or preferably from the pen of a squid. Chemically it is regarded as a derivative of carbohydrates.

CHITON, a family of gasteropodous mollusks of the order *Cyclobranchiata*, sub-order *Polyplacophora*. The shell is composed of eight narrow, calcareous pieces, overlapping one another in a row along the back, and strongly attached to the mantle, which is remarkably fleshy and fibrous. There are over 200 known species, found all over the world, adhering to rock-like limpets.

CHITTAGONG WOOD, a name somewhat vaguely used by cabinet-makers; usually the wood of *Chicrassia tabularis*, a tree of the order *Cedrelaceæ*, a native of the mountainous countries to the east of Bengal. It is often beautifully veined and mottled.

CHITTOR, a fortified town of India, in the district of Odeypoor, or Mewar. The fortress occupies the summit of an isolated rock nearly 6,000 yards in length and 1,200 in breadth.

CHITTOR, a town of India, in the district of Arcot, about 80 miles west of Madras, on the right bank of the Puni, about 1,100 feet above the sea.

CHIVALRY, a social arrangement of mediæval life in Christian Europe, of which knighthood formed a central feature. It included everything relating to martial accomplishments and the relation between vassal and lord, then the chief bond of society. With regard to the position of the female sex and domestic life, it developed sentiments and manners which had a powerful and salutary effect on modern society, although it is true that the high ideal standard of morals which it cultivated was not always fully exemplified in the lives of those who were trained under its influence. Though closely connected with feudalism its germ has been traced to a much earlier age.

In English law, chivalry is used to mean the tenure of lands by knight's service, which might be general or special, according as the tenant was bound to perform military service generally or some particular service

The *Court of Chivalry* was a military court, established by Edward III, of which the earl marshal and the lord high constable were judges. It tried military offenses and decided questions of personal honor, questions as to coat-armor, and the like; it sat for the last time in 1737.

CHIZEROTS AND BURINS form one of those peculiar races in France that live isolated in the midst of the rest of the population, and are despised and hated by their neighbors. They are found in the arrondissement of Bourg-en-Bresse, in the department of Ain, and the communes of Sermoyer, Arbigny, Boz and Ozan belong to them. According to tradition they are descended from the Saracens. Although industrious and prosperous, they are held in the utmost contempt and detestation by their peasant neighbors, who are themselves often indolent and destitute. They are looked upon as covetous and malicious, and scarcely would the daughter of a small farmer or well-to-do day laborer become the wife of one of them, so that they mostly marry among themselves. From time immemorial they have been field-laborers, cattle-dealers, butchers, and the like.

CHLORANTHACEÆ, a small group of aromatic and stimulant plants, chiefly tropical, allied to the peppers. *Chloranthus inconspicuus* is the Chu-lan of the Chinese, who use it for perfuming teas.

CHLORIMETRY, the process of estimating the proportion of "available chlorine" in bleaching powder, which may vary from 20 to 40 per cent. The term *available* applies only to that portion of the chlorine which is easily liberated, and which takes part in the bleaching process.

CHLORITE, or **RIPIDOLITE**, an abundant mineral, consisting of silica, alumina, magnesia and protoxide of iron, in somewhat variable proportions. It is of a green color (see *Britannica*, Vol. XVI, p. 413), and occurs now and again crystallized in minute hexagonal plates, or in aggregates of small leaflets, either singly or disposed in radial groups, which are scattered over the joint-surfaces of certain rocks, or may occur in a thin incrustation upon other minerals. It is rather soft, and is easily broken or scratched with a knife.

CHLORITE-SCHIST, a green schistose rock, in which chlorite is abundant in foliated plates, usually blended with minute grains of quartz, and often with feldspar, mica, talc, or magnetite.

CHLORITIC MARL, a thin bed of white or pale-yellow marl, sometimes indurated, containing dark-green glauconitic grains, phosphatic nodules, and iron pyrites. It belongs to the Cretaceous system, coming between the Upper Greensand and Chalk Marl.

CHLOROSIS, a peculiar form of anæmia or bloodlessness, common in young women, and connected with the disorders incident to the critical period of life. It has been called the *green sickness*, from the peculiar dingy greenish-yellow hue of the complexion; the green color, however, is not always present. The disease is attended with very great debility, and often with breathlessness, palpitation and other distressing or even alarming symptoms. In a few cases it is associated with imperfect development of the larger arteries, and is then incurable; but in the vast majority of cases it yields readily to treatment unless complicated with some other disease.

CHOATE, RUFUS, advocate and orator, born in Essex, Mass., Oct. 1, 1799, died in Halifax, N. S., July 13, 1859. He graduated at Dartmouth in 1819, was tutor in the college during the following year, studied law at Cambridge, and afterwards in the office of William Wirt in Washington, who then held the office of attorney-general. Returning to

Salem he was elected to Congress in 1830, where he remained until 1834, at which time he resigned and went to Boston. In 1841 Daniel Webster was called to the cabinet of President Harrison, and Mr. Choate was elected to his place in the United States Senate. Here he made several brilliant speeches, among which were those on the Oregon boundary, the tariff, and the proposed annexation of Texas. Resigning his seat, Mr. Choate returned to his legal business in Boston. After Webster, he was considered the leader of the Massachusetts bar. Mr. Choate died while he was on his way to Europe for the benefit of his health. A musical voice, winning personality, learning, good judgment and a quaint humor were among the elements of his popularity.

CHOCTAW INDIANS. See *Britannica*, Vol. V, pp. 680-81. See also **INDIANS, AMERICAN**, in these *Revisions and Additions*.

CHOKE-CHERRY, a name given to certain nearly allied species of cherry, natives of North America, having small fruit in racemes like the bird-cherry or cherry-laurel, from which latter, however, they are easily distinguished by their deciduous leaves. The fruit is at first rather agreeable, but afterwards astringent in the mouth.

CHOKE-DAMP, also called *after-damp* or *foul-damp*, the carbonic acid gas given off by coal which accumulates in coal mines, and may suffocate those exposed to it. It is distinguished from *fire-damp*, the marsh-gas or light carbureted hydrogen which causes the explosions.

CHOKING: in its slighter forms, a very familiar occurrence, resulting from a morsel of food or other solid, or even a drop of liquid, passing into the larynx or upper opening of the wind-pipe, instead of the gullet. It is generally caused by a breath being suddenly drawn in coughing, laughing, etc., while food or fluid is in the mouth. Sometimes a larger mass is drawn into the opening of the wind-pipe, completely blocking it, and arresting respiration altogether. This condition is one of extreme danger; the sufferer becomes purple in the face, and if not at once relieved will speedily die of suffocation.

In *cattle* the causes fall under two heads: (1) those that depend on the material swallowed; and (2) those that depend on the animal swallowing. Under the first head we find sharp-pointed objects which become fixed into or entangled in the membrane lining the throat and gullet; solid masses too large to pass on to the stomach; dry farinaceous materials which clog in the passage. The second class of causes consists in inflammation of the throat, or irritation of the organs of deglutition; constrictions of the passage; ulceration of the cesophagus, which is apt to follow choking, and is the cause of a relapse; lastly, without any disease of the deglutitory organs an animal may be choked by eating too greedily, and imperfectly masticating or salivating its food.

CHOLERA. See *Britannica*, Vol. V, pp. 682-84.

CHONOS ARCHIPELAGO. See *Britannica*, Vol. XVIII, p. 352.

CHOPIN, an old English liquid measure equal to half a pint. The Scotch *chappin* was nearly an English quart. The German *schoppen* is a pint.

CHOPIN, FREDERIC FRANÇOIS. See *Britannica*, Vol. V, pp. 685-86.

CHOPINE (Spanish, *chapin*), a high clog or pattern formerly worn by women under the shoe, the height being regulated in accordance with the rank of the wearer. It was of Oriental origin, having been introduced into Venice from Turkey, and thence into England during the reign of Elizabeth. Some chopines were half a yard high, resem-

bling a short stilt; they were covered with leather, many of them being decorated with painting or gilding. The term came later to be applied to the shoe and clog combined.

CHORALE. Though the name is occasionally applied to the psalm and hymn tunes of similar character used in the Protestant churches of France and Britain, it most properly belongs to the melodies sung to the metrical hymns of the German Reformed church, and introduced by Luther, by whom and his friend Walther the first collection of importance was produced in 1524, and entitled the *Enchiridion*. The settings were in four, five or six parts, the melody, as with all the old choral hymns and psalms, being given to the tenor. They possess in common a solemn, dignified and devotional character. In Germany they are now usually sung very slowly and heavily in unison with organ accompaniment.

CHORAL SERVICE, the musical service of the Church of England, celebrated by a full complement of clergymen, lay clerks, and choristers, when all those parts of the service are sung or intoned as ordered in the rubrics.

CHORD. The chord of an arc is a straight line joining its two extremities; or a chord in a circle, ellipse, parabola, etc., is a straight line joining any two points in a curve.

CHORLEY, HENRY FOTHERGILL, musical critic, born at Blackley Hurst, England, Dec. 15, 1808, died Feb. 16, 1872. He was educated in Liverpool, and in 1838 became a member of the staff of the "Athenæum," and soon after assumed charge of the musical department, from which he retired in 1868. He contributed also many literary reviews. Chorley was author of three acted dramas, and some graceful verse, but his chief works are *Music and Manners in France and Germany* (1841), and *Thirty Years' Musical Recollections* (1862).

CHOSE IN ACTION (Fr., *chose*, "a thing"), one of the two great classes of what the law calls *chattel-personal*. The one class is "choses in possession," such as goods, household furniture, cattle, etc.; the other class is "choses in action," such as the right to sue for a debt, a legacy, damages, etc. The old common-law rule was that, except in the case of negotiable instruments, contracts could not be assigned so that the assignee might sue in his own name; but the assignee must bring his action in the name of the assignor or cedent, so that the assignee was always exposed to every defense which might have been stated against the original debtor under the contract. Now, every *legal chose in action* is absolutely assignable if express notice in writing be given to the debtor, and in some States a chose in action may not only be assigned, but the assignee may bring suit for possession in his own name; while in others the name of the assignor is used as plaintiff in the action to the use of the assignee. Courts of law generally follow the rules of equity in this respect.

CHOUTEAU, AUGUSTE, pioneer, born in New Orleans, La., in 1739, died in St. Louis, Mo., Feb. 24, 1829. His brother Pierre was born in New Orleans in 1749, died in St. Louis, July 9, 1849. The young men made a trip northward from their native city in 1763, reaching Ste. Genevieve, Mo., and afterwards they ascended the river some sixty miles and founded a trading station on the present site of the city of St. Louis.

CHRESTOMATHY, a name for books of selections from foreign languages, usually provided with glossary and notes for the use of learners.

CHRETIEN DE TROYES, an old French poet, of whose life nothing more is known than that he lived in the second half of the 12th century, and was

a favorite poet at the court of Mary, daughter of Louis VII. He worked up the legends of the Round Table into numerous spirited poems, which had a wide literary influence, and were translated by the German minnesingers, Wolfram von Eschenbach, Gottfried of Strasburg, and others.

CHRISM, the name given to the oil consecrated on Holy Thursday, in the Roman Catholic and Greek churches, by the bishop, and used in baptism, confirmation, ordination, and extreme unction. There are two kinds of chrism—the one, a mixture of oil and balsam, is used in baptism, confirmation, and orders; the other, which is merely plain oil, is used in extreme unction.

CHRISOME, the name of the white linen cloth laid by the priest on the child in Roman Catholic baptism to signify its innocence. By olden usage it was generally presented by the mother as an offering to the church, but if the child died before the mother was "churched" again it was used as a shroud. By a common abuse of words, chrisome came to mean the child itself, being first applied in the old bills of mortality to denote such children as died within the month of birth.

CHRISTADELPHIANS, a small religious body which arose in the United States about the middle of the 19th century. The Christadelphians (or "Brethren of Christ") claim to represent the true faith and practice of Apostolic times, as revived by Dr. John Thomas, of Brooklyn, N. Y., the leading advocate of their views, who was born in England in 1805 and died in 1871. They deny the existence of a personal devil, and the immortality of the soul, believing in "conditional immortality," to be bestowed upon the faithful of all ages when Christ returns. They insist on the plenary inspiration of the Bible, the real death of Christ as a sacrifice for sin, his resurrection and ascension, and look for his return to the earth to reign on the throne of David over the converted and restored twelve tribes of Israel and all nations. They believe that death is a state of entire unconsciousness, terminated by a corporeal resurrection for those who have become related to Christ through faith and obedience, or are responsible for his rejection. Those accepted after the judgment reign forever with Christ over the nations; those rejected die the second death. Communities of Christadelphians exist in the principal towns of Great Britain, Ireland and the United States.

CHRISTENING, a term often used as equivalent to baptism.

CHRISTIAN ALLIANCE, a religious association organized in 1887, with its headquarters at 692 Eighth Avenue, New York city. It was founded by Rev. A. B. Simpson, who, at this writing (1891), has been its president from the date of its organization. Its membership, as described by its founder, "consists of all professing Christians who subscribe to its principles, and enroll their names." Its objects are stated to be "wide diffusion of the Gospel in its fullness, the promotion of a deeper and higher Christian life, and the work of evangelization, especially among the neglected classes, by highway missions and any other practical methods." The organization is said to be rapidly extending, especially throughout the United States and Canada. Auxiliary to the parent Alliance, is the "International Missionary Alliance," with a missionary training school located at 690 Eighth Avenue, New York city. Rev. A. B. Simpson is also corresponding secretary of the Missionary Alliance. At the opening of the year 1890, the secretary reported having established 23 missionaries in India, China, Japan, Hayti and Congo Free State. In New York city special work is done for fallen girls by means

of "the Door of Hope," a branch "home" opened by the Alliance.

CHRISTIAN II (1481–1559), king of Denmark, Norway and Sweden, born at Nyborg, in the island of Funen, in 1481, and mounted the throne of Norway and Denmark in 1518. In 1520 he overthrew at Bogesund the brave regent of Sweden, Sten Sture the younger, and thereafter was crowned king. But his ferocious passions, and especially his treacherous massacre in the Stockholm "blood bath" of the foremost men in Sweden, roused such a spirit of opposition in that country that he was speedily driven out by the young national leader, Gustavus Vasa, himself the son of one of the victims. Assisted by Charles V, Christian landed in Norway in 1531, but at the battle of Aggerhuus next year was totally defeated, and spent his remaining years in imprisonment at Sonderburg and Kallundborg, where he died in 1559. See Britannica, Vol. XXII, p. 747.

CHRISTIAN IV, king of Denmark and Norway, and duke of Sleswick-Holstein, born at Frederiksborg, in Zealand, in 1577, died at Copenhagen, Feb. 28, 1648. He was elected successor to the throne in 1588. He assumed the government of the duchy in 1593, and of the kingdom in 1596. He labored earnestly for the improvement of his country, and his legislative and financial reforms, together with his love and patronage of the arts and sciences, gained for him the affection of his people.

CHRISTIAN COMMISSION, an organization formed at the call of the Young Men's Christian Association in New York city, Nov. 14, 1861, for the purpose of looking after the spiritual and temporal welfare of the volunteer soldiers in the Union army. George H. Stuart, a well-known Christian merchant of Philadelphia, was president of the organization throughout the war; and thousands of the ministers and most active laymen of the churches of the North gave their personal services in connection with the humane work of the Commission upon the field of battle, on the march, in camp, and in the hospital.

CHRISTIAN CONNECTION, or **UNION**, an American religious denomination which originated about the beginning of this century in North Carolina, Vermont, Kentucky and Tennessee, on the basis of the Bible as the sole authoritative rule of faith and practice, with open fellowship to all Christians of whatever creed, personal piety being the only test of qualification for membership.

CHRISTIAN KNOWLEDGE SOCIETY FOR PROMOTING, one of the great religious associations connected with the Church of England, and the oldest of them all. It was founded in 1698, although it did not receive its present name till 1701, and had for its objects: "(1) To promote and encourage the erection of charity schools in all parts of England and Wales; (2) to disperse, both at home and abroad Bibles and tracts of religion; and, in general, to advance the honor of God and the good of mankind by promoting Christian knowledge both at home and in other parts of the world by the best methods that should offer." These objects it has never ceased to pursue, chiefly directing its efforts to the British dominions. The Protestant missionaries who labored in the south of India in the 18th century were supported chiefly by this society, and it is now fully engaged in supplying to the mission field throughout the world needful religious literature in the vernacular.

CHRISTIAN SCIENCE, a system of religion founded by Rev. Mary Baker Glover Eddy, president of the Massachusetts Metaphysical College in Boston, Mass., and chartered in 1881. The founder claims that as early as 1866 she discovered meta-

physical healing emanating from the Divine Mind, and named it Christian Science; that the Principle thereof is Divine and Apodictical, governing all; that all real Being is the Divine Mind and Idea; that the Science of Divine Mind demonstrates that Life, Truth, and Love are all-powerful and ever present; that the opposite of Truth, named Error, is the false supposition of a false sense; that Mind governs all, not partially but supremely, and that the Mind's control over man is a demonstrable science; that it is capable of healing sickness and sin, and so destroying the foundations of death. The platform adopted by the society claims God as Supreme Being, the only Life, Substance, and Soul, the only Intelligence of the Universe, including Man; that neither God nor the perfect man can be discerned by the human senses; that the individuality of Spirit is unknown; that God is a Trinity consisting of a Trinity in Unity, Life, Truth, and Love; the same in essence, though multiform in office; God the Father, Jesus the Type of Sonship, Divine Science, or the Holy Comforter—these three expressing the threefold essential nature of the Infinite; that Jesus the Christ was a mediator between humanity and Spirit; that he voiced Truth; that God is all-inclusive, and is reflected by everything real and eternal; that the word Christ is not properly a synonym for Jesus, though commonly so used; that it expresses God's spiritual, eternal idea, being synonymous with Messiah; that Jesus was a corporeal, or bodily existence, but the Christ was incorporeal, and the dual personality continued until the Master's Ascension; that then the human, the corporeal concept, or Jesus, disappeared, while the invisible, the spiritual idea, or the Christ continued to exist in the eternal order of Divine Science, taking away the sins of the world, as the Christ has always done, even before the human Jesus was incarnate to mortal eyes; that Spirit is infinite; that there is but one Spirit, because there can be but one Infinite, and therefore but one God; that there is no evil in Spirit, because Spirit is God; that Soul and Spirit are one; that God is Soul; and Soul is not corporeal, but a Divine Principle; that sin, sickness, and mortality are inharmonious, the opposite of Mind, and contradictions of reality; that Mind is Divine, the only Ego, and the Ego is deathless and limitless; that the Divine Ego or individuality is all-inclusive Being, that Being is God; that God is personal, and that in its scientific sense, but not in any anthropomorphic sense; that the Science is demonstrably true, for it heals the sick and sinful as no other system can; that, rightly understood, it leads to eternal harmony, and brings to light the eternal and true God, and man as made in His likeness; that the basis of all health, sinlessness, and immortality is the great fact that God is the only Mind; that sin, sickness, and death are error, and to conquer error is to deny its verity; that to get rid of sin through science, is to divest sin of any supposed mind or reality, and never to admit that sin can have intelligence or power, pain or pleasure.

The "tenets" or "creed" of the Society, and its church, which is called "the Church of Christ (Scientist)," is as follows:

"First.—As adherents of Truth, we take the Scriptures for our Guide to Life.

"Second.—We acknowledge one Father, Son and Holy Ghost—one God, the brotherhood of man, and Divine Science—and the forgiveness of sin, which is the destruction of sin; and the atonement of Christ, which is the efficacy of Truth and Love; and the way of salvation marked out by Jesus, which is healing the sick, casting out devils (evils),

and raising the dead—uplifting a dead faith into Life and Love."

CHRISTIANSFELD, a settlement of Moravian brothers in Northern Sleswick, founded in 1772. Population, 700.

CHRISTISON, SIR ROBERT, D. C. L., LL.D., Scottish physician and toxicologist, born at Edinburgh, July 18, 1797, died January 23, 1882. In 1819 he proceeded to London and Paris, and in the French capital studied toxicology under the celebrated Orfila. He was in 1822 appointed professor of Medical Jurisprudence in the University of Edinburgh, and in 1832 was promoted to the chair of *Materia Medica*, which he occupied till 1877, when he retired. He was appointed physician-in-ordinary to the Queen in 1848; president of the Edinburgh Royal Society (1868-73); and created a baronet in 1871. Besides contributing papers on various subjects to medical journals, Christison wrote a *Treatise on Poisons* (1829); *Biographical Sketch of Edward Turner, M. D.* (1837); a treatise on *Granular Degeneration of the Kidneys* (1839); and *The Dispensatory: a Commentary on the Pharmacopœias of Great Britain* (1842).

CHRISTMAS ISLAND, a British possession in the Pacific, lat. 1° 57' north, long. 157° 27' west. It has good anchorage, and is the headquarters of an American guano company. Another Christmas Island, annexed to Britain in 1888, lies about 250 miles southwest of Java. It is 6 miles long by 4 broad, composed of coral masses piled up on a volcanic substratum, and is partially covered with luxuriant vegetation. There is a third Christmas Island in the Bras D'Or, Cape Breton.

CHRISTOPHE, HENRI, 1767-1820, king of Hayti, born a slave on the island of Granada, Oct. 6, 1767. He joined the black insurgents against the French in 1790, and, from his gigantic stature, energy and courage, soon became a leader among them, and was appointed brigadier-general. In 1802 he gallantly defended Cape Hayti against the French. In 1807 he was appointed president of Hayti. In 1811 he was proclaimed king of Hayti, by the name of Henri I, and ruled with vigor; but his avarice and cruelty led to an insurrection, and, deserted by his body-guard and all his nobles, he shot himself, Oct. 8, 1820. See *Britannica*, Vol. XI, p. 545.

CHRISTOPHER, a saint of the Roman Catholic and Greek churches. According to the oldest form of the legend, he is said to have lived in Syria, and suffered martyrdom under the Emperor Decius (249-251). He is reported to have been 12 feet high, and of prodigious strength. In the pride of his strength he would serve only the mightiest upon earth. After being some time in the service of a king and seeing his master's dread of the devil, he gave himself to be the devil's servant. One day, however, he saw the devil trembling before an image of Christ, and he resolved thenceforth to serve Christ only. For his penance he undertook to carry pilgrims across a broad unbridged stream. One day Christ came to him in the form of a child to be carried over, but the burden grew ever heavier and heavier, until it was almost too much for him to reach the farther shore. "Marvel not Christopher," said the child, "for with me thou hast borne the sins of all the world." In painting and sculpture the saint is usually represented with the infant Christ upon his shoulders, leaning on a great staff, and straining every nerve to support his weight. The Greek church celebrates his festival on the 9th of May, the Roman Catholic on the 25th of July.

CHRIST'S HOSPITAL, Newgate Street, London, founded on the site of the Greyfriar's Monastery by Edward VI, June 26, 1553, as a hospital for orphans.

Children are admitted between eight and ten years of age, and discharged between fifteen and sixteen, according to their school position, excepting the "Grecians" (i. e., the highest class of scholars in the hospital), of whom five are sent annually on various scholarships to the Universities of Oxford and Cambridge. Altogether about 1,180 boys and 90 girls are now upon the foundation. The governors are the patrons of several churches, chiefly in Surrey and Essex. Most of the building perished in the great fire of 1666, but it was soon rebuilt under the superintendence of Sir Christopher Wren. In the course of time the new hospital fell into decay, and in 1825 a third structure was erected by Mr. Shaw. The great hall of the hospital is a magnificent room, second only to that of Westminster. Christ's hospital is essentially a classical institution, Latin and Greek being the basis of education; but, to satisfy the wants arising from the changed condition of society, the modern languages, drawing, science, etc., are also taught.

CHRISTY, EDWIN P., born in 1815, died in New York city, May 21, 1862. The original "Christy's Minstrels" were organized by him in Buffalo, in 1842, and as manager of the troupe in America and London he amassed a fortune. He died insane.

CHROMATIC: in music, a term applied to notes in melodic progression which are raised or lowered by accidentals, without changing the key of the passage, and also to chords in which such notes occur. The chromatic scale is one proceeding by semitones alone.

CHROMATIC: in optics, that part of the science which deals with the colors of light and of bodies.

CHROMATOPHORES, pigment cells containing pigment granules of various colors. It is by contraction and expansion of these cells that chameleons and cuttle fishes are enabled to change color rapidly.

CHROMATYPE, a photographic picture, in which the paper employed has been sensitized by some of the salts of chromium.

CHRONICLE, a history in which events are treated in order of time. Most of our older histories were called chronicles, such as the *Saxon Chronicle*, *Holinshed's Chronicle*, *Baker's Chronicle*. The name is also given to two historical books of the Old Testament.

CHRONICLES, BOOKS OF. See *Britannica*, Vol. V, pp. 706-9.

CHRONOGRAM, or CHRONOGRAPH, a whimsical device of the later Romans, by which a date is given by selecting certain letters among those which form an inscription, and printing them larger than the others. The principle will be understood from the following example, made from the name of George Villiers, first Duke of Buckingham:

GEORGIVS DVX BVCKINGAMLE.

The date MDCXVVIII (1628) is that of the year in which the duke was murdered by Felton at Portsmouth. Another well-known example conveys the date in the inscription upon a medal struck by Gustavus Adolphus in 1632:

CHRISTVS DVX; ERGO TRIVMPHVS.

CHRONOGRAPH ("time marker" or "recorder"); an instrument to note, within a certain fraction of a second, the instant when a particular event occurs. The most recent are electrical, now indispensable to astronomers, since the transit of a star can, by touching a stud, be noted to within $\frac{1}{100}$ th of a second of time. The typical form of the chronograph is a cylinder which revolves once a minute, and carries on its surface a sheet of paper divided all round into equal parts, indicating fractions of a second. If, for example, the cylinder is

thirty inches round, it is evident that very minute sub-divisions of time are attainable. A valuable application of the chronograph is for determining the longitude—e. g., in trigonometrical surveys. Thus two observers note simultaneously the transit of a star, say at Washington and Indianapolis (and that without any reference to right ascension or declination), and having telegraph as well as chronograph determine very easily the difference of time with an accuracy never dreamed of formerly.

CHRONOSCOPE, an instrument contrived by Sir Charles Wheatstone to measure the duration of certain short-lived luminous phenomena, such as the velocity of light, or the electric spark, of which the eye itself can be no judge, owing to the persistence of impressions on the eye after the cause of sensation has ceased. The phenomenon is observed by reflection in a mirror in such rapid motion that the image of the luminous object would appear to describe a circular arc the length of which must be a measure of the duration of the light.

CHRYSALIS, or CHRYSALID, a term originally applied to the golden-colored, resting stages in the life-history of many butterflies, but sometimes extended to all forms of pupæ or nymphs—that is, to the second stages in the history of insects which undergo complete metamorphosis. It is the stage which results from the fasting quiescence of the generally active and voracious larvæ or caterpillar, and also, of course, the stage which after one or rarely two months awakens into the winged insect or imago.

CHRYSANTHEMUM (Gr., "gold flower"), a genus of plants of the natural order *Compositæ*, sub-order *Corymbifera*, having a hemispherical or nearly flat involucre, with imbricated scales, which are membranous at the margin, a naked receptacle, the florets of the disc tubular and hermaphrodite, those of the ray strap-shaped and female, the fruit destitute of pappus. The species of this genus are annuals, perennials, or shrubby, and all have leafy stems.

CHRYSSELEPHANTINE, the art of making statues jointly of gold and ivory, extensively practiced among the Greeks. It developed out of the art of wood-carving, the draperies of the wooden figures being gilded for ornament, while the faces, hands, etc., were painted white. Then the uncovered parts of the body came to be made of marble, producing acroliths, and ultimately ivory was used, with gilding or gold-plating. The bulk of the figure continued to be made of wood, or wood and clay; thin gold plates were fastened over the parts intended to represent clothing, while on the fleshy parts small plates of ivory were skillfully laid.

CHRYSIS, "golden-wasp," a genus of hymenopterous insects, type of a family *Chrysidæ*. Their systematic position is not far from that of the true wasps. They delight in sunshine and may be seen poised in the air—the motion of their wings being so rapid as to render the body alone of the insect visible.

CHRYSOBALANUS, a genus of trees and shrubs, natives of tropical and subtropical America and Africa, of which there are probably only two species. The cocoa-plum, *C. Icaco*, of tropical America, produces an edible fruit.

CHRYSOBERYL, a gem almost as hard as sapphire, and the finer specimens of which are very beautiful, particularly those which exhibit an opalescent play of light. It is of green color, inclining to yellow, semi-transparent, and has double refraction. It occurs crystallized in six-sided prisms; often in macles, or twin crystals. It is found occasionally in granite, but more frequently in gneiss and mica-schist. See *Britannica*, Vol. XVI, p. 386.

It is composed of alumina, glucina, and small proportions of ferric oxide, titanitic acid, and sesquioxide of chromium—the alumina being about 80 per cent. of the whole. The chrysoberyl of the ancients was a different mineral, probably the Chrysope, of the moderns.

CHRYSOLE, a mineral composed of silica, magnesia, and protoxide of iron; of a fine yellowish-green color, with vitreous luster; transparent, and having double refraction; in hardness, about equal to quartz; and with conchoidal fracture (see *Britannica*, Vol. XVI, p. 410). It often crystallizes in four-sided or six-sided prisms, variously modified. *Olivine*, or common chrysolite, is an important rock-forming mineral. It is dark yellowish-green in color, and occurs generally in somewhat rounded grains or corroded crystals in some igneous rocks, such as the basalts.

CHRYTOTYPE, a photographic process, the result being produced mainly by a solution of chloride of gold.

CHUCK-WILL'S-WIDOW, a bird found in the southern parts of the United States, so called from its note, which is repeated like that of the whip-poorwill, and which resembles the syllables of its name very distinctly articulated. The bird is of the family *Caprimulgidæ*.

CHUDLEIGH, CAPE, on the north coast of Labrador, at the entrance of Hudson Strait, 60° 12' N. lat., 65° 25' W. long.

CHUFFUCK, SAMUEL W., inventor, born in Vermont in 1800, died in Utica, N. Y., June 28, 1875. In 1845 he engaged in the manufacture of telegraph instruments in Utica, and is said to have made the first one. The "pony" sounder and circuit-closer attachment to the key were his inventions. He was also a collector of rare coins.

CHUMBUL, a river of Central India, rising in the Vindhyan Mountains, at a height of 2,019 feet above the sea, and entering the Jumna after a generally northeast course of 650 miles.

CHUNAM, the Indian name for a very fine kind of quicklime made from calcined shells or from very pure limestone, and used for chewing with betel, and for plaster.

CHRONOLOGICAL OUTLINE of Historical Events. See *Britannica*, Vol. V, pp. 709-54.

1876.—Colorado admitted into the Union, March 11. Queen Victoria proclaimed Empress of India, May 1. Centennial exhibition opened at Philadelphia, May 10. Sioux Indian massacre of Federal troops, June 25. French decree of amnesty for Communists, June 28. Centenary of American Independence, July 4.

1877.—United States electoral commission appointed, January 30. Rutherford B. Hayes declared elected, March 2; inaugurated, March 5. First Turkish parliament, March 19. Great railroad strike in the United States, July 18-30. Trial of Russian Nihilists began October 31.

1878.—Paris International Exhibition opened, May 1. Attempted assassination of the Emperor of Germany, June 2. Berlin treaty signed, June 13. Yellow fever raged in the Southern States, September and October. United States paid the Fisheries award under protest, November 23. Gold sells at par in Wall street, December 17.

1879.—United States resumes specie payment, January 1. Zulus defeat English in South Africa, January 12. McMahon resigns the presidency of the French Republic; Jules Grévy succeeds, January 30. Bill admitting women to practice in the Supreme Court passes Senate, February 7. *Jeannette* sails from San Francisco for North Pole, July 9.

1880.—Winter Palace at St. Petersburg blown up by dynamite, February 17. Work of tunneling Mont St. Gothard completed, February 29. Prince Bismarck resigns, April 17. International Fishery Exhibition at Berlin, April 10. International Exhibition at Brussels, June 1. Mount Vesuvius railway opened, June 6. French Republic expels Jesuits, June 20. Cologne cathedral (commenced in 1228) completed, August 14. International Exhibition at Melbourne, October.

1881.—Chilians take Lima, January 17. James A. Garfield inaugurated President of the United States, March 4. Alexander II of Russia assassinated March 13. Attempted assassination of Garfield, July 2. Garfield died September 19. Vice-President Chester A. Arthur inaugurated 21st President of the United States September 22. Cotton exhibition

opened at Atlanta, October 25. *Jeannette* survivors heard from, December 20.

1882.—Giteau found guilty, January 25. Attempted assassination of Queen Victoria by Roderic McLane, March 7. Assassination in Dublin of Lord Cavendish and Burke, May 3. Giteau hung June 30. Alexandria bombarded by British fleet, July 11. Great floods in Germany, November 27. Transit of Venus, December 6. Arabi Pasha exiled, December 13.

1883.—Great floods in Rhine Valley, January 2. Great eruption of Mount *Ætna*, March 23. Phoenix Park murderers executed at Dublin, May-June. Brooklyn Bridge opened, May 24. Coronation of Alexander III of Russia, May 27. Great cholera mortality in Cairo, Egypt, July 19. Great strike of telegraphers in the United States, July 19-August 13. United States Arctic relief steamer *Proteus* crushed in Smith's Sound, July 23. French begin hostilities in Anam, August 17. Death of Count de Chambord, Bourbon claimant, May 24. Volcanic eruption devastates Java, destroying 50,000 lives, August 22-26. O'Donnell, assassin of Cary, the informer, reached London for trial, September 20. Rediscovery of comet of 1812, September 22. Hurricane at Nassau N. P. (100 vessels destroyed), September 25. Army of Egypt annihilated by El Mahdi, November 3-5.

1884.—England assumes protectorate over Egypt, January 7. Destructive hurricane in Great Britain and Ireland, January 23. Baker Pasha suffers severe defeat in Soudan, February 24. Tornado crosses Georgia, Tennessee, Missouri, Mississippi, Illinois and Indiana, February 20. *Jeannette* explorers reach New York, February 22. General Graham defeats Egyptian rebels at Teb, February 20. Dynamite explosions in London, March 1-15. French capture Bac Ninh, March 14. English troops recalled from Egypt, March 31. Steamship *Daniel Steinman* wrecked off Halifax (121 lives lost), April 4. Two thousand Soudanese massacred by Arabs at Shendi, April 16. Steamer *State of Florida* collides with bark *Ponema* in mid-Atlantic, sinking both vessels (100 persons drowned), April 18. Severe earthquake in Eastern England, April 22. The *Bear*, the advance ship of the second Greeley relief expedition, sails from New York, April 24. The *Thetis*, second ship of the expedition, sails May 1. Financial panic in New York (several banks suspending), May 12-16. Petroleum discovered near Quetta, India, June 15. Steamships *Ghjon* and *Luzham* collide near Corunna, sinking both (130 lives lost), July 21. British ministry ratify the annexation of New Guinea by Australian Confederation, July 31. Great Britain determines to rescue Gen. Gordon at Khartoum, September 1. Hurricane devastates Yokohama and Tokio, September 15. British government liberate "Tichborne claimants" October 20. New Guinea formally annexed to Great Britain, November 6. Congo conference meets in Berlin, November 15. Earthquakes in Malaga, Spain, destroy villages, drowning 2,000 persons, December 23-31.

1885.—English in Egypt defeat Mahdi's troops near Metemneh, January 17. Khartoum captured by Mahdi and Gen. Gordon killed, January 26. War opens between Nicaragua and Guatemala, March 11. Half-breed insurrection under Louis Riel, N. W. Territory, March 27-28. French reverses in Tonquin, March 30-April 6. Peace signed in Central America, April 15. King Leopold of Belgium assumes title "Sovereign of the Congo," April 28. Riel captured, May 16. Revised Old Testament published, May 22. El Mahdi dies of small-pox, June 16. Lord Salisbury forms a new cabinet, June 18. Two thousand lives lost by Cashmere earthquake, June 18-20. Great strike of car conductors and drivers in Chicago, June and July. Niagara State Park thrown open to public, July 15-17. Death of Gen. Grant, July 23. Cholera ravages in Spain (5,000 dying daily), August 15-25. *Puritan* outsails *Genesta*, August 14. Eastern Roumelia annexed by Bulgaria, September 19. Hell Gate blown up by dynamite, October 10. Hurricane in Labrador destroys hundreds of lives, October 27. Vice-President Thomas A. Hendricks, of United States, and King Alphonso XII of Spain die, November 25. Jules Grévy reelected President of France, December 28.

1886.—Mr. Gladstone forms a new cabinet, February 2. Great street-car strike in New York and Brooklyn, March 3-5. Fighting between Anarchists and police in Chicago, May 4. Tornadoes and floods devastate central portion of United States, May 11-15. Great eruption of Mount *Ætna*, May 16. President Cleveland married, June 2. Orange election riots in Dublin, July 6. Gladstone defeated by Conservatives and Unionists, July 20. Prince Alexander abdicates throne of Bulgaria, August 20; reelected on the throne, September 1; but finally abdicates, September 5. Statue of Liberty on Bedloe's Island unveiled, October 28. Valuable discoveries of gold in Australia announced, November 25. Freycinet cabinet resigns in France, December 3. M. Goblet forms new French ministry, December 9.

1887.—Queen Victoria's Jubilee Year opens, January 1. Stanley starts on his expedition to relieve Emin Bey, January 18. German elections result in favor of Bismarck, February 14-20. Emperor William of Germany celebrates 96th birthday, March 22. British government introduces new coercion bill for Ireland, March 28. The Goblet ministry of France resigns, May 17. *Celtic* and *Britannic* collide (several lives lost), May 19. M. Rouvier forms French ministry, May 28. Cyprus ceded by Turkey to England, June 1. Queen Victoria's jubilee celebrated in London, June 19-25. King Kalakaua in Hawaii deposed, July. Irish coercion bill passed, July 4. Dr. McGlynn excommunicated by the Pope, July 8. Prince Ferdinand accepts throne of Bulgaria, August 15. Exhibition opened at Atlanta, Ga., October 10. Great

fire at Han-Kow, China (1,000 lives lost), October 17. Alliance between Austria, Germany, and Italy prolonged for five years, October 26. Four of the Chicago anarchists hung, November 11. French president Grévy resigns, November 26. M. Sadi-Carnot elected President of the French Republic, December 2. Baracra, Cuba, devastated by a tidal wave, December 22. Powder explosion at Amoy, China (800 lives lost), December 31.

1888.—Pope Leo XIII's Jubilee begins in Rome, January 1. Frightful blizzard in Western States, January 13-14. The Fisheries Convention signed in Washington, February 15. Emperor William of Germany died, March 9. Great blizzard in Eastern States, March 11. Disastrous floods in Germany and Hungary, March 19. Great earthquakes in China, April 23. Trans-Caspian Railroad opened to Samarcand, May 26. Emperor Frederick II of Germany dies, June 15. President Diaz of Mexico reelected, July 14. Yellow fever appears at Jacksonville, Florida, and became epidemic, August 15. Lord Sackville, British Minister at Washington dismissed by President Cleveland, October 30. England annexes the Cook Islands, November 20. Jacksonville Board of Health raises quarantine, December 4. Panama Canal Co. fails, December 14. British troops rout the Arabs at Suakim, December 20. Portuguese blockade Eastern coast of Africa, December 31.

1889.—Oklahoma bill, making a new territory in the United States, passes Congress, February 1. French Chambers dissolve Panama Canal Co., February 4. Great earthquake shocks in South America, March 4. Great hurricane in Samoan waters, wrecking six men-of-war, March 29. Centennial Anniversary of the founding of the United States Government celebrated in New York, April 29, 30, and May 1. Conemaugh Valley flood, May 30. Samoan Treaty signed in Berlin, June 14. Gen. Hipolyte chosen President of Hayti, October 17. Brazil proclaimed a republic, November 15. Stanley arrives at Zanzibar with Emin Bey, December 6.

1890.—New Extradition Treaty between United States and Great Britain, ratified by United States Senate, February 18. Congress selects Chicago as site of the World's Fair, February 24. Seynoid Ali, brother of the late Sultan of Zanzibar, succeeds to the throne, February 18. New Peruvian cabinet formed, February 18. Battle between Mwanga assisted by Europeans, and King Kalema, for throne of Uganda, Africa, reported, February 14—annihilating forces of the latter. German elections result in enormous gains for Socialist party, February 30. Battle between French and King of Dahomey's troops at Kotonou, Senegal, repulsing the latter, February 24. German victory in Africa, under Wissmann, January 4. Dr. Palacio elected president of Venezuela, March 7. Treaty of Commerce between Germany and Austria, signed at Constantinople, August 26. Tokay, Hungary, destroyed by fire (1,000 families made homeless), August 26. Keneshma, Russia, nearly destroyed by fire, August 28. Mine explosion at Boryslav, Russia (20 deaths), August 28. Treaty of Peace between San Salvador and Guatemala, August 26. Triple Alliance Treaty, between Germany, Austria, and Italy, extended to 1897, September 13. Elections in Brazil result in favor of the government, September 13. Disastrous floods in China (4,000,000 Chinese made homeless), September 17. Turkish man-of-war, *Ertogroul*, founders at sea (500 persons drowned), September 19. Moorish rebels defeated by Sultan's forces at Al Shokhman, September 25. Congress adjourned, October 1. The McKinley Tariff Bill signed by the President, October 3. Centennial celebration of the introduction of cotton manufacture in United States, held at Pawtucket, R. I., September 29 to October 3. Treaty between Germany and Zanzibar signed, October 5. Mormon Conference at Salt Lake City sustained President's action declaring the abolition of polygamy, October 6. United States Supreme Court Justice Samuel F. Miller died, October 13. Serious election disorders in Swiss canton of Ticino, October 27, 28. Elections in Brazil sustain the new government by large majorities, October. Elections held in United States resulted in large gains by Democrats, November 4. British protectorate over Zanzibar proclaimed, November 7. King William III, of Holland, died, and was succeeded by his daughter, 10 years old, November 23. Congress reassembled, December 1. Sioux Indian war breaks out, December 15. A new congressional apportionment bill based on the census of 1890, passed the House, December 17. Henry B. Brown, of Michigan, appointed Justice of United States Supreme Court, in place of Justice Miller, deceased, December 23.

1891.—German government takes possession of territory on coast of Zanzibar, January 1. Gen. Miles takes command of troops at seat of Sioux Indian War, January 2. In Caroline Islands over 800 foreigners killed and houses of missionaries destroyed at Pohni, January 7. Difficulties with Sioux Indians adjusted, January 15. Chile insurrection breaks out, and ports of Valparaiso and other important towns blockaded by the rebels, January 15. George Bancroft, the historian, dies in Washington, January 17. Brazilian ministry resigned, January 22. Hon. William Windom, Secretary of the Treasury, died suddenly in New York city, January 29. At Oporto, Portugal, garrison mutinied against government, but were suppressed, January 31. Spanish elections under new universal suffrage law favorable to government February 3. Italian ministry under Signor Crispi resigned, succeeded by new cabinet, headed by Rudini, February 9. Swiss government gives notice of terminating commercial treaty with Italy, February 10. Admiral D. D. Porter dies in Washington, February 13. Egyptian ministry resigned, Feb-

ruary 18. Gen. Sherman dies, February 14. Spanish force repulsed in Caroline Islands, February 17. American Loan and Trust Company suspends, February 18. Dr. Alexander Winchell, of Michigan University dies, February 19. Dillon and O'Brien transferred to Galway Jail, February 19. Disestablishment in Wales rejected by English Parliament by a vote of 265 to 204, February 20. Osman Digma's forces defeated by Egypt, February 21. Disastrous floods in Arizona, February 22. Admiral Alvarez, Commander of the Spanish navy, dies, February 22. Empress Frederick visits Paris, February 22. Great floods along the Ohio river, February 23. Norwegian cabinet resigns February 23. Brazilian Assembly adopts the proposed constitution, February 24. Women's Triennial Council at Washington, D. C., February 25. United States Congress passes agricultural appropriation bill, February 25. Gen. da Fonseca elected president of Brazil, February 25. Woman's National Suffrage Association meets in Washington, February 26. New York Merchants present testimonial of appreciation to Secretary Blaine, February 27. Great floods at Yuma, Arizona, February 27. Roumanian minister resigns, February 27. Empress Frederick leaves Paris, February 27. New cabinet elected at Honolulu, February 28. United States Congress passes subsidy bill; also postoffice bill, March 2. Free fights between Irish factions in Ireland, March 3. United States Congress adjourns, March 4. The Czechs victorious in Bohemia, March 5. Canadian elections carried by Conservatives by reduced majorities, March 5. Financial panic in Buenos Ayres, March 6. German victory in Zanzibar, March 6. United States Secretary of War decides to enlist 2,000 Indians as soldiers, March 7. King Alexander I, of Servia, officially proclaimed king, March 7. Parnell collection delegates start for America, March 8. Bishop Paddock, of P. E. Diocese of Massachusetts, dies March 9. Severe blizzard prevails in England, March 9. Heaviest snow-storm of century in Great Britain, March 11. Canadian Parliament announced to meet April 29, March 11. French garrison in Tonquin overcome by natives, March 12. Italians arrested for killing chief Hennessey, after acquittal by jury, are assassinated in New Orleans, March 14. Judge John R. Brady, of New York Supreme Court, dies March 16. British steamer *Rozburgh Castle* sinks in collision off Scilly Islands, 22 men drowned, March 16. Prince Jerome Napoleon dies at Rome, March 17. First telephonic communication between London and Paris, March 17. Tippoo Tib, famous African chief, stricken with paralysis, March 18. Gen. Joseph E. Johnston, ex-Confederate general, dies March 21. Insurgents make great progress in Chili, March 22. New York legislature refuses to submit prohibition amendment to the vote of the people by a party vote of 62 to 45, March 28. Queen Victoria visita Grasse, France, March 28. Governor of Belanona, Madagascar, and his brother executed for the massacre of 278 persons, March 24. Protocols exchanged delimiting the British and Italian boundaries in Africa, March 24. Minnesota State Prison burned (loss \$900,000), March 25. England and Spain accept invitation to participate in World's Fair, March 25. New York legislature passes Zoological Garden and Bronx Botanical Bill, March 26. New Hampshire House kills local option license bill, March 26. Bulgarian Minister of Finance shot in Sofia, March 27. Russian troops reported massing on the Austrian and German frontiers, March 28. Dr. Howard Crosby dies in New York city, March 29. Irish factions in collision at Sligo, Ireland, March 29. Belgian police arrest three anarchists with 500 lbs. of dynamite in their possession, March 29. Phineas Taylor Barnum dies at Bridgeport, Conn., April 7.

CHURCH. See Britannica, Vol. V, pp. 758-60.

CHURCH, PHARCELLUS, Baptist clergyman, born in Seneca, N. Y., Aug. 11, 1801, died in Tarrytown, N. Y., June 5, 1886. He graduated in 1824 at Madison University (now Colgate), and after being ordained to the ministry, held pastorates in Providence, R. I., New Orleans, La., Boston and elsewhere. In 1854 he was editor of the "New York Chronicle," and from 1865 to 1886 one of the proprietors of the "Examiner." He was editorially connected with the "Watchman and Reflector." In 1848 Dr. Church was a delegate to the evangelical alliance meeting in London. He published many sermons, addresses and religious books, and he was connected with the founding of Rochester University.

CHURCH, FREDERIC EDWIN, painter, born in Hartford, Conn., May 4, 1826, became a pupil of Thomas Cole at Catskill, N. Y., and opened a studio in New York city in 1849. In South America, the West Indies, Mexico, Europe and the Holy Land, he has collected artistic material, but is best known by his picture of the *Falls of Niagara*, as seen from the Canadian side. Among his other paintings are: *The Heart of the Andes*; *Sunrise on Mt. Desert*; *Jerusalem*; *The Parthenon*; and *The Monastery*.

CHURCH, RICHARD WILLIAM, born in 1815, died Dec. 9, 1890. He spent a great part of his youth in Italy and elsewhere on the Continent; took a first-class at Oxford in 1836, and soon after was elected to a Fellowship at Oriol. From 1853 he held the rectory of Whatley, near Frome. In 1854 he published *Essays and Reviews*, and thereby took rank almost at once as one of the most graceful and scholarly writers of the day. His University sermons (1876-78), in a volume entitled *Human Life and Its Conditions* (1878), the series of St. Paul's and Oxford sermons in *The Gifts of Civilization* (1880), and the five St. Paul's sermons forming *The Discipline of the Christian Character* (1885), are profound contributions to religious thought. Other works are his *Life of St. Anselm* (1871), an amplification of two essays in his first volume; *The Beginning of the Middle Ages* (1877), an introduction to the series of *Epochs of Modern History*; *Dante*; *An Essay*; *Spenser* (1879), and *Bacon* (1879), two of the best books in the series of *English Men of Letters*.

CHURCH, SANFORD ELIAS, jurist, born in Milford, Otsego county, N. Y., April 18, 1815, died in Albion, N. Y., May 14, 1880. He became a lawyer and settled in Albion, whence he was called to the assembly in 1842. He was district-attorney (1846-47); lieutenant-governor from 1851 to 1855; comptroller of the State (1868-69), and member of the State constitutional convention in 1867. In 1870 he was elected chief justice of the court of appeals of the State of New York and held the office until his death. He was an influential politician of the Democratic party, and was respected for his uprightness and conservatism.

CHURCH-ALE, an ale brewed especially for use at church festivals; also a church festival at which this ale was served. These festivals were convivial meetings, usually held on Easter Sunday or during Whitsuntide. Two persons were chosen beforehand to preside over the feast and divide the victuals and drink voluntarily contributed by the parishioners. Sometimes the drink which had been brewed from malt given by the parishioners was sold about Whitsunday for the payment of church expenses. The church-ale was one of the old English institutions denounced by the Puritans.

CHURCHILL, LORD RANDOLPH HENRY SPENCER, an English statesman, third son of the seventh duke of Malborough, born Feb. 13, 1849, and educated at Eton and Merton College, Oxford. Lord Randolph entered Parliament in 1874; but it was not until after the general election of 1880 that he became prominent in politics, when he appeared as the leader of a band of Conservatives known as the "Fourth Party." Though a Conservative by tradition, he had a mind of his own, and in the period of Conservative depression that followed Disraeli's death he was frequently in collision with the nominal leaders of his party on questions of party organization and the conduct of the Opposition; but his vigorous attacks on Mr. Gladstone's policy, both foreign and domestic, were of unquestionable value to the Conservative cause; and upon Mr. Gladstone's defeat (1885) Lord Randolph was rewarded with the Secretaryship for India in Lord Salisbury's first ministry. From July to December, 1886, he was Chancellor of the Exchequer and leader of the House of Commons, a position which he soon relinquished. His attacks on the spending departments thenceforward were most incisive; but on most other points he spoke and voted steadily on the Conservative side. Lord Randolph Churchill is brilliant, versatile, erratic, and, though now (1891) in comparative retirement, no one can predict his future. His wife, Lady

Randolph Churchill, of American birth, daughter of Leonard Jerome, has given most valuable assistance to her husband in his electoral contests, and is a prominent member of the Primrose League.

CHURCHILL RIVER, of Canada, rises between the north branch of the Saskatchewan and the Athabasca, under 55° north latitude, and flows generally northeast through a series of lakes, first as the Beaver, then as the Missinippi, and finally as the Churchill or English River, to Hudson Bay, which it enters near Fort Churchill, after a course of nearly 1,000 miles. It is extensively navigated by canoes which are conveyed by portage past the largest of the many rapids.

CHURCHING OF WOMEN, a religious usage, prevailing in the Christian church from an early period, of women, on their recovery after child-bearing, going to church to give thanks. It appears to have been borrowed from the Jewish law (Lev. XII, 6), and the earliest express mention of it is in the pseudo-Nicene Arabic canons.

CHURCH OF GOD. See RELIGIOUS DENOMINATIONS IN THE UNITED STATES, in these Revisions and Additions.

CHURCH-RATES, in England, a tax or assessment laid on the parishioners and occupiers of land within a parish, by a majority of their own body in vestry assembled, for the purpose of upholding and repairing the fabric of the church and the belfry, the bells, seats and ornaments the churchyard fence and the expenses (other than those of maintaining the minister) incident to the celebration of divine service.

CHURNS, machines used for the production of butter from cream or from whole milk. By agitation the butter globules are thrown against each other, until, after a period which varies in length with the quality of the butter-fat, the temperature and the condition of "ripeness," or incipient acidity of the cream. Churns are of great variety in form and dimensions, from the ladies' glass hand-churn, producing a few ounces of butter at a time, to one driven by water, steam or horse-power and churning the whole milk of a dairy at one operation.

CHUTNEY, an East Indian condiment, very largely used in India, and to a considerable extent in Britain. Indian Chutney is a compound of mangoes, chillies or capsicum and lime-juice, with some portion of other native fruits, such as tamarinds, etc., the flavor being heightened by garlic.

CIALDINI, ENRICO, Italian soldier, born at Castelvetro, Modena, Aug. 10, 1811. He studied at Parma, but by his share in the abortive insurrection of 1831 was forced to escape to France. In 1835, passing over to the Spanish service, he fought against the Carlists, and was made colonel. When Charles Albert headed the Italian rising in 1848 he hurried to Italy, and in the struggle which ensued fell into the hands of the Austrians. On his release he was employed by the Sardinian government, and fought in the brief campaign of 1849. In the Crimea he commanded a division of the Sardinian contingent. Created Duke of Gaeta, and for a few months governor of Naples, he had to act against Garibaldi in the second Sicilian expedition (1862). In 1864 he became a senator, and in the war of 1866 occupied Venice. In 1876 he was sent as ambassador to Paris, but retired in 1881, and received the post of one of the two generals of the army.

CIBRARIO, LUIGI, an Italian historian, born in Turin in 1802, died in 1870. He was minister of public instruction in 1852, and minister of foreign affairs in 1855. He wrote important works on the history of Turin, and of the monarchy of Savoy, and on the political economy of the Middle Ages.

CICADA, a large genus of hemipterous insects, typical of the sub-order *Homoptera*, with uniform wings. They are well known for the noise made by the males, and for the "manna" or sap which their incisions cause to exude from trees. Specially abundant in warm countries, some eighteen species of cicada occur in the vine-bearing regions of Europe. Some large South American species are said to chirp "loud enough to be heard at the distance of a mile." The noise is caused by the vibrations of membranes at the openings of two respiratory tubes (tracheae) on the last joint of the thorax, and the volume of sound is increased by two complex resonating cavities a little farther back. The apparatus is rudimentary in the females. *C. septemdecim* is the North American "seventeen years' locust," or "harvest fly," said to occur in special abundance every seventeen years, though they probably appear in some parts of the country every year. The males of the species perform the act of reproduction and soon die, probably taking no nourishment in the perfect state. The females deposit about 500 eggs in the twigs of trees, and die immediately after. The larvæ drop and bore their way into the ground, where they are supposed to remain for seventeen years, sucking the juices of the roots of trees and plants. When the pupæ emerge, the ground sometimes seems honeycombed by their numbers. The family to which cicadas belong is often known as that of the *stridulent* insects, and includes about five hundred species. An even larger closely allied family is that of the *Cicadellidæ*, including the common cuckoo spit. The name cicada has sometimes been applied to another hemipterous insect, a common bug named *Halticus pallicornis*, or *C. aptera* of Linnæus.

CICATRIZATION (Lat., *cicatrix*, "a scar"), the process of healing or skinning over of an ulcer or broken surface in the skin or in a mucous membrane, by which a fibrous material of a dense resisting character, covered by a protecting layer of epithelium, is substituted for the lost texture. The new tissue in such a case is called the *cicatrix*, and usually resembles to a considerable extent the structure which it replaces; it is, however, less elastic, and from its shrinking in volume may produce an appearance of puckering.

CICERONE (from Cicero, "the orator," or "speaker"), a name given by the Italians to the guides who show travelers the antiquities of the country; hence, in general application, a guide; one who explains interesting features or curiosities.

CICINDELLA, a genus of beetles in the section *Pentamera*, and type of a family with some 300 species. They are very active, and occur abundantly on sandy places.

CICISBEO, a professed gallant who waits with fantastic devotion upon a married lady. In the higher ranks of Italian society, it was at one time considered unfashionable for the husband to associate with his wife anywhere except in his own house; and in society, or at public places of amusement, the wife was accompanied by her *cicisbeo*.

CIDARIS, a genus of sea urchins, and type of a family (*Cidaridæ*) with very long spines. The most of the members of the family are fossil forms, but over a score of living species are known.

CIEZA, a town of Spain, 26 miles northwest of Murcia. Population, 10,910.

CIGAR. See Britannica, Vol. V, pp. 775-76.

CILIA, "eyelashes," hair-like lashes borne by cells. They are mobile modifications of the living matter of the cell, and exhibit alternate bending and straightening. In many cases normal, patho-

logical and artificial cilia may sink down into less motile amoeboid processes.

CIMARRON, a beautiful interior village of New Mexico, former county-seat of Colfax county, situated near a range of lofty mountains, about 65 miles south of El Moro.

CINCHONA. See Britannica, Vol. V, pp. 780-82.

CINCINNATI, a city of Ohio, county-seat of Hamilton county, and the metropolis of the State (see Britannica, Vol. V, pp. 782-84). The city is specially noteworthy for the elegance of its private residences and public edifices. Among the latter are the county court-house, the post-office and United States government building; the Cincinnati Hospital, Pike's Opera House, Chamber of Commerce building, Masonic Temple, Art School and Museum of Art, and numerous beautiful church edifices and charitable institutions. The frequency with which expositions have been held in Cincinnati during the last twenty years has given it the title of the Exposition City of the West. The most important of these was the Centennial Exposition, held in 1888 to celebrate the one hundredth anniversary of several important events, among them the settlement of Ohio. The exposition opened on July 4, and continued for one hundred days. The buildings for the various exhibits covered about twenty-three acres of ground. The central position of Cincinnati in relation to extensive producing regions and to leading channels of commerce, renders it one of the most important commercial cities of the Mississippi Valley. Its manufactures are of a widely diversified character, the more important being iron and leather goods. The population, which in 1880 was 255,708, has increased to 296,309 in 1890.

CINCINNATI GROUP: in American geology, an important group of rocks, belonging to the Lower Silurian series, particularly well developed near Cincinnati. The rocks of this series are rich in fossil remains, and some of the shales contain a large proportion of bituminous matter. Also called *Hudson River Group*.

CINCINNATI, ORDER OF THE, a society in the United States of North America, established by the officers of the Revolutionary Army in 1783, "to perpetuate their friendship, and to raise a fund for relieving the widows and orphans of those who had fallen during the war." It was so named because it included patriots, who, in many instances, had, like Cincinnatus, left rural affairs to serve their country, and were resolved to return to their citizenship and its peaceful pursuits. The badge of the society consists of a bald eagle of gold suspended by a dark-blue ribbon with white borders, symbolizing the union of France and America. On the breast of the eagle there is a figure of Cincinnatus receiving the military ensigns from the senators, in the background his cottage; near it a plow and instruments of husbandry, and round the whole are the words, *Omnia reliquit servare rempublicam*. As this distinction was made hereditary, it was attacked as opposed to republican equality, and at a meeting held in Philadelphia in 1784 several changes were made in the constitution of the society, the right of succession being made conditional on approval in each case by the society. After 1804 the branches in several of the States were abolished. There are still, however, several State societies.

CINDER-BED, a name given by the quarrymen to a stratum of the Middle Purbeck series of the Jurassic system, almost entirely composed of the loosely aggregated shells of a small oyster.

CINNAMIC ACID, $C_9H_7CH=CHCOOH$, exists in the free state in the balsams of Tolu and

Peru, in liquid storax, and in gum benzoin. Cinnamic acid forms colorless crystals readily soluble in alcohol, ether, and boiling water, but sparingly soluble in cold water. It is not of any importance in the arts, and is chiefly interesting as being the acid corresponding to oil of cinnamon. Although isomeric with oil of cassia, it has a slightly different flavor. Both of these oils are employed in medicine as aromatic stimulants, but chiefly as pleasant adjuncts to disguise the taste of nauseous drugs.

CINQUE, chief of the Mendi Africans, born at Caw-Mendi, about 1800. In 1839 this chief and a large company of his tribe were stolen from Africa and shipped to Havana, Cuba, being there purchased by Montes and Ruiz. The Africans were transferred to another ship, and were on their way to a southern port of Cuba when Cinque organized a revolt, overcame the crew and put them and the passengers on shore, then directed the two Spaniards to take them to Africa. By night the vessel was steered northward and finally arrived at Montauk Point, L. I. The Africans were put ashore at Farmington, Conn., and benevolent people instituted a trial for their release. The case was tried in the U. S. district court of the State, and after prolonged investigations the Africans were declared born free, and not amenable to punishment for the revolt on board ship. They were returned to their native land at public expense, and a mission was there established which is still maintained.

CINQUEFOIL, a common bearing in heraldry, representing a flower with five petals borne full-faced and without a stalk. If pierced—that is, perforated in the center—it should be so blazoned. Cinquefoil in architecture is an ornamental foliation in five compartments, used in the tracery of windows, panelings, and the like. The cinquefoil is often represented in a circular form, the spaces between points or cusps representing the five leaves.

CIOTAT, LA, a town in the French department of Bouches-du-Rhone, on a bay in the Mediterranean, twenty-three miles southeast of Marseilles. It has a commodious harbor, the extensive workshops of the *Messageries Maritimes Company*, and a great coral fishery. Population, 8,901.

CIRCÆA, a small and widely distributed genus of Onagraceous herbs. *C. lutetiana*, frequent in shady situations, bears the name of Enchanter's Nightshade, and in Germany of Hexenkraut (Witches' Herb).

CIRCIANS, a name given in its wider sense to all the formerly independent tribes of the Caucasus; in a narrower sense it denotes the tribes inhabiting the northwestern wing of the Caucasus, with a government half patriarchal and feudal, and half constitutional. In 1858-65, rather than submit to Russian government, nearly the whole nation of fifteen tribes, to the number of nearly half a million persons, left their country for the Turkish possessions in Asia Minor, or the mountainous parts of Bulgaria, carrying with them their insubordinate spirit and marauding habits, which added to the horrors of the Bulgarian massacres of 1876-77. The Circassian nobles are principally Mohammedans, while the great mass of the people profess a corrupt Christianity, which shows strange survivals of earlier heathenism in its sacrifices and sacred trees, joined to the celebration of Easter, the sign of the Cross, and processions with lights. The Circassians are proverbially handsome, and for generations their daughters have adorned the harems of the wealthy Turks. They are also strong, active, brave and temperate. They are chiefly known through their long struggles to

maintain their independence against the aggression of Russia.

CIRCLE, MAGIC, a space in which sorcerers were wont to protect themselves from the fury of the evil spirits they had raised. This circle was usually described at midnight in certain conditions of moon and weather, on a piece of ground about nine feet square. Inside the outer circle was another somewhat less, in the center of which the sorcerer had his seat. The spaces between the circles, as well as between the parallel lines which inclosed the larger one, were filled "with all the holy names of God," and a variety of other characters supposed to be potent against the powers of evil.

CIRCLEVILLE, a flourishing railroad city and county-seat of Pickaway county, Ohio. It is on the Scioto River and Ohio Canal. The city is built on ancient earthworks, which are in the form of a circle and a square. Pork-packing and the making of brooms are two leading industries.

CIRCULAR NOTES, bank-notes issued by foreign bankers for the special use of travelers, corresponding to the letters of credit issued by American bankers.

CIRCULAR NUMBERS, numbers whose powers end in the same figure as the numbers themselves: as those ending in 0, 1, 5, 6.

CIRCULATION. See under **PHYSIOLOGY**, *Britannica*, Vol. XIX, pp. 8-64.

CIRCUMCISION, FEAST OF, a festival in honor of Christ's circumcision, observed on Jan. 1st in the Roman church since about A. D. 487, and in the Anglican since 1549.

CIRCUMFERENCE, or **PERIPHERY**, the curve which incloses a circle, ellipse, oval, cardioid, or other plane figure. In figures bounded by straight lines, as the triangle, square, and polygon, the term *perimeter* is employed to designate the sum of all the bounding lines taken together.

CIRCUMNAVIGATION, the term usually applied to the act of sailing round the world, its literal meaning being simply "a sailing round."

CIRCUMVALLATION, LINES OF, the chain of works surrounding an army engaged in besieging a fortress, facing outward towards the country so as to guard against all attempts at relief by a field army. Redoubts, either isolated or connected by a line of parapet, were much used for this purpose in the sieges of the ancient and Middle Ages.

CIRCUS. See *Britannica*, Vols. V, p. 791; X, p. 65; XX, p. 829. The modern circus is chiefly an exhibition of feats of horsemanship and acrobatic displays, often combined with a menagerie, or collection of wild beasts. Astley was the most famous of English circus-managers; the Paris hippodrome is justly celebrated; but probably the most important circus ever organized is that of Barnum and Bailey's "Greatest Show on Earth," which includes a whole army of performers, "mid-air artists," and male and female equestrians.

CIRRIPEDIA, or **CIRRHIPEDIA**, a degenerated sub-class of crustacea, including the numerous forms of barnacles and acorn-shells. *Cirrhopoda* was a form of the name once commonly in use.

CIRRHOISIS: in pathology, a chronic inflammation of the liver, so called because of the yellow appearance of the organ when in this condition. The term is sometimes applied to a similar affection of other organs.

CIRRHUS, CIRRHUS, or **TENDRIL**: in botany, a leaf altered into a slender spiral, which by twisting around such objects as it comes in contact with attaches the plant to them, and enables it to climb. The term is also employed in zoölogy to designate any curled filament, and has been applied to the curiously modified feet of the *Cirripedia*.

CIRTA, the capital of ancient Numidia, now Constantine.

CIS, a Latin preposition meaning "on this side;" it is often prefixed to names of rivers and mountains; as **Cisalpine**, "on this side of the Alps."

CISALPINE REPUBLIC. After the battle of Lodi, in 1796, Bonaparte organized two states, one on the south of the Po, the Cispadane Republic, and one on the north, the Transpadane. In 1797 these two were united into one under the title of the Cisalpine Republic, which embraced Lombardy, Mantua, Bergamo, Brescia, Cremona, Verona, and Rovigo, the duchy of Modena, the principalities of Massa and Carrara, and the three legations of Bologna, Ferrara, and the Romagna. The republic was dissolved for a time in 1799 by the victories of the Russians and Austrians, but was restored by Bonaparte after the victory of Marengo, with some modifications of constitution and increase of territory. In 1802 it took the name of the Italian Republic, and chose Bonaparte for its president. In 1805 a deputation from the republic conferred on

the Emperor Napoleon the title of King of Italy, after which it formed the kingdom of Italy till 1814.

CISTERN. See *Britannica*, Vol. IV, p. 503; Vol. XXI, pp. 714 *et seq.*

CISTUS, or **Rock-Rose**, a genus of exogenous plants giving its name to the natural order *Cistaceæ*, which contains about 200 known species, chiefly natives of the South of Europe and the North of Africa. Some of them are beautiful evergreen shrubs. From *Cistus Creticus*, *Cistus ladaniferus*, and other species, *gum ladanum* is obtained.

CITADEL, a fort of four or five bastions in or near a town. It serves two purposes: it enables the garrison of a town to keep the inhabitants in subjection; and in case of a siege, it forms a place of retreat for the defenders.

CITATION, the act of calling a party into court to answer to an action, to give evidence, or to perform some other judicial act.

CITHARA, an ancient instrument closely resembling the guitar. See *Britannica*, Vol. XV, p. 114.

CITIES OF THE UNITED STATES. The following is a list of the cities of the United States having a population of 10,000 or over in 1890, as shown by the census of that year:

Akron, Ohio	27,702
Albany, N. Y.	93,523
Alexandria, Va.	14,318
Allegheny, Pa.	104,967
Allentown, Pa.	25,183
Alpena, Mich.	11,228
Alton, Ill.	10,184
Altoona, Pa.	30,269
Amsterdam, N. Y.	17,264
Anderson, Ind.	10,759
Appleton, Wis.	11,825
Asheville, N. C.	10,433
Atchison, Kan.	14,222
Atlanta, Ga.	65,514
Atlantic City, N. J.	13,038
Auburn, Me.	11,228
Auburn, N. Y.	25,887
Augusta, Ga.	33,150
Augusta, Me.	10,521
Aurora, Ill.	19,634
Austin, Tex.	15,324
Baltimore, Md.	433,547
Bangor, Me.	19,090
Baton Rouge, La.	10,397
Battle Creek, Mich.	13,090
Bay City, Mich.	27,836
Bayonne, N. J.	18,936
Beatrice, Neb.	13,921
Bellefonte, Pa.	15,360
Beverly, Mass.	10,921
Biddeford, Me.	14,418
Binghamton, N. Y.	35,093
Birmingham, Ala.	26,241
Bloomington, Ill.	22,242
Boston, Mass.	448,477
Bradford, Pa.	10,478
Bridgeport, Conn.	48,856
Bridgeton, N. J.	11,471
Brockton, Mass.	27,294
Brookhaven, N. Y.	12,572
Brookline, Mass.	12,103
Brooklyn, N. Y.	804,377
Buffalo, N. Y.	251,457
Burlington, Iowa.	22,528
Burlington, Vt.	14,566
Butte City, Mont.	10,701
Cairo, Ill.	10,044
Cambridge, Mass.	70,028
Camden, N. J.	58,274
Canton, Ohio.	26,327
Carbondale, Pa.	10,826
Cedar Rapids, Iowa.	17,997
Charleston, S. C.	54,592
Charlotte, N. C.	11,555
Chatanooga, Tenn.	29,113
Chelsea, Mass.	27,909
Chester, Pa.	20,167
Cheyenne, Wyo.	11,693
Chicago, Ill.	1,098,576
Chillicothe, Mass.	14,050

Chillicothe, Ohio	11,256
Cincinnati, Ohio	296,309
Cleveland, Ohio	261,546
Clinton, Iowa	18,629
Clinton, Mass.	10,424
Cohoes, N. Y.	22,432
Columbia, Pa.	10,597
Columbia, S. C.	14,508
Columbus, Ga.	18,650
Columbus, Ohio	90,898
Concord, N. H.	17,004
Council Bluffs, Iowa	31,388
Covington, Ky.	97,375
Cumberland, Md.	10,090
Dallas, Texas	38,140
Danbury, Conn.	19,385
Danville, Ill.	11,528
Danville, Va.	10,255
Davenport, Iowa	25,161
Dayton, Ohio	58,868
Decatur, Ill.	16,841
Denton, Texas	10,959
Denver, Col.	126,136
Des Moines, Iowa	50,067
Detroit, Mich.	205,669
Dover, N. H.	12,790
Dubuque, Iowa	30,147
Duluth, Minn.	32,725
East Liverpool, Ohio	10,947
Easton, Pa.	14,135
East Portland, Oregon	10,481
East St. Louis, Ill.	15,156
Eau Claire, Wis.	17,438
Elgin, Ill.	17,429
Elizabeth, N. J.	37,683
Elkhart, Ind.	11,370
Elmira, N. Y.	26,070
El Paso, Texas	10,886
Eric, Pa.	89,899
Evansville, Ind.	50,674
Everett, Mass.	11,068
Fall River, Mass.	74,398
Findlay, Ohio	18,674
Fitchburg, Mass.	22,037
Flushing, N. Y.	19,136
Fond du Lac, Wis.	11,942
Fort Scott, Kan.	11,837
Fort Smith, Ark.	11,291
Fort Wayne, Ind.	85,349
Fort Worth, Texas	20,725
Freeport, Ill.	10,159
Galesburg, Ill.	15,212
Galveston, Texas	29,118
Gloucester, Mass.	24,651
Gloversville, N. Y.	18,796
Grand Rapids, Mich.	64,147
Greenwich, Conn.	10,120
Hagerstown, Md.	11,098
Hamilton, Ohio	17,519
Hannibal, Mo.	12,816
Harrisburg, Pa.	40,164
Hartford, Conn.	53,182
Hastings, Neb.	13,798
Haverhill, Mass.	27,402
Hazleton, Pa.	11,818
Helena, Mont.	13,834

Hempstead, N. Y.	23,517	Norfolk, Va.	85,454
Hoboken, N. J.	43,560	Norristown, Pa.	19,750
Holyoke, Mass.	35,637	North Adams, Mass.	16,074
Hornellsville, N. Y.	10,948	Northampton, Mass.	14,990
Houston, Texas.	27,411	Norwalk, Conn.	17,739
Hudson, N. Y.	10,027	Norwich, Conn.	16,192
Huntington, W. Va.	10,082	Oakland, Cal.	48,590
Hyde Park, Mass.	10,198	Ogden, Utah.	14,919
Indianapolis, Ind.	107,445	Ogdensburg, N. Y.	11,677
Ironton, Ohio.	10,922	Oil City, Pa.	10,943
Ishpeming, Mich.	11,184	Omaha, Neb.	139,526
Ithaca, N. Y.	11,557	Orange, N. J.	18,774
Jackson, Tenn.	10,022	Oshkosh, Wis.	22,752
Jackson City, Mich.	20,779	Oswego, N. Y.	21,826
Jacksonville, Fla.	17,160	Ottumwa, Iowa.	13,996
Jacksonville, Ill.	12,357	Oyster Bay, N. Y.	13,788
Jamaica, N. Y.	13,646	Paducah, Ky.	13,024
Jamestown, N. Y.	15,991	Passaic, N. J.	13,027
Janesville, Wis.	10,681	Paterson, N. J.	78,358
Jeffersonville, Ind.	11,274	Pawtucket, R. I.	27,512
Jersey City, N. J.	163,987	Peabody, Mass.	10,158
Johnstown, Pa.	21,129	Peekskill, N. Y.	10,026
Joliet, Ill.	27,407	Pensacola, Fla.	11,751
Kalamazoo, Mich.	17,857	Peoria, Ill.	40,756
Kansas City, Kan.	38,170	Petersburgh, Va.	23,817
Kansas City, Mo.	132,416	Philadelphia, Pa.	1,044,894
Keokuk, Iowa.	14,075	Pittsburgh, Pa.	238,473
Key West, Fla.	18,058	Pittsfield, Mass.	17,221
Kingston, N. Y.	21,181	Pittston, Pa.	10,295
Knoxville, Tenn.	22,447	Plainfield, N. J.	11,250
La Crosse, Wis.	25,053	Port Huron, Mich.	13,519
La Fayette, Ind.	16,407	Portland, Me.	36,606
Lancaster, Pa.	32,090	Portland, Oregon.	47,294
Lansing, Mich.	12,630	Portsmouth, Ohio.	12,387
Lansingburg, N. Y.	15,023	Portsmouth, Va.	12,345
Laredo, Texas.	11,313	Pottstown, Pa.	13,201
Lawrence, Mass.	44,654	Pottsville, Pa.	14,194
Leadville, Colo.	11,159	Poughkeepsie, N. Y.	22,836
Leavenworth, Kan.	20,250	Providence, R. I.	132,069
Lebanon, Pa.	14,737	Pueblo, Cal.	28,128
Lewiston, Me.	21,668	Quincy, Ill.	31,478
Lexington, Ky.	22,355	Quincy, Mass.	16,723
Lima, Ohio.	15,970	Racine, Wis.	21,022
Lincoln, Neb.	55,491	Raleigh, N. C.	12,798
Little Rock, Ark.	22,496	Reading, Pa.	58,926
Lockport, N. Y.	7,608	Richmond, Ind.	16,849
Logansport, Ind.	13,798	Richmond, Va.	80,838
Long Island City, N. Y.	30,396	Rochester, N. Y.	128,327
Los Angeles, Cal.	50,394	Rockford, Ill.	23,589
Louisville, Ky.	161,005	Rock Island, Ill.	13,596
Lowell, Mass.	77,696	Rome, N. Y.	14,980
Lynchburg, Va.	19,779	Sacramento, Cal.	26,272
Lynn, Mass.	55,727	Saginaw, Mich.	46,169
McKeesport, Pa.	20,711	St. Joseph, Mo.	52,811
Macon, Ga.	22,698	St. Louis, Mo.	450,245
Madison, Wis.	13,392	St. Paul, Minn.	133,156
Mahoney, Pa.	11,321	Salem, Mass.	31,801
Malden, Mass.	28,021	Salt Lake City, Utah.	45,025
Manchester, N. H.	44,126	San Antonio, Texas.	38,681
Manistee, Mich.	12,799	San Diego, Cal.	16,153
Mansfield, Ohio.	13,542	Sandusky, Ohio.	19,294
Marlborough, Mass.	13,905	San Francisco, Cal.	297,990
Marinette, Wis.	11,513	San José, Cal.	18,027
Massillon, Ohio.	10,068	Saratoga Springs, N. Y.	13,124
Medford, Mass.	11,079	Savannah, Ga.	41,762
Memphis, Tenn.	64,586	Schenectady, N. Y.	19,857
Menominee, Mich.	10,606	Scranton, Pa.	83,450
Meriden, Conn.	21,230	Seattle, Wash.	43,314
Meridian, Miss.	10,889	Sedalia, Mo.	13,994
Michigan City, Ind.	10,704	Shamokin, Pa.	14,338
Middletown, N. Y.	11,918	Sheboygan, Wis.	16,341
Milwaukee, Wis.	204,150	Shenandoah, Pa.	13,445
Minneapolis, Minn.	164,734	Sioux City, Iowa.	37,262
Mobile, Ala.	31,822	Sioux Falls, S. D.	10,154
Moline, Ill.	11,995	Somerville, Mass.	40,152
Montgomery, Ala.	21,790	South Bend, Ind.	21,786
Muncie, Ind.	11,339	South Bethlehem, Pa.	10,286
Muscattine, Iowa.	11,432	Spokane Falls, Wash.	19,917
Muskegon, Mich.	22,668	Springfield, Ill.	24,852
Nanticoke, Pa.	10,037	Springfield, Mass.	44,179
Nashua, N. H.	19,311	Springfield, Mo.	21,842
Nashville, Tenn.	76,909	Springfield, O.	32,135
Nebraska City, Neb.	11,472	Stamford, Conn.	15,665
New Albany, Ind.	21,000	Steubenville, Ohio.	13,363
Newark, N. J.	181,518	Stillwater, Minn.	11,239
Newark, Ohio.	14,369	Stockton, Cal.	14,376
New Bedford, Mass.	40,733	Syracuse, N. Y.	87,877
New Brighton, N. Y.	16,400	Tacoma, Wash.	35,858
New Britain, Conn.	19,010	Taunton, Mass.	25,448
New Brunswick, N. J.	13,459	Terre Haute, Ind.	30,287
Newburgh, N. Y.	23,263	Tiffin, Ohio.	10,978
Newburyport, Mass.	13,947	Toledo, Ohio.	82,652
New Castle, Pa.	11,581	Topeka, Kan.	31,309
New Haven, Conn.	85,981	Trenton, N. J.	58,488
New London, Conn.	13,759	Troy, N. Y.	60,605
New Orleans, La.	241,995	Utica, N. Y.	44,001
Newport, Ky.	24,938	Vicksburg, Miss.	13,298
Newport, R. I.	19,449	Waco, Texas.	13,067
Newton, Mass.	24,379	Waltham, Mass.	18,707
Newton, N. Y.	17,537	Washington, D. C.	228,160
New York, N. Y.	1,515,501	Waterbury, Conn.	28,591

Watertown, N. Y.	14,738
West Bay City, Mich.	12,910
West Troy, N. Y.	12,942
Weymouth, Mass.	10,866
Wheeling, W. Va.	85,062
Wichita, Kan.	23,735
Wilkes Barre, Pa.	37,651
Williamsport, Pa.	27,107
Wilmington, Del.	61,437
Wilmington, N. C.	20,013
Windham, Conn.	10,025
Winona, Minn.	18,208
Woburn, Mass.	13,499
Woonsocket, R. I.	20,759
Worcester, Mass.	84,655
Yonkers, N. Y.	31,945
York, Pa.	20,849
Youngstown, Ohio.	33,199
Zanesville, Ohio.	21,117

CITIZEN: (Fr., *citoyen*; Lat., *civis*), a term applied either specifically to a dweller in a town, or to any one who is either born in the country or has become legally naturalized in it. From the point of view of American constitutional law, a citizen being a member of the political community to which he belongs, every person born in the United States and subject to its jurisdiction (except untaxed Indians) falls within the definition. An alien may become a citizen by being naturalized under the acts of Congress. A citizen of the United States residing in any State of the Union is a citizen of that State. There being a government in each of the several States, as well as a government of the United States, a person may be, and usually is, at the same time a citizen of both, but his rights as a citizen under one of these governments differ legally from those under the other. On the other hand, a person may be a citizen of the United States and not be a citizen of any particular State, having his residence in one of the Territories, or not having a fixed residence in any State. Citizenship is not confined to those who have a right to vote, as minors and women are usually citizens without those rights.

In France during the Revolution, the word citizen was adopted by the Republicans as the most appropriate term to express the principle of *liberté, égalité et fraternité*. It took the place of *Monsieur*. Every Frenchman became *citoyen* in relation to other Frenchmen, the highest in official station being so addressed by the lowest. The usage gradually died out after the assumption of imperial power by Napoleon.

CITIZENSHIP IN THE UNITED STATES embraces the following persons: (1) All individuals born in the United States and not subject to any foreign power (except untaxed Indians). This includes all children of alien parents other than those of foreign official representatives. (2) All children born elsewhere to fathers who were at the time of their birth citizens resident at some time in the United States. (3) All naturalized persons. (4) Women, though not born in the United States, nor naturalized (if not incapable of naturalization) who are married to citizens. (5) All Indians born within the United States, who have withdrawn from tribal relations, and who are enrolled as taxpayers, or who have accepted lands in severalty under the Congressional act of 1870.

A person may be a citizen of the United States without being a citizen of a particular State, and *vice versa*. The two citizenships are quite distinct in law. For citizenship in the States severally, see **NATURALIZATION OF ALIENS**.

A naturalized citizen is one of foreign birth who has become a citizen by adoption or naturalization. The conditions under and the manner in which an alien may be admitted to citizenship in the United States are prescribed by sections 2165-74 of the Revised Statutes of the United States. They sub-

stantially include the following: The alien must declare upon oath before a circuit or district court of the United States, or a district or supreme court of the Territories, or a court of record of any of the States having common-law jurisdiction, and a seal and clerk, two years at least prior to his admission, that it is his intention, *bona fide*, to become a citizen of the United States, and to renounce forever all allegiance and fidelity to any foreign prince or state, and particularly to the one of which he may at the time be subject. He must also declare on oath before one of the courts named "that he will support the Constitution of the United States, and that he absolutely and entirely renounces and abjures all allegiance and fidelity to every foreign prince, potentate, state or sovereignty, and particularly by name to the prince, potentate, state or sovereignty, of which he was before a citizen or subject," which proceedings must be recorded by the clerk of the court.

If it shall appear to the satisfaction of the court to which the alien has applied that the applicant has resided within the United States, continuously, for five years, and that during that time "he has behaved as a man of good moral character, attached to the principles of the Constitution of the United States, and well disposed to the good order and happiness of the same," he will be admitted to citizenship. If the applicant has borne any hereditary title or order of nobility he must make an express renunciation of it at the time of his application. Any alien twenty-one years old and upwards, who has been in the armies of the United States and has been honorably discharged therefrom, may become a citizen on his petition without any previous declaration of his intention, provided that he shall have resided in the United States at least one year previous to his application, and is of good moral character. Any alien under the age of twenty-one years, who has resided in the United States three years next preceding his arriving at that age, and who has continued to reside therein to the time he may make application to be admitted a citizen thereof, may, after he arrives at the age of twenty-one years, and after he has resided five years within the United States, including the three years of his minority, be admitted a citizen; but he must make a declaration on oath and prove to the satisfaction of the court that for two years next preceding it has been his *bona fide* intention to become a citizen. The children of persons who now are or have been citizens of the United States are, though born out of the limits and jurisdiction of the United States, considered as citizens thereof. The naturalization of Chinese is expressly prohibited by section 14, chapter 126, Laws of 1882.

CITRON-WOOD, or **CITRUS-WOOD**, the most highly prized wood of Roman antiquity, derived from *Biota orientalis*, or from *Callitris quadrivalvis*, allied coniferous trees, natives of Africa and the Orient. It is a very beautiful wood, believed by the Turks to be imperishable, and much used by them for floors and ceilings of mosques.

CITRUS, a genus of the natural order *Aurantia-cæ*, trees and shrubs of tropical, subtropical and warm temperate Asia, but many of them now cultivated in all similar climates for their fruit. To it belong the orange, citron, lemon, lime, bergamot, shaddock, etc.

CITROSMIA, a genus of trees of the natural order *Monimiaceæ*, of which the leaves abound in an oil resembling oil of citron. They are natives of the tropical parts of South America.

CITTADELLA, a town of Northern Italy, 14 miles northeast of Vicenza, situated on the Bren-

tella. It has manufactories of paper and woolen. Population, 8,505.

CITY (Fr., *cité*; Lat., *civitas*), an important town. In the United States a city is an incorporated town, usually governed by a mayor, aldermen and common council. In some States 10,000 inhabitants are requisite to the formation of a city government, while in the new States a less number is required, some having incorporated cities of fewer than 3,000 inhabitants. In several of the Western States cities are organized under a general law by which they are designated, according to the number of inhabitants, as cities of the first, second and third class. The term city, as used in Great Britain, is generally applied to all towns which are incorporated, and which either are or have been sees of bishops. In the case of towns which have grown greatly beyond their original dimensions it is not unusual to give the name of city to the space which they originally occupied—thus, we speak of the city of London in contradistinction to the metropolis, *la Cité* of Paris, and similarly of other places.

CITY OF REFUGE. The Jewish law set apart six cities, three on each side of the Jordan, as cities of refuge for the murderer. These cities were Bezer, Ramoth, and Golan on the east, and Hebron, Shechem, and Kadesh on the west.

CITY POINT, a port of entry situated at the confluence of the James and Appomattox Rivers, in Prince George county, Va. This place was made a supply depot by General Grant in his assaults on Petersburg and Richmond.

CIUDAD RODRIGO, a fortified town of Spain, 17 miles from the Portuguese frontier, and 56 southwest of Salamanca by rail, on a steep hill above the river Agueda, which is here crossed by a fine bridge. It is a poor, dirty town, chiefly of interest for its sieges during the Peninsular War.

CIVICS (Lat., *civis*, a citizen), a new word directly derived from the adjective civic, and introduced by Henry Randall Waite, Ph.D., F. A. S. A., who defined it as follows: "The body of knowledge or science which devotes itself to the consideration of citizenship relations, including the reciprocal relations of government and citizenship." Civics seeks to properly coordinate, as parts of an integral science, the essential truths with which the citizen must be familiar in order to the best use of his powers and privileges. It includes (1) *Ethics*: defined by E. Benjamin Andrews, D.D., LL.D., of the Faculty of the Institute as "The Doctrine of Duties in Society," in other words, the study and setting forth of the conditions of human character which are essential to the welfare of the citizen, society and government. As right character is the natural source of right action, the science of civics first concerns itself with the facts which underlie and account for these essential characteristics of the good citizen. That the citizen may be qualified to act the part of an intelligent juror in all affairs submitted to the decision of the suffrage, it is essential that he be adequately informed as to other facts in Civics as follows: (2) *Civil Polity*—Governmental methods and machinery; suffrage rights and obligations; the qualifications and duties of public officials; executive, legislative, and judicial affairs, and all other matters having relation to the orderly and proper administration of government. (3) *Law*—The principles and facts of the law in applications most directly involving the interests of society, and especially of the citizen and the government. (4) *Economics*—The principles or laws which explain or control the production, distribution and ownership of that which constitutes, or is technically called wealth; the facts relating to the develop-

ment of natural resources, to manufactures, and to internal and foreign commerce; questions of supply and demand, labor and capital; and matters of like character, considered with reference to their effects upon the citizen, and in their relations to government. (5) *History*—Collateral facts illustrative of tendencies and results, growing out of given conditions, considered in connection with Ethics, Civil Politics, Law and Economics. *Civics* offers an opportunity for the exact differentiation of facts hitherto confused, as within the scope of two or more of the sciences which it includes, and for corresponding exactness in deductions. It differs from what is called social science in general, or sociology, in confining itself to the consideration of sociological facts in their bearings on affairs of citizenship and government.

CIVICS, AMERICAN INSTITUTE OF, a National Educational Institution, with a charter from the United States Government. Founded in 1885, by the late Chief Justice Morrison R. Waite and Justice William Strong, of the U. S. Supreme Court; Noah Porter, late President of Yale University; John Bigelow, Mellen Chamberlain, Theodore W. Dwight, John Jay, Ex-Governor Hugh S. Thompson, of South Carolina; General H. B. Carrington, U. S. A.; W. E. Sheldon, the late Dr. Alexander Winchell, Henry Randall Waite, Ph.D., General William Preston Johnston, of Louisiana; General Joseph R. Hawley, W. H. Du Puy, LL.D., Bishop J. H. Vincent, and other distinguished citizens. Assuming that the voter is a trustee charged with sacred responsibilities, the Institute aims to secure such attention to the facts of Civics on the part of all citizens as shall surround the suffrage with the safeguards which grow out of a proper sense of obligations, integrity of purpose, and an adequate degree of intelligence as to affairs in issue. The Institute is controlled by 33 Trustees, and has auxiliaries styled "Councils" in every State and Territory. The immediate direction of its affairs is intrusted to a President and Faculty now numbering 12 members. It has departments of work as follows: 1st, in connection with Common Schools; 2nd, Colleges and Professional Schools, A. B. Woodford, Ph.D., secretary; 3d, the Press, L. A. Maynard, secretary; 4th, Popular Work. Its Faculty has corresponding members in 152 colleges. Its Press Department, with the aid of leading newspapers, reaches more than a million readers weekly; its corps of lecturers, scattered throughout the land, numbers 45 distinguished speakers and writers. In connection with its Department of Popular Work, aided by Rev. J. M. Whiten, Ph.D., it seeks to promote its purposes through the cooperation of pulpit orators by suitable addresses on stated occasions intended to exalt the standard of citizenship. The Business Educators' Association of America, representing Business Schools with an attendance of more than 50,000 youth, has made itself an auxiliary of the Institute, with the purpose of carrying instructions in Civics into all business schools. The President of the Institute is Dr. H. R. Waite, and its offices are in New York city.

CIVIL DAMAGE ACTS, the name given to measures passed in several of the United States giving to persons who have sustained injury, in person or property or means of support, by any intoxicated person, in consequence of such intoxication, the right of action against the person who sold or gave away the liquor which caused such intoxication.

CIVIL DEATH, a term applied to one who is separated from civil society, or from the enjoyment of civil rights. In the United States one who has

been convicted of a felony and sentenced to imprisonment for life is said to be civilly dead.

CIVILIAN, a person whose pursuits are civil, that is, neither military nor naval; or one who is skilled in the civil law.

CIVIL RIGHTS, a term applied to the privileges which are accorded to every citizen by virtue of his citizenship, without regard to race, color, or previous condition of servitude. The condition of the colored race in the United States after the abolition of slavery led to the adoption of the 14th and 15th amendments to the Constitution, by which it is provided that "no State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States;" and that the "right of citizens of the United States to vote shall not be denied or abridged by the United States, or by any State, on account of race, color, or previous condition of servitude." The words "privileges and immunities" have been held to mean such as are of a general nature, as security to life and liberty, the right to acquire property, to have access to courts of justice, and freedom to pursue and obtain happiness and safety, with such restrictions as are necessary to the public good. Whatever guaranties States accord to their own citizens upon these points must be extended to the citizens of other States. The effect of the 15th amendment to the Constitution in respect of many questions of right in the several States has not been settled by the courts, but the object of that amendment is well understood. It abrogates all State legislation or Constitutional provision creating distinctions among citizens of the United States based upon race and color, and prevents the introduction of such distinctions either by the action of the State or by the General Government.

CIVIL RIGHTS ACT, an act of the United States Congress, passed in 1875, forbidding the exclusion of any person from the enjoyment of inns, public conveyances, theaters, etc., on account of race or color.

CIVIL RIGHTS BILL, an act passed in 1866 by the United States Congress conferring citizenship upon all persons born in the United States, not subjects of other powers, "of every race and color, and without regard to any previous condition of servitude."

CIVIL SERVICE AND CIVIL SERVICE REFORM. Civil Service is the executive branch of the public service, as distinguished from the military and the naval. Under enlightened forms of government it is separated into three branches: Legislative, Judicial, and the Executive.

The Legislative branch is essentially representative, and this function of legislators makes their views and interests an important part of the proper test of fitness for the places they seek. But very different considerations should prevail in the selection of clerks and other subordinates, for the reason that secretaries, clerks, copyists, messengers, etc., are in no sense representative. They owe no duty to members of one party that they do not owe equally to the other. Their political views should under no circumstances enter into their work.

The Judicial branch of the Government is not representative. To make it so in any sense is a prostitution of judicial functions and a calamity. Justice should be administered alike to every one, at all times and places, without party fear or favor. In the Executive department of the United States there are more than 100,000 persons occupying responsible clerical positions above the grade of laborers; there are nearly 50,000 postmasters, with tens of thousands of subordinates, and in all the departments official life is graded from the central

authority down to the porters and doorkeepers. With rare exceptions they are doing work the success and the utility of which depend upon its being done wholly on business principles, without any bias of party views. Yet so great was the effort made by parties struggling for power to fill these places with their favorites for the sake of their patronage that gross abuses were practiced.

The same difficulties exist in a monarchical as in a republican form of government. Great Britain discovered the abuses fifty years ago, and required an examination of applicants. The first ones were called *pass* examinations, but rapidly grew into *competitive* examinations. The British precedent was the basis of an act, passed by the United States Congress in 1858, by which such examinations were made the basis of an appointment to any place in the four great classes of clerkships in Washington. These examinations were the first practical steps toward what is designated as Civil Service Reform. For more than thirty years Great Britain enforced competitive examinations for the selection of her administrative officials in British India. They proved successful, and in 1870 were insisted upon in the administration of the Home Government.

In 1872 and 1874 President Grant enforced the system in the departments at Washington. He appointed a Civil Service Commission to attend to the matter, and the result was that a superior mental power began to be felt in the executive part of the national work. The hostility of many members of Congress, who wanted their favorites in official positions, was encountered, and for a time was partially successful. Competitive examinations were, however, reestablished by President Hayes at the postoffice and custom-house in New York city, and continued there by Presidents Garfield and Arthur. In 1883 Congress passed an act containing stringent provisions for the suppression of political assessments, and also provided for a complete system of competitive examinations. Since July, 1883, these rules have been enforced not only in the national departments, but in various State and municipal governments.

CIVIL SERVICE RULES. President Grant in 1872 appointed a "commission" to "devise rules and regulations" for admission to, and continuance in, the civil service of the United States. The commission prepared and reported such rules, based upon competitive examinations, and the Government officers began at once to carry them out to some extent. But the political pressure brought to bear upon many of the Senators and Members of Congress by their constituents for place and promotion was such that the progress made in the proposed reform was much less rapid than had been expected. In 1879 President Hayes renewed the efforts of President Grant, and the reform was specially observed in the New York postoffice and some other large postoffices. Since that date considerable progress has been made, and the system of competitive examinations has been extended not only to the Federal offices but also to the civil service in several of the States and chief cities.

The act of Congress prescribing rules and the extent of their application was passed in 1883. It provides for the appointment by the President of three "Civil Service Commissioners," with a chief Examiner, a Secretary, and other employes, and makes it the duty of the Commission to aid the President in preparing rules for carrying the new act into effect; to make regulations for examinations, and for office records and reports, and to provide also for the enforcement of the act. The headquarters of the Commission is in Washington, D. C. The act prescribes that the rules shall apply

to the Executive Departments at Washington; the Department of Labor and the Civil Service Commission; the Customs districts in which there are fifty or more employés, eleven in number; the postoffices in which there are fifty or more employés, now forty-six; and the Railway Mail Service—including, altogether, about thirty-two thousand places.

The Classified Departmental Service embraces all places in the departments at Washington, excepting messengers, laborers, workmen, and watchmen (not including any person designated as a skilled laborer or workman), and no person so employed can, without examination under the rules, be assigned to clerical duty, and also excepting those appointed by the President, by and with the advice and consent of the Senate. The Classified Customs Service embraces the customs districts where the officials are as many as fifty, including the places giving \$900 a year, and all those giving a larger salary where the appointee is not subject to confirmation by the Senate. The Classified Postal Service embraces the postoffices where the officials are as many as fifty, including all places above the grade of a laborer.

For places in the Classified Service, where technical additional qualifications are needed, special examinations are held. In the Departmental Service they are held for the State Department, the Pension, Patent and Signal offices, Geological and Coast Surveys, and other offices.

Applicants for examination must be citizens of the United States of the proper age. No person habitually using intoxicating liquors can be appointed. No discrimination is made on account of sex, color, or political or religious opinions. The limitations of age are: For the Departmental Service, not under twenty years; in the Customs Service, not under twenty-one years, except clerks or messengers, who must not be under twenty years; in the Postal Service, not under eighteen years, except messengers, stampers, and other junior assistants, who must not be under sixteen or over forty-five years, and carriers, who must not be under twenty-one or over forty; and in the Railway Mail Service not under eighteen or over thirty-five years. The age limitations do not apply to any person honorably discharged from the military or naval service of the United States by reason of disability resulting from wounds or sickness incurred in the line of duty. Such persons are preferred under § 1754 R. S.

Every one seeking to be examined must first file an application blank. The blank for the Departmental or Railway Mail Service should be requested directly of the Civil Service Commission, at Washington. The blank for the Customs or Postal Service must be requested in writing by the persons desiring examination of the Customs or Postal Board of Examiners at the office where service is sought. These papers should be returned to the officers from whom they emanated.

The applicants to enter the services designated are examined as to their relative capacity and fitness. The clerk examination is used only in the Customs and Departmental Services for clerkships of \$1,000 and upward, requiring no peculiar information or skill. It is limited to the following subjects: First, orthography, penmanship, and copying; second, arithmetic—fundamental rules, fractions, and percentages; third, interest, discount, and elements of book-keeping and of accounts; fourth, elements of the English language, letter-writing, and the proper construction of sentences; fifth, elements of the geography, history, and government of the United States. For places in which a lower degree of education suffices, as for employés in postoffices and those below the grade of clerks in custom-houses and in the departments at Washington, the Commission limits the examination to less than these five subjects, omitting the third and parts of the fourth and fifth subjects; and this is known as the copyist examination. No one is certified for appointment whose standing upon a just grading in the clerk or copyist examination is less than 70 per centum of complete proficiency, except that applicants claiming military or naval preference under § 1754 R. S. need obtain but sixty-five.

The law also prescribes competitive examinations to test the fitness of persons in the service, for promotion therein.

Persons passing an examination are graded and registered. The Commission gives a certificate to the person stating whether he passed or failed to pass.

When there is a vacancy to be filled the appointing officer applies to the Commission or proper examining board, and it reports to him the names of the three persons graded highest on the proper register of those in his branch of the service and remaining eligible, and from the said three a selection must be made.

Every appointment is made for a probationary period of six months, at the end of which time, if the conduct and capacity of the person appointed have been found satisfactory, the appointment is made absolute.

The following are excepted from examination for appointment: Confidential clerks of heads of departments or offices, cashiers of collectors and postmasters, superintendents of money-order divisions in postoffices, custodians of money for whose fidelity another officer is under bond, disbursing officers who give bonds, persons in the secret service, deputy collectors and superintendents and chiefs of divisions or bureaus, and a few others.

CIVITA SAN-ANGELO, a town of South Italy in the province of Teramo, near the Adriatic. It has a population of 6,578, and a trade in grain, wine and oil.

CIVITELLA DEL TRONTO, a town of South Italy in the province of Teramo, situated on a rock crowned by a castle. Population, 7,227.

CLAFLIN, HORACE BINGHAM, merchant, born in Milford, Mass., Dec. 18, 1811, died in Fordham, N. Y., Nov. 14, 1885. He entered business life as clerk in his father's store, and in 1831 he formed a partnership with his brother and his brother-in-law, and succeeded to his father's business. A dry-goods store in Worcester was their next venture, and as it was successful Mr. Clafin came to New York city in 1843, and entered upon what proved to be a remarkably successful business career. The business of the house in which he held the chief interest during the last twenty years of Mr. Clafin's life exceeded that of any other similar house in the world. Mr. Clafin was an influential member of Henry Ward Beecher's church, a liberal contributor to Brooklyn's charities, and the benefactor of many young men who were in need of credit or money. He was a Republican until the election of 1884, and a vigorous opponent of slavery.

CLAIBORNE, or **CLAYBORNE**, WILLIAM, colonist, born in Westmoreland, England, about 1589, died in Virginia about 1676. He was appointed secretary of state for the dominion of Virginia by Charles I, in 1626, and in 1642 treasurer for life. His rights and claims were disputed by Lord Baltimore, and he finally gave up the struggle in support of them. He discovered Kent Island in 1631, and owned a large tract of land upon which Annapolis was built. Claiborne has been misunderstood by historians, but recent investigation has shown that he was the victim of court favoritism and injustice. By his friends he was called "the champion of Virginia," while others denounced him as the "evil genius of Maryland."

CLAIBORNE, WILLIAM C. C., an American statesman, born in Virginia in 1773, died in 1817. He represented Tennessee in the National Congress in 1797, and was appointed governor of the Mississippi Territory in 1802, and of Louisiana Territory in 1804; he was governor of the State of Louisiana from 1812 to 1816.

CLAIBORNE GROUP, a name given in America to certain beds of clay, lignite, shelly sands, and marly limestone which occur in the vicinity of Claiborne, Alabama, and are believed to belong to the Eocene system.

CLAIRAC, a town of France, in the department of Lot-et-Garonne, situated on the Lot. It has flour and paper mills, and considerable trade in white wines, and prunes. Population, 2,423.

CLAIRAUT, ALEXIS CLAUDE, a mathematician, born at Paris, May 13, 1713, died there May 17, 1765. He early exhibited a remarkable aptitude for mathematics, and at eighteen years of age was admitted into the Academy of Sciences. He wrote a number of scientific papers, but his fame rests principally upon his *Théorie de la Figure de la Terre* (1743), in which he promulgated the theorem that the variation of gravity on the surface of the earth, regarded as an elliptic spheroid, was altogether independent of the law of density; on his explanation of the motion of the lunar apogee, and on his computation of the time of the return of Halley's comet.

CLAIRVAUX, a village in the department of Aube, 10 miles above Bar-sur-Aube, on the left bank of the river. Its celebrated abbey was founded in 1115 by St. Bernard. It is now transformed into a great prison or house of detention. Population, 1,950.

CLAIRVOYANCE. See Britannica, Vol. XXII, pp. 404-7.

CLAM, the popular name of various genera of bivalve mollusks, of which the principal are the common hard-shell clam—the Indian quahaug—of the Atlantic coast of the United States; the long or soft-shelled clam, known in England as the cob; the fresh-water clam, which is properly a mussel; and the edible giant clam of the South Sea and the Pacific, which bears the largest and most beautiful of bivalve shells.

CLAN-NA-GAEL, THE, a secret organization founded in Dublin in 1869. Its avowed purpose was to keep alive the Irish national spirit, and to aid in the liberation of Ireland from English rule; also to secure a republican form of government for the Irish nation. Membership was confined exclusively to Irishmen, and all proceedings were guarded with the greatest secrecy, the members being bound by oaths, and protected by passwords and signs of recognition. At a later period of its existence it was also known as the United Brotherhood. American headquarters were established in Chicago and Philadelphia, with branches in all the principal American cities. An enormous following was secured. Each branch or section in the United States was known by a given number. Particular care was taken as to the character of those admitted to membership. Each member had his individual number, and on it a password was framed. Each candidate was required to swear that he entertained no mental reservations, and that he was not bound by any previous oath to expose anything relative to the order. A sword was used in the ceremony of initiation to signify that force only could accomplish the society's aim. A cipher was used by the simple device of writing the alphabetical letter next succeeding the real one required, thus: "Fohmboe" was by the initiated readily translated into "England;" "Ce" meant "Bd" an abbreviation for "Brotherhood." Each candidate solemnly pledged himself, under penalty of death, to keep the name and everything connected with the organization strictly secret from all not entitled to know the secrets, and also faithfully to preserve the funds of the society for the cause of a prospective Irish revolution. The oath was as follows: "I (name in full) do solemnly swear, in the presence of Almighty God, that I will labor while life is left me to establish and defend a republican form of government in J s f m b o e ; that I will keep strictly secret the name and everything connected with the C e from all not entitled to know such secrets; that I will obey and comply with the constitution and laws of the C e, and that I will faithfully preserve the funds of the C e for the cause of J s j t i revolution alone, as specified in the constitution; that I will deem it my special duty and mission to promote and foster sentiments of union, brotherly love and nationality among the J s j t i n f o ; that I take this obligation without any mental reservation, holding the same forever binding upon me, and that any violation thereof, or desertion of any duty to the brotherhood is infamous, and merits the severest punishment. So help me God."

Very little was known by the American public about the Clan-na-Gael until the summer of 1889. In May of that year, Dr. Philip N. Cronin, a physician of high professional and social standing in the city of Chicago, suffered a violent and mysterious death. It was found by certain members of the order that he had in his possession evidence that would convict Clan-na-Gael officials of the misappropriation of large funds belonging to the society.

The parties writhed under the consciousness of guilt, and the fear of exposure drove them wild. It was determined to get rid of Dr. Cronin. A secret meeting was held, and a vote to "remove" him passed. He was enticed from his home on the plea that his professional services were needed by a person seriously ill. Quick to respond to such a call, he went to his death. While bending over his supposed patient, the blow was struck. His mutilated remains were discovered in a sewer basin in the outskirts of the city. In the investigation which followed the society was unearthed, its methods disclosed, four of its members convicted of the murder, three of whom were sent to prison for life, while the fourth was sentenced to imprisonment for three years.

CLANWILLIAM, a division of the Western Provinces, north of Cape Town, South Africa, embracing within its area the rich valley of Olifant River West, with a large stretch of mountain and "kar-roo" on each side. Chief village, Clanwilliam, on Jan Dissels River.

CLAP, THOMAS (1703-67), Congregational minister, and from 1739 to 1765 president of Yale College. He was born in Scituate, Mass., in 1703, graduated at Harvard in 1722, and preached at Windham, Mass., from 1726 to 1739. His learning and other qualities eminently fitted him for the position of president of the College, and he made important improvements in its various departments; he drew up a new code of laws, which were adopted by the trustees, and a new charter which was granted by the legislature; but his religious views led to his resignation in 1765, and he died in New Haven, Conn., in 1767. Thomas Clap, his great-grandfather, came to New England in 1630 and settled in Scituate, Mass., in 1640.

CLAUQUE (Fr., *claque*, "to clap the hands," or "applaud"), the name given to an institution for securing the success of a public performance or production, by bestowing upon it preconcerted applause, thus giving the impression that it is favorably received. The claque is of great antiquity, but first became a regularly organized and paid body during the time of the great Napoleon, in the famous struggle between Mademoiselle Georges and Mademoiselle Duchesnois at the Théâtre Français. The performances of the claque are directed by a leader, who arranges the points at which applause, laughter or tears are to be forthcoming, and each claqueur has a special role allotted to him. Thus, in various parts of the theater are placed *ricurs*, those who laugh at the comic sallies; *pleureurs*, those who weep at pathetic passages; *bisseurs*, who call *bis* or *encore*, and so on; while all occasionally join in hand-clapping and applause.

CLARE ISLAND, an island of Ireland, belonging to the county of Mayo, situated in the Atlantic at the entrance of Clew Bay.

CLAREMONT, a mansion at Esher, Surrey, Eng., 14 miles southwest of London, built in 1768 by Lord Clive at an expense of £100,000, and now the private property of Queen Victoria.

CLAREMONT, a manufacturing town of Sullivan county, N. H., 48 miles northwest of Concord. There are cotton, woolen and paper mills; also a water-wheel manufactory. The town has a large library and a high school.

CLARENCE, an English ducal title, first conferred in 1362 on Lionel, second son of Edward III and Philippa.

CLARENCEUX, or CLARENCEUX, the first of the two provincial Kings-of-Arms, in England, whose jurisdiction of Clarenceux extends to all England south of the Trent, that of Norroy comprehending the portion north of that river.

CLARENDON, a small town of Rutland county, Vt., much visited by invalids on account of its mineral springs, the waters of which are efficacious in skin diseases and kidney-complaints.

CLARENDON, CONSTITUTIONS OF, a series of ordinances, sixteen in number, made by a council of the nobility and prelates held at the hunting lodge of Clarendon in 1164, whereby King Henry II checked the power of the Church, and greatly narrowed the total exemption which the clergy had claimed from the jurisdiction of the secular magistrate. They defined the limit of the patronage as well as of the jurisdiction of the Pope in England, and provided that the Crown should be entitled to interfere in the election to all vacant offices and dignities in the Church. See ENGLAND, Britannica, Vol. VIII, p. 372; also Vol. I, p. 32.

CLARE, Sr., born in 1193, of a noble family of Assisi, in 1212 retired to the Portiuncula of St. Francis, and in the same year founded the order of Franciscan nuns, which spread rapidly through Europe. She died Aug. 11, 1253. Two years afterwards she was canonized by Alexander IV; her festival falls on August 12.

CLARETIE, JULES, real name ARSÈNE ARNAUD, French author, born at Limoges, Dec. 3, 1840. While still a school boy in Paris, he published a novel and became a contributor to the Parisian journals. His short story, *Pierrille* (1863), was praised by George Sand; and the novels *Mademoiselle Cachemire* (1865), and *Un Assassin*, renamed later *Robert Burat* (1866), were at once popular. He became one of the most important art and dramatic critics and political writers on the Paris press. During the Franco-German war he acquired the materials for a series of bright and vigorous anti-German books of an historical character, comprising *Histoire de la Révolution de 1870-71* (new ed., 5 vols. 1875-76); *Les Prussiens chez Eux* (1872); and *Cinq Ans après l'Alsace et la Lorraine depuis l'Annexion* (1876). He distinguished himself by his conduct during the siege of Paris. His more important later novels are: *Madeleine Bertin* (1868); *Le Train 17* (1877); *Monsieur le Ministre* (1881); and *Le Prince Zilah* (1884). He gained a firm footing on the stage through his pictures of the Revolution, *Les Muscadins* (1874); *Le Regiment de Champagne* (1877), and *Les Mirabeau* (1878); and in 1885 he succeeded M. Perin as director of the Théâtre Français. An English translation of his *Life of Camille Desmoulins* was published in 1876.

CLARIFICATION, the process of clearing a fluid from a turbid condition. Natural waters containing much organic matter are clarified by the addition of a little alum, which is precipitated with the organic matter, and the water then becomes healthy and refreshing. An addition of cold water to hot coffee, etc., causes a deposit to be thrown down, which clears the solution.

CLARINDA, a city at a railroad junction and the county-seat of Page county, Iowa. It is 62 miles southeast of Council Bluffs, and situated on the Nodaway River, and has a woolen factory and a flour mill.

CLARION, the county-seat of Clarion county, Pa. The village is in the oil region, and the prosperity of the place is much increased thereby. Clarion Seminary is here.

CLARK, ABRAHAM, one of the Signers of the Declaration of Independence, born in Elizabethtown, N. J., Feb. 15, 1726, died in Rahway, Sept. 15, 1794. By profession he was a surveyor and conveyancer and earned the title of "poor man's counselor." He was elected to the Continental Congress, serving from 1776 to 1783, with the exception of 1779, and he had a place in the New Jer-

sey legislature from 1782 to 1787, and from 1787 to 1788 was again in the Continental Congress. Mr. Clark has been called the "Father of the Paper Currency." From 1791 till his death he held a seat in the United States Congress.

CLARK, ALVAN, optician, born in Ashfield, Mass., March 8, 1804, died in Cambridge, Mass., Aug. 19, 1887. He was a farmer's son and became an engraver for calico print-works (1827-36), then a portrait painter, and ultimately became famous as a manufacturer of telescopes.

CLARK, ALVAN GRAHAM, astronomer, born at Fall River, Mass., July 10, 1832. He has discovered double stars, was a member of the expeditions which went to Spain to observe the total eclipse of 1870, and to Wyoming eight years later. Mr. Clark has invented several improvements in telescopes, and assisted in the completion of several famous lenses, among which are the Chicago refractor, the 80-inch for the Imperial Observatory at St. Petersburg, and the 86-inch refractor for the Lick Observatory in California, 1887.

CLARK, DANIEL, Senator, born at Stratham, Rockingham county, N. H., Oct. 24, 1809. He graduated at Dartmouth, 1834, studied law, was a member of the assembly five years, served in the United States Senate from 1857 to 1866, and afterward held other government offices. The resolution expelling from the Senate the Southern Senators who had left their seats on the secession of their States was offered by Senator Clark in 1861. President Johnson appointed him United States Judge for the New Hampshire district.

CLARK, DAVID WAGGATT, D. D., Methodist Episcopal bishop, born at Mount Desert, Me., Feb. 12, 1812, died in Cincinnati, O., May 23, 1871. He graduated at Wesleyan University in 1836; taught for seven years in Amenia Seminary, N. Y.; edited the "Ladies' Repository" from 1853 to 1864, when he was made a bishop. He afterwards labored in California, Oregon, and in the region south of the Ohio River. He was the author of *Elements of Algebra; Mental Discipline; Life and Times of Bishop Hedding*, and *Man All Immortal*.

CLARK, GEORGE ROGERS, an American general, born near Monticello, Albemarle county, Va., Nov. 19, 1752, died near Louisville, Ky., Feb. 18, 1818. In early life he was a surveyor and farmer, but he became distinguished as a leader of frontiersmen against the Indians and the British. All of the fertile region northwest of the Ohio River was wrested from the British by the valor of this soldier, yet he died in poverty. The State of Virginia sent him a sword after he had become old and poor, but he broke it in pieces, exclaiming, "When Virginia needed a sword, I gave her one. She sends me now a toy. I want bread!"

CLARK, HORACE FRANCIS, LL. D., railroad president and statesman, born in Southbury, Conn., Nov. 29, 1815, died in New York city, June 19, 1873. After graduating at Williams in 1833, Mr. Clark became a lawyer and won the reputation of being the hardest worker in the profession in New York city. He was twice elected to Congress (1856-61) on the Democrat ticket. In 1857 he became connected with the New York and Harlem Railroad as director, and afterward was president or director of a number of important roads. He was a manager of the Western Union Telegraph Company; president of the New York Union Trust Company; a successful operator in Wall street; and was one of the politicians who in 1871 broke the power of the Tweed ring. Com. Vanderbilt was the father-in-law of Mr. Clark.

CLARK, JONAS, patriot clergyman, born in Newton, Mass., Dec. 25, 1730, died in Lexington,

Mass., Nov. 15, 1806. After graduating at Harvard, 1752, he became pastor of a church in Lexington, where he spent his life. Edward Everett said of Mr. Clark that he "rendered services second to no other, in enlightening and animating the popular mind on the great question at issue in Revolutionary times." John Hancock and Samuel Adams were at the house of Mr. Clark on the night of April 18, 1775, when Paul Revere took his famous ride, and warned them, among others, of the danger at hand. These two men asked Mr. Clark if his people would fight. "I have trained them for this very hour; they would fight, and, if need be, die too under the shadow of the house of God," he replied. The first blood of the Revolution was shed near his house, April 19, 1775, and when he saw the dead heroes he exclaimed, "From this day will be dated the liberty of the world!"

CLARK, LABAN, Methodist Episcopal clergyman, born in Haverhill, N. H., July 19, 1778, died in Middletown, Conn., Nov. 28, 1868. He was an itinerant preacher, and labored for half a century in Canada, New York and New England. The missionary society of the Methodist church was organized in consequence of a motion offered by Mr. Clark in 1819. He was one of the founders of Wesleyan University at Middletown in 1831, and president of its board of trustees until his death.

CLARK, LEWIS GAYLORD, author, born in Otisco, Onondaga county, N. Y., in 1810, died at Piermont, on the Hudson, Nov. 3, 1873. From 1834 to 1859 he edited the "Knickerbocker Magazine" and increased its popularity by writing the "Editor's Department," and contributing pleasant humorous stories to its columns. Among the contributors to the magazine were many famous people, and these persons collected their contributed articles, illustrated them with their portraits, and had them published in *The Knickerbocker Gallery*, devoting the proceeds of the book to purchase a residence for Mr. Clark at Piermont on the Hudson. This genial author numbered among his friends Charles Dickens.

CLARK, WILLIS GAYLORD, twin brother of the preceding, died in Philadelphia, June 12, 1841. He was editorially connected with the "New York Mirror," "Columbian Star," and the Philadelphia "Gazette," and wrote poetry and humorous sketches. *The Spirit of Life* was his longest poem. A volume entitled *Literary Remains*, containing his contributions to the "Knickerbocker Magazine," was issued by his brother.

CLARK, MYRON HOLLEY, governor of New York, born in Naples, Ontario county, N. Y., Oct. 23, 1806. From 1852 to 1854 he was State senator, and during his first term of service there were consolidated the various railroads that now form the New York Central. To Mr. Clark's influence is due the provision which limits passenger fares to two cents a mile. He was a temperance and anti-slavery man, and elected to be governor by the coalition of several parties, some of which called themselves "Republican;" he was therefore the first State candidate elected on that ticket (1854).

CLARK, THOMAS MARCH, Protestant Episcopal bishop, born at Newburyport, Mass., July 4, 1812. He graduated at Yale, 1831, studied theology at Princeton, and became a Presbyterian pastor in his native town. Afterwards he became an Episcopal clergyman, held rectorates in Philadelphia, Hartford and twice in Boston. In 1854 he was consecrated second bishop of Rhode Island. Bishop Clark has published sermons, addresses, *Lectures to Young Men on the Formation of Character*; *The Efficient Sunday-School Teacher*; and *Primary Truths of Religion*.

CLARK, SIR ANDREW, F. R. S., Scottish physician, born at Aberdeen, Oct. 28, 1826, and educated at

Aberdeen and Edinburgh. After an exceptionally brilliant career as a student of medicine in the latter city, he became assistant to Dr. Hughes Bennett and Dr. Robert Knox the anatomist, and afterwards had charge for four years of the pathological department at the Haslar Naval Hospital. He subsequently settled in London, where he has acquired a high reputation for skill. He is president of the Royal College of Physicians, and consulting physician to the London Hospital. Dr. Clark is the author of numerous essays, lectures and reviews, and has for some time been Mr. Gladstone's medical attendant. He was created a baronet in 1883.

CLARK, WILLIAM GEORGE, English scholar and author, born in March, 1821, died at York, Nov. 6, 1878. He was educated at Sedbergh and Shrewsbury. He entered Trinity College, Cambridge, in 1840, and in 1844 was elected Fellow of his college, where he resided until 1873. He acted long as a tutor, and was public orator in the University from 1857 to 1869. Ordained in 1853, he resigned his orders in 1869, publishing his reasons in *The Present Dangers of the Church of England*. Clark edited the first series of *Cambridge Essays* (1855), and long acted as one of the editors of the "Journal of Philology." Other works were his edition of George Brimley's *Essays* (1858), and *Lectures on the Middle Ages and the Revival of Learning* (1872). His greatest work was the famous *Cambridge Shakespeare* (9 vols., 1863-66).

CLARK, WILLIAM SMITH, educator, born in Ashfield, Mass., July 31, 1826, died in Amherst, March 9, 1886. He graduated at Amherst and afterwards held professorships of chemistry and botany in that college. During the war of 1861-65 he served, and two years after its close, he became president of the agricultural college of Massachusetts. In 1876 he went to Japan, pursuing botanical studies and introducing into the United States new shade trees and seeds of foreign plants which proved of value. He was twice elected to the State legislature. As an author Prof. Clark contributed many papers on botany and chemistry.

CLARKE, CHARLES (1787-1877), and Mary Victoria Cowden, English authors. Charles was born at Enfield, Middlesex, Dec. 15, 1787, and early imbibed a passion for the theater. After his father's death, in 1820, he became a book-seller in London, and soon afterwards partner as music publisher with Alfred Novello, whose sister (born 1809) he married in July, 1828. The next year Mrs. Cowden Clarke began her famous *Concordance to Shakespeare's Plays*, published, after sixteen years' toil, in 1845. In 1834 Clarke began a twenty years' course of public lectures on Shakespeare and other dramatists and poets, which brought him much celebrity and profit. In 1859 he published *Carmina Minora*, a volume of original verse, and in 1863 he edited the poems of George Herbert. The joint productions of the pair were an edition of Shakespeare's works with annotations (1869), *Recollections of Writers* (1878), and the valuable *Shakespeare Key* (1879). In 1856 they went to live at Nice, but removed in 1861 to Genoa, where Charles died, March 13, 1877. Mrs. Clarke alone wrote several novels, volumes of verse, and other works. Of these the best known are the *Girlhood of Shakespeare's Heroines* (1850), and *World-noted Women* (1857).

CLARKE, HYPÉ, English financier and philologist, born in London in 1815, was employed in England as a civil engineer in the improvement of Morecambe Bay, and next in the promotion of telegraph and railway service in Upper India. In 1868 he founded the Council of Foreign Bondholders, whose affairs he administered for some years, and

he has done much to promote the Anthropological Institute and the Press-Fund. His writings include books on mythology and comparative philology, especially on the native American languages and their supposed connection with those of the Old World; and a number of pamphlets on railways, foreign loans, banking, etc.

CLARKE, JAMES FREEMAN (1810-82), clergyman, born in Hanover, N. H., April 4, 1810. After graduating at Harvard in 1829, and at Cambridge divinity school in 1833, he held a pastorate in Louisville, Ky., for seven years, and then returned to Boston, where, in 1841, he established the Unitarian Church, known as the Church of the Disciples. The worship of his church combined some of the forms of the Protestant Episcopal Church, the silent prayer of the Friends, and the *extempore* prayer of the Congregationalists. Dr. Clarke was for several years an overseer of Harvard University and a lecturer and professor. His acquaintance with Margaret Fuller enabled him to prepare, with the assistance of William H. Channing and R. W. Emerson, a volume of memoirs. A large number of works were published by him and include the following: *Eleven Weeks in Europe*; *Christian Doctrine of Forgiveness of Sin*; *Service Book*; *Orthodoxy: its Truths and Errors*; *Self-Culture*; *Every-day Religion*; and *Vexed Questions*.

CLARKE, JOHN, physician, born in Suffolk, England, Oct. 8, 1609, died in Newport, R. I., April 20, 1676. He emigrated to Boston in 1637, and desiring more religious freedom than the colony afforded, he with others settled in Rhode Island, then called Aquidneck, in 1638. He is supposed to have drawn up the code of laws which governed the colony. For several terms he was elected to the general assembly of the State, and it is said that he was the first to show "in an actual government that the best safeguard of personal rights is Christian law." He has been called the "Father of Rhode Island," and also the "Father of American Baptists."

CLARKE, JOHN SLEEPER, comedian, born in Baltimore, Md., 1835, studied for the law, but abandoned it and went upon the stage in his native city. He made a success as a low comedian, and acted in Philadelphia, New York city, Boston and London. His home is now in England, although he was warmly received by the American public, who considered him almost equal to the comedian Burton.

CLARKE, MARY BAYARD, author, born in Raleigh, N. C., about 1830. Her father was Thomas P. Devereux, and she married Col. William J. Clarke. She has lived in Texas, Cuba and North Carolina. Among her writings are: *Reminiscences of Cuba*; *Mosses from a Rolling Stone*; or, *Idle Moments of a Busy Woman*; *Battle of Manassas*; and *Rebel Sock*. Besides writing prose and poetry Mrs. Clarke has translated Victor Hugo's *Marguerite*, or *Two Loves*.

CLARKE, McDONALD, the "Mad Poet," born in Bath, Me., June 18, 1798, died in New York city, March 5, 1842. He was an eccentric character, about whose life little was known till he came to New York city in 1819. He was the author of the oft-quoted lines:

"Night drew her sable curtain down
And pinned it with a star."

Among his publications were the following books: *A Review of the Eve of Eternity*, and other Poems; *The Elixir of Moonshine*, by the Mad Poet; *The Belles of Broadway*; *Death in Disguise*; and *A Cross and a Coronet*.

CLARKE, REBECCA SOPHIA, author, born in Norridgewock, Me., Feb. 22, 1833. She has written stories for young people; among her best are *Little*

Prudy Stories; *Flaxis Frizzle Stories*; *Dotty Dimple Stories*; and *Quinnbasset Girls*. Her pen-name is "Sophie May."

CLARKE RIVER, or FLATHEAD RIVER, a stream which drains a part of Montana, Idaho and Washington. It rises in the Rocky Mountains, flows northwest and finally reaches the Columbia River. Gold is found near its source.

CLARKSBURG, the county-seat of Harrison county, W. Va., situated at the place where the Elk and West Fork Rivers unite with the Monongahela. It has flour, woolen and saw-mills, electric lights, gas and water-works, two academies, fine public buildings, and in the vicinity of the town coke and coal are found.

CLARKSVILLE, the county-seat of Montgomery county, Tenn., 50 miles northwest of Nashville, on the Cumberland River. Tobacco is manufactured in large quantities. Iron mines are near the town. It is the seat of the Southwestern Presbyterian University.

CLARKSVILLE, the oldest town of Northern Texas and the county-seat of Red River county. It has various schools and churches, and is the center of a very fertile region.

CLARY (*Salvia sclarea*), a plant of the same genus with sage, a native of the South of Europe. Its flowers are used for making a fermented wine, esteemed for its flavor.

CLASSICS. The term *classici* was originally applied to those citizens of Rome that belonged to the first and most influential of the six classes into which Servius Tullius divided the population. As early as the second century after Christ it was applied figuratively to writers of the highest rank, and this mode of designation has since been generally adopted both in literature and art. As the great productions of writers and artists of antiquity have continued to be looked upon by moderns as models of perfection the word *classics* has come to designate, in a narrower sense, the best writers of Greece and Rome.

CLASTIC ROCKS (Greek *Klastos*, "broken"), rocks composed of fragmental materials. The term includes all rocks of a secondary or derivative origin, as conglomerate, sandstone, shale, etc., which have been formed out of the remains of previously existing rocks. Besides the large class of sand and gravel rocks, it also embraces many rocks of organic origin, such as certain limestones, composed of the débris of shells, corals, etc.; coals, made up of the remains of plants; some ironstones, consisting in whole or in part of organic débris, fragmental volcanic rocks, such as tuff and agglomerate, come also into the same division.

CLAUDE, St., a town of France in the department of Jura, at the confluence of the Bienne and Tacon Rivers. It has manufactories of cotton, paper, musical boxes, toys, and fancy articles of horn, bone, ivory, etc. Population, 6,632.

CLAUSEN, HENRIK, a Dutch divine and statesman, born in Laaland in 1793, died in 1877. He became professor of theology at Copenhagen in 1820; was chosen a deputy of the states in 1840, and became a member of the cabinet in 1848. His writings were chiefly on church history and biblical exegesis.

CLAUSEWITZ, KARL VON, Prussian general, born at Burg, June 1, 1780, died of cholera at Breslau, Nov. 16, 1831. He served with distinction in several campaigns in the Prussian and in the Russian service, in 1815 became chief of the Prussian army corps, and was ultimately director of the army school, and inspector of artillery. His writings prepared the way for a complete revolution in the theory of war. Of his works the best known

are his great book on war, *Vom Krieg* (3 Vols. 4th edition, 1890), and his life of Scharnhorst.

CLAUSIUS, RUDOLPH, born in 1822; became professor at the Polytechnic Institution of Zurich in 1855, at the University of Würzburg in 1867, and at the University of Bonn in 1869. His calculations based upon the dynamical theory of heat, by which he shows the necessity of a Creator and the possibility of miracles, have won for him much distinction among scholars.

CLAVAGELLA, or CLUB-SHELL, a genus of lamellibranchiate mollusks of the same family with *Asperigillum*. These mollusks inhabit holes which they excavate for themselves in rocks or in masses of coral.

CLAVARIA, a genus of fungi, order *Hymenomyces*, family *Clavariæ*, in which the spore-bearing tissue is produced over all parts of the surface. The species are numerous, some of them simple and club-shaped, some branched. *C. botrytis*, a species common in oak and beech woods, especially in Germany, is gathered when young and used as food. Other species, notably *C. flava*, *coralloides*, *auræa* and *formosa*, are used in the same way.

CLAVICLE, an important part of the pectoral girdle of vertebrates, perhaps most familiarly known in the collar-bone of man and in the "merry thought" of birds. It is well developed in those mammals in which the fore-leg or arm is used very strongly and freely, but is poorly developed or absent in many cases, as in Carnivores and Ungulates. In most flying birds it is strong, and often fused to the breast-bone. It is a paired bone superadded from the skin as an auxiliary to scapula and coracoid. Its position is ventral and anterior to the coracoid, and it is often associated with an interclavicle. See ANATOMY, Britannica, Vol. I, p. 826.

CLAVICORNES, a great family of coleopterous insects, of the section *Pentamera*. Most of the beetles of this family feed on animal substance, and many of them find their appropriate food in substances undergoing decay. See Britannica, Vol. VI, p. 131.

CLAVIJERO, FRANCISCO HAVIER (1721-87) Mexican historian, born at Vera Cruz in 1721; entered the order of the Jesuits in 1748, and became a teacher of rhetoric and philosophy. On the suppression of the Jesuits in Spanish America in 1767, Clavijero retired to Italy, where he died at Bologna in 1787. He wrote in Italian a *History of Mexico*, an impartial and valuable work, of which an English translation by C. Cullen was published in 1787.

CLAXTON, KATE, actress, born in New York city in 1848, grand-daughter of Rev. Spencer H. Cone, an actor at one period of his life, and daughter of a colonel of the 61st New York regiment during the civil war. She made her dramatic *début* as "Lotta" in Chicago, but created no enthusiasm till she appeared as "Mathilde" in *Led Astray*, 1873; in this she was a success, and she added to her reputation by acting "Louise" in *The Two Orphans*. While acting this part in Brooklyn, N. Y., the disastrous theater fire occurred, Dec. 5, 1876, and shortly afterwards a hotel in St. Louis, where the actress was staying, was burned. On both occasions she displayed great coolness and bravery. In 1876 she married a fellow-actor, Charles Stephenson.

CLAY, a term applied to those kinds of earth or soil which, when moist, have a notable degree of tenacity and plasticity. The clays appear to owe their origin to the decomposition of various rocks, and to consist chiefly of aluminic silicate, along with other ingredients, which vary in character with the nature of the parent rock from the degradation of which they are derived. Thus, common clay is a mixture of kaolin or China clay (which is a

hydrated clay), and the fine powder of some felspathic mineral, which is anhydrous and not decomposed. The commoner varieties of clay and clay-rocks are: China clay, or kaolin; pipeclay, very like kaolin, but containing a larger percentage of silica; potter's clay, not so pure as the preceding; sculptor's clay or modeling clay, a fine potter's clay, sometimes mixed with fine sand; plastilina, a potter's clay from Italy, supposed to be composed of oil, glycerine, resin and powdered clay; brick-clay, an admixture of clay and sand with some ferruginous matter; fire-clay, containing little or no lime, alkaline earth or iron; shale, a laminated clay-rock; clay-slate, an indurated cleaved clay-rock; loam, a non-plastic mixture of clay and sand; marl, a clay containing much calcareous matter.

CLAY, CASSIUS MARCELLUS, politician, born in Madison county, Ky., Oct. 19, 1810.

While studying in Yale College, from which he graduated in 1832, he heard William Lloyd Garrison speak, and this influenced him to become an abolitionist, although his parents were slave-holders. Entering the legal profession on his return to Kentucky, he attained prominence and was elected in 1835 to the legislature. In 1837 and in 1840 he was sent to that official body; the improvements in the common schools and in the jury system of Kentucky are due to Mr. Clay's efforts. Mr. Clay was the supporter of Henry Clay for the presidency, the opposer of the annexation of Texas, and in 1845 the editor of an anti-slavery paper, "The True American," and was continually involved in quarrels. He served and was taken prisoner in the Mexican war, and aided in the election of President Taylor. He labored for the election of Fremont in 1856, and Lincoln in 1860. The following year he was sent as minister to Russia, but returned to America in 1862, being made major-general of volunteers. Refusing to serve so long as slavery was recognized, Mr. Clay left the Union army and went again to Russia, remaining as minister from 1863 to 1869.

After the war he supported the revolutionary movement in Cuba in 1870; he gave political support to Horace Greeley in 1872, to Samuel J. Tilden in 1876, and, although a Democrat, advocated the election of Mr. Blaine in 1884. For killing a negro, Perry White, in 1877, Mr. Clay was tried, but acquitted, the jury bringing in a verdict of "justifiable homicide," as the man, a discharged servant, had threatened his life.

CLAY CENTRE, a town of Kansas, county-seat of Clay county, situated on the Republican River about 125 miles west of Leavenworth. It contains a variety of manufactories, and is an important center of trade.

CLAY CROSS, a town in Derbyshire, England, $\frac{1}{4}$ miles south of Chesterfield, the center of a coal and iron district. Population, 6,879.

CLAY, HENRY. See Britannica, Vol. V, pp. 817-18.

CLAYMORE, the old Celtic one-handed, two-edged longsword. The name is now inaccurately given to the basket-hilted sword of the officers of Highland regiments.

CLAYTON, a village of Jefferson county, N. Y., on the St. Lawrence River at the western end of the region of The Thousand Islands. It is a railroad terminus, a summer resort, and a place where ships and skiffs are built.

CLAYTON, JOHN MIDDLETON, a jurist, born in Dagsborough, Sussex county, Del., July 24, 1796, died in Dover, Del., Nov. 9, 1856. He graduated at Yale in 1815; became a lawyer; was elected to the legislature in 1824; elected to the U. S. Senate in 1829 and 1835; was Secretary of State under President Taylor, and served in the U. S. Senate from 1845 to

1849, and from 1851 to 1856. He acquired a reputation for oratory while in the Senate; his best efforts being the speeches on the Foote resolution, in which he discussed nullification, the argument favoring the paying of French spoliation claims, and his defense of the Clayton-Bulwer treaty (negotiated by him while Secretary of State), and President Taylor's administration.

CLAYTON-BULWER TREATY. See *Britannica*, Vol. VI, p. 782.

CLEARANCE: in the mercantile marine, a permission from the custom-house officers for the departure of a ship from a port, denoting that all the formalities have been observed, and all dues, etc., paid. If a foreign vessel, she must also be certified by the consul of the nation to which she belongs.

CLEAR, CAPE, a headland of Clear Island, the most southerly point of Ireland, with a light-house and telegraph station.

CLEARFIELD, the county-seat of Clearfield county, Pa., on a railroad and the west branch of the Susquehanna. It has lumber manufactories, a foundry, machine shops, a public park and an academy.

CLEARING-HOUSE. See *Britannica*, Vol. III, pp. 328-29.

CLEARING-HOUSE CERTIFICATES, certain evidences of value, or of credit, taking the place of money for the time being, and especially used by the Clearing-House Association of Banks. It is one of the developments in banking procedure, whereby the clearing-house combination or association of banks constituting the clearing house is pledged to maintain the credit of every member of the association. Its beneficial effects will be readily comprehended by stating that if a bank is threatened with a run on its funds, and cannot convert its securities into ready cash to meet the contingency without heavy loss, owing either to the temporary or other depreciation in the value of the securities, or the inability at the moment to convert them into cash because of a possible stringency of the money market, the other banks in or of the association come to the rescue, by the issuance of certificates from the clearing house, which certificates are good at any bank in the association for their face value, and have the immediate effect of restoring confidence in the minds of depositors. For example, suppose, in the event of a "run" on a given bank, the demand for a million and a half of dollars is made; it would require three tons of gold coin to meet it, involving an immense expense as well as risk; whereas, under the system of clearing-house certificates there is a guaranty given that a sum sufficient to satisfy all demands has been deposited, subject to the return on demand, and the entire body composing the Clearing-House Association is pledged to maintain the integrity of the certificate.

The totals of the general proof being daily transferred to the ledger, reference to this is alone necessary to ascertain the dealings of each individual bank, day by day, month by month, and year by year, since it became a member of the association. There is a constant check upon irregularities, as all the banks are under the scrutinizing eye of the clearing house. Each one of the body fully realizes how greatly expulsion would jeopardize its credit. This latter feature has done much to prevent the undue extension of loans which would inevitably produce weakness and possible disaster. The system originated with Mr. F. W. Edmonds, formerly cashier of the Mechanics' Bank, New York city. He planned the issue of clearing-house certificates in 1852, and paved the way for the

smooth and successful business management subsequently developed in the banking world.

CLEARING-NUT (*Strychnos potatorum*), a small tree, a native of India, whose seeds are much used for clearing water. A seed rubbed around the inside of a vessel of muddy water causes the impurities to settle rapidly.

CLEAR LAKE, a sheet of water in Lake county, Cal. It is 24 miles long and from two to six miles broad, and is much frequented by hunters and tourists, on account of the various kinds of game which frequent its shores and the fish in its waters.

CLEATS: in ship-building, pieces of wood fastened to various parts of the vessel, and having holes or recesses for fastening ropes. There are several kinds applied to various purposes.

CLEAVAGE, or SLATY CLEAVAGE, the property possessed by many crystallized minerals of breaking easily into thin plates. Cleavage is the result of an operation which is subsequent to, and entirely independent of, the original stratification of the rocks.

CLEAVERS, or GOOSE-GRASS, *Galium Aparine*, a coarse annual, whose fruit when ripe will adhere to whatever may come in contact with it. The plant is used to some extent in medicine as a diuretic and sudorific.

CLEBURNE, PATRICK RONAYNE, a soldier, born in Cork county, Ireland, March 17, 1828, killed in the battle of Franklin, Tenn., Nov. 30, 1864. He early discovered a predilection for the profession of arms, and enlisted in the 41st regiment of infantry in the English army. After several years in the military service, he came to the United States and located at Helena, Ark., where he adopted the profession of law, in which he was succeeding at the commencement of the civil war in 1861. He enlisted in the Confederate army as a private; contrived the capture of the United States arsenal in Arkansas in March, 1861, and was soon afterward promoted from the rank of captain to that of colonel. He was promoted to the grade of brigadier-general in March, 1862. At the battle of Shiloh he commanded a brigade in the third army corps, and signalized himself for courage and sagacity. He was made major-general in December, 1862, and commanded a division of the right wing of the Confederate army at the battles of Stone River and Chickamauga. He distinguished himself in covering the retreat of Gen. Bragg's army after the battle of Mission Ridge in November, 1863, and was commended by the Confederate Congress for his heroic and successful defense of Ringgold Gap. He was a division commander under Gen. Joseph E. Johnston during his famous campaign in North Georgia, and distinguished himself in a number of its various battles. He commanded a corps at the battle of Jonesboro, Ga., also at Franklin, Tenn., where he was killed in storming the second line of the Federal works.

CLEF, a musical character placed on the staff, by which the names of the notes are fixed. There are three clefs; namely, the G, the C and the F clef.

CLEG, a name given to some insects of the dipterous family *Tabanidæ*. The females are extremely troublesome to horses and cattle.

CLEMATIS, a genus of plants of the natural order *Ranunculaceæ*, mostly herbaceous climbers. There are many species, natives of the temperate climates. *C. viorna*, *cylindrica*, and *virginiana*, or virgin's-bower, with white flowers, are the best known species in the United States. There are many forms in cultivation, with large flowers of various colors, mostly varieties or hybrids that have been obtained from *C. viticella* of Europe, *C. lanuginosa* of China, and the Japanese species, *C. azurea* and *C. florida*.

CLEMENCEAU, EUGÈNE, a French statesman, born at Mouilleron-en-Pared, in 1841. He early obtained distinction as a physician in Paris, where he was elected mayor of the 18th arrondissement in 1870, and member of the National Assembly in 1871. He became a member of the Chamber of Deputies in 1876, and was one of the committee of 18 who directed the resistance against the anti-Parliamentary party. He is proprietor of "La Justice," an important Paris journal. He is noted as being one of the most expert swordsmen in France.

CLEMENS, JEREMIAH, statesman, born in Huntsville, Ala., Dec. 28, 1814, died there May 21, 1865. After graduating at the State University he became a lawyer; was appointed United States marshal for Northern Alabama, and elected to the legislature in 1839, 1840, 1841 and 1843. He was connected with the army in 1842, when he went to Texas as lieutenant-colonel of volunteers, and in 1847-48 was an officer in the infantry. From 1849 to 1853 he was in the United States Senate, and in 1859 became editor, at Memphis, of the "Eagle and Enquirer." Popular feeling influenced him, and he became a secessionist, but in 1864 he declared for the Union cause. He was the author of several novels, some of which dealt with American history. Just previous to his death he was at work on a history of the war.

CLEMENS, SAMUEL LANGHORNE, an American humorist, born at Florida, Mo., Nov. 30, 1835. He is best known by his *nom-de-plume*, "Mark Twain," which had been the pen-name of Capt. Isaiah Sellers, who, previous to 1863, furnished river news to the "New Orleans Picayune," and which was derived from the call of the leadsmen on the Mississippi River boat when he sounds two fathoms. Mr. Clemens's education was chiefly obtained in the printing office, he being apprenticed to a printer at the age of thirteen, and he worked at the trade in St. Louis, Cincinnati, and New York, and in 1851 became river pilot on the Mississippi. He followed mining and newspaper work in Nevada and California; made a trip to the Hawaiian Islands in 1866; lectured in California and Nevada; made a tour through Europe, Egypt and the Holy Land; and since 1870 has lived at Hartford, Conn., employing his time in writing books or delivering lectures. He established in 1884 the publishing house of C. L. Webster & Co., in New York city, and this firm brought out Gen. U. S. Grant's *Memoirs*. Among Mr. Clemens's most popular books are: *The Innocents Abroad*; *Roughing It*; *Adventures of Tom Sawyer*; *The Prince and the Pauper*; and *A Yankee at the Court of King Arthur*.

CLEMMER, MARY, author, born in Utica, N. Y., in 1839, died in Washington, D. C., Aug. 18, 1884. This was the maiden name of Mrs. Edmund Hudson; but, as she wrote for many years under the name Clemmer, she was best known by it. Her first literary work was for the "Springfield Republican," and she afterwards gained reputation by the "Woman's Letter from Washington," which for years regularly appeared in the "New York Independent." She was the friend of Alice and Phoebe Cary, and wrote their biographies. Monographs on Margaret Fuller, George Eliot, Charles Sumner, Longfellow, and Emerson were from her pen. She was the author of *Victoria*; *Eirene*; *His Two Wives*; *Ten Years in Washington*; and a volume of poems. She was married to Rev. Daniel Ames, but was divorced, and married Mr. Hudson in 1883.

CLEOMEDES, a Greek writer on astronomy. Nothing is known regarding his life, nor the period when he flourished. His treatise is entitled *The Circular Theory of the Heavenly Bodies*, and is remarkable as containing several truths of modern

science—such as the spherical shape of the earth, the revolution of the moon about its axis, etc. Cleomedes's treatise was first printed in Latin in 1498, and the last edition in German in 1832.

CLERC, LAURENT, educator, born in La Balme, near Lyons, France, Dec. 28, 1785, died in Hartford, Conn., July 18, 1869. When only a year old he fell into the fire, and was so injured that he lost the sense of smell and hearing. Several years later Abbé Sicard took the lad and gave him so good an education that he became a teacher. Rev. Dr. Gallaudet persuaded him to come to America, and found an institution for the instruction of the deaf and dumb. This he did, and in 1817 such a school was opened at Hartford, and M. Clerc devoted the rest of his life to this work.

CLERK, JOHN, of Eldin, writer on naval tactics, born in 1728, died May 10, 1812. He prospered as an Edinburgh merchant, and by 1773 purchased the small estate of Eldin at Lasswade, where he devoted himself to etching, to geology, and to studying deeply both the theory and practice of naval tactics. On April 12, 1782, his manœuver for breaking the enemy's line was tried, and a decisive victory was gained over the French.

CLERK, JOHN (1757-1832), son of the naval writer, was raised to the Scottish bench in 1823, when he assumed the judicial title of Lord Eldin.

CLERK, PARISH, an official in the Church of England, who leads the responses in the congregation, and assists in the services of public worship, at funerals, etc.

CLELMONT-DE-LODEVE, a town in the department of Hérault, 23 miles northwest of Montpellier. It has extensive manufactories of woolen cloth. Population, 5,685.

CLERUS, a genus of insects of the order *Cleoptera*, section *Pentamera*, and of the great family *Serricornes* (see *Britannica*, Vol. VI, p. 132). There are about 20 species of this genus in the United States. Their larvæ feed on the larvæ of different kinds of bee.

CLEVELAND, a wild mountainous district, with some picturesque fertile valleys, forming the east part of the North Riding of Yorkshire, England. In the south the hills rise 1,300 to 1,850 feet. An extraordinary change has been wrought in the aspect of the country by a rich discovery of ironstone in the Cleveland hills; since 1851 lonely hamlets have become populous towns. The ironstone is chiefly an argillaceous carbonate, inferior in quality to the ironstone of the coal-measures.

CLEVELAND, a city of Ohio (see *Britannica*, Vol. V, p. 828). The population of the city has increased from 160,146 in 1880 to 261,546 in 1890, and its growth in business and wealth has been correspondingly rapid. There were in 1890 2,500 manufacturing establishments, employing 40,000 persons, with an annual production of \$85,000,000. The city contains eight ship-yards, two of them of immense proportions, constructing iron and steel vessels. A harbor of refuge, constructed by the United States Government and costing nearly \$2,000,000, was completed during the last decade, and the great viaduct extending from the lake on the east side to the top of the hill on the west side, costing \$2,225,000, was completed a little earlier. The public library contains 50,000 volumes.

CLEVELAND, a railroad junction and the county-seat of Bradley county, Tenn. It is an educational town and contains an academy, a female institute, and the largest southern female college.

CLEVELAND, CHARLES DEXTER, educator, born in Salem, Mass., Dec. 3, 1802, died in Philadelphia, Pa., Aug. 18, 1869. Graduating at Dartmouth in

1827, he became a teacher of Latin and Greek in Dickinson College, and afterwards in the New York University, and in a young ladies' school in Philadelphia. He was appointed consul to Cardiff, Wales (1861-67). Prof. Cleveland was the author of several works on English, American, and classical literature, text-books and song-books for schools, and prepared a concordance to Milton's poems.

CLEVELAND, GROVER, the twenty-second President of the United States, born in Caldwell, Essex county, N. J., March 18, 1837. He was christened Stephen Grover, in honor of Rev. Stephen Grover, pastor of the Presbyterian church at Caldwell, but the first name was omitted in his early life. When four years old his parents removed to Fayetteville, N. Y., where Grover received an academic education, and afterwards became a clerk in a country store. At the age of 17 he became an assistant teacher in the New York Institution for the Blind in New York city. In 1855 he went to Buffalo and assisted his uncle, Lewis F. Allen, in the compilation of the *American Herd Book*, and in August of that year entered the law office of Rogers, Bowen & Rogers, in Buffalo, as a student-at-law. He was admitted to the bar in 1859, and in 1863 was appointed assistant district attorney of Erie county, a position which he retained for three years. In 1865 he was the Democratic candidate for district attorney, but was defeated. He then became a law partner of Isaac V. Vanderpool in Buffalo, and four years later a member of the law firm of Lanning, Cleveland & Folsom. In 1870 he was elected sheriff of Erie county, and at the close of his term of office formed the law firm of Bass, Cleveland & Bissell, which subsequently became the firm of Cleveland & Bissell, Mr. Bass having retired on account of failing health. In 1881 Mr. Cleveland was elected mayor of the city of Buffalo on the Democratic ticket, and by his fearless use of the veto prerogative soon became known as the "veto mayor." In 1882 he received the Democratic nomination for governor of the State of New York, and was elected by a plurality of 192,854 over the Republican nominee, Charles J. Folger. July 11, 1884, the Democratic national convention nominated him for the Presidency of the United States, he receiving 683 votes out of a total of 820. James G. Blaine was the Republican candidate, and the canvass which followed was remarkable more for the discussion of the personal characters and qualifications of the respective candidates than for the discussion of political issues. In the election which followed Mr. Cleveland received a majority of 37 in the electoral college and a majority in the popular vote of 23,005 out of a total of 10,067,610. His administration of the Presidential office was marked by the same unprecedented use of the veto power which had characterized his administration of the gubernatorial office. June 2, 1886, President Cleveland married, in the White House, Frances Folsom, daughter of his former law partner. With the exception of Mrs. Madison, Mrs. Cleveland was the youngest of the many mistresses of the White House, having been born in Buffalo, N. Y., in 1864. In 1888 Mr. Cleveland was renominated for the Presidency by the Democratic national convention, but was defeated by the Republican candidate, Benjamin Harrison. Since his retirement from the Presidential office, Mr. Cleveland has resumed in New York city the practice of law.

CLEVELAND, ROSE ELIZABETH, sister of Grover Cleveland, born in Fayetteville, N. Y., in 1846, educated at Houghton Seminary, Clinton, and became a teacher in that institution, and somewhat later assumed charge of the Collegiate institution

at Lafayette, Ind. She has lectured before several schools on historical subjects, and has written a book entitled *George Eliot's Poetry and Other Studies*; and a novel entitled *The Long Run*. For a short time she was editor of "Literary Life," a Chicago magazine.

CLEW, or CLUE, a name given to the lower corner of square sails, and the aftermost lower corner of stay-sails.

CLEW BAY, an inlet of the Atlantic, on the west coast of Mayo county, Ireland. Old Red Sand Stone, Carboniferous limestone, and Cambrian strata form the shores of the bay. The upper part of the bay contains an archipelago of 300 fertile and cultivated islets.

CLICHE, the impression made by a die in melted tins, or other fusible metal. It is the proof of a die-sinker's work, by which he judges of the effect, and ascertains the stage of progress reached before the die is hardened. The same term is applied by the French to stereotype casts from woodcuts.

CLICK-BEETLE, the popular name given to many species of coleopterous insects of the family *Elateridæ*. They are so called from springing into the air with an audible click, when placed on the back. The American species are very numerous, and in the imago state feed on vegetables. See *Britannica*, Vol. VI, p. 132.

CLIENT, a term in universal use in the United States and England to designate the person who employs an attorney, counselor, or other member of the legal fraternity, either to conduct a case or to give legal advice.

CLIDASTES, a remarkable genus of snake-like reptiles found in the cretaceous formation of North America. They have an additional articulation of the vertebrae. About 12 species have been described.

CLIFFORD, WILLIAM KINGDON (1845-79), an English mathematician. In 1870 he accompanied the English expedition to the Mediterranean to observe the solar eclipse, and in 1871 became professor of applied mathematics at University College, London. On account of failing health he spent the summer of 1876 in Spain and Algiers, and in 1878 was again compelled to seek rest in Madeira, where he died the following year.

CLIFF DWELLINGS. See *Britannica*, under METEORA, Vol. XVI, p. 114; and INDIANS, AMERICAN, Vol. XII, pp. 822-33, and in these Revisions and Additions.

CLIFTON SPRINGS, a health resort of Ontario county, N. Y. It has large sulphur springs and a building devoted to invalids, called the Clifton Springs Sanitarium.

CLIFFORD, NATHAN, jurist, born in Rumney, N. H., Aug. 18, 1803, died in Cornish, Me., July 25, 1881. He adopted the legal profession, was in the State legislature from 1830 to 1834, was attorney-general for the State from 1834 to 1838, and subsequently served two terms in Congress. In 1846 he was called to President Polk's cabinet as attorney-general, and in this capacity he made important treaties with Mexico. California was annexed to the United States according to the terms of one of these treaties. In 1858 he became associate justice of the Supreme Court, and in 1877 it was his duty as senior associate judge to preside over the electoral commission of that year; and although Judge Clifford believed Mr. Tilden elected, he conducted the proceedings impartially, and the court declared for the election of Mr. Hayes.

CLIFTON, a town of Ontario, and a port of entry, situated on the Niagara River, two miles below the Falls. The river is here crossed by the great railroad suspension bridge, and the view of the Falls from the town is magnificent.

CLIMACTERIC YEAR, a period in which some great change is supposed to take place in the life of man. The mystical number seven and its multiples were believed to constitute a turning point in his health and fortune. The most important of all was the sixty-third year, and was called the "climacteric year," or "grand climacteric," which was supposed to be fatal to most men; its influence being attributed to the fact that it is the multiple of the two mystical numbers, 7 and 9.

CLIMATE. See *Britannica*, Vol. VI, p. 1, and Vol. XVI, pp. 114-84.

CLIMAX, a Greek word signifying primarily a stair, and in rhetoric that artifice which consists in placing before the mind of the reader or hearer a series of propositions or objects so arranged that the least forcible strikes it first, and the others rise by successive gradations in impressiveness.

CLIMBERS, the birds of the order *Scansores*, so called from their climbing habits. They have two toes before opposed by two behind, so as to adapt their feet for the purpose of grasping the branch of a tree or any similar object. To this order belong parrots, toucans, wood-peckers, cuckoos, etc.

CLIMBING-PERCH (*Anabas scandens*), a fish of the family *Anabasidae*, found in the rivers of the East Indies. In climbing the fish is said to suspend itself by its spiny gill-covers, and, fixing its anal fin in cavities of the bark, to urge its way upward by distending and contracting its body.

CLIMBING PLANTS, or **CLIMBERS**, those plants which, having weak stems, seek support from other objects, chiefly from other plants, in order to ascend from the ground. This is accomplished in different ways. Some climb by means of small root-like processes growing from the stem, some by means of tendrils, some by adhering disks, and many by the twining of their stems around those to which they cling.

CLINCHER-BUILT, a term applied in ship-building when the lower edges of the side-planks overlap the next row under them, like slates on the roof of a house. If the planks are all smooth, meeting edge to edge, the construction is called *carvel-built*.

CLINCH RIVER, a stream 300 miles in length, which rises in southwest Virginia, enters Tennessee, and at Kingston unites with Holston River to form the Tennessee.

CLINGMAN'S DOME, the second highest peak of the Appalachians. It is in Swan county, N. C., and belongs to the Great Smoky Mountains. Its height is 6,660 feet, and it was named in honor of Thomas L. Clingman, who ascended it in 1858.

CLINICAL, BAPTISM: in the ancient church, baptism administered to a person on a sick or death-bed.

CLINICS (Latin, *clanicus*, a bed-ridden person), that form of medical or surgical instruction given by the professors or lecturers to their classes, but imparted at the bedside, or in the presence of the patient, in illustration of the disease under which he is suffering, and detailing its proper treatment, effects of treatment, and the varieties of forms under which it is encountered. The study of *clinics* has been gradually extended until it covers all that relates to the practical knowledge of any given disease. It is regarded as the most valuable mode of instruction in the art or science of medicine or surgery. In its practical workings it is most satisfactory; the students accompany the physician, surgeon, or professor in his rounds through the hospital wards, and are there carefully instructed in the various phenomena of disease or injury, taught to observe the characteristics of individual cases, and to study the effects of the different modes of treatment. Clinical medicine was for many ages sadly

neglected, but attention was renewed about the beginning of the 18th century—the eminent physician Boerhaave so successfully re-animating the subject that the system of instruction involved was thoroughly carried out. Since that time it has come into general use, until every good medical school has a clinic established, or intimately connected with it.

CLINKER, the name given to the scales or globules of black oxide of iron obtained from red-hot iron under the blows of the hammer. The term is also applied to the slags of iron furnaces. By geologists cindery masses which form the crust of some lava-flows are termed clinkers.

CLINOMETER, an instrument for taking the dip and strike of a stratum. It consists of a compass provided with a small spirit-level, and having on the lid a small graduated quadrant and a plumb-line.

CLINTON, a salt-producing village in Huron county, Ontario, situated on a branch of the Grand Trunk Railroad.

CLINTON, a city of Illinois, a railroad center and the county-seat of DeWitt county.

CLINTON, a city of Iowa, and county-seat of Clinton county (see *Britannica*, Vol. VI, p. 7). The city has grown rapidly since 1880, and now (1891) supports one daily and several weekly newspapers, two national banks, a high school, numerous graded schools, and a large public library. Its manufacturing are extensive, consisting of saw-mills, paper mills, iron foundries, chair factories, repair shops, sash and door factories, asphaltum works, canning works, flour mills, etc. Lumber and grain are the chief articles of export. Population in 1880, 9,052; in 1891, 13,629.

CLINTON, a cotton-shipping town of East Feliciana parish, La. It is the capital of the parish, and connected by a 25-mile railroad with Port Hudson on the Mississippi River.

CLINTON, a city of Massachusetts, at the junction of the Worcester and Nashua, and the Boston, Clinton and Fitchburg Railroads (see *Britannica*, Vol. VI, p. 7). Clinton has but recently received a city charter. Among the principal manufactures are ginghams, plaids, Brussels and Wilton carpets, and machinery. The Lancaster mills are located here, and employ about one thousand operatives. Population in 1880, 8,029; in 1890, 10,379.

CLINTON, a handsome town in Missouri, county-seat of Henry county, forty miles southwest of Sedalia, is an important center of trade.

CLINTON, a railroad junction of Oneida county, N. Y., chiefly known for its educational institutions. Here are Hamilton College, four seminaries for young ladies, and one for boys. The village is on the Chenango canal. In its vicinity building stone and iron ore are found.

CLINTON, CHARLES, ancestor of the Clintons in the United States, born in county Longford, Ireland, in 1690, died in Orange county, N. Y., Nov. 19, 1773. In May, 1729, Charles Clinton with a party of friends set out for Philadelphia, but the captain proved dishonorable and landed them at Cape Cod in October of that year. Two years later the party settled in Ulster county, N. Y., some sixty miles north of New York city, and about six miles west of the Hudson River. Mr. Clinton was a farmer and land surveyor; he became county judge and was lieutenant-colonel in Oliver DeLancy's regiment, serving under Col. Bradstreet at the capture of Fort Frontenac.

CLINTON, DEWITT (1769-1828), American statesman. See *Britannica*, Vol. VI, p. 7.

CLINTON, GEORGE, a colonial governor. He became governor of Newfoundland in 1732, and in 1743

of New York. In 1753 he was succeeded by Sir D. Osborne, and later became governor of Greenwich Hospital. In 1745 he was appointed vice-admiral of the red, and twelve years later admiral. He died in 1781.

CLINTON, GEORGE (1739-1812), American statesman. He was with his brother James as lieutenant in the expedition against Fort Frontenac, and later became clerk for the colonial governor. In 1768 he was elected to the New York Assembly, where he maintained the cause of the colonies against the crown, and in 1776 he was called by Washington to take post in the Highlands with rank as general of militia. In the spring of 1777 he was a deputy to the New York provincial congress, and the same year was made brigadier-general in the Continental Army. From 1777 to 1795 he was successively elected governor of New York, during which period he exhibited great energy of character, and rendered important service to the State. In 1800 he was chosen to the State legislature, and the following year again became governor. In 1804 he was made vice-president of the United States, and filled the office until his death, eight years later.

CLINTON, SIR HENRY (1738-95), a British general. In 1758 he was captain of the Guards, and in 1775 became major-general, and was sent to Boston with Burgoyne and Howe. In 1778 he was appointed commander-in-chief of the British forces in America, with the rank of lieutenant-general, and while holding this rank dealt the heaviest blows the Americans received during the Revolution. He returned to England in 1782, and was elected to Parliament; later he was made governor of Limerick, and in 1793 was appointed to the command of Gibraltar. He wrote several works on his campaign in America.

CLINTON, JAMES (1736-1812), an American soldier. During the war of 1756, between the English and French, he was captain under Bradstreet, and in consideration of the services rendered at the capture of Fort Frontenac he was appointed captain commandant of four regiments levied for the protection of the western frontiers of Ulster and Orange counties, N. Y. In 1775 he became colonel of the 3d New York regiment, and in 1776 was made brigadier-general. After the war he was a commissioner to adjust the boundary-line between Pennsylvania and New York; was a member of the New York legislature, and one of the convention that adopted the Constitution of the United States.

CLINTON GROUP, a name given by American geologists to a subdivision of the Upper Silurian series. The group is of special interest as containing important deposits of iron ore. The name is given with reference to the town of Clinton, N. Y.

CLIO: in Grecian mythology, the daughter of Jupiter and Mnemosyne, the mother of Hyacinthus and Hymenæus. She was the Muse of history and epic poetry, and was represented as bearing a half-opened roll of a book.

CLIO, a genus of shell-less pteropodous mollusks, of which one species, *C. borealis*, is extremely abundant in the Arctic seas, and constitutes a principal part of the food of whales.

CLIPPER, a name familiarly given to a sailing-ship built expressly for speed.

CLITZ, HENRY BOYNTON, an American soldier, born in 1824. He served during the war with Mexico, and was brevetted first-lieutenant. From 1848 to 1855 he was an assistant instructor at West Point. At the beginning of the civil war he went into active service, and was on duty until July 1, 1865, when he was placed on the retired list, at his own request, having in the mean-time received the successive promotions to the rank of colonel.

CLIVE, KIRRY, an English actress, born in London in 1711, died Dec. 6, 1785. She was the daughter of William Raftor, an Irish Jacobite lawyer. She came out at Drury Lane about 1728, and there chiefly continued to play until her retirement to Twickenham in 1769. About 1731 she was married to George Clive, a barrister, from whom she soon afterwards separated. She was admired by Garrick, Handel, and Horace Walpole, and Dr. Johnson said of her that in "sprightliness of humor he never had seen her equaled."

CLOACA: in zoölogy, the technical name for the common terminal chamber into which the alimentary canal, the genital, and the urinary ducts, all open. A cloacal chamber and aperture occurs in many fishes, in all amphibians, reptiles, and birds, and in the three lowest mammals. In all other mammals the urino-genital orifice is independent of the end of the alimentary canal, or anus.

CLOACA MAXIMA (see Britannica, Vol. XX, p. 814), the most important of the sewers of ancient Rome; according to tradition, constructed by Tarquinius Priscus, or by Tarquinius Superbus, to drain off the stagnant waters of the Velabra, a swampy land between the Capitoline and Palatine hills, on which stood the Forum, and also the Circus Maximus. The sewer was flushed by a continual stream of superfluous water from the aqueducts. Large portions of this and of the other cloacæ remain entire after two thousand years, but the greater part is buried, by the accumulation of soil, at a considerable depth below the present level of the streets. During the Republic, the surveillance of the Roman cloacæ was one of the duties performed by the censors. Under the empire, officers called *curatores cloacarum urbis* were appointed for their supervision. So thoroughly was the city undermined by these large sewers that Pliny calls it *urbs pensilis*, a city suspended in the air rather than resting upon the earth.

CLOCKS. See Britannica, Vol. VI, p. 13; and Vol. XXII, p. 779.

CLOGHEEN, a town in the southwest of Tipperary county, Ireland. Extensive flour mills are here. Six miles northwest of Clogheen are the famous limestone caves of Mitchellstown. Population, 1,317.

CLOGHER, a decayed city of Ireland, the see of a Roman Catholic bishop, in the south of Tyrone, on the Blackwater River. Population, 225.

CLONAKILTY, a seaport town in the south of Cork county, Ireland. Its chief export is grain, and it has several corn and flax mills. Population, 3,676.

CLONES, a town of Ireland, in the county of Monaghan. It has some ancient remains, including the ruins of a monastery dating from the 5th century, and of a round tower. It has manufactories of linen, and corn mills. Population, 2,150.

CLONFERT, an ancient episcopal city of Ireland, in the extreme east of County Galway. Population, 2,200. The bishopric was founded in the 6th century, and ceased to be a separate Anglican one in 1602, being ultimately incorporated with Killaloe; but it is still the see of a Roman Catholic bishop. There is another Clonfert, a parish in County Cork.

CLONTARF, a town in the county of Dublin, about three miles northeast of Dublin city. Clontarf is celebrated in history as the place where, in 1014, Brian Boroihme won a great victory over the Danes, a battle forming the subject of Gray's ode, *The Fatal Sisters*. Population, 4,210.

CLOSE: in heraldry, when the wings of a bird are close to the body, it is described as close. The term is used only with reference to birds addicted to flight, such as the eagle, falcon, etc. Of other do-

mestic fowls it is understood that their wings are in this position.

CLOSE-HAULED: in nautical language, the mode in which the sails are arranged in order to make the ship move in a direction the nearest possible toward that point of the compass from which the wind blows.

CLOSET: in heraldry, the half of the bar.

CLOSSE, RAPHAEL LAMBERT (1820-82), a Canadian soldier. In 1842 he was made sergeant-major of the garrison of Montreal, and soon became noted for his skill in fighting the hostile tribes. In 1858 he received the fief of St. Lambert as a reward for his services, and in 1872 another was bestowed upon his widow. He was killed while trying to rescue some workmen who had been attacked by Iroquois.

CLOTHO, a genus of spiders, of which there is only one known species, a native of the south of Europe and north of Africa.

CLOUD, Sr., a town of France, in the department of Seine-et-Oise, situated on the declivity of a hill near the Seine, five miles west of Paris. Population, 2,378.

CLOUDBERRY (*Rubus Chamæmorus*), a plant related to the bramble, although of very different appearance, having an herbaceous single-flowered stem, destitute of prickles. The plant is eight to ten inches in height; the leaves few, large, lobed, and kidney-shaped; the flowers large and white; the fruit orange red; equal in size to a bramble-berry, and of an agreeable flavor. It is a native of the northern parts of Europe, Asia, and America. The fruit is highly valued.

CLOUDS. See Britannica, Vol. XVI, pp. 114-84.

CLOVE BARK, a commercial bark which is formed of several pieces of thin and hard bark, rolled up one over the other. It has a deep brown color, and a taste similar to that of cloves. It possesses properties analogous to those of cinnamon.

CLOWES, WILLIAM C. (1540-1604), an English surgeon, who served with Leicester in the Low Countries, and also on board the fleet that defeated the Spanish armada. He became surgeon to the queen, and after a prosperous practice in London retired to a country-house in Essex, where he died in 1604. He was the author of several books, two of which were long popular: *A Proved Practice for All Young Chirurgians* (1591); and *A Treatise on the Struma* (1602).

CLUBBING: in cabbages, turnips, and other plants of the genus *Brassica*, a diseased growth of tubercular excrescences, in the upper part of the root or lower part of the stem, caused by the larvæ of the cabbage-fly and of other insects, by which the vigorous growth of the plant is prevented, and crops are often much injured.

CLUNCH, a name given by miners to any tough, indurated clay, such as is sometimes found in the coal-measures, or in newer strata. The term has also been applied to the lower and harder beds of the cretaceous rocks.

CLUNES, a borough of Victoria, Australia, 119 miles northwest of Melbourne. Gold-mining and grazing are the chief industries. Population, about 5,000.

CLUPEIDÆ, an important family of malacopteroous fishes, nearly allied to the *Salmonidæ*. To this family belong the herring, pilchard, anchovy, etc.

CLUPESCIDÆ, a group of malacopteroous fishes, exhibiting characters intermediate between those of the *Clupeidæ* and of the *Esocidæ*. To this family belongs the genus *Arapaima* and the genera *Heterotis* and *Butirinus*.

CLUSERET, GUSTAVE PAUL, a French-American soldier, born in 1823. He served in the French

army until 1862, when he emigrated to the United States, entered the Union army, and was made aid-de-camp to General McClellan with the rank of colonel. He served in several important battles, and was brevetted brigadier-general for gallantry. He returned to Europe in 1867, and subsequently was arrested several times in consequence of his political attacks on the French government; but he escaped punishment on the plea that he was a naturalized American citizen. He settled near Geneva, Switzerland, in 1872.

CLUSIA, a tropical American genus of shrubs and trees of the natural order *Guttifera*. *C. rosea* yields an abundant resin, which is used as an external application in veterinary medicine, and for covering boats instead of pitch. *C. insignis*, the wax-flower of Demerara, is used to make a stimulating and soothing plaster.

CLUSONÉ, a town of Lombardy, Northern Italy, situated near the left bank of the Serio. It has manufactories of linen, a trade in corn and iron, and in the vicinity are copper foundries and vitriol works. Population, 3,883.

CLUSTERED COLUMNS, one of the richest features in Gothic ecclesiastical architecture: The columns or shafts are sometimes attached one to another throughout their whole length, sometimes only at the base and capital.

CLWYD, a river of North Wales. It flows north through Denbigh and Flint shires to the Irish Sea.

CLYDE, a village of Wayne county, N. Y., on the Clyde River. It has manufactories of glass, steam-engines and farming implements.

CLYDE, a village of Ohio, 17 miles southwest of Sandusky. It produces various manufactures, including flour and edge-tools.

CLYMER, GEORGE (1789-1813), a Signer of the American Declaration of Independence. He held various important positions as a defender of colonial rights, and in 1775 became one of the first Continental treasurers. On July 20, 1776, Mr. Clymer, with four others, was appointed by the legislature to succeed those members of the Pennsylvania delegation who had refused their assent to the Declaration of Independence, and had left their seats in Congress. He was reelected to Congress in 1777, and in 1788 was elected to the first Congress held under the provisions of the Federal Constitution. In 1796 he withdrew from public life after a career 30 years of which had been given to the interests of his country.

CLYMER, MEREDITH, an American physician, born in 1817. He graduated in medicine in 1837, and subsequently studied in London, Paris, and Dublin. He began practice in Philadelphia, but shortly afterward removed to New York. He accepted the position of professor in several colleges, among them being the University of the City of New York, and the Albany Medical College. During the civil war he was surgeon of the United States volunteers. He has written numerous works on medical subjects.

CLYSTER, called also *enema*, a medicine administered in the liquid form through the rectum. It is used either for the purpose of procuring evacuation of the bowels, or for conveying stimulants or nourishing substances into the system.

COADJUTOR, a fellow-worker, not as principal, but as second; as, the assistant of a bishop or other prelate.

COAGULATION, the amorphous solidification of a liquid, as when the caseine of milk is solidified by rennet in making cheese, or the white of an egg by boiling. The fibrin in the blood, chyle, and lymph of animals is coagulated by the separation of these fluids from the living body.

COHUILA, a State of Mexico, separated from Texas by the Rio Grande. It has an area of 59,280 square miles, partly mountainous, and forming in the west a part of the wilderness of the Bolson de Mapimi. The climate is healthy, although extremes of heat and cold are usual. The State is rich in minerals and pasturage. Several cotton factories and a large number of flour mills are in operation. Capital, Saltillo. Population, about 145,000.

COAL DISTRICTS. For general article on coal, see *Britannica*, Vol. VI, pp. 45-81. In Eastern America, all the coal strata, except those of the small triassic basins of Virginia and North Carolina, are of the Carboniferous age. In Colorado, New Mexico, and on Queen Charlotte Island, excellent anthracite has been produced by volcanic heat from cretaceous lignites. In the valley of the Mississippi the coals are of the bituminous class. In the Alleghanies the coals have lost a portion of their volatile matter, and have become semi-bituminous. The coals of Blossburg, Broad Top, Frostburg, and a belt running down into Alabama belong to this group. There is in Rhode Island a coal-basin of limited extent of the same age as those of Pennsylvania; but it seems to have been nearer the focus of metamorphic action, for the coal is partially converted into graphite, forming the variety known as graphitic anthracite.

Coal areas are distributed as follows, so far as positive data are obtainable: Great Britain, 11,859 sq. miles; France, 2,000 sq. miles; Belgium, 500 sq. miles; Prussia, 2,000 sq. miles; Austria, 1,800 sq. miles; Russia, 20,000 sq. miles. The coal area of Spain is not definitely known. Her coal field in the province of Asturias is one of the most important on the continent of Europe, but as yet her coal production is small. Recent discoveries have shown that Russia has much larger coal fields than were formerly credited to her, and by some explorers it has been estimated that at least 30,000 sq. miles of territory within her confines are coal beds of different ages.

The coal area of the United States is divided into several distinct fields, to-wit: (1) The Alleghany field, reaching from the Alleghany Mountains on the west to the middle of the State of Alabama, with a computed area of 58,737 sq. miles; (2) the Illinois field, covering a large portion of the State of Illinois, and reaching into Indiana and Kentucky. Its area is estimated at 64,887 sq. miles; (3) the Missouri field, including portions of the States of Iowa, Kansas, Arkansas, Missouri and Texas, and estimated as covering 47,138 sq. miles.

The bituminous division includes the following fields: (1) the Triassic, embracing the coal beds of the Triassic or New Red Sandstone formation in the Richmond basin in Virginia, and extending into North Carolina; (2) the Appalachian field, which extends from the State of New York on the north to the State of Alabama on the south, having a length northeast and southwest of over 900 miles, and a width ranging from 30 to 180 miles; (3) the Northern field, which is confined exclusively to the central part of Michigan; (4) the Central field, embracing the coal areas in Indiana, Illinois, and Western Kentucky; (5) the Western field, including the coal areas west of the Mississippi River, south of the 43rd parallel of north latitude, and east of the Rocky Mountains; (6) the Rocky Mountain field; and, (7) the Pacific Coast field.

The total product of coal in the United States in the year 1888, as compiled from official sources, was 148,659,402 tons, having a value at the mines of \$211,518,624. During the same year (1888), 24,093 tons of anthracite, and 1,085,647 tons of bituminous

coal were imported, principally from Australia and British Columbia to San Francisco; from Great Britain to the Atlantic and Pacific coasts; and from Nova Scotia to Atlantic coast points; while there was exported 969,542 tons of anthracite, and 860,462 tons of bituminous. The exported coal went principally to the West Indies, and Central and South America.

When the anthracite tracts of Pennsylvania and Rhode Island, and the coal fields of Virginia, Michigan, and North Carolina, with the productive coal areas in the far west, are added, it will readily be seen that the coal area of the United States will largely exceed 200,000 sq. miles. Coals are primarily divided into two great groups—the hard and soft, or the anthracite and bituminous coals. Each of these groups is capable of subdivision into several varieties. The prevailing variety in the Rhode Island coal tract is the *graphitic anthracite*. It contains one or two per cent. of gaseous matter, ignites with difficulty, and forms an inferior fuel. Anthracite contains from three to ten per cent. volatile matter, and sometimes 95 per cent. of carbon, and ignites with some difficulty, but produces an intense heat. The anthracite division includes several districts whose commercial out-puts for the year 1889 (as reported by the United States census of 1890) are shown in the following table:

Sections.	Long tons.	Per cent.
Pennsylvania, New York, and New Jersey	22,214,831	68.02
New England States.....	5,407,357	15.27
Western States.....	4,922,076	12.30
Southern States.....	1,613,120	4.56
Pacific Coast.....	30,900	0.08
Canada.....	1,094,736	3.09
Foreign.....	35,190	0.10
Total.....	35,407,710	100.00

COALITION: in politics, a term applied to the union of two parties, or, as usually happens, portions of parties, who agree to sink their differences and act in common. The English ministry known as the Great Coalition was formed in 1782, when Fox, the leader of the reformers, took office with Lord North, the leader of the opposite party. The term is also used of alliances between separate states. Of these the coalitions formed at different times by other European nations against France are among the most famous in history.

COAL-FISH (*Merlangus carbonarius*), a fish of the same family as the cod and haddock, and named from the color of its back. It is found in large shoals both on the European and American sides of the Atlantic. It forms an important part of the food of the Orkney and Shetland Islanders, and of the inhabitants of some of the Hebrides. The liver of the coal-fish abounds in oil, which is used for lamps.

COAL-TAR, or **GAS-TAR**, a thick, black, opaque liquid, which comes over and condenses in the pipes when coal or petroleum is distilled. Coal-tar is slightly heavier than water, and has a strong, disagreeable odor. As a source of benzine, and through it of the aniline dyes, coal-tar is a commodity of great commercial value.

COALVILLE, a thriving town of Utah, situated on the Weber River, at the base of the Wahsatch Mountains, about thirty-five miles east of Salt Lake City. It is chiefly engaged in the mining of coal for railroad and manufacturing purposes.

COALVILLE, a village of Leicestershire, England, 16 miles northwest of Leicester by rail. Population, 2,000.

COAST SURVEY OF THE UNITED STATES. In 1807, upon the recommendation of President Jef-

erson, Congress passed an act authorizing the President to cause a survey of the coasts of the United States to be made, in order to prepare accurate charts of every part of the coast; but it was not till 1817 that the work was actually begun. In that year a commencement was made near the harbor of New York, under the direction of Prof. F. R. Hassler, a native of Switzerland, who had gained experience in similar works abroad. Owing to the failure of Congress to make suitable appropriations, the work was only prosecuted at intervals between 1817 and 1832, no general survey being attempted, and the detached surveys being limited to the most elementary information.

In 1832 Congress empowered Mr. Hassler to employ such astronomers as he thought advisable to assist the military and naval officers in the prosecution of the work, and provided an appropriation adequate to the requirements of the service. From that date to the present time the survey of the coast has been in steady and active progress. Prof. Hassler continued in charge of the work until his death in 1843. His successor was Prof. A. D. Bache, who superintended operations until his death in 1867, when Prof. Benjamin Peirce, the eminent astronomer, was appointed his successor. Prof. Peirce resigned in 1874, and was succeeded by Mr. Carlile P. Patterson, formerly hydrographic inspector upon the survey. Mr. Patterson died in 1881, and was succeeded by the present superintendent, Prof. J. E. Hilgard.

Some estimate of the magnitude of the work may be formed from the fact that the American coast line, exclusive of Alaska, reaches a total of 7,060 miles, while the shore line, following the indentations of the numerous bays, etc., reaches a total of 29,375 miles. The work combines three important operations: first, the geodetic survey, which accurately determines the geographical position of various points along the coast by astronomical and trigonometrical methods; second, a topographical survey, which delineates the coast line and the characteristic features of the land; and third, a hydrographic or nautical survey of the channels, shoals, and approaches to the shore, including observations of currents and tides.

As fast as the work is completed charts are published in sheets for the use of mariners, and can be obtained at a low price at the principal sea-ports. The plan of publication embraces a main series of charts, giving a continuous representation of the entire coast on a scale of 1: 80,000, or about three-quarters of an inch to a mile, and exhibiting all natural and artificial features of the shore, together with the depth of water and configuration of the sea-bottom, channels, shoals, etc.; a series of charts on a smaller scale, 1: 400,000, known as "off-shore charts," for the use of mariners in approaching the coast; and a series of still more general charts on a scale of 1: 1,200,000, for the use of mariners in navigating between distant points. In addition to these a large number of charts of separate harbors, bays, anchorages, rivers, passages and dangers, on scales varying from 1: 5,000 to 1: 60,000, are published.

Although the survey of the coast proper is now nearly completed, there still remains plenty of work to occupy the force. In 1871 Congress provided for conducting a chain of triangulation across the continent to form a geodetic connection between the Atlantic and Pacific coasts, and for the execution of the trigonometrical survey of such States as should make a requisite provision for the topographical and geological survey of their domain. This work is now being actively prosecuted, and the plan of a general geodetic

survey of the entire country bids fair to be realized.

COAMINGS: in a ship, small frame-works on the deck, to prevent sea and rain water from running down the hatchways, ladder-ways and scuttles.

COAN, TITUS (1801-82), an American missionary to Hawaii. He studied theology at Auburn, N. Y., and immediately after his graduation sailed from New York for the straits of Magellan, Aug. 16, 1833. He returned to New London, Conn., in the following year, and seven months later sailed, with seven others, for the Hawaiian Islands, arriving at Hilo in the summer of 1835. Mr. Coan spent two years in the study of the language, in which he became a powerful speaker, and the number of conversions under him from 1838 to 1840 was reported as more than 7,000. He received in all up to 1882 over 13,000 into the Hilo and Puna church. In 1870 he visited the United States, but after an eleven months' stay returned to Hilo to renew his labors as a missionary. He published several works about his travels.

COAST-GUARD, a guard stationed on the coast; specifically, in Great Britain, an organization formerly intended to prevent smuggling merely, but now constituted so as to serve as a defensive force also.

COAT OF ARMS: in the Middle Ages, a coat worn by princes and great barons over their armor, and descended to the knee. It was made of cloth of gold or silver, of fur or of velvet, and bore armorial insignia. The "coat of arms" in heraldry is a relic of the ancient armorial insignia, divested of the coat on which it used to be embroidered. See *Britannica*, Vol. XI, p. 683.

COAST RANGE, a range of mountains of California, nearly parallel to the Pacific coast.

COATESVILLE, a railroad junction of Chester county, Pa., on Brandywine Creek. It has water and gas works and rolling, paper and woolen mills.

COAT OF MAIL: in the armor of the Middle Ages, a suit made of metal scales or rings, linked one within another. See *Britannica*, Vol. II, p. 556.

COATI, or COATI MONDI, a genus of carnivorous quadrupeds of the family *Procyonidæ*, subfamily *Naswinæ*. They are nearly allied to the raccoons, and like them are exclusively American. They have an elongated snout, which is a sort of flexible proboscis, and is turned about in search of food, and employed in rooting up the earth to obtain worms and insects. See *Britannica*, Vol. XV, p. 441.

COATZACOALCO, a river of the Isthmus of Tehuantepec in Mexico. It rises in the Sierra Madre, and falls into the Gulf of Mexico 130 miles southeast of Vera Cruz. It is navigable for large vessels for 30 miles, and is interesting as part of a route which has been surveyed for an interoceanic canal.

COBB, HOWELL (1815-68), an American statesman. He was admitted to the bar in 1836, and the same year was an elector on the Van Buren ticket. In 1837 he was appointed solicitor-general of the western circuit of Georgia, and from 1843 to 1851 served by successive reëlections as a Democrat in Congress, becoming speaker in 1849. He was elected governor of Georgia in 1851, and two years later resumed his law practice. In 1855 he was again elected to Congress, and in 1857 became President Buchanan's Secretary of the Treasury. At the beginning of the civil war the Confederate Congress appointed him brigadier-general, and subsequently promoted him to a major-generalship. He took little part, however, in military movements.

COBBE, FRANCES POWER, authoress, born near Dublin, Ireland, Dec. 4, 1822. She was educated at Brighton, England, and early had her interest aroused in theological questions. She is a strong theist, a supporter of women's rights, and has taken a prominent part in the anti-vivisection crusade. She has written numerous works on religious subjects.

COBBOLD, THOMAS SPENCER, writer on parasitic worms, born at Ipswich, England, in 1828, died March 20, 1886. He studied medicine at Edinburgh and lectured in London on botany, zoology, comparative anatomy, geology, and helminthology, in connection with various hospitals and colleges. He wrote *Entozoa* (1864); *Parasites* (1879); and *Tapeworms* (1866); besides numerous other works on kindred subjects.

COBET, CAREL GABRIEL, a Dutch philologist, born in 1818. In 1847 he became professor at the University of Leyden, and in 1876 was made Foreign Associate of the French Academy of Inscriptions and Belles-lettres. Among his principal works are: *Oratio de Arte Interpretandi*, editions of the Greek classics, and writings on the comic poet Plato, Dionysius of Halicarnassus, and Xenophon.

COBLE, a low flat-boat with a square stern, mostly used by salmon fishers.

COBLESKILL, a village of Schoharie county, N. Y., on Cobleskill Creek, 45 miles west of Albany. It contains a variety of manufactories. Population, 1,122.

COB-NUT, a name given to some of the largest and finest cultivated varieties of the hazel-nut. In the West Indies the name is given to the fruit of *Omphalea triandra*, a tree of the natural order *Euphorbiaceæ*. The tree has a white juice, which turns black in drying, and in Guiana is used instead of ink.

COBOURG, a port of entry and capital of Northumberland county, Ontario, on Lake Ontario, 69 miles northeast of Toronto. It contains a Wesleyan university and several woolen mills, foundries and breweries. Population, about 5,000.

COBURG PENINSULA, the most northerly part of Australia, to the west of the Gulf of Carpentaria. It runs out in a northwestern direction towards Melville Island, from which it is divided by Dundas Strait.

COCANADA, a seaport and headquarters of Godavari district, Madras, 315 miles north of Madras. It exports cotton, oil-seeds, sugar, rice and cigars. Population, 28,856.

COCCEIUS, or **KOCK, JOHANNES**, a distinguished theologian, born at Bremen in 1603, died at Leyden, 1669. He studied at Hamburg and Franeker; in 1636 became professor of Hebrew there, and in 1650 of theology at Leyden. His chief work is the *Lexicon et Commentarius Sermonis Hebraici et Chaldaici Veteris Testamenti* (1669), the first tolerably complete dictionary of the Hebrew language.

COCCEJI, HEINRICH FREIHERR VON, born at Bremen in 1644, died in 1719. He studied jurisprudence and philosophy in Leyden, and in 1672 was made professor of the law of nations at Heidelberg, and the following year was appointed to a similar office at Frankfort-on-the-Oder. His work on German civil law, *Juris publici prudentia* (1695) was almost universally used as an academical text-book for this branch of jurisprudence.

COCCO, COCCOA ROOT, or **EDDOES**, plants of the genus *Colocasia*, of the natural order *Araceæ*, natives of the West Indies and tropical America. The roots form the principal food of many of the inhabitants, its taste being very much like that of potatoes.

COCCOMILIA, or **COCUMIGLIA** (*Prunus coccomilia*), a species of plum, a native of Calabria, of which

the bark—particularly of the root—is used in that country for the cure of intermittent fevers.

COCCOSTEUS, a genus of fossil fishes, peculiar to the Devonian measures; about seven species have been described.

COCCULUS INDICUS. See *Britannica*, Vol. I, p. 172.

COCCUS, a genus of insects of the order *Hemiptera*, sub-order *Homoptera*, the type of a family, *Coccidæ*, allied to the *Aphis*. They are very numerous, and are attached to particular plants, on the juices of which they feed, often producing much mischief by the flow and loss of sap which their punctures occasion. This family contains some species which are of great value, particularly for the beautiful dyes which they yield. Among them are cochineal and kermes.

COCCYX. See *Britannica*, Vol. I, p. 821.

COCHABAMBA, a central department of Bolivia, with offshoots of the Eastern Cordilleras, and extensive plateaus. The climate is equable and healthy, and its fertile valleys render it the richest and most picturesque district of the Republic. Agriculture and cattle-raising are the chief occupations. Area, 26,685 square miles; population, about 355,000. The capital, Cochabamba, has a population variously estimated at from 15,000 to 40,000.

COCHIN, once the capital of the principality of Cochin, but now a seaport of the district of Malabar in the presidency of Madras. It is next to Bombay on this coast for ship-building and maritime commerce, the annual exports reaching a value of \$3,500,000. Population, about 16,000.

COCHIN-CHINA, a French province, bordered northeast by the territory of Mois, northwest Cambodia, south and east by the Chinese Sea, and by the Gulf of Siam in the west (see *Britannica*, Vol. VI, pp. 92-97). The area is 23,082 square miles, and the population is estimated at 1,858,807, of whom 2,000 are Europeans, 1,500,000 Annamites, 105,000 Cambodians, 50,000 Chinese, and 8,000 savages. French Cochin-China was incorporated with French Indo-China in 1887, and the whole divided into twenty-one arrondissements and four provinces. There are 5,660 French troops in Cochin-China, besides about 2,800 Annamite soldiers. The imports (1888) amounted to 39,392,851 francs, and the exports to 60,913,433 francs, of which 70 per cent. was rice. The annual revenue and expenditure are balanced at 30,215,943 francs in the local budget of 1888; expenditure of France (budget 1890), 6,288,718 francs.

COCHITUATE LAKE, of Middlesex county, Mass., a sheet of water covering 800 acres, is the chief source of the water supply of Boston.

COCHRANE, ALEXANDER DUNDAS ROSS WISHART BAILLIE, a British author, born in 1816, died Feb. 15, 1890. He was a member of Parliament in 1841-46; in 1847-52; in 1859-68; and in 1870-80. He succeeded to the peerage as first Baron Lamington in 1880. He was long known to society as *Ballie-Cochrane*, a writer of poetry and author of *Young Italy*. He recently published in *Blackwood's Magazine*, *In the Days of the Dandies*.

COCKBURN, SIR ALEXANDER, an English judge, born Dec. 24, 1802, died Nov. 20, 1880. He studied at Cambridge, was called to the bar and soon became distinguished as a pleader before Parliamentary committees. He was a member of Parliament, and later was solicitor-general, chief-justice, lord chief-justice, and was knighted.

COCKER, a small dog of the spaniel kind. It is trained to start game in snipe and woodcock shooting.

COCKERILL, JOHN, manufacturer, born in Lancashire, England, in 1790, died at Warsaw in 1840.

He was the son of William Cockerill, an inventor and machinist, who in 1807 settled at Liege in Belgium. John, with an elder brother, succeeded to his father's business in 1812, established a woolen factory in Berlin in 1815, and in 1817 founded the famous works at Seraing. His statue was erected at Seraing in 1871.

COCK-FIGHTING, a barbarous sport common among both the Greeks and Romans, as to-day it is common in India, the Malay countries, and Spanish America. It flourished for fully six centuries in England, the cockpit at Whitehall having been erected and patronized by royalty. It is now prohibited by statute in both England and the United States. Newspaper readers are familiar with paragraphs on cock-fights interrupted by the police. The game-fowl is the favorite breed of fighting-cocks, and much art is displayed in the training of cocks, and in trimming and preparing the cock for the combat. Young cocks are called stags, and are considered at their best when two years of age, and from $3\frac{1}{2}$ to $4\frac{1}{2}$ lbs. in weight. When prepared for battle their natural spurs are usually reinforced by steel spurs from two to three inches in length.

COCK-LANE GHOST, a reported apparition which was said to have appeared in the year 1762 in the house of one Mr. Parsons, in Cock Lane, Smithfield, England, and caused extraordinary excitement in London. Strange and unaccountable noises were heard in the house, and a luminous figure, bearing a strong resemblance to a lady who, under the name of Mrs. Kemt, had once resided in the house, but who had died two years before, was said to have been seen; and dark suspicions as to Mr. Kemt having poisoned the lady were immediately aroused. Crowds were attracted to the house and most of them became believers, but a few skeptics instituted a careful investigation, and discovered that Parsons's daughter, a girl eleven years of age, had personated the ghost. Parsons was prosecuted, and condemned to stand thrice on the pillory for imposture and fraud.

COCKNEY, originally a child delicately nurtured, and hence applied to the citizens of luxurious towns, as opposed to the hardier inhabitants of the country. London has been famed for its luxury from the earliest times, and its inhabitants have now appropriated the name of Cockneys.

COCK OF THE PLAINS (*Centrocercus urophasianus*), the largest of the North American species of grouse. It is an inhabitant of the interior of California, living in flocks, and often feeding so much on species of *Artemisia* that its flesh is almost too bitter to be eaten.

COCK OF THE ROCK (*Rupicola*), a genus of South American passerine birds in the family of *Cotingidæ*, or chattering. The male is remarkable for a lofty, laterally compressed crest; the bill is high and strong, the tail short and straight. In the best-known species, *R. crocea*, from Guiana and the northeast of Brazil, the male is predominantly orange-red in color, with a dark crest, and is considerably larger than the sober brown female. It is about the size of a common pigeon.

COCKPIT, a name given in a ship of war to the compartment in the lower part of the ship where the wounded are attended to during action. The surgery and dispensary which contains the medicine chests for the ship's company adjoin the cockpit.

COCKSCOMB, an annual plant of the natural order *Amarantaceæ*, a native of the East Indies. By gardeners the name is confined to *Celosia cristata*. It grows with an upright stem, which becomes flattened upwards, expands and forms a wavy crest. The colors are various and often very brilliant.

COCK'S-FOOT GRASS (*Dactylis*), a genus of grasses, called cock's-foot from the dense branches of the one-sided panicles. *D. glomerata* is a native of Europe, Asia, North America and the North of Africa. It is valuable for hay, and forms an important part in almost all the best pastures, as it is much relished by cattle. It thrives on most kinds of soil, and in situations too shady for many other grasses. It is extensively cultivated in America.

COCKSWAIN, or **COXWAIN**: on board ship, the steersman of a boat, and commander of the boat's crew.

COCOA-NUT BEETLE, a large beetle of the family *Longicornes*, tribe *Lamiariæ*, the larvæ of which are very destructive in cocoa-nut plantations, eating their way in all directions in the stems of the younger trees.

COCOON, the silken sheath spun by the larvæ of many insects in passing into the pupa or resting stage. The arrangement of the threads, and the completeness of the covering vary widely. The most typical and perfect cocoons are those of many moths, especially those of the silkworm. The delicacy, neatness and labor exhibited by these last make them as marvelous as they are useful.

COD. See *Britannica*, Vol. VI, pp. 103-04.

CODA: in music, a passage added to a composition, for establishing more completely the final cadence. It may be compared to the peroration of an oratorical discourse.

CODE. See *Britannica*, Vol. VI, pp. 104-07.

CODEINE, an opium alkaloid obtained from poppy-heads. It is a white crystalline substance, similar to morphine, but much feebler in its action.

CODEX, a name applied to ancient manuscripts, especially of the classics or of the Scriptures. Of the latter class the principal are the *Codex Sinaiticus*, discovered in 1844 and 1859 in the monastery of Mount Sinai by Tischendorf, and the *Codex Vaticanus*, both of the 4th century; and the *Codex Alexandrinus* and *Codex Ephraemi* of the 5th century. See *Britannica*, Vol. XVIII, pp. 143-44.

CODICIL, a supplement to a will whereby anything omitted is added, or any change demanded by the altered circumstances of the testator. A codicil is authenticated in the same manner as a will, and possesses the same privileges when holograph or written by the hand of the testator himself.

CODLIN MOTH (*Carpocapsa pomonella*), a small moth, which is very injurious in apple orchards, laying its eggs in the calyx-end of the newly formed fruit, within which the larva feeds, so that the growth of the fruit is arrested and it falls off prematurely.

CODRINGTON, SIR WILLIAM JOHN, G. C. B., (1804-84), an English general, son of the British admiral, Sir Edward Codrington. Sir William was commander-in-chief in the Crimea in 1855.

CELE-SYRIA, or **EL-BUKAA**, a valley of Syria extending between the ranges of the Lebanon and Anti-Lebanon, at an elevation of 2,300 feet above the sea. It is 70 miles in length and seven in breadth. In this valley stand the ruins of Baalbek and Chalcis.

COERCION. See *Britannica*, Vol. VII, p. 608; and Vol. XIX, pp. 670-71.

CEREBIDÆ, a family of oscine passerine birds found in the warmer parts of America. They are small, and of brilliant and varied colors.

COEYMANS, a small railroad town of Albany county, N. Y. Soap, straw-paper and brooms are manufactured. There are flagstone quarries here, and also a mineral spring.

COFFEE-BUG (*Lecanium coffeæ*), an insect of the Coccus family, which lives on the coffee-tree, and is extremely destructive to coffee plantations.

COFFEE TREE, or **KENTUCKY COFFEE**, a leguminous tree of the United States, often growing to a large size, the seeds of which have been sometimes used as a substitute for coffee.

COFFER, a box or casket for keeping jewels, money or other valuables. Coffers and chests were sometimes made of iron, but more frequently of wood.

COFFER-FISH, a fish of the genus *Ostracion*. The body is inclosed in a firm case formed of hexagonal bony scales fitted into one another like a mosaic. The snout, the bases of the fins, and the end of the tail are the only soft-skinned parts. Over a score of species are known, from tropical and sub-tropical seas. The best-known form is *O. quadricornis* from the tropical Atlantic.

COFFEYVILLE, a railway city of Kansas, and shipping point for the Cherokee Nation. It is in Montgomery county, on the Verdigris River.

COFFIN, SIR ISAAC, a British admiral, born in Boston, Mass., in 1759, died in 1839. He entered the navy in 1773, and served against the Americans during their struggle for liberty. After the war he visited his native land and endowed the Coffin School at Nantucket.

COGGESHALL, a town in the county of Essex, England, situated on the Blackwater, 44 miles northeast of London. It has manufactories of silk, velvet and lace. Population, 2,916.

COGALNICEANU, MICHAEL, a Roumanian statesman, born in 1806. At an early age he became professor of national history at Jassy. In 1864 he was president of the cabinet, and from 1868 to 1870 was again a member of the cabinet, as minister of internal affairs. In 1876 he was made minister of foreign affairs; later ambassador to France, and in 1879 he became senator. He has written several valuable histories.

COGNIZANCE, a term used in heraldry, sometimes to signify a crest, sometimes a badge, or other distinguishing mark.

COGNOSCENTI, persons professing a critical knowledge of works of art, and of a somewhat more pretentious character than amateurs.

COGNOVIT, in law, is the defendant's written confession that the plaintiff's cause against him is just and true.

COHABITATION, the state of living together as husband and wife, and being reputed to be such. These circumstances are held to afford sufficient proof that the contract of marriage has been constituted by their mutual consent.

CO-HEIR AND **CO-HEIRESS**, one of two or more persons among whom an inheritance is divided.

COHN, FERDINAND JULIUS, a German botanist, born in 1828. In 1850 he became privatdocent, and in 1870 professor of botany in the Breslau University. He has written many popular works on botany.

COHNHEIM, JULIUS FRIEDRICH, a German pathologist, born in 1839. He practiced medicine for a while, and in 1864 became connected with the Berlin Charity Hospital. In 1868 he became professor of pathology in the University of Kiel; in 1872 at Breslau, and in 1878 at Leipsic. He has made many important discoveries in pathology, and has written several books on this subject.

COHORT: in the ancient Roman armies, a portion of a legion, consisting usually of 600 men. There were generally 10 cohorts to a legion.

COHOSH, the Indian name of a number of plants used in medicine, the principal of which are *Cimicifuga racemosa*, *Actæa alba* and *spicata*, and *Caulophyllum thalictroides*.

COHUNE OIL, a fixed oil obtained from the kernel of the fruit of *Attalea Cohune*, a palm abund-

ant in Honduras and on the Isthmus of Panama. The leaves are 30 feet in length, and each leaflet measures three feet, while the tree attains a height of only about 40 feet.

COIF a covering for the head in general, but more especially for the circular portion on the crown. Its special signification is now limited to the caul or cap worn by sergeants-at-law.

COIMBATORE, the capital of a district of Madras presidency, on the Noyil, 304 miles southwest of Madras by rail. It is elevated 1,487 feet above the level of the sea, and has a cool temperature, rendering it a desirable place of residence for Europeans. Population in 1881, 38,967. See *Britannica*, Vol. VI, p. 116.

COINCIDENCE. When two geometrical figures are laid upon one another, and the boundaries of the one falls everywhere exactly upon those of the other, the figures are said to coincide. See *CONGRUITY*, in these Revisions and Additions.

COKE. See *Britannica*, Vol. VI, pp. 118-19.

COKE, THOMAS, D. C. L. (1747-1814), first bishop of the Methodist Episcopal church, was born at Brecon in Wales, in 1747, graduated at Oxford in 1768, and settled as a curate in Somersetshire, England. Being dismissed by his rector for open-air preaching and holding cottage services, he joined the Methodists, and served as president of the English and Irish conferences in 1782, 1797, and 1805. In 1784 he arrived in New York, having been set apart by Wesley as "superintendent" of the societies in America. He made nine voyages to this country, and died on the Indian Ocean while on a missionary voyage to Ceylon in 1814, having devoted his life to the cause of Methodist foreign missions.

COL, a depression or pass in a mountain-range. In those parts of the Alps where the French language prevails the passes are usually named *cols*, as the *Col-de-Balme*, the *Col-du-Geant*, etc.

COL'ARCO: in music, with the bow, in contradistinction to *pizzicato*.

COLBAN, MARIE SOPHIE, a Norwegian novelist, born in 1814. She visited Paris, and was employed by a journal there to go to Rome as Italian correspondent. She has written various novels.

COLBURN, ZERAH (1804-40), an American mathematical prodigy. At a very early age he was exhibited in America, England, Scotland, Ireland, and France, mentally solving intricate problems with great facility. At the age of nine he was able to answer immediately questions like "What is 999,999² x 49² x 25²?" In 1820 he became a teacher in London, performing astronomical calculations at the same time for Dr. Thomas Young, then secretary of the board of longitude. In 1825 he united with the Methodist church; was for nine years an itinerant preacher. In 1835 he became professor of languages in Norwich University, Vt., which position he held till his death. His remarkable faculty disappeared as he grew to manhood.

COLBY UNIVERSITY. See *COLLEGES*, in these Revisions and Additions.

COLCHESTER, a manufacturing town of New London county, Conn. Bacon Academy is here. Paper and India-rubber goods are manufactured.

COLCHICUM, a genus of the natural order *Liliaceæ*, sub-order *Melanthaceæ*. The species are stemless, with flowers half subterranean, the limb of the perianth and part of the tube only rising above ground. The superior ovary rises after the flowering is over in the form of three little follicles slightly adhering to each other on a lengthened stalk. It is a valuable medicinal plant, the parts chiefly used for medicinal purposes being the corm and the seeds.

COLCOTHAR, a name given by the alchemists to the brownish, red peroxide of iron which remains in the retorts when green vitriol or the sulphate of iron is calcined. As a pigment it is known as *Indian red*. The powder is used for polishing glass and the like.

COLD. See *Britannica*, Vol. V, pp. 218-19.

COLD CREAM, a preparation of fatty substances used as a mild dressing for the skin, usually made of olive oil, white wax and rose water.

COLDEN, CADWALLADER (1688-1776), a Scottish-American physician. After studying medicine and mathematics in Europe, he came to the United States in 1708, and practiced in Philadelphia till 1715, when he revisited London. He settled in New York city in 1718, and the following year became surveyor-general of the colony and master in chancery. In 1755 he retired to a tract of land about nine miles from Newburgh on the Hudson, where he gave his attention to farming and scientific pursuits. He administered the affairs of the province as president of the council in 1760, and the following year he was appointed lieutenant-governor of New York. He held this position till his death, and was many times at the head of affairs through the absence or death of the various governors.

COLDEN, CADWALLADER DAVID (1769-1834), an American lawyer. In 1818 he was elected mayor of New York city; in 1820 was sent to Congress, and in 1824 to the State senate. He wrote a *Life of Robert Fulton*.

COLD HARBOR, a location in Hanover county, Va., 10 miles northeast of Richmond. Here in May and June of 1864 the Confederate and Union armies confronted each other and a series of engagements took place.

COLD-PIT, in gardening a simple contrivance for the preservation of half-hardy plants through the winter. It consists of a pit, about 3 ft. in depth, covered with a frame either thatched or glazed.

COLD SPRING, a village of New York, situated on Long Island, on an inlet of the Sound, about thirty miles east of New York city. It contains a very successful artificial hatchery belonging to the United States Fish Commission. It was formerly an important whaling port.

COLD SPRING, a village of Putnam county, N. Y., situated among the Highlands on the east bank of the Hudson, one mile from West Point. Cannon, brass castings and machinery are here manufactured.

COLDSTREAM GUARDS, a celebrated regiment in the Foot Guards of the British army, its organization dating from an earlier period than that of any other regiment excepting the 1st Foot. Raised in 1660 by Gen. Monk at Coldstream, it was at first called Monk's Regiment; but when Parliament gave a brigade of guards to Charles II, this corps was included in it, and the name was changed to Coldstream Guards.

COLDWATER, a town in Michigan, capital of Branch county, on the Lake Shore Railway, 156 miles east of Chicago. It has numerous manufacturing, and a public school building which cost \$100,000.

COLE, SIR HENRY, English civil administrator and author, born at Bath, July 15, 1808, died April 18, 1882. He was educated at Christ's Hospital. He became assistant keeper of the records in 1838; was chairman of the Society of Arts; did valuable service on the committee of the Exhibition of 1851; was the founder of South Kensington Museum, and in 1860 became director of that institution. For his service on innumerable committees and councils, and in promoting valuable reforms, he was

made K. C. B. in 1875. He wrote much for newspapers and reviews, and under the name of "Felix Summerly," published a number of books for children.

COLE, THOMAS, an American landscape painter, born at Bolton-le-Moors in 1801, died Feb. 11, 1848. He removed to America in 1819. In 1830 two of his pictures appeared in the Royal Academy, and he afterwards made sketching tours through England, France and Italy; but all his best landscapes were from American subjects.

COLE, VICAT, R. A., an English landscape painter, born at Portsmouth in 1833, and received early artistic instruction from his father. His paintings were first exhibited in 1852, and six years later he was elected member of the Society of British Artists. His picture entitled *A Surrey Cornfield* greatly increased his reputation. Mr. Cole became an Associate of the Royal Academy in 1870, and was elected R. A. in 1880.

COLEBROOKE, or GREAT FALLS, a village of New Brunswick, and a port of entry, situated near the Great Falls of the St. John River, which is here crossed by a fine suspension bridge.

COLEMAN, LYMAN (1796-1882), an American author. He was a tutor in Yale College from 1820 to 1825, studying theology at the same time. He preached for seven years in the Congregational church, and for five years was principal of Burr Seminary in Vermont, and later principal of the English department of Phillips Andover Academy. After a visit to Germany he taught German in Princeton College, and later in Amherst. He traveled in Europe, Egypt, and Palestine in 1856, and on his return to America taught Latin and Greek in Lafayette College, Easton, Pa. Prof. Coleman's publications were principally on Biblical subjects.

COLENSO, JOHN WILLIAM (1814-83), an English colonial bishop of Natal. In 1846 he became rector of Forncett St. Mary, Norfolk, and in 1854 was elected bishop of Natal. He published extensively on mathematical, religious and other topics. See *Britannica*, Vol. XVII, p. 242; Vol. XVIII, p. 512.

COLEPEPER, JOHN, a British statesman, a native of Sussex, England, but little is known of his history until his return for Kent in 1640 to the Long Parliament. In 1642 he became chancellor of the exchequer, a twelvemonth later master of the rolls, and in another twelvemonth Lord Colepeper. He died June 11, 1660.

COLERIDGE, DERWENT (1800-83), an English clergyman. In 1841 he became principal of St. Mark's College, Chelsea. While holding this position he was a prebendary of St. Paul's Cathedral and later rector of Homwell, Middlesex. He published some works of a religious character.

COLERIDGE, JOHN DUKE, baron, an English jurist, born in 1821. In 1855 he became recorder of Portsmouth, and in 1861 was made Queen's counsel. From 1865 to 1873 he was a member of Parliament. In 1871 he became attorney-general, and in 1873 chief justice of the court of common pleas. In 1880 he was made lord chief justice of England.

COLEROON, a river of Southern India. See *KÁVERI*, *Britannica*, Vol. XIV, p. 19.

COLES, EDWARD (1786-1868), a governor of Illinois. He was private secretary to President Madison for six years from 1810, and in 1817 went to Russia on a diplomatic mission. On his return he was appointed registrar of the United States land office at Edwardsville, Ill., and was governor of the State from 1823 to 1826, during his term of office preventing the pro-slavery party from obtaining control of the State.

COLEUS. See Britannica, Vol. XII, p. 266.

COLEWORT, a name given to some of the many cultivated varieties of *Brassica oleracea*. The name is also applied to cabbages cut for use before their leaves have fully closed into heads.

COLFAX, SCHUYLER, an American statesman, born in New York city, March 23, 1823, died Jan. 13, 1885. In 1836 he removed and settled with the family in Indiana. In 1841 he was made deputy to his stepfather, George W. Matthews, who was county auditor. Colfax held this position for eight years. He was for several years editor of the "South Bend Free Press and Register," the most influential Whig journal in Northern Indiana. In 1848 he was secretary of the Whig convention in Baltimore which nominated Taylor for President. The next year he was a member of the convention to revise the constitution of the State of Indiana, and earnestly opposed a clause to prohibit free colored men from settling in that State. He was again a delegate to the Whig national convention in 1852, and having joined the new Republican party, was elected to Congress in 1854, and continued in that office until 1869. In December, 1863, he was elected Speaker of the House, and twice reelected as Speaker. In May, 1868, at the Chicago National Republican Convention he was nominated for Vice-President of the United States, and in November was elected, taking his seat as President of the Senate March 4, 1869. In 1871 President Grant offered him the place of Secretary of State, but he declined in order to serve out his term as Vice-President. His later years were spent chiefly in retirement from active politics, but, yielding to popular demand, he made several successful tours in the lecture field. At his death public honors were awarded to his memory, both in Congress and in several of the States.

COLFAX, a flourishing town, county-seat of Whitman county, Wash. It is the trade-center of an extensive and fertile agricultural district.

COLIC, a name employed by the later Greek and Roman physicians to denote diseases attended with severe pain and flatulent distension of the abdomen, without diarrhoea or looseness of the bowels. The disease is now generally believed to be spasmodic in character, and to be dependent upon irregular contractions of the muscular coat of the intestines. It is usually attended with constipation, and ceases when the regular action of the bowels is restored, although often in this case the operation of medicine is attended by continued pain for a time. It is closely allied as a symptom to several very severe and dangerous diseases, such as peritonitis, lead poisoning, etc.

COLL, one of the western isles of Scotland, off the west coast of Mull, two and a half miles north-east of Tiree Isle. It is 12 miles in length. Population 723; engaged in agriculture and fishing.

COLLATERAL SECURITY, any property or right of action, as a bill of sale or stock-certificate, which is given as additional security for the performance of an obligation, and is to be surrendered upon the performance of the latter.

COLLAR-BEAM, a piece of timber connecting a pair of rafters. Large roofs have two or more collar-beams.

COLLÉ, a town of Italy, on the Elsa, 24 miles southwest of Florence. It has an old cathedral and castle. Population, 5,090.

COLLECT, a short form of prayer, consisting of a single sentence, conveying one main petition, which is based on an attribute ascribed to God in the opening invocation, and closes with an ascription of praise or a pleading of the merits of Christ.

COLLEGE COLORS. The following is a list of the colors chosen and in use by the principal colleges of the United States compiled from reports made by the institutions named up to Jan. 1, 1891:

Alfred College.....	Purple and Gold.
Anherst College.....	Violet and White.
Barnard College.....	Blue and White.
Bates College.....	Garnet.
Boston University.....	Crimson and White.
Bowdoin College.....	White.
Brown University.....	Brown.
Carleton College.....	Maise.
Colgate University.....	Maroon and Yellow.
Coll. City of New York.....	Lavender.
Columbia College.....	Blue and White.
Columbian University.....	Orange and Blue.
Cornell College.....	Royal Purple.
Cornell University.....	Cornelian and White.
Cumberland University.....	Blue, Green and White.
Davidson College.....	Pink and Blue.
DePauw University.....	Old Gold.
Dickinson College.....	Red and White.
Franklin and Marshall College.....	Blue and White.
Franklin College.....	Blue and Orange.
Furman University.....	Purple and White.
Georgetown College.....	Blue and Gray.
Hamilton College.....	Rose Pink.
Harvard University.....	Crimson.
Haverford College.....	Scarlet and Black.
Hiram College.....	Bright Red and Sky Blue.
Hobart College.....	Orange and Royal Purple.
Illinois Wesleyan.....	Steel Gray and Navy Blue.
Indiana University.....	Maroon.
Iowa State University.....	Old Gold.
Johns Hopkins University.....	Black and Blue.
Kentucky University.....	Orange and Blue.
Kenyon College.....	Mauve.
Knox College.....	Old Gold and Royal Purple.
Lafayette College.....	Maroon and White.
Lake Forest University.....	Pink and Blue.
Lehigh University.....	Brown and White.
Manhattan College.....	Blue and White.
Marietta College.....	United States Flag.
Miami University.....	Scarlet and White.
Middlebury College.....	Blue.
Monmouth College.....	Red and White.
Mt. St. Mary's College.....	White and Blue.
Muhlenberg College.....	Garnet and Steel.
Northwestern University.....	Purple and Gold.
Norwich University.....	Gold and Garnet.
Notre Dame College.....	Blue and Old Gold.
Oberlin College.....	Red and Gold.
Ohio State University.....	Red and Gray.
Ohio Wesleyan College.....	Scarlet and Jet.
Olivet College.....	Crimson.
Pennsylvania College.....	Orange and Navy Blue.
Polytechnic Institute of Brooklyn.....	Blue.
Princeton College.....	Orange and Black.
Randolph Macon College.....	Orange and Black.
Rollins College.....	Rose Pink.
Rutgers College.....	Scarlet.
Seton Hall College.....	Blue and White.
Smith College.....	White.
Stevens Inst. Technology.....	Silver, Gray and Cardinal Red.
St. Francis Xavier College.....	Red and Blue.
St. John's College.....	Light Blue and White.
St. Lawrence University.....	Scarlet and Brown.
St. Louis University.....	Orange, White and Blue.
St. Stephen's College.....	Blue.
Swarthmore College.....	Garnet.
Syracuse University.....	Orange.
Trinity College (Hartford).....	Old Gold and Blue.
Trinity College (N.C.).....	Blue.
Tufts College.....	Brown and Blue.
Tulane University.....	Old Gold.
Union College.....	Garnet.
University of California.....	Blue and Gold.
University of Denver.....	Garnet and Gold.
University of Georgia.....	Crimson, Black and Old Gold.
University of Kansas.....	Blue and Buff.
University of Michigan.....	Mauve and Blue.
University of Minnesota.....	Old Gold and Maroon.
University of Missouri.....	Old Gold and Black.
University of Nebraska.....	Old Gold.
University of North Carolina.....	White and Blue.
University of Pennsylvania.....	Red and White.
University of Rochester.....	Blue and Steel Gray.
University of South Carolina.....	Tea Green and Cardinal Red.
University of City of New York.....	Violet.
University of the South.....	Purple and Gold.
University of Tennessee.....	Blue and Gray.
University of Texas.....	White, Heliotrope and Old Gold.
University of Vermont.....	Straw and Dark Green.
University of Virginia.....	Navy Blue and Orange.
University of Wisconsin.....	Red.

University of Wooster.....	Old Gold and Black.
Vanderbilt University.....	Yellow and Black.
Vassar College.....	Pink and Gray.
Wabash College.....	Scarlet.
Wake Forest College.....	Blue and Red.
Washington and Jefferson College.....	Black and Carmine
Washington and Lee University.....	White and Blue.
Washington University.....	Green and Red.
Wellesley College.....	Blue.
Wells College.....	Green and White.
Wesleyan University (Conn.).....	Cardinal and Black.
Western Reserve University.....	Crimson and White.
Westminster College.....	Dark Blue and White.
William and Mary College.....	Orange and White.
Williams College.....	Royal Purple.
Yale University.....	Dark Blue.

COLLEGES AND UNIVERSITIES IN UNITED STATES AND CANADA. For the general subject of Colleges and Universities in various countries, with elaborate earlier statistics of such institutions, see Britannica, Vol. VI, pp. 142-43, and Vol. XIII, pp. 831-38. The subjoined list embraces the names of the principal literary and theological institutions of this class in the United States and in the Dominion of Canada, together with the dates of their organization, the places where they are located, their relation to religious denominational control, the names of their presidents severally on Jan. 1, 1891, and the numbers of their teachers and students, and also the numbers of volumes in their respective libraries:

Organized.	Name.	Location.	Denom- national Con- trol.	President or Chairman of Faculty.	Instructors.*	Students.*	Volumes in Library.
1857	Alfred College.....	Alfred Centre, N. Y.	Non-Sect.	J. Allen, D.D., LL.D.	20	349	7,713
1815	Allegheny College.....	Meadville, Pa.	Meth. Epis.	D. H. Wheeler, D.D., LL.D.	16	293	12,500
1821	Amherst College.....	Amherst, Mass.	Non-Sect.	M. E. Gates, LL.D., L.H.D.	28	356	54,000
1807	Andover Theol. Sem.	Andover, Mass.	Cong.	Egbert O. Smyth, D.D.	12	62	47,000
1852	Antioch College.....	Yellow Springs, O.	Non-Sect.	Daniel A. Long, D.D., LL.D.	14	100	7,000
1867	Atlanta University.....	Atlanta, Ga.	Non-Sect.	Rev. H. Bumstead, D.D.	28	677	7,000
1889	Barnard College (a).....	New York City	Non-Sect.	A. Brooks, A. M. (Ch. Fac.)	16	46	125
1863	Bates College.....	Lewiston, Me.	Free Bapt.	Oren B. Cheney, D.D.	12	166	10,373
1858	Berea College.....	Berea, Ky.	Non-Sect.	Wm. B. Stewart, A.M., D.D.	17	355	4,600
1869	Boston University.....	Boston, Mass.	Meth. Epis.	Wm. F. Warren, D.D., LL.D.	118	928	15,000
1794	Bowdoin College.....	Brunswick, Me.	Cong.	Wm. DeWitt Hyde, D.D.	27	267	46,000
1764	Brown University.....	Providence, R. I.	Baptist (b)	E. B. Andrews, D.D., LL. D.	30	325	70,000
1885	Bryn-Mawr College.....	Bryn-Mawr, Pa.	Or. Friends.	James E. Rhoads, LL. D.	25	130	8,000
1870	Canisius College.....	Buffalo, N. Y.	R. Catholic.	Rev. J. U. Heinze, S. J.	24	335	14,000
1870	Carleton College.....	Northfield, Minn.	Cong.	Rev. James W. Stroug, D.D.	22	297	9,850
1881	Case Sc. App'l Science.	Cleveland, O.	Non-Sect.	Cady Staley, Ph.D., LL.D.	11	100	.....
1889	Catholic Univ. Amer.	Washington, D. C.	R. Catholic.	Rt. Rev. J. J. Keane, D.D. (c)	16	33	15,000
1785	Charleston College.....	Charleston, S. C.	Non-Sect.	H. E. Shepherd, A.M., LL.D.	6	.....	10,000
1888	Clark University.....	Worcester, Mass.	Non-Sect.	G. S. Hall, A.M., Ph.D., LL.D.	32	46	12,000
1820	Colby University.....	Waterville, Me.	Baptist	Albion W. Small, Ph.D.	12	170	26,000
1819	Colgate University (d).....	Hamilton, N. Y.	Baptist	Vacant.	15	138	19,000
1847	Coll. City of N. Y.	New York City	Non-Sect.	Alex. Stewart Webb, LL.D.	43	1,121	25,889
1754	Columbia College.....	New York City	Non-Sect.	Seth Low, LL.D.	103	1,656	115,700
1821	Columbian Univ.	Washington, D. C.	Non-Sect.	James C. Welling, LL.D.	57	776	10,000
1857	Cornell College.....	Mt. Vernon, Ia.	Meth. Epis.	Wm. F. King, D.D., LL.D.	24	643	9,000
1868	Cornell University.....	Ithaca, N. Y.	Non-Sect.	Chas. Kendall Adams, LL.D.	121	1,350	108,138
1842	Cumberland Univ.	Lebanon, Tenn.	Cmb. Presb.	Nathan Green, LL.D. (Chan.)	14	312	7,000
1769	Dartmouth College.....	Hanover, N. H.	Cong.	S. C. Bartlett, D.D., LL.D.	48	455	72,000
1837	Davidson College.....	Davidson, N. C.	Presb.	J. B. Shearer, D.D., LL.D.	8	111	9,000
1832	Denison University.....	Granville, O.	Baptist	Gal. Anderson, D.D., LL.D.	12	172	13,000
1837	De Pauw University.....	Greencastle, Ind.	Meth. Epis.	John P. D. John, D.D.	60	1,038	12,000
1783	Dickinson College.....	Carlisle, Pa.	Methodist	George E. Reed, D.D., LL.D.	14	240	32,000
1867	Drew Theolog. Sem.	Madison, N. J.	Meth. Epis.	Henry A. Buttz, D.D., LL.D.	6	125	35,000
1857	Eminence College.....	Eminence, Ky.	Non-Sect.	W. S. Giltner, A.M.	8	93	2,000
1837	Emory College.....	Oxford, Ga.	Meth. Ep. S.	W. A. Candler, D.D.	13	253	7,000
1889	Erskine College.....	Due West, S. C.	A. R. Presb.	W. M. Grier, D.D.	6	82	7,000
1867	Fisk University.....	Nashville, Tenn.	Cong.	E. M. Cravath, D.D.	11	523	4,011
1834	Franklin College.....	Franklin, Ind.	Baptist	W. T. Stott, D.D.	11	259	6,500
1852	Franklin and Marshall.	Lancaster, Pa.	Ref. Germ.	Rev. John S. Stahr, Ph.D.	15	201	26,000
1851	Furman University.....	Greenville, S. C.	Baptist	Charles Manly, D.D.	8	166	2,500
1817	General Theol. Sem.	New York City	Prot. Epis.	E. A. Hoffman, D.D., D.C.L.	10	116	20,242
1789	Georgetown College.....	Georgetown, D. C.	R. Catholic.	J. Havens Richards, S. J.	59	550	45,000
1812	Hamilton College.....	Clinton, N. Y.	Presb.	Henry Darling, D.D., LL.D.	14	153	35,000
1776	Hamden-Sidney.....	Hamden-Sidney, Va.	Non-Sect.	Rich. McIlwaine, D.D.	7	144	10,000
1828	Hanover College.....	Hanover, Ind.	Presb.	D. W. Fisher, D.D., LL.D.	14	160	10,000
1636	Harvard University.....	Cambridge, Mass.	Non-Sect.	Chas. Wm. Eliot, LL.D.	242	2,271	376,200
1832	Haverford College.....	Haverford, Pa.	Friends	Isaac Sharpless, Sc.D., LL.D.	15	101	25,000
1867	Hiram College.....	Hiram, O.	Disciples	E. V. Zollars, A.M.	13	260	4,000
1822	Hobart College.....	Geneva, N. Y.	Prot. Epis.	E. N. Potter, S.T.D., LL.D.	16	66	24,319
1867	Howard University.....	Washington, D. C.	Non-Sect.	J. E. Rankin, D.D., LL.D.	55	400	10,000
1853	Illinois Wesleyan.....	Bloomington, Ill.	Meth. Epis.	W. H. Wilder, M.A., D.D.	21	917	3,500
1820	Indiana University.....	Bloomington, Ind.	Non-Sect.	D. S. Jordan, Ph.D., LL.D.	25	380	15,000
1846	Iowa College.....	Grinnell, Ia.	Cong.	Rev. George A. Gates	26	588	15,100
1847	Iowa State Univ.	Iowa City, Ia.	Non-Sect.	Charles A. Schaeffer, Ph.D.	67	800	23,000
1867	Johns Hopkins Univ.	Baltimore, Md.	Non-Sect.	Daniel Colt Gilman, LL.D.	57	412	37,000
1858	Kentucky Univ.	Lexington, Ky.	Disciples	Chas. Louis Loos, LL.D.	19	833	13,700
1824	Kenyon College.....	Gambler, O.	Prot. Epis.	William B. Bodine, D.D.	18	137	20,000
1837	Knox College.....	Galesburg, Ill.	Non-Sect.	Hon. N. Bateman, LL.D.	27	603	8,000
1832	Lafayette College.....	Easton, Pa.	Presb.	Trall Green, M.D., LL.D.	25	320	22,300
1857	Lake Forest Univ.	Lake Forest, Ill.	Presb.	W. C. Roberts, A.M., D.D., LL.D.	105	1,451	11,000
1828	Lane Theol. Sem.	Cincinnati, O.	Presb.	Rev. J. A. Craig, Ph.D. (Ch.)	7	40	16,500
1847	Lawrence University.....	Appleton, Wis.	Meth. Epis.	Chas. W. Gallagher, D.D.	13	301	12,000
1866	Lehigh University.....	S. Bethlehem, Pa.	Prot. Epis.	Robert A. Lamberton, LL.D.	25	460	85,000
1865	Lincoln University.....	Lincoln, Ill.	Cmb. Pres.	A. E. Turner, A.M.	13	200	2,000
1866	Maine State College.....	Orono, Me.	Non-Sect.	M. C. Fernald	17	125	8,000
1853	Manhattan College.....	New York City	R. Catholic.	Rev. Brother Anthony, F.S.C.	31	965	27,530
1835	Marletta College.....	Marletta, O.	Non-Sect.	John Eaton, Ph.D., LL.D.	11	171	42,000
1834	McKendree College.....	Lebanon, Ill.	Meth. Epis.	T. H. Herdman, D.D.	9	134	7,000
1838	Mercer University.....	Macon, Ga.	Baptist	G. A. Nunnally, D.D.	16	267	10,000

(Continued.)

Organized.	Name.	Location.	Denomi- national Con- trol.	President or Chairman of Faculty.	Instructors.*	Students.*	Volumes in Library.
1809	Miami University†	Oxford, O.	Non-Sect.	E. D. Warfield, M.A., LL.B.	10	70	11,000
1800	Middlebury College†	Middlebury, Vt.	Non-Sect.	Rev. Ezra Brainerd, LL.D.	9	65	16,200
1857	Monmouth College†	Monmouth, Ill.	Unit. Presb.	J. B. McMichael, A.M., D.D.	18	331	16,000
1837	Mount Holyoke College†	South Hadley, Mass.	Non-Sect.	Mrs. Elizabeth Storrs Mead	35	280	18,500
1808	Mt. St. Mary's College	Emmettsburg, Md.	R. Catholic.	Very Rev. Edw. P. Allen, D.D.	30	180	11,000
1867	Muhlenberg College	Allentown, Pa.	Lutheran	Rev. Theodore L. Seip, D.D.	11	143	8,500
1825	Newton Theol. Inst.	Newton Centre, Mass.	Baptist	Alvah Hovey, D.D., LL.D.	9	70	18,000
1855	Northwestern Univ.†	Evanston, Ill.	Meth. Episc.	Henry Wade Rogers, LL.D.	100	1,684	29,000
1819	Norwich University	Norwich, Vt.	Non-Sect.	Charles H. Lewis, LL.D.	9	58	.....
1842	Notre Dame College	Notre Dame, Ind.	R. Catholic.	Rev. Thomas E. Walsh, A.M.	48	648	32,000
1833	Oberlin College	Oberlin, O.	Non-Sect.	Vacant.	69	1,800	36,000
1873	Ohio State University†	Columbus, O.	Non-Sect.	William Henry Scott, LL.D.	37	477	9,500
1842	Ohio Wesleyan College†	Delaware, O.	Meth. Episc.	Jas. W. Bashford, Ph.D., D.D.	33	1,117	14,386
1859	Olivet College†	Olivet, Mich.	Cong. & Pr.	Horatio Q. Butterfield, D.D.	17	378	18,000
1832	Pennsylvania College†	Gettysburg, Pa.	Lutheran	H. W. McKnight, D.D., LL.D.	16	226	22,345
1890	Polytechnic Institute (c)	Brooklyn, N. Y.	Non-Sect.	D. H. Cochran, Ph.D., LL.D.	43	780	3,000
1746	Princeton (C. of N. J.)	Princeton, N. J.	Non-Sect.	Francis L. Patton, D.D., LL.D.	52	850	71,000
1830	Randolph-Macon College	Ashland, Va.	Meth. E. So.	Wm. Waugh Smith, LL.D.	23	277	6,500
1853	Roanoke College	Salem, Va.	Non-Sect.	Julius D. Dreher, A.M., Ph.D.	10	180	17,000
1885	Rollins College	Winter Park, Fla.	Non-Sect.	Edward P. Hooker, A.M., D.D.	14	134	.....
1766	Rutgers College	New Brunswick, N. J.	Non-Sect.	Theodore S. Doolittle, D.D.	21	201	25,732
1853	Rutherford College (f)	Rutherford Col., N. C.	Non-Sect.	R. L. Abernethy, A.M., D.D.	7	213	1,000
1856	Seton Hall College	South Orange, N. J.	R. Catholic.	Rev. W. F. Marshall, A.M.	14	125	5,000
1865	Shaw University	Raleigh, N. C.	Baptist	Rev. H. M. Tupper, D.D.	28	400	5,000
1827	Shurtleff College	Upper Alton, Ill.	Baptist	A. A. Kendrick, D.D.	17	238	8,250
1871	Smith College	Northampton, Mass.	Non-Sect.	L. Clark Seelye, D.D.	31	551	8,000
1874	Southwestern Baptist Coll.	Jackson, Tenn.	Baptist	G. W. Jarman, A.M., LL.D.	6	162	5,000
1870	Stevens' Institute Tech.	Hoboken, N. J.	Non-Sect.	Henry Morton, Ph.D.	17	216	7,000
1847	St. Francis Xavier College	New York City	R. Catholic.	Rev. David A. Merrick, S.J.	20	485	22,000
1789	St. John's College	Annapolis, Md.	Non-Sect.	Thomas Fell, LL.D., Ph.D.	13	151	8,000
1856	St. Lawrence University†	Canton, N. Y.	Universalist	Alpheus Baker Hervey, Ph.D.	10	97	10,000
1829	St. Louis University	St. Louis, Mo.	R. Catholic.	Rev. J. E. Kennedy, S.J.	81	427	42,000
1860	St. Stephens' College	Annandale, N. Y.	Prot. Episc.	R. B. Fairbairn, D.D., LL.D.	7	81	8,000
1869	Swarthmore College	Swarthmore, Pa.	Friends	William D. Foulke	24	198	13,250
1849	Syracuse University†	Syracuse, N. Y.	Meth. Episc.	C. N. Sims, D.D., LL.D. (Ch.)	51	774	41,974
1823	Trinity College	Hartford Conn.	Prot. Episc.	G. W. Smith, D.D., LL.D.	15	128	32,000
1859	Trinity College	Trinity College, N. C.	Meth. Episc. S.	John F. Crowell, Dr. Litt.	10	153	7,000
1852	Tufts' College	College Hill, Mass.	Universalist	Elmer H. Capen, D.D.	21	150	30,000
1834	Tulane University	New Orleans, La.	Non-Sect.	W. Preston Johnston, LL.D.	75	1,289	52,000
1795	Union College	Schenectady, N. Y.	Non-Sect.	Harrison E. Webster, LL.D.	17	120	33,200
1836	Union Theological Sem.	New York City	Presbyterian.	Thos. S. Hastings, D.D., LL.D.	9	162	65,000
1802	U. S. Military Academy	West Point, N. Y.	Non-Sect.	Col. John M. Wilson, LL.D.	53	346	34,000
1845	U. S. Naval Academy	Annapolis, Md.	Non-Sect.	Capt. R. L. Phythian, U.S.N.	64	284	31,023
1831	University of Alabama	Tuscaloosa, Ala.	Non-Sect.	Richard C. Jones, A.M.	20	216	10,000
1868	University of California†	Berkeley, Cal.	Non-Sect.	Vacant.	110	750	42,000
1831	University City of N. Y.	New York City	Non-Sect.	H. M. McCracken, D.D., LL.D.	28	1,270	15,000
1880	University of Denver†	Denver, Col.	Meth. Episc.	W. F. McDowell, S.T.B. (Ch.)	100	600	2,500
1785	University of Georgia	Athens, Ga.	Non-Sect.	W. E. Boggs, D.D., LL.D. (Ch.)	80	260	17,000
1866	University of Kansas†	Lawrence, Kan.	Non-Sect.	Francis H. Snow, LL.D.	87	508	13,791
1837	University of Michigan†	Ann Arbor, Mich.	Non-Sect.	James B. Angell, LL.D.	96	2,475	.....
1868	University of Minnesota†	Minneapolis, Minn.	Non-Sect.	Cyrus Northrop, LL.D.	105	1,100	25,000
1844	University of Mississippi†	Oxford, Miss.	Non-Sect.	Edward Mayes, LL.D. (Ch.)	16	223	13,000
1840	University of Missouri†	Columbia, Mo.	Non-Sect.	M. M. Fisher, D.D., LL.D.	28	763	25,000
1869	University of Nebraska†	Lincoln, Neb.	Non-Sect.	C. E. Bessey, Ph.D. (Ch.)	29	513	12,000
1789	University of N. Carolina	Chapel Hill, N. C.	Non-Sect.	Kemp P. Battle, LL.D.	16	200	30,000
1753	University of Penn.	Philadelphia, Pa.	Non-Sect.	Wm. Pepper, M. D., LL.D.	174	1,589	80,000
1850	University of Rochester	Rochester, N. Y.	Baptist	David J. Hill, LL.D.	15	190	25,000
1801	University of S. Carolina	Columbia, S. C.	Non-Sect.	J. M. McBryde, Ph.D., LL.D.	25	195	30,000
1868	University of the South	Sewanee, Tenn.	Prot. Episc.	T. F. Gailor, S.T.B., S.T.D.	20	249	25,000
1794	University of Tennessee	Knoxville, Tenn.	Non-Sect.	C. W. Dabney, Jr., Ph.D., LL.D.	38	510	13,000
1883	University of Texas†	Austin, Texas.	Non-Sect.	L. Waggener, A.M., LL.D. (Ch.)	17	307	7,000
1791	University of Vermont†	Burlington, Vt.	Non-Sect.	Mat. H. Buckham, D.D.	34	473	40,000
1819	University of Virginia†	Charlottesville, Va.	Non-Sect.	Wm. M. Thornton, LL.D. (Ch.)	81	451	51,000
1867	University of W. Virginia†	Morgantown, W. Va.	Non-Sect.	E. M. Turner, LL.D.	19	200	5,000
1848	University of Wisconsin†	Madison, Wis.	Non-Sect.	T. Chamberlain, Ph.D., LL.D.	70	800	33,000
1868	University of Wooster†	Wooster, O.	Presbyterian.	Rev. Sylvester F. Scovel	40	750	12,000
1873	Vanderbilt University	Nashville, Tenn.	Methodist	L. C. Garland, A.M., LL.D.	60	637	18,000
1861	Vassar College†	Poughkeepsie, N. Y.	Non-Sect.	James M. Taylor, D.D.	34	394	18,000
1832	Wabash College	Crawfordsville, Ind.	Presbyterian.	Jos. F. Tuttle, D.D., LL.D.	14	258	33,000
1833	Wake Forest College	Wake Forest, N. C.	Baptist	C. E. Taylor, Ph.D. Dr. Litt.	11	220	11,000
1802	Wash. & Jefferson College	Washington, Pa.	Presbyterian.	James D. Moffat, D.D.	11	350	11,000
1782	Washington & Lee Univ.	Lexington, Va.	Non-Sect.	Gen. G. W. C. Lee, LL.D.	17	219	25,500
1854	Washington University†	St. Louis, Mo.	Non-Sect.	Marshall S. Snow (Act. Ch.)	41	526	10,000
1875	Wellesley College	Wellesley, Mass.	Non-Sect.	Helen A. Shafer, M.A.	81	694	35,450
1836	Wells College	Aurora, N. Y.	Presbyterian.	Edward S. Frisbee, D.D.	14	80	8,000
1831	Wesleyan University†	Middletown, Conn.	Meth. Episc.	B. P. Raymond, D.D., LL.D.	26	351	30,000
1826	Western Reserve Univ.†	Cleveland, O.	Non-Sect.	H. C. Hayden, D.D., LL.D.	76	746	28,000
1822	Westminster College	New Wilmington, Pa.	Unit. Presb.	Rev. R. G. Ferguson, D.D.	10	374	.....
1693	William & Mary College	Williamsburg, Va.	Non-Sect.	Lyon G. Tyler, M.A.	8	188	7,000
1793	Williams College	Williamstown, Mass.	Non-Sect.	Franklin Carter, Ph.D., LL.D.	24	311	30,000
1854	Wofford College	Spartanburg, S. C.	Methodist	Jas. H. Carlisle LL.D.	10	325	6,000
1701	Yale University	New Haven, Conn.	Cong.	Timothy Dwight, D.D., LL.D.	150	1,625	300,000

* All departments.

† Co-education of the sexes.

‡ Education of women only.

(a) Annex of Columbia College. (b) A majority of the trustees must be Baptists. (c) Rector. (d) Name changed from "Madison University" to "Colgate University" 1890. (e) Brooklyn College and Polytechnic Institute founded 1854; reorganized, 1890, with full college powers, as the Polytechnic Institute of Brooklyn.

LIST OF COLLEGES IN THE DOMINION OF CANADA, as reported by the *Canadian Almanac and Directory* for the year 1891. No statistical summaries were given. The name of the college, its location, and the presiding officer of the faculty are here printed under caption "president." In some cases he is designated as chancellor, dean, or principal.

University of Toronto—Sir Daniel Wilson, LL.D., F.R.S.E.
 Queen's University, Kingston—Sanford Fleming, C.E., C.M.
 G., LL.D.
 McGill University, Montreal—Hon. Sir D. A. Smith, K.C.
 M.G., LL.D.
 Trinity University, Toronto—Hon. G. W. Allen, D.C.L.
 Victoria University, Cobourg—Rev. N. Burwash, S.T.D.
 McMaster University, Toronto—
 University of Mount Allison College, Sackville, N. B.—J. R. Lynch, LL.D.
 University of King's College, Windsor, N. S.—Rev. E. C. Willets, M.A., D.C.L.
 University of Acadia College, Wolfville, N. S.—Rev. A. W. Sawyer, D.D.
 University of Ottawa—Rev. J. McGuckin, O.M.I., M.A.
 Wycliffe College, Toronto—Rev. James Paterson Sheraton, D.D.
 Knox College, Toronto—W. M. Clark, M.A.
 Wesleyan Theological College, Montreal—Rev. Principal Douglas, D.D., LL.D.
 Montreal Diocesan Theological College—Rev. W. B. Bond, D.D., LL.D.
 Presbyterian College, Montreal—D. H. MacVicar, D.D., LL.D.
 Royal Military College, Kingston—Major-General D. R. Cameron, C.M.G.
 Ontario Agricultural College, Guelph—James Mills, M.A.
 Upper Canada College, Toronto—George Dickson, M.A.
 St. Michael's College—Rev. V. Marjion, O.S.B.

Assumption College, Sandwich—Rev. D. Cushing.
 Bishop Ridley College, St. Catharines—Rev. J. O. Miller, M.A.
 Trinity College, Port Hope—Rev. C. J. S. Bethune, M.A., D.C.L.
 St. Jerome's College, Berlin—Rev. Theo. Spetz, C.R., D.D.
 Brantford Young Ladies' College—W. Cochrane, M.A., D.D.
 Coligny College, Ottawa—Principal MacVicar, D.D., LL.D.
 Demill Ladies' College, Oshawa—Rev. A. D. Demill.
 Hellmuth College, London—J. F. Hellmuth, LL.D.
 Mt. Allison Wesleyan Ladies' College, Sackville—Rev. B. C. Borden, M.A.
 Ontario Ladies' College, Whitby—G. Y. Smith, LL.B.
 Presbyterian Ladies' College, Toronto—T. M. McIntyre, M. A., LL.B., Ph.D.
 St. Hilda's College, Toronto—Lord Bishop of Toronto.
 Wesleyan Ladies College, Hamilton—A. Burns, D.D., LL.D.
 Royal College of Physicians and Surgeons, Kingston—Fife Fowler, M.D., L.R.C.S.
 University of Toronto (medical faculty), Hon. Edward Blake, M.A.
 McGill University, Montreal (medical faculty), Sir Wm. Dawson, C.M.G., LL.D., F.R.S.
 Trinity Medical College, Toronto—Walter B. Geikie, M. D. C.M., F.R.C.S.E., L.R.C.P.
 Women's Medical College, Toronto—R. B. Nevitt, B.A., M. D.
 Women's Medical College, Kingston—Hon. M. Sullivan, M. D., F.R.C.P.S.K.

COLLEGES AND UNIVERSITIES OF LIBERAL ARTS IN THE UNITED STATES. The subjoined table gives the statistical summaries of these institutions by States and Territories. They were prepared and kindly furnished by the United States Bureau of Education, and are the latest summaries on the items given which had been reported to the public up to Jan. 1, 1891. They are for the school year closing in 1889:

STATES AND TERRITORIES.	Institutions.	Profes'srs and Teachers.	In Preparat'y Dep'tment.	In Col- legiate Dep'tment.	Stu- dents.	Volumes in Libraries.	Value of Scientific Apparatus.	Value of Grounds and Buildings.	Permanent Productive Funds.
Alabama.....	5	64	60	497	1,049	28,400	\$23,850	\$750,000	\$326,000
Arkansas.....	4	22	196	34	449	3,600	90	128,000	6,000
California.....	13	201	1,563	1,174	3,295	87,312	223,550	1,917,000	2,061,500
Colorado.....	4	58	365	140	747	20,000	26,200	1,014,023	217,000
Connecticut.....	3	90	.....	1,037	1,169	208,000	61,480	1,400,000	1,216,556
Dakota.....	6	68	536	97	1,126	10,027	22,345	430,000	26,000
District of Columbia.....	5	74	341	225	736	77,311	5,500	1,000,000	480,000
Florida.....	4	28	267	48	357	5,600	1,650	109,056	20,000
Georgia.....	6	70	297	485	1,175	46,500	89,505	908,000	749,870
Illinois.....	26	359	2,192	1,710	5,757	158,311	2,582,200	3,046,138	3,046,138
Indiana.....	14	224	1,028	1,159	3,659	116,100	103,000	1,955,000	2,087,000
Iowa.....	21	228	2,516	1,636	5,237	96,752	73,164	1,547,896	1,107,142
Kansas.....	15	206	1,652	623	4,418	53,383	140,650	1,700,050	434,100
Kentucky.....	14	137	697	1,038	2,071	51,364	16,750	811,250	1,090,407
Louisiana.....	12	165	1,291	484	3,002	115,032	98,150	972,197	1,558,030
Maine.....	3	35	.....	441	443	79,126	70,000	650,000	1,215,767
Maryland.....	8	159	453	716	1,457	70,630	186,104	1,133,920	3,006,000
Massachusetts.....	7	223	56	2,580	2,877	395,806	915,000	5,058,000	9,997,526
Michigan.....	10	179	887	1,607	3,246	110,259	911,200	1,534,975	1,385,653
Minnesota.....	8	109	573	685	1,740	50,600	102,445	2,133,559	1,288,534
Mississippi.....	4	35	538	350	902	16,150	50,700	423,000	549,061
Missouri.....	20	224	1,388	1,000	3,500	127,800	173,600	2,833,000	1,792,464
Montana.....	1	14	80	32	150	1,000	1,500	100,000	10,000
Nebraska.....	7	32	491	378	1,125	27,800	86,330	1,150,000	1,068,000
Nevada.....	1	7	.....	43	143	1,100	2,000	35,000	195,000
New Hampshire.....	1	20	.....	229	229	68,000	100,000	200,000	850,000
New Jersey.....	4	30	41	804	961	163,800	50,500	495,000	.....
New Mexico.....	2	8	95	.....	195	25	.....	36,000	1,000
New York.....	19	326	2,386	3,233	6,090	355,824	898,719	5,535,209	9,278,080
North Carolina.....	10	91	401	929	1,571	68,913	81,300	807,000	360,000
Ohio.....	35	506	3,377	3,061	8,796	265,871	251,831	3,265,741	4,148,850
Oregon.....	4	35	167	220	587	12,962	21,100	140,000	234,000
Pennsylvania.....	26	426	2,175	2,849	5,793	313,480	446,800	5,249,000	4,386,994
Rhode Island.....	1	22	.....	268	268	70,000	.....	625,000	980,336
South Carolina.....	8	77	283	525	1,061	43,700	126,500	536,500	637,400
Tennessee.....	18	219	1,468	1,445	4,370	91,184	128,950	1,819,650	1,706,310
Texas.....	10	110	844	1,200	2,416	22,258	55,500	568,000	594,800
Utah.....	1	16	.....	.....	312	.....	4,000	150,000	.....
Vermont.....	2	34	.....	136	385	52,672	154,000	370,000	438,000
Virginia.....	7	91	54	764	1,277	128,000	306,800	1,601,600	1,450,454
Washington.....	2	19	121	165	415	6,150	3,800	90,000	13,000
West Virginia.....	3	31	132	235	369	7,200	10,000	247,000	167,150
Wisconsin.....	9	126	831	955	2,001	84,123	162,600	1,468,000	484,766
Wyoming.....	1	12	44	9	80	1,500	3,000	150,000	.....
Total.....	384	5,422	29,356	34,226	80,090	3,694,825	\$5,911,813	\$56,115,126	\$60,597,442

Of the total number of professors and teachers 750 were in the preparatory department, and 2,575 in the collegiate; of the students, 29,856 were in the preparatory department, and 84,286 in the collegiate; total number of endowed professorships, 354. The summaries for Dakota include those for South and North Dakota, as the date before these two new States were admitted.

COLLEGE POINT, a village of New York, situated on the northern shore of Long Island, about ten miles east of New York city. It contains a variety of manufactories and many fine residences of the business men of the metropolis.

COLLEGIATE CHURCHES, so called in England from having a college or chapter, consisting of a dean or provost and canons attached to them. They date from the 9th century, when such foundations in large towns became frequent. They are under the jurisdiction of the bishop of the diocese in which they are situated, and he exercises visitatorial powers over them.

COLLIER, JOHN PAYNE, a Shakespearean critic and commentator, born in London in 1780, died Sept. 17, 1883. While still a boy he became Parliamentary reporter for the "London Times," and subsequently for the "Morning Chronicle;" but his real literary career commenced in 1820 with the publication of *The Poetical Decameron*. The more important of his publications were, a *History of English Dramatic Poetry to the Time of Shakespeare*; *Notes and Emendations to the Plays of Shakespeare*; *Bibliographical and Critical Account of the Rarest Books in the English Language* (1865); and *An Old Man's Diary Forty Years Ago* (1872). In one of his publications he announced the discovery of an extensive series of marginal annotations in a 17th-century hand on a copy of the second Shakespeare folio (1631-32)—the famous Perkins folio. This announcement caused a great commotion in the literary world, but it was subsequently shown that they were forgeries, and the discovery after his death of some manipulated books in his own library greatly injured his reputation.

COLLIMATOR, a subsidiary telescope used to detect or correct errors in collimation; that is, in directing the sight to a fixed object when adjusting for transit observations. When the vertical thread in the field of view exactly coincides with the vertical axis of a telescope, the instrument is *collimated* vertically; and when the horizontal spider's thread just covers the horizontal axis, the instrument is correct in horizontal collimation.

COLLIN, a town of Bohemia, situated on the Elbe. It has manufactories of cotton and potash. Garnets, topazes and cornelians are found in the vicinity. Population, 9,460.

COLLINGWOOD, a town of Ontario, Canada, situated on the south shore of Georgian Bay. It produces a large variety of manufactures, and is an important center of trade and transportation.

COLLINS, WILLIAM WILKIE, a celebrated English novelist, born in London, Jan. 8, 1824, died there Sept. 23, 1889. He was educated partly at Highbury, but from 1836 to 1839 was with his parents in Italy. After his return to London he spent four years in business, but finding it uncongenial he entered Lincoln's Inn as a student-at-law. Here his literary bent manifested itself, the life of his father (1848) being his earliest production. He now entered upon an active career, devoting himself principally to works of fiction, several of them being first published as serial stories in "Household Words," "All the Year Round," the "Cornhill," and other periodicals to which he contributed. His best known works are: *Antonina, or The Fall of Rome* (1850); *Basil* (1852); *Hide and Seek* (1854); *The Dead Secret* (1857); *The*

Woman in White (1860); *No Name* (1862); *Armada* (1866); *The Moonstone* (1868); *The New Magdalen* (1873); *The Law and the Lady* (1875); *Alice Warlock* (1875); *The Evil Genius*, and *The Guilty River* (1886). Doubtless the best of these productions was *The Woman in White*, and the reputation this masterpiece of fiction made for him in England spread rapidly to America and the Continent, until his readers could be found in every civilized country on the globe. The powerful interest of his novels always lay in the mystery that was continued to the end of them, and in the art by which the reader's attention was held fixed and curious through the succeeding chapters. He visited the United States in 1873-74, and the distinguished consideration with which he was everywhere received afforded him great pleasure.

COLLINSON, PERER, botanist, born at Hugal Hall, near Windermere, Jan. 14, 1694, died Aug. 11, 1768. Although he became an extensive manufacturer of hosiery, in connection with which he did a large business with the American colonies, he was chiefly distinguished as a botanist. He introduced numerous European plants into the United States, and many American trees into England. A genus of labiate plants is named *Collinsonia*, after him.

COLLINSONIA, a genus of handsome plants found chiefly on the Pacific coast of the United States. They belong to the natural order *Scrophulariaceæ*. Several species are cultivated for the beauty of their flowers.

COLLINSVILLE, a manufacturing town of Hartford county, Conn., on the Farmington River. Paper, plows, axes and cutlery are here manufactured.

COLLINSVILLE, a city of Illinois, pleasantly situated in the midst of a fertile agricultural district, about 12 miles east of St. Louis.

COLLOID, a name applied by Graham to any soluble substance which, when exposed to *dialysis*, does not pass through the porous membrane. Starch, gum albumen, and gelatine are examples of colloids. The name is used in contradistinction to *crystalloid*.

COLLISION, the act of striking or dashing together. In maritime law, although the term collision is applied to all cases of vessels running foul, technically it only applies to the act of two vessels striking together; when one vessel strikes against another, it is called *allision*. In either case the injured parties have, under the general maritime laws of all civilized nations, a claim against the offending vessel for any damage resulting. There may be a collision without actual contact, as where one vessel by careless navigation compels another to run ashore to escape greater peril. Collisions are usually classified as follows: (1) Those which occur without blame attaching to either vessel; as where the injury is occasioned by a storm. In such cases the misfortune must be borne by the party on whom it happens to light, the other not being responsible to him in any degree. (2) Those which arise where both vessels are at fault—where there has been a want of due diligence or of skill on both sides. In such cases the law apportions the resulting damage between them, both having contributed to the injury. (3) Those in which the injured vessel is alone at fault; in which case the owners must bear their own loss. (4) Those in which the injured vessel is free from blame, and the collision is the result of negligence or violation of the rules of navigation by the other. In this class of cases the offending vessel must respond in damages for all losses sustained.

There are certain rules of navigation which have been adopted by the courts of all nations, and have

the effect of positive law. They may be generally stated as follows: (1) When two sailing or steam vessels are approaching each other bow on, or nearly so, both helms must be put to port, so that each may pass on the port side of the other. (2) When two sailing vessels are crossing, and have the wind on different sides, the one with the wind on the starboard side shall have the right of way—unless she is sailing with the wind free, and the other is closehauled; in which case the vessel with the wind free must give way to the other. If both have the wind on the same side, or one has it aft, the windward vessel must keep out of the way of the other. (3) As a steamboat is deemed as always sailing with a free and fair wind, and capable of better control than a sailing vessel, the former must always keep out of the way of the latter. (4) Every vessel overhauling another must keep out of the way of the latter. (5) A vessel clearing out of a harbor must make way for another vessel that enters. (6) When two steam vessels approach each other on such a course that a collision is possible, each shall slacken speed, and if necessary stop and reverse; and in a fog steam vessels must go at a moderate speed. (7) The master of a vessel entering a port or river where other vessels are lying at anchor, is bound to make use of all proper checks to stop the headway of his vessel, in order to prevent accidents.

Although the foregoing are *rules*, adopted for the general guidance of masters of vessels, they are subordinate to the rule prescribed by common sense, which is that every vessel shall keep clear of every other vessel when she has the power to do so, notwithstanding such other vessel may have taken a course in violation of the rules of navigation. In no case would a master be justified in keeping his course after it became apparent that to do so would result in a collision, if by changing such course without injury a collision could be avoided.

All vessels are required to display lights at night, whether sailing vessels or steamboats, and whether under way or at anchor. These lights and their arrangement are such that the observer can tell whether they are carried by a sailing or steam vessel, whether the vessel is under way or at anchor, and if under way, the course the vessel is steering. The rules regarding lights are as follows: (1) Sea-going steamers, while under way, must display at the foremast head a bright white light, on the starboard side a green light, and on the port side a red one. The side lights must be so arranged with in-board screens that they cannot be seen across the vessel's bow. (2) Steamers having other vessels in tow must display two white lights at the masthead, instead of one. (3) Sailing vessels must display the green and red side lights described above, but none at the masthead. (4) All vessels at anchor, whether propelled by wind or steam, must display, not more than twenty feet above the hull, a white light in a globular lantern, eight inches in diameter.

In fogs, whether by day or night, steam vessels under way must sound a steam-whistle at intervals of not more than one minute; sailing vessels under way must sound a fog-horn at intervals of not more than five minutes; and when at anchor, both steamers and sailing vessels must ring a fog-bell at intervals of not more than five minutes.

COLLUSION, a deceitful agreement between two or more persons to defraud or prejudice a third person, or for some improper purpose. The most common cases of collusion occur in arrangements between bankrupts and their creditors, such as payment by anticipation to a favored creditor on

the approach of bankruptcy, arrangements for granting preferences by circuitous transactions or otherwise. In judicial proceedings collusion is an agreement between two persons that one should institute a suit against the other in order to obtain a judicial decision for some improper purpose. Judgments so obtained are void.

COLLYER, ROBERT, an Anglo-American clergyman, born in Keighly, Yorkshire, England, in 1823. In 1843 he became a local Methodist preacher, and the following year came to the United States. In 1859 he united with the Unitarian church, and became a missionary in Chicago, Ill. In 1860 he organized the Unity church, and in 1861 was a camp-inspector for the sanitary commission. In 1879 he became pastor of the Church of the Messiah in New York city.

COLOCYNTH. See *Britannica*, Vol. VI, p. 150.

COLOCZA, or **KALOCSA**, a town of Hungary, situated on the Danube, 68 miles south of Pesth. Population, 16,302.

COLOGNE YELLOW, a pigment composed of two parts of yellow chromate of lead, one of sulphate of lead, and seven of sulphate of lime or gypsum.

COLOMBANO, SAN, a town of Northern Italy, in the province of Milan, on the right bank of the Lambro, situated in the midst of hills, in which are found porphyry, feldspar, granite and limestone. Population, 5,000.

COLOMBIA (La Republica de Colombia). See *Britannica*, Vol. VI, pp. 152-57. A republic of Central America, formed by the union in 1861 of nine States, namely: Antioquia, Bolivar, Boyaca, Cauca, Cundinamarca, Magdalena, Panama, Santander and Tolima—under the title of the "United States of New Granada," changed in 1871 to that of the "United States of Colombia." A revolution in 1885 brought about another change, and the National Council of Bogota, composed of three delegates from each State, promulgated a new constitution Aug. 4, 1886, and the country is now styled the "Republic of Colombia." By the new constitution the sovereignty of the nine States was abolished, and they became simple departments, their presidents, elected by ballot, being reduced to governors under the direct nomination of the President of the Republic, whose term of office was prolonged from two to six years. The legislative power rests with a congress of two houses, called the Senate and the House of Representatives. The Senate, as before, consists of 27 members, three from each department, and the House of Representatives of 66 members, elected by universal suffrage, each department forming a constituency, and returning one member for 50,000 inhabitants.

The area of the Republic is 513,938 sq. miles, of which 330,756 sq. miles are north of the equator and the remainder south of the equator. Population, about 4,500,000. The capital is Bogota, with a population of 100,000. The revenue of the Republic for 1889 was, in round numbers, \$21,500,000, and expenditures \$28,000,000. Its industries are chiefly confined to agriculture and the rearing of cattle. Gold is found in all the departments, and Tolima is rich in silver. The imports of Colombia for 1889 amounted to 11,777,624 pesos, and the exports to 16,199,718 pesos. The bulk of the foreign trade is with the United States and Great Britain. The strength of the army in time of peace is 6,500 men. The total length of railways in 1890 was 218 miles, and in 1888 there were 2,800 miles of telegraph in operation.

COLON, that portion of the large intestine which extends from the cæcum to the rectum, which is the terminal portion of the intestinal canal.

COLONEL (Ital., *colonello*, "leader of a column"), the chief officer of a regiment in the United States army, ranking next below brigadier-general. In Great Britain regimental colonels are general officers who have had a regiment "given to them" as a reward for long service, and virtually as an honorary retirement. In 1888 it was decided to discontinue these appointments as soon as those who have a vested right to succeed to them have been satisfied, and it has been decided that no officer shall obtain the rank of colonel except by brevet, or on being selected for certain appointments carrying with them that rank. In the German, Austrian and Russian armies, where the regiments are very large, the colonelcies are mostly honorary posts, held by royal and other distinguished personages.

COLONIA DO SANTISSIMO SACRAMENTO, a port of Uruguay or Banda Oriental, situated on the left bank of the Plata, about 100 miles above Monte Video, the capital of the State.

COLONIAL ANIMALS, organisms which cannot be fairly regarded as unities, but consist of numerous more or less similar individuals united in a common life. The process of asexual budding, which leads to the formation of compound organisms, is commonest in relatively passive vegetative animals, like sponges, hydroids, corals, polyzoa, and ascidians, and is an expression of their general physiological constitution. When the colonial organism is free-living, as in *Siphonophora* and some *Tunicata*, the individual members are more closely knit together, and the colony is more perfectly integrated. Some colonial forms are of importance as illustrating in loose union an order of individuality, which in higher types becomes more firmly unified.

COLONIZATION SOCIETY, THE AMERICAN, a society organized in 1816 by Bishop Meade, of Virginia, Rev. Dr. Finley, of New Jersey, Charles F. Mercer, of Virginia, and others, for the purpose of transferring negroes from the United States and colonizing them in Africa. The first president of the society was Bushrod Washington. Henry Clay was for many years president of the society. The first colonists, consisting of 86 persons, were sent in 1820 to Africa, to the west coast of Africa, where they founded the Republic of Liberia. The practical work of the society terminated soon after emancipation of the colored people of the United States.

COLONIES, THE AMERICAN. See UNITED STATES, Britannica, Vol. XXIII, pp. 729-87.

COLONNA, CAPE (ancient *Sunium Promontorium*), a headland of Greece, forming the southmost point of Attica. Its summit, crowned by the ruins of the temple of Minerva, rises 270 feet above the water. Sixteen white marble columns, from which the cape derives its name, are still standing.

COLONNADE, the name given to a series of columns placed at certain intervals from one another, and arranged in various ways according to the rules of art and the order employed.

COLONSAY, an island of the Hebrides, in Argyleshire, Scotland, near the isle of Oronsay. Population, 400.

COLOR, in music, is applied to those passages and harmonic progressions in bravura airs affording the singer an opportunity of display. It is also applied to all grand harmonic combinations in orchestral compositions.

COLORADO. For the early history, geography, climate, productions, and earlier statistics, see Britannica, Vol. VI, pp. 161-63. The census of 1890 gives the area of the State of Colorado as 103,925 sq. miles; population, 412,198; capital, Denver, with

a population of 126,186. The following table shows the population of the State by counties for the years 1880 and 1890, as officially reported by the census of those years:

County.	1890.	1880.
Arapahoe.....	123,185	38,544
Archuleta.....	896	
Baca.....	1,479	
Benét.....	1,513	1,654
Boulder.....	14,083	9,723
Chaffee.....	6,513	6,513
Cheyenne.....	584	
Clear Creek.....	7,184	7,323
Conejos.....	7,193	5,605
Costilla.....	3,491	2,579
Custer.....	2,970	3,050
Delta.....	2,534	
Dolores.....	1,493	
Douglas.....	3,003	2,433
Eagle.....	3,723	
Elbert.....	1,523	1,703
El Paso.....	21,329	7,949
Fremont.....	9,156	4,733
Garfield.....	4,473	
Gilpin.....	5,337	6,439
Grand.....	504	417
Gunnison.....	4,333	3,333
Hinsdale.....	333	1,437
Huerfano.....	3,333	4,134
Jefferson.....	3,450	6,304
Kiowa.....	1,343	
Kit Carson.....	2,473	
Lake.....	14,633	23,533
La Plata.....	5,509	1,111
Larimer.....	9,713	4,332
Las Animas.....	17,303	3,903
Lincoln.....	333	
Logan.....	3,070	
Mesa.....	4,330	
Monteruma.....	1,533	
Montrose.....	3,330	
Morgan.....	1,301	
Otero.....	4,132	
Ouray.....	3,510	2,333
Park.....	3,543	3,970
Phillips.....	2,443	
Pitkin.....	3,333	
Prowers.....	1,333	
Pueblo.....	31,491	7,317
Rio Blanco.....	1,300	
Rio Grande.....	3,451	1,343
Routt.....	2,333	1,333
Saguache.....	3,313	1,973
San Juan.....	1,373	1,137
San Miguel.....	2,309	
Sedgwick.....	1,333	
Summit.....	1,303	5,459
Washington.....	2,301	
Weld.....	11,733	5,643
Yuma.....	2,533	

The increase of the population in the State from 1880 to 1890 was 217,371, a gain of more than 100 per cent. The number of Indians living on reservations in the State in 1890 was 935, including 484 males and 501 females. During the last decade much attention has been given to irrigation. The wealth of Colorado lies largely in her mines, to the working of which a large proportion of her people are devoted. The public school system was early made a prominent feature in the policy of the State. The Denver University is a large and growing institution. There are also a State University located at Boulder, a school of mines at Golden, an agricultural college at Fort Collins, a mute and blind institute at Colorado Springs, and an industrial school at Golden, all of which are liberally provided for. Numerous private institutions of high order have also been established. Denver is the chief railroad center of the State. From that city the Union Pacific Railway system radiates in four directions. The Denver and Rio Grande, the Burlington route, the Denver and New Orleans, and the Atchison, Topeka and Santa Fé, are all important railway lines in the State. The great parks of the State are nat-

ural gardens. Their approximate areas and elevations are as follows:

North Park.....	area, 2,500 sq. miles; elevation, 9,000 feet.
Middle Park.....	" 3,000 " " 8,500 "
South Park.....	" 2,300 " " 9,500 "
Estes Park.....	" 100 " " 7,500 "
San Luis Park.....	" 8,000 " " 7,500 "

Coal of a superior quality is found in many parts of the State, and the supply is regarded as comparatively inexhaustible.

The following is a full list of the governors of Colorado to and including 1891:

TERRITORIAL.

John Evans.....	1862-65	Edw. M. M'Cook.....	1869-73
Alex. Cummings.....	1865-67	Samuel H. Elbert.....	1873-74
A. Cameron Hunt.....	1867-69	John L. Bouatt.....	1875-76

STATE.

John L. Bouatt.....	1877-79	Benj. H. Eaton.....	1885-87
F. W. Pitkin.....	1879-81	Alva Adams.....	1887-89
James B. Grant.....	1883-85	Job A. Cooper.....	1889-91

The wheat acreage of Colorado in 1889 was estimated at 25,930 acres, yielding 337,000 bushels, valued at \$252,818; its oats acreage, 97,791 acres, yielding 3,129,000 bushels, valued at \$1,251,725; its barley acreage, 12,377 acres, yielding 319,000 bushels, valued at \$223,529; potatoes, 23,903 acres, yielding 2,717,000 bushels, valued at \$1,222,597; hay, 248,875 acres, yielding 370,013 tons, valued at \$4,218,148; Indian corn, 34,394 acres, yielding 777,000 bushels, valued at \$442,890.

COLORADO, a city of Texas, county-seat of Mitchell county, 70 miles west of Abilene. It contains very extensive manufactories of salt and soda.

COLORADO BEETLE. See Britannica, Vol. VI, pp. 134, 163.

COLORADO SPRINGS, a popular summer-resort of Colorado, situated on the Fontaine-qui-Bouille Creek, 75 miles south of Denver by rail, and about 10 miles east of Pike's Peak.

COLOR BLINDNESS. See Britannica, Vol. VIII, p. 824, and Vol. XIV, p. 579. See also Vol. VI, p. 784, and Vol. XV, p. 282.

COLOR-SERGEANT, a name given in the army to the sergeant who, in addition to other duties, guards and carries the national colors—that is, the flag.

CLOSTRUM, the term applied to the first milk yielded after delivery. It differs very materially from ordinary milk, and generally appears as a turbid, yellowish fluid.

COLQUHOUN, PATRICK, born at Dumbarton, Scotland, in 1745, died April 25, 1820. He became provost of Glasgow in 1782, and a police magistrate in London in 1792. He was the author of two important works, *Police of the Metropolis* (1795), and *Population, Wealth, Power and Resources of the British Empire* (1814).

COLTON, a town most healthfully situated in a fruit-raising section of San Bernardino county, Cal. It has canning and packing works, and manufactures iron and steel pipes and lime.

COLTON, CALVIN (1789-1857), an American clergyman. He entered the ministry of the Protestant Episcopal church, but relinquished preaching in 1829 from failure of his voice. From 1831 to 1835 he was in England as correspondent of the New York "Observer," and on his return to the United States distinguished himself as a writer of political tracts, advocating the principles of the Whig party. He was editor of the "True Whig," in Washington from 1842 to 1844. In 1852 he became professor of political economy in Trinity Col-

lege, Hartford, Conn. He wrote numerous works on religious, political and other subjects.

COLUBER, a genus of snakes. See Britannica, Vol. XXII, p. 194.

COLUMBIA, or OREGON RIVER, the largest American river that enters the Pacific. It rises in the Rocky Mountains in British Columbia, flows northwest, then southwest, and then westerly, forming the boundary between Washington and Oregon. It is navigable for the largest steamers for 140 miles. Its entire length is 1,400 miles.

COLUMBIA, the county-seat of Boon county, Mo., situated 10 miles north of the Missouri River. It is the seat of the State University, and has two female colleges.

COLUMBIA, a city of Pennsylvania, located in Lancaster county, on the east bank of the Susquehanna River, and on the Columbus branch of the Pennsylvania railroad, 81 miles west of Philadelphia. It was founded by English Quakers in 1726. A railroad bridge over a mile in length connects Columbia with Wrightsville, on the opposite bank of the Susquehanna. It is a large manufacturing center, having extensive rolling mills, foundries, oil refineries, saw mills, flour mills, tanneries, gas and water works, and manufactories of steam engines and railroad iron. Population in 1880, 8,312; in 1890, 10,598.

COLUMBIA, a city and capital of South Carolina, and county-seat of Richland county (see Britannica, Vol. VI, p. 168). The city, which has long been famed for its beauty, is built on a plateau about 200 feet above the Congaree River, affording a magnificent view of the surrounding country. It is about two miles square, regularly laid out with broad streets, several of them 100 feet wide, handsomely shaded, with macadamized roadways and paved sidewalks. The State House is built of granite, three stories high, and cost \$3,000,000. The United States court-house and postoffice, also of granite, and the new city hall are handsome buildings. The South Carolina University, which was organized as a college in 1806, was in 1880 reorganized with two branches, the South Carolina Agricultural and Mechanical College at Columbia, for whites, and Claflin University at Orangeburg, for blacks. Other educational institutions are a Presbyterian theological seminary, several academies for the education of both sexes, and excellent public schools. The Roman Catholics also have a school, the Ursuline Convent. There is a library containing 30,000 volumes belonging to the University. The city was founded in 1737, and became the capital of the State in 1790. It suffered a destructive conflagration in 1865. Population in 1880, 10,036; in 1890, 14,508.

COLUMBIA, the county-seat of Maury county, Tenn., on Duck River. The city is the seat of Jackson College, and has two seminaries for young ladies. It has a stock yard, a grain elevator and flour mills.

COLUMBIA, BRITISH. See CANADA, Britannica.

COLUMBIA CITY, a city of Indiana, county-seat of Whitley county, situated on Blue Creek, 20 miles west of Fort Wayne. It contains manufactories of flour, lumber and woolen goods.

COLUMBIA COLLEGE. See COLLEGES, in these Revisions and Additions.

COLUMBIAN EXPOSITION (1893). See WORLD'S FAIR, in these Revisions and Additions.

COLUMBIDÆ, a family of birds. See DOVE, Britannica, Vol. VII, p. 379.

COLUMBINE, the common name of plants of the genus *Aquilegia*, natural order *Ranunculaceæ*, natives of the temperate and colder regions. *A. Canadensis* is a beautiful plant which grows wild in many parts of

the United States, but is cultivated with the greatest ease. It has terminal flowers, scarlet without and yellow within, pendulous, much embellished by the numerous descending, yellow stamens and styles.

COLUMBRARIUM, a particular kind of sepulchral chamber used by the Romans to receive the ashes of bodies which had been burned.

COLUMBUS, a city of Georgia, and county-seat of Muscogee county (see *Britannica*, Vol. VI, p. 171). Columbus is at the head of steam navigation from the Gulf of Mexico, a distance of 300 miles. It is connected with Macon, Ga., by the Southwestern Railroad, and is the terminus of the North and South Railroad. It is also on the Western, and the Mobile and Girard railroads. A change in the level of the Chattahoochee River at this point affords unlimited water power, which has fostered extensive manufacturing interests. The largest cotton and woolen mills in the South are located at Columbus, producing a great variety of colored goods, ginghams, etc. The city contains an opera house, superior county buildings, churches, a high school, several graded schools, a female seminary, male academy, and several excellent hotels. The streets are broad, handsomely shaded, and well lighted. Population, in 1880, 10,123; in 1890, 18,650.

COLUMBUS, the county-seat of Bartholomew county, Ind., situated 41 miles southeast of Indianapolis, on the east fork of the White River.

COLUMBUS, a railroad junction and county-seat of Cherokee county, Kan., situated 50 miles south of Fort Scott.

COLUMBUS, a village of Kentucky, situated on the Mississippi River, twelve miles below Cairo. It is an important center of trade and transportation, and contains a variety of manufactories.

COLUMBUS, the county-seat of Lowndes county, Miss., on the Tombigbee River. It is the seat of a university and other educational institutions. It has a large cotton trade.

COLUMBUS, the county-seat of Platte county, Neb., on the Union Pacific Railway and the Platte River. The city has a high school and various manufactories.

COLUMBUS, a city and capital of the State of Ohio (see *Britannica*, Vol. VI, p. 170). Columbus is reached by no less than 15 different lines of railway, and has 30 miles of street railways, operated by both horse and electric power. It has an abundant supply of natural gas, which is largely used by manufacturers, as well as by private families, for fuel. Carriage manufacturing is the leading industry, one company manufacturing \$2,000,000 worth of goods annually. The area of the city is 12 square miles. Public parks cover 195 acres. The State University, United States Garrison, State Fair, Capitol, and other grounds, all fine parks, have a total area of 600 acres. A United States custom-house was established in Columbus in 1889, and transacted about \$1,000,000 worth of business in 1890. Population in 1880, 51,647; in 1890, 90,398.

COLUMBUS, the county-seat of Colorado county, Texas, situated on the Colorado River. Colorado College is located here.

COLUMBUS, a city of Columbia county, Wis., situated on Crawfish River.

COLUMBUS, CHRISTOPHER. See *Britannica*, Vol. VI, pp. 171-76.

COLUMELLA, the axis to which the carpels of a compound pistil are often attached, as in geranium, or which is left when a pod opens, as in azalea—also the central axis of the spore cases of mosses, and the central axis of spiral univalve shells.

COLUMN: in military evolutions, a mass of soldiers several ranks in depth, presenting a formation unlike that which arises from spreading them out

in line. There may be columns of regiments of battalions or of companies.

COLWELL, STEPHEN (1800-72), an American author. He was admitted to the bar in 1821 and practiced in Pittsburgh, Pa., for ten years. Subsequently he wrote for the press on his favorite topics of political and social science. During the civil war he was one of the foremost supporters of the national government in its struggle against secession, lending his time and money to the cause. After the war he was made a commissioner to examine the internal revenue system of the United States, and to this task he devoted much time and study. He wrote many valuable works on political economy.

COLYMBIDÆ, a family of web-footed birds. See *Driver*, *Britannica*, Vol. VII, p. 292.

COMA, a Greek word used in medicine to signify more or less profound insensibility, somewhat resembling sleep, from which the person cannot be easily roused.

COMA BEREMCES, a small and close cluster of stars near the equinoctial colure, south of the tail of the Great Bear.

COMANCHES. See *Britannica*, Vol. VI, p. 177.

COMB, or **COOMB**, an old English corn-measure containing four bushels, or half a quarter. The name is often applied to hollows or valleys among hills.

COMBATANTS: in the armies of civilized nations, soldiers whose duty it is to fight both in attack and defense. They are either cavalry, artillery, engineers, or infantry. Non-combatants, on the other hand, perform administrative duties, and fight only in self-defense, though soldiers and armed as in the commissariat, transport, ordnance, store, medical, pay, and veterinary departments.

COMET. See *Britannica*, Vol. VI, pp. 182-93.

COMET EYE-PIECE, a celestial eye-piece with lenses of long focus and field-lens of large diameter.

COMET-SEEKER, a telescope with a low magnifying power, and a short focus as compared with the size of its object-glass. It has a wide field, and is employed to find comets.

COMFORT, GEORGE FISK, an American educator, born in Berkshire, Tompkins county, N. Y., in 1833. He graduated at Wesleyan University, and then studied in Europe. On his return to the United States in 1865 he was made professor of languages at Alleghany College, Meadville, Pa., and in 1872 became professor of æsthetics and modern languages at Syracuse University, Syracuse, N. Y. Among his publications is a series of textbooks for the German language.

COMISO, a town of Sicily, in the province of Syracuse. It has paper manufactories. Population, about 9,000.

COMITY OF NATIONS, a term given to that international courtesy by which effect is given to the laws of one nation within the territory and against the citizens of another nation.

COMMA, a small interval in the mathematical study of sound, generally corresponding to the vibration-ratio 81:80, which occurs between the two pitches of two notes, which, on the piano, organ and other tempered instruments, are represented by one only.

COMMANDANT, a commander; the commanding officer of a place, or of a body of men.

COMMANDITE, SOCIÉTÉ EN, or partnership in, an expression used in France to express a partnership in which one may advance capital without taking charge of the business.

COMMEMORATION, the great festival of the Oxford academic year, corresponding to the "Commencement" of American colleges.

COMMENSURABLE. Two quantities or numbers which are of the same kind, and each of which contains a third quantity or number a certain number of times without a remainder, are said to be commensurable.

COMMENTREY, a town in the French department of Allier, 211 miles south of Paris by rail. It is near a great coal-field, and owes its rise to coal and iron-works. Population, 9,233.

COMMINATION, a penitential office used in the Church of England after the Litany on Ash Wednesday, consisting of sentences taken from Deuteronomy xxvii and other passages of Scripture. To each sentence that is read, the congregation respond Amen.

COMMISSARIAT, a name for the organized system whereby armies are provided with provisions, forage, equipage, etc. The name is also applied to the body of officers employed in that department.

COMMISSARY: in general, any one to whom the power and authority of another are committed; in ecclesiastical law, an officer appointed by a bishop to exercise spiritual jurisdiction in remote parts of a diocese.

COMMISSION, a writing, generally in the form of a warrant, authorizing one or more persons to perform duties or exercise powers belonging to another, or to others. Instruments of delegation, bearing this title are issued by the government to officers in the army and navy, judges, justices of the peace, postmasters and others. Another class of commissions are those granted to a body of persons intrusted with the performance of certain special duties of a public or legal character.

COMMISSIONNAIRES, a class of attendants at hotels in continental Europe, who perform certain miscellaneous services, and attend at the arrival of railway trains and steamboats to secure customers, look after luggage, etc. A body of commissionnaires has been established in London, consisting of maimed soldiers who have retired with a pension.

COMMISSION MERCHANT, a person employed to sell goods on commission, consigned or delivered to him by another who is called his principal.

COMMISSURE, an anatomical term applied to nervous connections between adjacent parts of the nervous system.

COMMONER, one under the rank of nobility; also, a member of the House of Commons. The commoners at Oxford, are a class of students eating at the common table.

COMMON FORMS, the ordinary clauses which are of frequent occurrence in identical terms in writs and deeds.

COMMONS AND COMMON LAW. See Britannica, Vol. VI, pp. 208-10.

COMMON SCHOOLS OF THE UNITED STATES. The table on the following page gives the chief statistical educational summaries of the public and common schools as reported by the school superintendents of the States to the Educational Bureau at Washington, where they were duly tabulated and issued for the use of the public. They are for the year ending in 1889, and the latest furnished to the public at the date of this writing, April 1891.

COMMON TIME: in music, that species of measure which contains two minims or two crotchets in a bar.

COMMUNICATION, PRIVILEGED, a communication between such persons or under such circumstances that it does not involve an action for damages, or a communication between such persons and under such circumstances that the receiver cannot be called upon to produce it as an admission in a suit. The most common instance of such

privilege is in the case of a client and his legal adviser. In the United States members of the legal profession are privileged, and as a rule what a client communicates to them cannot be disclosed except the right of confidentiality be waived. The privilege is extended to the communications of several parties, or of their counsel and agents engaged on the same side of a cause, and made with a view to their joint prosecution or defense. Interpreters stand in the same relation as attorneys.

Confessions made to a clergyman or priest in some States are privileged by statute, but generally it is otherwise. By a statute of the State of New York, ministers of the Gospel and priests of every denomination are forbidden to disclose confessions made to them in their professional character, and in the course of discipline enjoined by the Church. Similar statutes exist in Missouri, Wisconsin, Michigan and Iowa. Communications made to a physician are in some States privileged, and in others not. Communications between husband and wife are privileged from disclosure.

In England no special privilege is extended to the Roman Catholic confessional, and the question as to how far a confession made to a clergyman for the purpose of obtaining spiritual comfort and consolation is protected was long considered doubtful. The rule has, however, been established for some time that clergymen are not entitled to the same privilege as legal advisers; in Scotland the point has never been decided. In England communications to a medical man, even in the strictest professional confidence, are not protected from disclosure; and the same is the case in Scotland. For communications involving no liability for defamation, see **LIBEL**, Britannica, Vol. XIV, p. 506.

COMMUNISM. See Britannica, Vol. VI, pp. 211-19.

COMNENUS, the name of a family, originally Italian, of which many members occupied the throne of the Byzantine empire from 1057 to 1204, and that of Trebizond from 1204 to 1461.

COMO, a town of Colorado, and an important railroad junction, situated at the head of Kenosha Pass. It is surrounded by extensive coal mines.

COMODO, an island of the Malayan Archipelago. It is 35 miles in length and 16 miles in width, and occupies nearly the entire width of the strait, which separates the islands of Sambawa on the west and Flores on the east.

COMORIN CAPE, the most southerly extremity of India, in $8^{\circ} 4' 20''$ north latitude, and $77^{\circ} 35' 35''$ east longitude.

COMPANY: in military organization, that part of a battalion which constitutes a captain's command. It is both a tactical and administrative unit, and is divided into two sections or two subdivisions.

COMPANY, all the persons engaged on board a ship, including naval officers as well as crew.

COMPARETTI, DOMENICO, philologist, born June 27, 1835, at Rome. In 1859 he was appointed to the chair of Greek in the University of Pisa, which he exchanged a few years later for the same position in the Instituto di Studii Superiori at Florence. He was a frequent contributor to the learned journals, and author of works on Greek dialects in South Italy, Virgil the Magician, and Homer and Pisistratus. With D'Ancona he edited the invaluable *Canti et Racconti del Popolo Italiano* (1869).

COMPENSATION OF ERRORS: in physics, a method of neutralizing errors which cannot be avoided, by introducing others into the experiment or observation, of an opposite nature, and equal in amount. The compensation pendulum illustrates the principle.

PUBLIC SCHOOL STATISTICS.

STATES AND TERRITORIES.	School Age.	School Pop'lati'n.	Number Enrolled in Public Schools.	Average Daily Attendance.	Average Duration of Schools in Days.	Salaries of Superintendents and Teachers.	Total Expenditures.
Alabama.....	7-21	522,691	270,204	172,101	75.75	\$576,898	\$750,000
Arizona a.....	6-18	b 10,308	6,817	8,849	185	105,866	180,212
Arkansas.....	6-21	404,879	216,152	c 141,500	c 75	d 880,041	967,608
California.....	5-17	275,808	215,905	143,788	160.4	3,409,457	5,063,131
Colorado.....	6-21	85,824	59,318	85,567	170	955,987	1,506,143
Connecticut.....	4-16	157,243	127,069	89,289	180.82	1,326,845	1,964,254
Dakota a.....	7-20	e 116,129	98,826	53,211	106	968,790	1,790,968
Delaware a.....	6-21	f 43,538	g 32,552	21,371	161	202,698	266,718
District of Columbia.....	h5-17	c 52,590	35,764	27,619	181	470,110	i 464,640
Florida.....	6-21	c 119,090	86,008	63,652	150	j 450,000	500,000
Georgia e.....	6-18	c 569,375	321,176	217,208	j 68.4	706,760	989,005
Idaho.....	5-21	e 24,071	12,678	c 9,240	g 90	j 95,000	160,580
Illinois.....	6-21	1,183,867	763,411	500,736	148	6,914,388	11,015,058
Indiana.....	6-21	770,875	523,147	354,752	129	4,086,199	4,467,626
Iowa.....	5-21	649,608	489,329	304,256	154	4,137,165	6,483,397
Kansas.....	5-21	524,206	405,454	244,297	128	3,936,904	5,137,461
Kentucky.....	6-20	e 664,967	k 380,936	l 222,554	94	1,716,551	2,153,178
Louisiana e.....	6-18	385,187	125,578	90,551	98	495,361	544,269
Maine.....	4-21	212,064	143,118	98,641	111.5	j 818,000	1,262,930
Maryland.....	(m)	179,460	99,220	98,220	186	1,430,475	1,862,766
Massachusetts.....	5-15	e 967,785	963,166	370,551	171	n 5,580,708	7,510,719
Michigan.....	5-20	640,069	428,604	c 279,900	152	3,198,585	4,952,524
Minnesota.....	(m)	273,814	319,711	193,119	126	2,145,356	3,961,215
Mississippi.....	5-21	b 463,264	319,711	193,119	o 91	963,276	1,115,206
Missouri.....	6-20	865,264	611,541	376,977	141.3	d 3,220,264	4,552,463
Montana a.....	4-21	e 27,600	13,826	c 8,600	127	j 215,000	p 217,442
Nebraska.....	5-21	316,306	232,344	156,692	114	d 1,891,852	3,419,721
Nevada a.....	6-18	q 9,789	7,511	5,149	170	d 135,208	168,852
New Hampshire.....	5-21	(r)	s 60,124	43,484	113.9	501,174	t 739,073
New Jersey a.....	5-18	e 967,847	224,396	135,187	192	u 2,525,435	3,115,441
New Mexico e.....	5-20	c 16,484	(r)	c 12,300	j 57.2	d, j 74,400	j 145,400
New York.....	5-21	1,803,667	1,088,818	637,487	178	9,978,004	16,050,345
North Carolina a.....	6-21	e 580,819	387,382	208,657	63.4	571,034	c 700,000
Ohio.....	6-21	1,120,587	777,162	580,492	165	6,760,596	10,098,706
Oregon.....	4-20	93,098	56,696	40,012	o 109	521,651	752,693
Pennsylvania.....	(m)	964,409	667,355	449,8	d 6,669,798	t 11,902,261	
Rhode Island.....	h5-15	64,905	51,295	33,203	139	573,413	907,267
South Carolina.....	(m)	194,264	136,258	68	a 430,117	a 460,434	
Tennessee a.....	6-21	c 552,508	v 436,524	v 308,969	79	980,709	1,157,390
Texas.....	8-16	545,616	a, c 440,467	ac 340,000	112	3,609,642	3,493,452
Utah.....	6-18	58,482	24,221	c 19,750	185	185,999	284,266
Vermont a.....	(m)	68,453	46,061	187	483,426	650,392	
Virginia.....	5-21	w 610,271	386,948	195,526	119	1,289,039	1,620,209
Washington.....	5-21	70,246	46,751	29,247	92	314,594	656,111
West Virginia.....	6-21	268,934	187,528	119,990	a 102	812,728	1,307,901
Wisconsin.....	4-20	576,967	344,942	186,391	162.4	d 2,414,281	3,655,012
Wyoming g.....	(m)	5,622	5,622	c 3,750	x 119	d 84,906	j 118,908
Total.....			12,291,269	8,004,275	134.5	\$87,688,666	\$122,129,600

a In 1887-88
 b In 1887.
 c Approximately.
 d Salaries of teachers only.
 e In 1888.
 f In 1886.
 g In 1886-87.
 h Inclusive.
 i Also \$5,046 were expended for evening schools.

j Estimated.
 k Highest number in attendance; no report from Bell county.
 l Bell county not reporting.
 m No school census.
 n Including fuel and janitor's wages.
 o Country schools only.
 p Amount of revenue.
 q In 1889.

r School census imperfect.
 s Number who have attended two weeks or more.
 t Including debt paid.
 u Revenue for "maintaining the schools."
 v A few counties not reporting are estimated.
 w In 1885.
 z In 1880.

COMPETITION, the act of endeavoring to gain what another endeavors to gain at the same time. In political economy, it is simply the form taken by the struggle for existence as applied to industry.

COMPLEMENT: in music, the quantity required to be added to any interval to complete the octave; for example, a fourth is the complement of a fifth, etc.

COMPLEMENT: that which completes or makes up a given magnitude to some fixed magnitude. It is most commonly used in mathematics to signify the arc or angle by which a given arc or angle falls short of a quadrant or right angle

COMPONE, or Gobony: in heraldry, a bordure, pale, bend, or other ordinary, made up of two rows of small squares, consisting of alternate metals and colors.

COMPOSITION: in bankruptcy, a certain percentage which creditors agree to receive from a bankrupt in lieu of full payment of his debts, and the acceptance of which operates as a discharge to the bankrupt.

COMPOSITION: in art, such an arrangement of the separate objects represented as that they shall all manifestly tend to bring out the idea which animates the whole.

COMPOSTS, manures consisting of mixtures of substances which are adapted to the fertilization of the soil, and which, being allowed to ferment and undergo chemical changes for a considerable time, become very valuable.

COMPOUND, the usual name in India for the inclosure in which a house stands, with its outhouses, yard and garden.

COMPOUND ANIMALS, those animals in which individuals distinct as to many of the powers of life are yet united in some part of their frame, so as to form one living system. Examples of this union are found in many animalcules and zoophytes, also in cestoid worms and ascidian mollusks.

COMPOUND COMMON TIME: in music, that species of measure which contains the value of two dotted minims in a bar. Compound triple time denotes a measure of nine crotchets or quavers in a bar.

COMPRESSED AIR BATHS, a strong chamber of riveted iron plates, in which two or more persons can sit, and into which air is driven by a steam-engine to any required pressure. The inflow of fresh air and the escape of the foul air are regulated by valves. Patients remain in the bath from one to three hours, and the pressure is generally increased to an atmosphere and a half. Another appliance for using either compressed or rarefied air consists of a mask tightly covering mouth and nose, and connected by a tube and suitable valves with some form of air-cistern, in which the pressure can be varied as desired. By this appliance patients can either inspire compressed or rarefied air, or can breathe out into either of these. The general effects of compressed air are to lessen the frequency of the movements of the chest, and of the heart or pulse-beats, while allowing the absorption of more oxygen, and increasing the blood-tension. Rarefied air produces the opposite effects.

COMRIE, a village of Perthshire, 20 miles west of Perth. It lies amid a very picturesque scenery of clay-slate band of Scotland. Its industries are distilling, and woolen and cotton weaving. Population, 1,611.

COMPTON, BARNES, a farmer, born in Port Tobacco, Md., Nov. 16, 1830. He graduated at Princeton in 1851. He was elected a member of the State House of Delegates from Charles county in 1860 and 1861, and of the State Senate in 1867, 1868, 1870 and 1872, serving as its president in 1868 and 1870. Was six times elected State Treasurer of Maryland, holding the office 11 years, two months, when he resigned. In politics he was a Democrat, and was elected a representative from the Fifth Congressional District of Maryland to the 49th and 50th Congresses. He was declared reelected to the 51st Congress, but was unseated by the House of Representatives. He was elected in 1890 to the 52nd Congress from the same district.

COMPROLLER, a government officer of the United States Treasury Department; also an officer of a State, county, or municipality, whose duties are specially connected with the fiscal affairs. See **BANKING SYSTEM IN THE UNITED STATES**, in these Revisions and Additions.

COMPURGATORS: twelve persons whom Anglo-Saxon law permitted the accused to call in proof of his innocence, and who joined their oaths to his. They were persons taken from the neighborhood, or otherwise known to the accused. It was rather in the character of witnesses than of jurymen that they acted, though the institution has been spoken of as the Anglo-Saxon jury; what they swore to was not so much their knowledge as their belief. The number of compurgators varied with the rank of

the parties and the nature of the accusation, but was usually twelve. The system of compurgators was adopted even in civil actions for debt. Compurgation, which was a custom common to most of the Teutonic races, fell into disuse after the Conquest, but the ceremony of what was called canonical purgation of clerks-convict was not abolished in England till the reign of Elizabeth.

CON, or **COL**, an Italian particle, meaning "with," much used in musical terms, as "con spirito," "con brio."

CONACRE, a custom of letting land in Ireland in small portions for a single crop, the rent being paid either in money or in labor.

CONANT, THOMAS JEFFERSON, an American Biblical scholar, born in 1802. In 1825 he became tutor in Columbian College, Washington, D. C., and in 1827 professor of Greek, Latin, and German in Waterville College, Me. In 1835 he became professor of languages and Biblical literature in Madison University at Hamilton, N. Y., and held this position till 1851, when he accepted the chair of Hebrew and Biblical exegesis in Rochester Theological Seminary. He resigned in 1857 to accept from the American Bible Union the office of reviser of the common English version of the Bible, continuing in this service till 1875. He is conceded to be one of the first Hebraists of the age. He has written numerous important works on Biblical subjects.

CONCAVE. A surface is said to be concave when straight lines drawn from point to point in it fall between the surface and the spectator, and convex when the surface comes between him and such lines.

CONCENTAINA, a town of Valencia, Spain, situated on a slope of the Sierra Mariola. It has manufactories of linen, woolen, paper, soap, etc. Population, 6,600.

CONCEPTION. See *Britannica*, Vol. XX, pp. 57, 76, and 407.

CONCEPTION OF OUR LADY, an order of nuns, founded in Portugal in 1484 by Beatrix de Sylva, in honor of the immaculate conception. It was confirmed in 1489 by Pope Innocent VIII. Cardinal Ximenes put the nuns under the direction of the Franciscans, and imposed on them the rule of St. Clare. The order subsequently spread into Italy and France.

CONCEPTUALISM. See *Britannica*, Vol. I, p. 35; and Vol. XXI, p. 424.

CONCERT, a public performance of concerted pieces, symphonies, etc., sometimes interspersed with songs.

CONCERTINA, a musical instrument whose sounds are produced by free vibrating springs of metal, as in the accordion. The scale of the concertina is very complete and extensive, beginning with the lowest note of the violin, G, and ascending chromatically for four octaves.

CONCERTO, a musical composition for two or more solo instruments, with orchestral accompaniments. Innumerable concertos have been written for the piano-forte, among which compositions of the most masterly kind are to be found.

CONCH, a marine shell, especially of the *Strombus gigas*. Also a spiral shell probably of the kind now constituting the genus *Triton*, said to have been used by the Tritons as a trumpet, and still used by some African peoples in war. The native whites of the Bahamas are called conchs from their common use of the flesh from Conchs as food.

CONCHIFERA: in Lamarck's arrangement of mollusks, a class containing those which have bivalve shells—*Lamellibranchiata* and *Brachiopoda*.

CONCHOID, or **NICOMEDES**, a curve invented by Nicomedes, about the 2nd century before Christ,

with the view of trisecting an angle, of constructing two geometrical means between two given straight lines, and of "doubling the cube." The curve is frequently used in architecture as a bounding line of the vertical section of columns.

CONCHOLOGY, that branch of natural history which deals with the shells of mollusks. From the time of Aristotle the beauty and variety of these structures have made them favorite objects of study, and few zoological subjects have excited so much popular enthusiasm. The study often became unscientific, and sometimes a craze. Since the shells are only external coverings, and were seldom considered in relation to their tenants, or in connection with the internal and external influences to which they owe their shapes, conchology has been somewhat barren of scientific results.

CONCIERGE, the French name for a door-keeper or janitor of a house, hotel, or public edifice. In French towns, where a large portion of the population lives in flats, the common door by which many households have access to their several tenements is usually under the charge of a concierge, who exercises a general supervision over all who pass.

CONCORD, the simultaneous sounding of tones that are in harmony with one another, whether consonant or dissonant.

CONCORD, a town of Massachusetts. See *Britannica*, Vol. VI, p. 240; and Vol. XXIII, p. 740.

CONCORD, a city and capital of New Hampshire, and county-seat of Merrimac county (see *Britannica*, Vol. VI, p. 240). The Merrimac River divides the city into two portions, which are connected by seven bridges, three of them railroad bridges. The streets are wide, well paved and lighted. The chief educational institutions are St. Paul's (Episcopal) school, a public high school, and several graded schools. It has also a public library, and a State library, containing 11,000 volumes. Its principal public buildings are the State House, built of granite, city hall, State prison, two orphanages, a home for the aged, and a State insane asylum. Concord has many fine hotels and extensive manufacturing interests, but is chiefly noted for its valuable granite quarries. Population in 1880, 13,843; in 1890, 16,948.

CONCORD, the county-seat of Cabarrus county, N. C. It has academies for boys and also for girls, a cotton factory and machine shops.

CONCORDIA, a town of the Argentine State of Entre Rios, on the Uruguay, 302 miles north of Buenos Ayres by river. It has a custom-house and a river trade exceeded only by that of Buenos Ayres and Rosario. Population, 10,000.

CONCORDIA, a railway city and the county-seat of Cloud county, Kan. It is on Republican River and has a fine water-power, which is applied in various factories or mills, where flour, wagons, plows and cigars are made. There are several schools and seminaries in the city, and also a United States land office.

CONCRETE. See *Britannica*, Vol. IV, pp. 753-56; Vol. VI, p. 243, and Vol. XX, p. 808.

CONCRETE, a term in logic opposed to abstract. A concrete notion is the notion of an object as it exists in Nature, invested with all its qualities; an abstract notion is the notion of any attribute, having qualities which may be thought of independently of the objects in which it adheres.

CONCRETION: in pathology, a formation of solid unorganized masses within the body, either by chemical precipitation from the fluids, or by the accidental aggregation of solids introduced into the system from without. In the former case, a con-

cretion is termed a *calculus*. Perhaps the most remarkable concretions are those formed in the stomach and intestines of man and the lower animals from the more solid and indigestible parts of the food, or of substances improperly swallowed.

CONCRETIONARY STRUCTURE, a condition in rocks produced by molecular aggregation subsequent to the deposition of the strata, whereby the material of the rock is formed into spherules or balls, as in the grains of oolitic limestone, or the larger concretions of magnesian limestone.

CONCURRENT, a technical term for the person who accompanies a sheriff's officer as witness or assistant.

CONCUSSION OF THE BRAIN: in medicine, one form of shock—that, namely, where the symptoms are due to an injury which has shaken or jarred the brain and stunned the patient, without producing any mechanical injury, so far as can be ascertained to the brain or skull. It is generally believed that concussion alone can produce severe symptoms and even death. It is apt to occur from a severe blow or fall on the head.

CONCUSSION OF THE SPINAL CORD: in medicine, a form of shock acting upon the vertebral column.

CONDIMENTS, substances employed at the table for the purpose of imparting flavor or seasoning to food.

CONDITION: in law, a declaration or provision that upon the occurrence of an uncertain event an obligation shall come into force, or shall cease, or that the obligation shall not come into force until a certain event. Such conditions are known, respectively, as precedent or subsequent, resolute, and suspensive.

CONDITION: in logic, that which must precede the operation of a cause. It is not regarded as that which produces an effect, but as that which renders the production of one possible. For instance, when an impression is made on wax by a seal, the seal is said to be the cause; the softness, or fluidity of the wax, a condition.

CONDONATION, a legal term used to express the act or course of conduct by which a husband or wife is held to have pardoned a matrimonial offense of which the other has been guilty. Thus, if a wife voluntarily cohabits with her husband after she has discovered that he has been guilty of adultery she is held to have condoned the offense, and such condonation is a bar to an action for divorce.

CONDUCTOR: in music, a name given to the leader of a modern orchestra.

CONDURANGO, the name of several asclepiadaceous woody climbers of South America, whose bark affords a drug used as a remedy for venomous bites. The plant is usually referred to *Marsdenia condurango*. Also written *cundurango*. It had a brief reputation as a cure for cancer.

CONDYLE: in anatomy, a protuberance on the end of a bone, serving for articulation with another bone, more especially applied to that by which the occipital bone of the skull is articulated to the spine.

CONE: in botany, a fruit-bearing spike covered with scales, as in the hop, but more especially in the fir, spruce and pine, the upper side of each scale containing two seeds.

CONEMAUGH FLOOD, a name given to one of the most sudden and disastrous floods known in American history. It occurred in Johnstown, Pa., and vicinity in the afternoon and night of May 31, 1889. About ten miles above Johnstown, on the South Fork Creek, a little above its junction with the Conemaugh River, was a dam owned by the "South Fork Fishing and Hunting Club," an organ-

ization of wealthy men, most of them residents of Pittsburgh. By means of that dam the water of the creek and upper watershed had been accumulated, forming an immense reservoir, bearing the name of "Conemaugh Lake," stored with fish. As the result of great rains the dam gave way and the freed waters were added to the already swollen current below, the whole rushing down the valley with the speed of a race-horse, sweeping away most of the hamlets and villages of Woodvale, Conemaugh, South Fork, Mineral Point, Morrellville, and large villages of Cambria City and Johnstown—the whole borough familiarly called "Johnstown City." In the census of 1880, Johnstown reported a population of 8,380, which had rapidly increased until, at the date of the flood, it had embraced about 10,000, and with the hamlets and villages an estimated total of from 20,000 to 25,000. The wreckage of hamlets, villages, manufactories, stations and other buildings of the Pennsylvania, and Baltimore and Ohio railways, business houses, hotels library and school buildings, churches and homes of the people, with their contents, was nearly complete. The loss of life in the valley reached a total of 2,142 (923 males and 1,219 females); the widows left by flood, 124; widowers, 198; and orphans and half orphans, 5,850; 99 entire families were lost. The suddenness and extent of the disaster reminded the spectator and readers of the appalling story of Herculaneum and Pompeii.

The final report of the "Flood Relief Commission," presented July 28, 1890, furnished the following figures: "The total cash contributions, so far as the Commission was able to obtain information, were \$4,116,801.58. Of this amount, \$2,912,346.30 passed through the hands of the Relief Commission, divided as follows: Contributions sent to Governor Beaver, \$1,236,146.45; contributions disbursed by Philadelphia Permanent Relief Committee, \$600,000; by Pittsburgh Relief Committee, \$560,000; by New York Relief Committee, \$516,199.48. The expenditures by the Commission were \$2,845,140.83, of which \$2,592,936.68 went to the relief of the Conemaugh Valley, \$246,475.26 to the relief of other portions of the State, and \$5,728.89 for general and office expenses."

CONE-SHELL, the shell of a mollusk of the genus *Conus*, family *Conidae*. The mollusks of this genus, which are carnivorous, inhabit the shores and banks of sandy mud, chiefly within the tropics. The shell has a remarkable conical form. Cone-shells first appear in the chalk, and become more abundant in the more recent formations.

CONEY ISLAND, a narrow strip of sand, five miles long by one-half mile broad, barely separated from the southwest angle of Long Island, at the entrance to New York harbor. It has a fine beach, and is a place of summer resort. On the edge of the dunes stands a long row of enormous hotels, and farther inland is a seaside home for poor children. Other structures are a tubular iron pier (1,000 feet), a look-out tower (300 feet), and a great number of bathing pavilions.

CONFECTIONERY. See *Britannica*, Vol. VI, pp. 256-57.

CONFEDERATE STATES. See *Britannica*, Vol. XXIII, pp. 773, *et seq.*

CONFERVA, a genus of the natural order *Algae*. The plants consist of simple or branching jointed filaments, filled with green matter, and are found some in fresh and some in salt water.

CONFESSION: in law, the admission of guilt made by a person who has committed a crime or misdemeanor. In the United States and in England confessions are conclusive against the parties making them, provided they have been made with

out any promise or threat held out as an inducement.

CONFISCATION, the act of appropriating without compensation private property to the public use; also, the act of seizing by authority property improperly obtained or held; as, to confiscate a set of burglar's tools, or a set of gambling implements. When the goods of a criminal are declared forfeited and adjudged to the public treasury they are said to be confiscated. By the terms of an act of Congress, passed in 1861, all property used for insurrectionary purposes was declared confiscated. In some European countries confiscation of the estates of an offender has been imposed as a punishment for certain political offenses.

CONGLOMERATE. See *GEOLOGY*, *Britannica*, Vol. X, p. 237.

CONGO FREE STATE. See under *AFRICA*, in these Revisions and Additions.

CONGREGATIONALISM. See *Britannica*, Vol. VI, pp. 268-69. See also *RELIGIOUS DENOMINATIONS IN THE UNITED STATES*, in these Revisions and Additions.

CONGRESSIONAL APPORTIONMENTS. The first article of the Constitution of the United States provides that the number of Representatives in Congress shall not exceed one for every 30,000 of the population, but each State shall have at least one Representative. The ratios of representation for the Congressional elections held during the several decades and subsequent to the action of Congress (after each census), fixing such ratio, were as follows:

From 1789 to 1792 as provided by the Constitution.....	30,000
" 1792 " 1803 based on the Census of 1790.....	33,000
" 1803 " 1813 " " " " 1800.....	38,000
" 1813 " 1823 " " " " 1810.....	35,000
" 1823 " 1833 " " " " 1820.....	40,000
" 1833 " 1843 " " " " 1830.....	47,700
" 1843 " 1853 " " " " 1840.....	70,680
" 1853 " 1863 " " " " 1850.....	93,420
" 1863 " 1873 " " " " 1860.....	127,361
" 1873 " 1883 " " " " 1870.....	131,425
" 1883 " 1893 " " " " 1880.....	151,912
" 1893 " 1898 " " " " 1890.....	173,901

See also *ELECTORAL VOTES*, in these Revisions and Additions.

CONGRESS OF THE UNITED STATES. See *Britannica*, Vol. XXIII, pp. 749, *et seq.*

CONGREVE, RICHARD, an English author, born Sept. 4, 1818, and educated under Arnold at Rugby, passing afterwards to Wadham College, Oxford, of which he became successively scholar, fellow, and tutor, but resigned after having become definitely a disciple of Comte. In 1855 he published a good edition of Aristotle's *Politics*. Later works are: *Lectures on the Roman Empire of the West* (1855); *Elizabeth of England* (1862); *Essays, Political, Social and Religious* (1874).

CONGRUITY, a term applied in geometry to lines and figures which exactly correspond when laid over one another. See *COINCIDENCE*, in these Revisions and Additions.

CONIFERÆ. See *Britannica*, Vol. II, pp. 315, 321; Vol. IX, p. 222; Vol. XIX, p. 102; Vol. XXIV, p. 131.

CONIROSTRES, a tribe or section of the order of birds called *Insectores*, and characterized by a strong conical bill. The number of birds belonging to this tribe is very great, and the families differ much in many respects. Among them are finches, sparrows, larks, linnets, American orioles, crows, birds of paradise, etc.

CONJUGATION, a term in grammar applied to a connected view or statement of the inflectional changes of form that a verb undergoes in its various relations.

CONJUGATION OF CELLS, a union of two distinct cells of a plant, in order to reproduce. It has been observed only in the *Confervaceæ* and *Diatomaceæ*.

CONJUNCTION: in astronomy one of the aspects of the planets. Two heavenly bodies are in conjunction when they have the same longitude; that is, when the same perpendicular to the ecliptic passes through both. The sun and moon are in conjunction at the period of new moon. In general a heavenly body is in conjunction with the sun when it is on the same side of the earth and in line with the sun.

CONKLING, Roscoe, a United States Senator, born in Albany, N. Y., Oct. 30, 1829, died in New York city, April 18, 1888. He began the practice of law in 1846, and in 1850 became district attorney of Oneida county, N. Y. He was elected mayor of Utica in 1853, and in November of the same year was chosen as a Republican to Congress. In 1860 he was reelected, but two years later was defeated by Francis Kernan. He defeated Kernan, however, in 1864. He received a reelection in 1866, and in January of 1867 was chosen United States Senator. Mr. Conkling was reelected in 1873 and 1879. In 1885-86 Mr. Conkling was counsel of the State senate investigating committee, appointed to look into the fraud and bribery in the grant of the Broadway, N. Y., horse-railroad franchise by the board of aldermen in 1884.

CONN LOUGH, a lake in the north of Mayo county, Ireland, and, with Lough Cullen, 13 miles long and 8 miles broad. To the west are hills stretching to Mount Nephin, which has a height of 2,646 feet.

CONNARACEÆ, a natural order of dicotyledonous or exogenous plants, consisting of trees and shrubs. Forty or fifty species are known, all tropical. The best known product of this order is the beautiful wood called "zebra wood" furnished by a large tree, *Omphalobium Lambertii*, a native of Guiana.

CONNEAUT, a railroad junction of Ashtabula county, Ohio, on Conneaut Creek, 2 miles from Lake Erie. It has a light-house, and as the creek makes a good harbor, Conneaut is a shipping point for produce.

CONNECTICUT. For the history, geography, productions, schools, map, and earlier statistics of the State of Connecticut, see Britannica, Vol. VI, pp. 285-89. The census of 1890 gives the area as 4,990 sq. miles; population, 748,258; capital, Hartford, with a population of 53,182, an increase since 1880 of 11,167; population of the State in 1880, 622,700; net increase of the State since 1880, 123,558. The following table gives the population of the State by counties for 1880 and 1890:

Counties.	1890.	1880.	Increase.
Fairfield	150,061	112,042	38,069
Hartford	147,180	125,382	21,798
Litchfield	53,542	52,044	1,498
Middlesex	39,524	35,589	3,935
New Haven	209,058	156,523	52,535
New London	76,684	73,152	3,482
Tolland	25,061	24,112	969
Windham	45,158	43,856	1,302

Manufacturing forms the leading industry of the State. Though it ranks fifth in the amount of its manufactures, it holds the first place in respect of their variety. The State produces about one-half the rubber goods, more than one-half the hardware, and nearly all the clocks in the United States. Among the most important manufactures are

paper, firearms, carriages, cotton goods, woolen and silk fabrics, machinery, gunpowder, carpets, hosiery, furniture, sewing-machines, straw goods, saddlery, pianos, tools, buttons, pins, and many other things known as "Yankee Notions." Of the total area of the State about 1,700,000 acres are improved, and about 2,200,000 acres are unimproved. The census of 1890 shows a large increase in the population of its chief cities.

Its public school system has a deservedly high reputation, as also its higher educational institutions. Yale College, located at New Haven, is now attended by more than one thousand students. Middletown is also a widely-known educational center, and is the seat of Wesleyan University, one of the oldest Methodist Universities in America. It is also the seat of the Berkeley Divinity School. The total public school enrollment in the State in 1890, as shown by the census of that year, was 126,505 pupils—a gain over that of the census year, 1880, of 6.68 per cent. The gain in population during same period was 19.84 per cent. The aggregate number of teachers was 3,226, of whom 460 were males and 766 females. The parochial schools reported as follows: Catholic schools, nearly 13,000 pupils; Lutheran, a little over 400; Protestant Episcopal, only a few pupils.

For the population of its chief cities, see CITIES, POPULATION OF. The following is a complete list of the governors of the State to and including 1891:

Samuel Huntington.....	1785-96	C. H. Pond.....	1853-54
Oliver Wolcott.....	1796-98	Henry Dutton.....	1854-56
Jonathan Trumbull.....	1798-1809	Wm. T. Miner.....	1855-57
John Treadwell.....	1809-11	Alex. H. Holley.....	1857-58
Roger Griswold.....	1811-13	W. A. Buckingham.....	1858-59
John Cotton Smith.....	1813-18	Joseph R. Hawley.....	1866-67
Oliver Wolcott.....	1818-27	James E. English.....	1867-69
Gideon Tomlinson.....	1827-31	Marshall Jewell.....	1869-70
John S. Peters.....	1831-33	James E. English.....	1870-71
Henry W. Edwards.....	1833-34	Marshall Jewell.....	1871-72
Samuel A. Foote.....	1834-35	Charles E. Ingersoll.....	1873-75
Henry W. Edwards.....	1835-38	James E. English.....	1875-77
Wm. W. Ellsworth.....	1838-42	Richard D. Hubbard.....	1877-79
C. F. Cleveland.....	1842-44	Chas. B. Andrews.....	1879-81
Roger S. Baldwin.....	1844-46	Hobart B. Bigelow.....	1881-83
Isaac Toucey.....	1846-47	Thomas M. Waller.....	1883-85
Clark Bissel.....	1847-49	Henry H. Harrison.....	1885-87
Jos. Trumbull.....	1849-50	Phineas C. Lounsbury.....	1887-89
Thos. H. Seymour.....	1850-53	Morgan G. Bulkeley.....	1889-91

The following figures from the official reports of the crop census of 1888 show the acreage and yield of the State in respect of the various products named: Indian corn, 56,977 acres, yielding 1,778,000 bushels, valued at \$1,155,700; wheat, 2,149 acres, yielding 32,000 bushels, valued at \$38,400; rye, 23,500 acres, yielding 348,000 bushels, valued at \$257,298; oats, 39,811 acres, yielding 1,055,000 bushels, valued at \$453,650; barley, 638 acres, yielding 14,000 bushels, valued at \$9,876; buckwheat, 10,794 acres, yielding 134,000 bushels, valued at \$87,024; potatoes, 33,459 acres, yielding 2,677,000 bushels, valued at \$1,418,662; tobacco, 6,136 acres, yielding 9,608,000 pounds, valued at \$1,248,369; hay, 563,156 acres, yielding 574,419 tons, valued at \$8,443,959.

CONNECTICUT RIVER, THE, rises in northern New Hampshire, and flows in a southerly direction, separating Vermont from New Hampshire, and crossing Massachusetts and Connecticut, it enters Long Island Sound at Saybrook. It is about 400 miles long, and is navigable 50 miles for boats drawing eight feet of water.

CONNELLSVILLE, a railroad junction of Fayette county, Pa., situated on the Youghiogheny River. The best coke in the world is manufactured here; bituminous coal is mined, and paper and woolen goods manufactured.

CONNERSVILLE, the county-seat of Fayette county, Ind., situated on Whitewater River. The city

has a handsome court-house and manufactories of woollens.

CONNOISSEURS, a French term used to designate persons who, without being themselves artists, are supposed to possess a discriminating knowledge of the merits of works of art.

CONODONTS, small fossils occurring in Palæozoic strata. They are variable in form, and look very much like the teeth of different kinds of fishes, some being simple, slender-pointed sharp-edged cones, while others are more complex, resembling in form the teeth of certain sharks. Their affinities are very uncertain—it being maintained by some that they are minute teeth of fishes allied to the living hag-fishes and lampreys, and suggested by others that they have more analogy with the hooklets or denticles of annelids and naked mollusks.

CONOID, a solid formed by the revolution of a conic section round its axis; such are the sphere, paraboloid, ellipsoid, and hyperboloid.

CONQUEST: in the law of succession in Scotland, heritable property acquired during the life-time of the deceased, and called conquest, in opposition to that to which he has succeeded, and which is called heritage.

CONQUISTADORES (Sp., *conquerors*), a collective term for the conquerors of Spanish America, such as Cortes, Balboa, and Pizarro.

CONRAD, ROBERT TAYLOR (1810-58), an American lawyer. At an early age he was admitted to the bar, and in 1838 became judge of the criminal sessions for the city and county of Philadelphia. Later, he edited "Graham's Magazine," and afterwards was associate editor of the "North American." In 1854 he was elected mayor of Philadelphia, and in 1856 was appointed to the bench of the quarter sessions. He published considerably in both prose and poetry.

CONSCIENCE. See under **ETHICS**; see also *Britannica*, Vol. IV, p. 587; Vol. XII, p. 409; and Vol. XXI, p. 733.

CONSCIENCE, COURTS OF, OR COURTS OF REQUESTS: in England, courts constituted by special acts of Parliament for the recovery of small debts.

CONSCIOUSNESS. See *Britannica*, Vol. XVI, p. 92; Vol. XIX, pp. 20, 41; and Vol. XX, p. 88. For different theories of consciousness, see *Britannica*, Vol. V, p. 142; Vol. VI, p. 525; Vol. XI, p. 417; and Vol. XIV, p. 758.

CONSEGUIANA, a volcano of Nicaragua, occupying a promontory on the south side of Fonseca Gulf, about ten miles from the Pacific Ocean. The crater, at an elevation of about 4,000 feet above the mean level, is half a mile across, while its interior descends perpendicularly to a depth of 200 feet. Its last eruption occurred in 1835.

CONSENT: in law, the foundation of all contracts and legal obligations.

CONSERVATOIRE. See **CONSERVATORY**, *Britannica*, Vol. VI, p. 291.

CONSERVATORS OF THE PEACE, a title formerly applied in England to knights elected in each shire from the 12th century onwards for the conservation of the peace. They were, in fact, the predecessors of the justices of the peace.

CONSERVES, flowers, herbs, roots, fruit and seed, beaten with powdered sugar to the consistence of a stiff paste, so as to preserve them as nearly as possible in their natural freshness.

CONSHOCKEN, a town of Pennsylvania, situated on the Schuylkill River, about three miles below Norristown. It produces a variety of manufactures, including iron, cotton, and Phoenix stone, a material for building and pavements.

CONSIDÉRANT, VICTOR PROSPER, a French Socialist, born in 1808 at Salins, in the department of Jura. After being educated at the Polytechnic School of Paris he entered the army, which, however, he soon left to promulgate the doctrines of the socialist Fourier. In 1849 Considérant was accused of high treason, and compelled to flee from France. In Texas he founded a socialist community, *La Réunion*, which flourished for a time, but is now of little importance. Considérant returned to France in 1869.

CONSIDERATION, in legal contracts. See *Britannica*, Vol. VI, p. 322.

CONSIGNMENT: in mercantile law, the term applied to goods which are placed in the hands of an agent or factor for sale, or for some other specified purpose.

CONSORT: literally, one who throws in his lot with another. In English constitutional law, the term is applied to the husband or wife of the reigning sovereign, viewed not in a private but in a public capacity, as participating to a certain limited extent in the prerogatives of sovereignty.

CONSPIRACY. See *Britannica*, Vol. VI, pp. 298-94.

CONSTABLE. See *Britannica* Vol. VI, pp. 294-95.

CONSTANT, BENJAMIN, a French painter, born in Paris, June 10, 1845. He studied in the *École des Beaux-Arts*, and under Cabanel, and first exhibited at the Salon in 1869, with his *Hamlet and the King*, which was purchased by the French government. He is best known for his treatment of Eastern subjects. Among the best of his works are: *Prisoners in Morocco* (1875); *Mahomet II* (1876); *The Harem* (1878); *The Favorite of the Emir* (1879); *The Day After a Victory in the Alhambra* (1882); and *The Vengeance of the Chérif* (1885). He is one of the most popular of contemporary French painters, and received medals in 1875 and 1876, and the decoration of the Legion of Honor in 1878.

CONSTANT, the name given in mathematical analysis to a quantity which remains the same for all cases of the problem in opposition to a variable. Thus, in questions about the fall of bodies in given times, the force of gravity is a constant quantity.

CONSTANTIA, a district of Cape Colony, South Africa, lying on the eastern and northeastern slopes of Table Mountain range. The district consists of three estates, High, Great, and Little Constantia, which have long been famed for the quality of the wines produced upon them.

CONSTANTINE, NIKOLAYEVITCH, grand-duke of Russia, the second son of the emperor Nicholas I, and the brother of Alexander II, born Sept. 21, 1827. During the Crimean war, he commanded the Russian fleet of the Baltic. On the outbreak of the Polish insurrection in 1862, he held the office of viceroy of Poland for three months, and was appointed in January, 1865, and reappointed in 1878 president of the council of the empire. In 1882 he was dismissed from this dignity, as well as the command of the fleet, on the suspicion of having intrigued with the revolutionary party, while his eldest son, Nicholas, was banished to Tashkend.

CONSTIPATION, an irregular and insufficient action of the bowels, due either to deficient secretion of fluids in the digestive organs, or to imperfect muscular action of the bowels, but usually to both these causes combined. The retention within the organism of matters which should be regularly evacuated as they are formed, and their consequent absorption into the blood and tissues of the body, often lead to a whole train of unpleasant symptoms: headache, or pain in other regions, irritability, lassitude, and debility.

CONSTITUTION OF THE UNITED STATES. See *Britannica*, Vol. XXIII, pp. 740, *et seq.*

CONSUETUDINARY, or CUSTOMARY LAW, an unwritten law established by usage, and derived by immemorial custom from remote antiquity. When universal, it is called common law; when particular, it is called custom in a narrower sense, as the custom of a trade, or of a district.

CONSUL. See *Britannica*, Vol. VI, pp. 315-17.

CONSUMPTION: in political economy, the use or expenditure of the products of labor, or of anything which has an exchangeable value.

CONTARINI, the name of a noble family in Venice, one of the twelve that elected the first doge. Between 1043 and 1674 eight doges were furnished by this family, which also counted among its members four patriarchs, and a large number of generals, statesmen, artists, poets and scholars.

CONTEMPT. See *Britannica*, Vol. VI, pp. 318-19.

CONTINGENT REMAINDER. See *Britannica*, Vol. XX, pp. 372-73.

CONTORTED STRATA, beds which are bent and twisted, so that in a section their edges follow crooked and curved lines.

CONTORNIAE, a term applied to a class of antique medals, which have a deep line cut around the edge like a furrow.

CONTRA: in music, a term signifying opposite, lower, and applied to the alto and tenor parts when they form the lowest part in the harmony. When a part lower than the usual bass is employed, it is called contra-basso. Contra is also used in organ-building to indicate that a certain stop is an octave lower than the usual stop.

CONTRABAND. See *Britannica*, Vol. VI, pp. 820-22.

CONTRACT. See *Britannica*, Vol. VI, pp. 322-24.

CONTRALTO, the deepest or lowest species of musical voice in boys, in eunuchs, and, best of all, in women, where its beauty of tone gives it the preference. The powers of expression which it possesses are quite peculiar, and cannot be supplied by any other kind of voice. Its tone character (timbre) is serious, spiritual, tender, and romantic. Contralto voices generally consist of two registers, the lowest beginning at F or G below middle C, and reaching as high as the A or B above it. The higher notes up to the next F or G partake more of the character of the soprano.

CONTRAVENTION: in the law of Scotland, any act done in violation of a legal condition or obligation.

CONTRAVALLATION, LINES OF, a chain of works around a besieged place to resist the sorties of the garrison.

CONTRAYERVA "counter-poison," an aromatic bitterish root of different species of *Dorstenia*, of the natural order *Moraceæ*; a tropical American plant used as a stimulant and tonic.

CONTRIBUTION: in law, a payment made by each of several persons (having a common interest) of his share in a loss suffered, or in an amount advanced by any one of the partners for the common good. A suit for contribution in law is a suit brought by one or more of the several interested parties to compel the others to contribute their proportionate share.

CONVENTIONAL: in art, that which is in accordance, not with the absolute principles of beauty in form of color, but with opinions with regard to forms and colors which chance to prevail at a particular time, in a particular country, or social class.

CONVERGING, or CONVERGENT, applied in geometry to straight lines that meet or tend to

meet in a point; looked at in a direction from the point, they are divergent, or separating. Convergent and divergent are often used in reference to rays of light.

CONVERSION, a theological term applied to the conscious change of heart prompting the repentant sinner to a new life, which is part of the process of regeneration. Popularly the name means the sensible experience of this.

CONVERSION, in logic, signifies that one proposition is formed from another by interchanging the subject and predicate.

CONVEYANCING. See *Britannica*, Vol. VI, pp. 824-25.

CONVOY (Fr., *convoy*), a name given to one or more ships of war appointed to protect a fleet of merchant-vessels against the attacks of an enemy. If a merchant-ship parts company with a convoy, or neglects to obey the convoy's instructions or signals, all claims of insurance are forfeited. The name is sometimes applied to the merchant-vessel so escorted. In the military service a convoy is a train of wagons laden with provisions, treasure, or warlike stores, and escorted by a detachment of troops.

CONVULSIONARIES, a name given to a fanatical sect of Jansenists who sprang up in France about 1730. Their meeting-place was the churchyard of St. Médard, in a suburb of Paris, where was the tomb of a certain Francis of Paris, who died in 1727, and was reckoned very holy by the Jansenists on account of extravagant asceticism.

CONWAY, a river in North Wales, famous for the bold romantic scenery along its higher, as well as for the richly beautiful scenery along its lower course. It rises in a small mountain lake, around which meet the three counties of Merioneth, Denbigh and Carnarvon; it runs 30 miles northward past Llanrwst and Conway to Beaumaris bay. In its last 10 miles a smooth-flowing if winding stream, it is navigable for vessels of 100 tons. At Conway it is half a mile broad at spring-tides, which rise here from 21 to 24 feet. Pearl-mussels are found at its mouth.

CONWAY, HUGH, the pseudonym of Frederick John Fergus, an English novelist, born in Bristol in 1847, died at Monte Carlo, May 15, 1885. At the age of 13 he entered a school frigate for the purpose of training for a seafaring life, but yielding to his father's wishes he abandoned this to become an auctioneer, and employed his leisure time in writing verses and occasional tales for the newspapers. Some of his songs were published in 1873, a volume of verse in 1879; but it was the issue and rapid sale of *Called Back* (1884) which made him famous. Fergus went to London, where he devoted himself to authorship, producing in rapid succession *Dark Days*, *A Family Affair*, and other works.

CONWAY, MONCURE DANIEL, an American author, born in Stafford county, Va., March 17, 1832. He studied law, but abandoned it to enter the Methodist ministry in 1850. Shortly after he left the Methodist ministry and entered the Divinity School at Cambridge, Mass., receiving his diploma in 1854. The same year he became pastor of the Unitarian church in Washington, D. C., and in 1857 took charge of a church in Cincinnati, Ohio. He wrote numerous pamphlets as a representative of the anti-slavery party, and has published various works on theological and other subjects.

CONWAY, THOMAS, COUNT DE (1738-1800), a soldier in the United States army. He distinguished himself in the French army, and in 1777 came to the United States and offered his services to Congress. He was at the battles of Brandywine and Germantown as a brigadier-general. He was made

major-general, Dec. 14, 1777, but in March of the following year resigned. Subsequently he returned to France, and was appointed governor of Pondicherry, and the French settlements in Hindoostan. In 1792 he took charge of the royalist army in the south of France. Count Conway is chiefly known in American history as the leader of a conspiracy to deprive Washington of the command of the army.

CONY, a rabbit, especially the European rabbit (*Lepus cuniculus*). See *Britannica*, Vol. XX, p. 192. The cony of the Old Testament is supposed to be the Syrian hyrax, or daman (*Hyrax Syriacus*). See *Britannica*, Vol. XII, p. 599.

CONYBEARE, WILLIAM JOHN, REV., son of William Daniel Conybeare, the eminent geologist, born Aug. 1, 1815, died at Weybridge in 1857. He was educated at Westminster and Trinity College, Cambridge. In 1842 he was appointed principal of the Liverpool Collegiate Institution, which position he was subsequently compelled by ill health to exchange for the vicarage of Axminster. He was joint author with Dean Howson of a widely known *Life and Epistles of St. Paul* (1851). His other works were *Essays, Ecclesiastical and Social* (1856), and a novel.

CONYZA, a genus of plants of the natural order *Compositæ*, sub-order *Corymbifere*. *Inula conyza*, better known as fleabane, has a strong, peculiar odor, which is said to drive away fleas and gnats.

COOK, DURRON, dramatic critic and author, born in London, Jan. 30, 1829, died Sept. 11, 1883. He wrote for various newspapers and magazines, including "Temple Bar" and "Chambers's Journal." His eight novels and other productions were well written and interesting.

COOK, ELIZA, a favorite minor English poetess, daughter of a London tradesman, born at Southwark in 1818. She contributed poetical pieces to various magazines from an early age, and issued her *Melania and Other Poems* in 1838. She has also written *Jottings from My Journal* (1860), and *Laconics* (1865).

COOK, JOSEPH, an American author, born in 1838. He was licensed to preach in 1868, and was pastor in Andover, Mass., and Lynn, the following three years. In 1871 he studied in Europe, Asia and Africa. In 1873 he returned to the United States, and lectured on the relations of religion, science and current reform. In 1880 he made a lecturing tour around the world, and was everywhere favorably received. His published works are chiefly on religious subjects.

COOK, MOUNT, the highest peak of Australasia, one of the Southern Alps, near the center of the range, on the western side of the South Island of New Zealand. See *Britannica*, Vol. XVII, p. 466.

COOKE, GEORGE FREDERICK, actor, born in Westminster in 1756, died in New York city, Sept. 26, 1811. He made his first public appearance at Brentford in 1776, and in the period between 1784 and 1800 became very popular in the English provinces and in Ireland. From 1801 to 1810 he played at Covent Garden both in comedy and in tragedy. In 1810 he visited America, and appeared before enthusiastic audiences in the chief northern cities.

COOKE, HENRY (1788-1868), an Irish Presbyterian minister. In 1808 he was ordained pastor of the church of Duncane, and in 1810 of the one at Donegare. In 1813 he became pastor of the church at Killyleagh, and in 1829 of the largest church in Belfast. He held this last position until his death in 1868.

COOKE, JAY, an American banker, born in 1821. He entered the banking-house of E. W. Clark & Co. as a clerk in 1838, and four years later became

a partner. In 1861 he established a new firm, of which he was the head, and this house became the Government agent for the placing of war loans. At the conclusion of the war the firm became the agent for the Northern Pacific railroad, and the suspension of the banking-house, growing out of its connection with that enterprise, was one of the causes of the financial panic of 1873. Mr. Cooke afterward resumed business with success.

COOKE, JOHN ESTEN (1880-86), an American author. He devoted himself to literature, after practicing law for about four years, until the beginning of the civil war, when he entered the Confederate army. He served in nearly all the battles of Virginia, and at Lee's surrender was inspector-general of the horse artillery of the Army of Northern Virginia. His writings relate almost entirely to Virginia, and describe the life, manners and history of the people of that State.

COOKERY. See *Britannica*, Vol. VI, pp. 331-33.

COOLEY, THOMAS MCINTYRE, an American jurist, born at Attica, N. Y., Jan. 6, 1824. He was admitted to the bar at Adrian, Mich., in 1846. For the two years following he practiced at Tecumseh, after which he settled in Adrian. He was for a time editor of "The Watch Tower." In 1858 he was appointed reporter of the Supreme Court, and held this office for seven years. In 1859 he became professor of law in the University of Michigan. In 1864 he was elected justice of the Supreme Court of Michigan to fill a vacancy, and was reelected in 1869 for eight years. In 1868-69 he was chief justice, and in 1885 retired from the bench. In 1881 he assumed the professorship of constitutional and administrative law in the University of Michigan. He has published numerous works on law.

COOLIDGE, FREDERICK S., of Ashburnham, Mass., a manufacturer, born in Westminster, Mass., Dec. 7, 1841. He received a common-school education; in politics is a Democrat, and was for several years one of the selectmen of Westminster, besides holding other town offices. In 1874 he was elected a member of the State legislature, being the first Democrat elected from that district since the year of his birth; was a member of the Democratic State committee and a candidate for Presidential Elector on the Democratic ticket in 1888; in 1890 was elected a representative from the 11th Congressional District of Massachusetts to the 52d Congress.

COOPER, PETER, an American philanthropist, born in New York city, Feb. 12, 1791, died there April 4, 1838. He was engaged in various business pursuits till 1828, when he erected the Canton iron-works in Baltimore, and in 1830 built from his own designs the first locomotive engine ever constructed in the United States. He next returned to New York and built an iron-factory, and later, in 1845, erected three blast-furnaces in Phillipsburg, Pa. Mr. Cooper took an active part in the laying of the Atlantic cable, and he was the first and only president of the New York, Newfoundland and London Telegraph Company. But he is most widely known as the founder of Cooper Union, New York city, the corner-stone of which was laid in 1854. This building was erected for the advancement of science and art, and the education of the poorer classes. In 1876 Mr. Cooper was the candidate of the National Independent party for president, and in the election that followed received nearly 100,000 votes.

COOPER, SUSAN FENIMORE, an American authoress, born in 1813. For several years before the death of her father, James Fenimore Cooper, she was his secretary and amanuensis. In 1873 she founded an orphanage in Cooperstown, N. Y., and

in 1886 established "The Friendly Society." Her published works are: *Rural Hours; The Journal of a Naturalist; Rhyme and Reason of Country Life; and Mt. Vernon to the Children of America.*

COOPER, THOMAS (1759-1840), an Anglo-American scientist. He studied law in England and then went to France, where he took a course in chemistry. In 1795 he came to the United States, and practiced law in Northumberland, Pa. In 1811-14 he was professor of chemistry in Dickinson College, and in 1816-21 held a similar position in the University of Pennsylvania. From 1820 to 1834 he was president of the College of South Carolina. Mr. Cooper published many works on political and scientific subjects.

COOPERATION. See Britannica, Vol. VI, pp. 838-41.

COOPERSTOWN, a pleasant village of New York, named for the novelist, James Fenimore Cooper. It lies at the south end of Otsego Lake, and has a hospital, academy, and orphan asylum.

COOSY, one of the largest rivers of India. After a course of 325 miles through the state of Nepal and the district of Purneah, it joins the Ganges from the left.

COOT. See Britannica, Vol. VI, pp. 341-42.

COOTEHILL, a town in the northeast of Cavan county, Ireland, on the Cootehill River. It has a trade in linen. Population, 2,000.

COPALCHI BARK, a bark resembling *cascarilla* in its properties, and produced by shrubs of the same genus. It is used as a substitute for cinchona.

COPE, CHARLES WEST, an English painter, born in 1811, died Aug. 20, 1890. His paintings are chiefly of a historical nature, but he also executed some valuable domestic pieces. He frescoed the Peers' corridor in the Houses of Parliament. He became a Royal academician in 1848, and professor of painting to the Academy in 1867.

COPE, EDWARD DRINKER, an American naturalist, born in 1840. He studied comparative anatomy in the United States and in Europe, and from 1864 to 1867 was professor of natural sciences in Haverford College. He was for some time palaeontologist to the United States geological survey, and later curator of the Academy of Natural Sciences of Philadelphia. Prof. Cope is a member of numerous scientific societies in America and Europe, and in 1884 was vice-president of the section on biology of the American Association for the Advancement of Science. He has published many important works on scientific subjects.

COPECK, the oldest Russian coin, and the first substitute for furs as a medium of exchange.

COPLAND, JAMES, a physician, born at Deerness, in the Orkneys, in 1791, died July 12, 1870. He graduated M. D. at Edinburgh in 1815, and settled to practice in London in 1820. He published the *Dictionary of Practical Medicine* (3 vols., 1832), a monument of enormous industry; also works on palsy and apoplexy (1850), and on consumption (1861).

COPPÉE, FRANÇOIS EDOUARD JOACHIM, a French poet, born in 1842. He produced poetical pieces of merit at a very early age, and while still young commenced writing dramas. He was a favorite of Napoleon III, who gave him a position in the library of the senate at the Luxembourg, and in 1878 he became archiviste of the Comédie Française.

COPPÉE, HENRY, an American educator, born in 1821. He served as an officer of artillery through the Mexican war, and received the brevet of captain for gallantry. From 1850 to 1855 he was assistant professor of geography, history and ethics at West Point, and from 1855 to 1866 was professor of

English literature in the University of Pennsylvania. From 1866 to 1875 he was president of Lehigh University, and then exchanged the presidency for the professorship of history. He has published many works on scientific and other subjects.

COPPER. See Britannica, Vol. VI, pp. 347-52.

COPPERHEAD (*Trigonocephalus contortrix*), a venomous serpent, closely allied to the rattlesnake, found in eastern North America from New England to Florida. It has a thick body from 2 to 3 feet long, a short tail without rattles, and is slow and clumsy in its movements; but lurking in dark and moist places, and giving no warning of its proximity, it is more dreaded than the rattlesnake. The term was applied during the civil war by the Unionists of the North to Southern sympathizers, as suggesting insidious foes.

COPPERED, COPPERING: in ship-building, the terms used in reference to the sheathing applied to the bottom.

COPPER INDIGO, an ore of copper found in spheroidal masses, of an indigo-blue color, in Thuringia and Vesuvius. It is very nearly pure sulphuret of copper.

COPPERMINE RIVER, a river in Canada, which enters a bay of the Arctic Ocean, northeast of the Great Bear Lake, after a course of about 250 miles.

COPSE, or COPPICE, a natural wood or plantation, whose trees, cut from time to time, send up new shoots from their roots or stools.

COPTIS, a genus of plants of the natural order *Ranunculaceæ*, natives of the north temperate zone. A decoction of the leaves and stalks of *C. trifolia* (three-leaved goldthread), found in the northern part of the United States, is used by the Indians for coloring cloth and skins yellow.

COPULA: in grammar and logic, the term employed to designate the word which expresses the relation between the subject and predicate. Thus, in the sentence "Art is long," art is the subject, long the predicate, and is the copula.

COPY: in the fine arts, a reproduction of a work, whether painting, statue or engraving, not by the original artist. A copy made by the master himself is called a *replica*.

COPYRIGHT BILL, INTERNATIONAL, of the United States. For earlier copyright laws in various countries, see Britannica, Vol. VI, pp. 356-67. The following is the full text of the International Copyright bill as approved and signed March 3, 1891:

Be it enacted, That section 4952 of the Revised Statutes be and the same is hereby amended so as to read as follows: "SECTION 4952—The author, inventor, designer or proprietor of any book, map, chart, dramatic or musical composition, engraving, cut, print or photographic negative thereof, or of a painting, drawing, chromo, statue, statuary, and of models or designs intended to be perfected as works of fine art, and the executors, administrators or assigns of any such person shall, upon complying with the provisions of this chapter, have the sole liberty of printing, reprinting, publishing, completing, copying, executing, finishing and varying the same, and in the case of dramatic composition of publicly performing or representing it, or causing it to be performed or represented by others, and authors or their assigns shall have exclusive right to dramatize and translate any of their works for which copyright shall have been obtained under the laws of the United States."

SEC. 2. That Section 4954 of the Revised Statutes be and the same is hereby amended so as to read as follows: "SECTION 4954—The author, inventor or designer, if he be still living, or his widow or children if he be dead, shall have the same exclusive right continued for the further term of fourteen years, upon recording the title of the work or description of the article so secured a second time and complying with all other regulations in regard to original copyright within six months before the expiration of the first term, and such persons shall within two months from the date of said renewal cause a copy of the record thereof to be published in one or more newspapers printed in the United States for the space of four weeks."

SEC. 3. That Section 4956 of the Revised Statutes of the United States be and the same is hereby amended so that it

shall read as follows: "Section 4956—No person shall be entitled to a copyright unless he shall, on or before the day of publication in this or any foreign country, deliver at the office of the Librarian of Congress, or deposit in the mail within the United States, addressed to the Librarian of Congress at Washington, District of Columbia, a printed copy of the title of the book, map, chart, dramatic or musical composition, engraving, cut, print, photograph, or chromo, or a description of the painting, drawing, statue, statuary, or a model or design for a work of the fine arts, for which he desires a copyright, nor unless he shall, also, not later than the day of the publication thereof in this or any foreign country, deliver at the office of the Librarian of Congress, at Washington, District of Columbia, or deposit in the mail within the United States, addressed to the Librarian of Congress, at Washington, District of Columbia, two copies of such copyright book, map, chart, dramatic or musical composition, engraving, chromo, cut, print, or photograph, or in case of a painting, drawing, statue, statuary, model, or design for a work of the fine arts, a photograph of same: *Provided*, That in the case of a book, photograph, chromo, or lithograph, the two copies of the same required to be delivered or deposited as above shall be printed from type set within the limits of the United States, or from plates made therefrom, or from negatives, or drawings on stone made within the limits of the United States, or from transfers made therefrom. During the existence of such copyright the importation into the United States of any book, chromo, or lithograph, or photograph, so copyrighted, or any edition or editions thereof, or any plates of the same not made from type set, negatives or drawings on stone made within the limits of the United States, shall be, and it is hereby, prohibited, except in the cases specified in paragraphs five hundred and twelve to five hundred and sixteen, inclusive, in section two of the act entitled "An act to reduce the revenue and equalize the duties on imports, and for other purposes," approved October first, eighteen hundred and ninety; and except in the case of persons purchasing for use and not for sale, who import subject to the duty thereon, not more than two copies of such book at any one time; and except in the case of newspapers and magazines, not containing in whole or in part matter copyrighted under the provisions of this act, unauthorised by the author, which are hereby exempted from prohibition of importation: *Provided, nevertheless*, That in the case of books in foreign languages, of which only translations in English are copyrighted the prohibition of importation shall apply only to the translation of the same, and the importation of the books in the original language shall be permitted."

Sec. 4. That section forty-nine hundred and fifty-eight of the Revised Statutes be, and the same is hereby, amended so that it will read as follows:

"Sec. 4958. The Librarian of Congress shall receive from the persons to whom the services designated are rendered the following fees:

"First. For recording the title or description of any copyright book or other article, fifty cents.

"Second. For every copy under seal of such record actually given to the person claiming the copyright, or his assigns, fifty cents.

"Third. For recording and certifying any instrument of writing for the assignment of a copyright, one dollar.

"Fourth. For every copy of an assignment, one dollar.

"All fees so received shall be paid into the Treasury of the United States: *Provided*, That the charge for recording the title or description of any article entered for copyright, the production of a person not a citizen or resident of the United States, shall be one dollar, to be paid as above into the Treasury of the United States, to defray the expenses of lists of copyrighted articles as hereinafter provided for.

"And it is hereby made the duty of the Librarian of Congress to furnish to the Secretary of the Treasury copies of the entries of titles of all books and other articles wherein the copyright has been completed by the deposit of two copies of such book printed from type set within the limits of the United States, in accordance with the provisions of this act and by the deposit of two copies of such other article made or produced in the United States; and the Secretary of the Treasury is hereby directed to prepare and print, at intervals of not more than a week, catalogues of such titles for distribution to the collectors of customs of the United States and to the postmasters of all postoffices receiving foreign mails, and such weekly lists, as they are issued, shall be furnished to all parties desiring them, at a sum not exceeding five dollars per annum; and the Secretary and the Postmaster-General are hereby empowered and required to make and enforce such rules and regulations as shall prevent the importation into the United States, except upon the conditions above specified, of all articles prohibited by this act."

Sec. 5. That section forty-nine hundred and fifty-nine of the Revised Statutes be, and the same is hereby, amended so as to read as follows:

"Sec. 4959. The proprietor of every copyright book or other article shall deliver at the office of the Librarian of Congress, or deposit in the mail, addressed to the Librarian of Congress, at Washington, District of Columbia, a copy of every subsequent edition wherein any substantial changes shall be made: *Provided, however*, That the alterations, revisions, and additions made to books by foreign authors, heretofore published, of which new editions shall appear subsequently to the taking effect of this act, shall be held and deemed

capable of being copyrighted as above provided for in this act, unless they form a part of a series in course of publication at the time this act shall take effect."

Sec. 6. That section forty-nine hundred and sixty-three of the Revised Statutes be, and the same is hereby, amended so as to read as follows:

"Sec. 4963. Every person who shall insert or impress such notice, or words of the same purport, in or upon any book, map, chart, dramatic, or musical composition, print, cut, engraving, or photograph, or other article for which he has not obtained a copyright, shall be liable to a penalty of one hundred dollars, recoverable one-half for the person who shall sue for such penalty and one-half to the use of the United States."

Sec. 7. That section forty-nine hundred and sixty-four of the Revised Statutes be, and the same is hereby, amended so as to read as follows:

"Sec. 4964. Every person, who after the recording of the title of any book and the depositing of two copies of such book, as provided by this act, shall, contrary to the provisions of this act, within the term limited, and without the consent of the proprietor of the copyright first obtained in writing, signed in presence of two or more witnesses, print, publish, dramatize, translate, or import, or knowing the same to be so printed, published, dramatized, translated, or imported, shall sell or expose to sale any copy of such book, shall forfeit every copy thereof to such proprietor, and shall also forfeit and pay such damages as may be recovered in a civil action by such proprietor in any court of competent jurisdiction."

Sec. 8. That section forty-nine hundred and sixty-five of the Revised Statutes be, and the same is hereby, so amended as to read as follows:

"Sec. 4965. If any person after the recording of the title of any map, chart, dramatic or musical composition, print, cut, engraving or photograph, or chromo, or of the description of any painting, drawing, statue, statuary, or model or design intended to be perfected and executed as a work of the fine arts, as provided by this act, shall within the term limited, contrary to the provisions of this act, and without the consent of the proprietor of the copyright first obtained in writing, signed in presence of two or more witnesses, engrave, etch, work, copy, print, publish, dramatize, translate or import, either in whole or in part, or by varying the main design with intent to evade the law, or knowing the same to be so printed, published, dramatized, translated or imported, shall sell or expose to sale any copy of such map or other article as aforesaid, he shall forfeit to the proprietor all the plates on which the same shall be copied, and every sheet thereon either copied or printed, and shall further forfeit \$1 for every sheet of the same found in his possession, either printing, printed, copied, published, imported or exposed for sale; and in case of a painting, statue, or statuary, he shall forfeit \$10 for every copy of the same in his possession or by him sold or exposed for sale; one-half thereof to the proprietor and the other half to the United States."

Sec. 9. That Section forty-nine hundred and sixty-seven of the Revised Statutes be, and the same is hereby amended, so as to read as follows:

"Sec. 4967. Every person who shall print or publish any manuscript whatever without the consent of the author or proprietor first obtained shall be liable to the author or proprietor for all damages occasioned by such injury."

Sec. 10. That Section 4971 of the Revised Statutes be and the same is hereby repealed.

Sec. 11. That for the purpose of this act each volume of a book in two or more volumes, when such volumes are published separately, and the first one shall not have been issued before this act take effect, and each number of a periodical shall be considered an independent publication subject to the form of copyrighting as above.

Sec. 12. That this act shall go into effect on the 1st day of July, A. D. 1891.

Sec. 13. That this act shall only apply to a citizen or subject of a foreign State or nation when such foreign State or nation permits to citizens of the United States of America the benefit of copyright on substantially the same basis as its own citizens, or when such foreign State or nation is a party to an international agreement which provides for reciprocity in the granting of copyright, by the terms of which agreement the United States of America may at its pleasure become a party to such an agreement. The existence of either of the conditions aforesaid shall be determined by the President of the United States by proclamation made from time to time as the purpose of this act may require.

COQUELIN, BENOIT-CONSTANT, a French actor and author, born in 1841. He first appeared on the stage in 1860. He has since written several plays. He visited the United States in 1888.

COQUIMBO, or SERENA. See Britannica, Vol. XXI, pp. 674-75.

COQUITO, a beautiful Chilian palm, *Jubaea spectabilis*, allied to the cocoanut. It bears small edible nuts, and the sap is boiled to a syrup (*miel de palma*), which is highly esteemed by the Chilians.

CORACOID, an important parietal-bone in the breast-girdle, forming along with the scapula the

articulation for the fore-limb, and always lying ventrally. In the lower fishes the entire girdle is cartilaginous; in the bony fishes distinct coracoids first appear; they are well seen in amphibia and in all reptiles except snakes; they are very large and strong in birds, but become mere processes of scapula in mammals.

CORAL FLOWER, or **CORAL-TREE**, a genus of plants of the natural order *Leguminosæ*, sub-order *Papilionaceæ*, natives of tropical and sub-tropical regions. The Indian coral flower is used in the East Indies for hedges; the wood, which is light and spongy, is used as a substitute for cork.

CORAL-RAG: in geology, a term applied to the highest members of the Middle Oolitic series, a variety of lime-stone containing continuous beds of petrified corals, of variable thickness.

CORAL SEA, that section of the Pacific which stretches between Australia on the west and the New Hebrides on the east.

CORALLINE, a genus of marine algæ, remarkable for rigidity, which is mostly owing to a calcareous incrustation. It is an object of great beauty in the rock-pools. There are about 30 known species, chiefly tropical.

CORANACH, **CRONACH**, Etc., a funeral dirge, formerly in use among the Irish and Scotch. It consisted of certain loud and mournful notes and verses, wherein the pedigree, property and the good and great deeds of the deceased were recounted, in order to excite sorrow or revenge in the hearers.

CORATO, a large town in Southern Italy, on a fertile plain, 25 miles west of Bari. Population, 80,428.

CORBAN: in Judaism, any offering to God in fulfillment of a vow. To the law concerning vows, the rabbins added the rule that a man might interdict himself by a vow, not only from enjoying anything himself, but also from giving it to others. The thing interdicted was considered as corban. Many of the Jews took advantage of this rule to shirk inconvenient obligations. It was this selfishness under the garb of religion which Christ rebuked in the Scribes and Pharisees.

CORBET, **RICHARD** (1582-1635), an English poet and bishop. He was educated at Westminster School, Broadgates Hall (now Pembroke College), and Christ Church, Oxford. He took orders, and had already enjoyed preferments at Cassington and Stewkeley, as well as a prebend in Salisbury, when in 1620 he was made dean of Christ Church. In 1624 he was appointed to the see of Oxford, and translated to that of Norwich in 1632. Here he died in 1635. Corbet's poetry reflects the genial temper and wit for which he was famous. His longest work is *Iter Boreale*, an account of the holiday tour of four students; the best as well as the best-known is the *Fairies' Farewell*.

CORBIE-STEPS, **CORBEL-STEPS**, or **CROW-STEPS**, a succession of steps with which gables of houses are sometimes ornamented.

CORCELLES, **CLAUDE FRANÇOIS PHILIBERT TIRCUIR DE**, a French diplomatist, born in 1802. He was elected to the Chamber of Deputies in 1837, and again in 1848. In 1851 he retired from politics, and remained in private life until 1871, when he returned to the legislature. From 1873 to 1876 he was ambassador to Rome.

CORDAGE, the running rigging of a ship, as distinguished from the standing rigging. The name is also given to the store of rope kept in reserve.

CORD-GRASS, a common name of the grasses of the genus *Spartina*. Some of the species, on account of the toughness of their fiber, are used for making ropes.

CORDIACEÆ, drupaceous *Boraginaceæ*. Some species are valued for their fruit, and others for their timber.

CORDON: in military operations, a line of sentinels, inclosing or guarding any particular space of ground, to prevent the passage of persons other than those belonging to the army.

COREA (**CH'AO-HSIEN**, or **KAOLE**). See *Britannica*, Vol. VI, pp. 390-94. The most recent official statistics give the population of Corea as 10,528,937. The capital is Seoul, with a population of about 250,000. Very little is known of the interior, either as to the people or the nature of the soil; but rice, millet, cotton, hemp, tobacco, and many fruits are grown on the fertile territory skirting the sea, and the people are similar in their habits to the Chinese on the neighboring mainland. In 1876 Corea concluded a treaty with Japan; in 1882 with China and the United States; in 1884 with Italy and Russia; and in 1886 with France. An overland trade convention has also been concluded with Russia. In these treaties Corea was treated with as an independent state, and by virtue of them the three ports of Jenchuan, Fusan and Yuen-san are now open to foreign commerce. The total value of the trade at the three ports was, in 1889—imports, \$3,377,815; exports, \$1,233,841. The value of the trade for 1890 was about double these figures. A military school, under the charge of two ex-army officers of the United States, has recently been established by the government. The army consists of about 7,000 troops.

CORDOVAN, leather prepared from goat skins. It was originally manufactured by the Moors of Cordova—hence its name. The best cordovan still comes from the Levant.

COREGONUS, a genus of fishes. See *GWYNIAD*, *Britannica*, Vol. XI, p. 346; *POLLAN*, Vol. XIX, p. 402; *POWAN*, Vol. XIX, p. 650; *COREGONUS*, XXI, p. 221, 223; *VENDACE*, Vol. XXIV, p. 137; *WHITEFISH*, Vol. XXIV, p. 552.

CORENTYN, a river of South America. It rises 25 miles east of the Essequibo, flows north separating the British and Dutch Guiana, and enters the Atlantic. It is navigable for a distance of 150 miles.

CORINNE CITY, an important town of Utah, situated on Bear River, about twenty-five miles north of Ogden. It is extensively engaged in shipping, and has a large trade in general produce and merchandise.

CORINTH, the county-seat of Alcorn county, Miss., and a great railroad junction of important lines of travel. It was the scene of an important battle, Oct. 3, 1862, between the National forces and the Confederates.

CORK. See *Britannica*, Vol. VI, p. 402.

CORLISS, **GEORGE HENRY** (1817-88), an American inventor. His most important inventions were the improvements in steam engines, by which uniformity of motion was secured by the method of connecting the governor with the cut-off. Mr. Corliss was a member of the Rhode Island legislature from 1868 to 1870, and was a Republican Presidential Elector in 1876. He received numerous high honors for mechanical achievements.

CORM, the short, bulb-like subterranean stem of many endogenous plants. It annually produces buds in the form of small corms, either from its summit or its side, and these gradually exhaust and destroy it. When a corm produces young corms from its summit, as in the crocus, they approach in a few years the surface of the soil, however deeply they may at first have been planted.

CORMORANT. See *Britannica*, Vol. VI, pp. 407-08.

CORN: as usually applied, a generic name for all seeds used in making bread, especially the seeds of cerealia. In England, corn means wheat; in Scotland, oats; and in the United States, maize.

CORNACEÆ, a small natural order of exogenous plants, containing about 40 known species, chiefly trees and shrubs, of the northern temperate regions. The fruits of some are edible.

CORN APHIS (*Aphis granaria*), a plant louse, which is often injurious to corn crops, appearing in great numbers on the ears, sucking the juice of the plant and so impoverishing the grain. The male is green; the female, dull orange.

CORN BEETLE (*Cucujus testaceus*), a minute beetle, whose larvæ feed on grain, particularly wheat. The perfect insect is of a tawny color; the larvæ, ochreous, with a forked tail.

CORNBASH, a member of the Lower Oolite. It consists chiefly of rubbly cream-colored limestone in thin layers, always nodular and concretionary, each fragment having a deep red coating.

CORN-COCKLE, or **CORN-ROSE** (*Agrostemma Githago*), a tall weed, a native of Europe or the west of Asia, but now found in many countries. It is a frequent weed among crops of grain, and is well known on account of its large purple flowers.

CORN CROP. For corn or maize crop, see *Britannica*, Vol. XV, pp. 909-10. The corn crop of the United States in 1889 reached the large total of 2,112,292,000 bushels. This is the largest corn crop reported in the entire history of the country. The largest total previously reached was that of 1888, when the amount reported was 1,987,790,000 bushels. Among the incidents of special historic value to farmers connected with the corn crop of 1889 were the results of a "prize contest," suggested and vigorously promoted by the publishers of the "American Agriculturist." The prize offered was for the largest yield of chemically dry shelled corn on a single acre during the year 1889. It was awarded to Mr. Z. J. Drake, of Marlborough county, South Carolina, whose single acre produced the enormous and hitherto unparalleled yield shown by the following figures: Total corn on ear, 17,407 lbs. (82 per cent. corn and 18 per cent. cob); shelled corn or kernels, 14,273 lbs.; shelled corn, green, 255 bushels; shelled corn, crib-cured, 239 bushels; shelled corn, chemically dry, 217 bushels—the greatest yield for a single acre ever recorded.*

*The acre selected by Mr. Drake was a sandy soil. The original growth was oak, hickory, and long-leaf pine. Three years previous, before the land was improved, \$3 per acre was a fair valuation, while thirty years ago the plantation of which this acre is an average specimen was called by its owner "Starvation's Empire." It had a gentle slope, with northern exposure and was naturally well drained. The acre was a fair specimen of much of the poor land in the South, and its improvement and productiveness affords an instructive lesson.

This acre was given every possible help suggested to the mind of the owner. In February, 1889, he hauled upon it 1,000 bushels of manure, the droppings of horses and mules fed on corn and other fodder. At the same time 500 lbs. each of manipulated guano, cotton-seed meal, and kainit were also broadcasted, and the whole plowed under. Following the plow whole cotton-seed was strewn in the furrows, at the rate of 600 bushels to the acre. A subsoil plow came after, breaking the soil to the depth of 12 inches, and burying the cotton-seed deeper than other manure. In this way he thought the decaying seed would back up the crop in the later season when the corn roots had penetrated beyond the other manures. One horse and a man did the plowing and sub-soiling in a day, March 6, at a total cost of \$2. The surface was harrowed the same day. The next day the acre was laid off in rows, two furrows to each, followed by the subsoil plow in each row. The rows were alternately three and six feet apart; i. e. there were three feet between two rows, then six feet between two rows, then three feet, and so on. The seed planted was the common gourd variety of the southern white dent corn, and five or six kernels were dropped to each foot of row. The latter were five inches deep, but the seed was only covered lightly, an inch deep, by raking in the sides

CORNEL or **CORNELIAN CHERRY**, the *Cornus* of the ancients, a tree or shrub of the natural order *Cornaceæ*, a native of Asia and the south of Europe. The fruit is oblong, shining red, and when perfectly mellow has an agreeable, vinous acid taste. It is much used in Turkey in making sherbet. The wood is extremely hard and tough, and is used for making mathematical instruments.

CORNELL, EZRA, an American philanthropist, born at Westchester Landing, N. Y., Jan. 11, 1807, died at Ithaca, Dec. 11, 1874. He settled in Ithaca in 1823, and conceived and developed the water-power tunnel at Fall Creek. He superintended the establishment of the first telegraph line in America, opened between Baltimore and Washington in 1844. Thereafter he devoted himself to the erection of telegraph lines through the United States, and was the founder of the Western Union Telegraph Company. Mr. Cornell founded the University at Ithaca, N. Y., which bears his name.

CORNELL COLLEGE. See **COLLEGES**, in these Revisions and Additions.

CORNELL UNIVERSITY. See **COLLEGES**, in these Revisions and Additions.

CORNET, formerly the lowest grade of commissioned officer in the British cavalry. With the lieutenant he assisted the captain in the daily duties connected with the troop to which he belonged. Cornets were abolished in 1871, sub-lieutenants being substituted.

CORN-FLOWER, a name especially applied to *Centaurea Cyanus*, a well-known composite weed of cornfields, much admired for the beauty of its deep blue flowers. From early times it has been used for decoration in wreaths and garlands. This use became specially prominent in Germany after 1870, on account of its being the Emperor William's favorite flower.

CORN-FLY, a common name of a number of small dipterous insects of the large family *Muscidae*, which do much injury to corn crops. Its larvæ live on the juice of the plant, which causes the swelling of the joint, and the plant either produces no ear or an imperfect one.

CORN-GROUND BEETLE, an insect of the order *Coleoptera*, section *Pentamera*. It burrows in the ground, climbs the stalks at night and devours the ears; the larva burrows in the earth, and eats the stems of corn close to the surface of the ground.

CORNIFEROUS: in geology, a term applied to a group of rocks belonging to the lower division of the Devonian series. The formation extends

of the furrow. On April 8 the crop was hoed for the first time, and thinned to one stalk every five or six inches in the rows, and the missing places replanted. On April 20 the wide spaces between the six feet alternate rows were plowed with the subsoil plow. Then a compost consisting of 300 lbs. each of manipulated guano, cotton-seed meal, acid phosphate, and bone was sown in the open furrows, thus confining this plant food to the wide spaces, after which the whole acre was gone over with a harrow. On May 15 the narrow three feet spaces were plowed with the subsoiler, and 300 lbs. of nitrate of soda was sown in the freshly opened furrows, and worked with a hand cultivator. On May 25 the harrow was run through the wide rows to loosen the crust. Later, the wide spaces were further stimulated by running through the middle of them three close subsoil furrows with the application in the furrows of 300 lbs. of manipulated guano. On June 2 the land was stirred with the hoe and a little earth was hoed into the corn, but only so as to make the surface about even around the stocks. On June 4, 5 and 8, these furrows were again turned in the middle of the wide rows, and 500 lbs. of a mixture composed of equal parts of guano, cotton-seed meal, and kainit applied in the wide space furrows, and the whole of the field hoed. On June 11, 100 lbs. of nitrate of soda were sown and harrowed in the narrow rows. No hilling of the corn was done, but so wonderful was the growth that it soon became necessary to put up posts and nail slats on both sides of the rows to prevent falling. In due time the harvest came with its remarkable figures and its invaluable lessons.

through New York and Canada, and farther west and southwest. The name corniferous (Lat. *cornu*, "horn," *fero*, "I bear") has reference to the common occurrence in the limestone of a quartzose mineral called hornstone.

CORNING, an important town of New York, pleasantly situated on the Chemung River, about 17 miles west of Elmira. It has excellent educational facilities, and contains a variety of manufactories, including flint-glass and railroad cars.

CORN-MOTH (*Tinea granella*), a small species of moth, very destructive to grain sheaves in the field and stored grain, among which it lays its eggs. The larva, which for its voraciousness, is known as the wolf, eats into the grain, and joins it together by a web. Frequent turning is resorted to for the destruction of the eggs and larva, and salt is for the same purpose mixed with grain.

CORNO MONTÉ, of GRAN SASSO D'ITALIA, a mountain in Southern Italy, the culminating peak of the Apennines. It has an elevation of 9,593 feet above the level of the sea.

CORNS, small hard growths, occurring principally on the feet, resulting from an increase in the thickness of the cuticle or epidermis, and generally caused by the irritation of some excessive pressure or friction on the part, as by tight or ill-fitting shoes. Corns are either hard or soft, the structure of both classes being essentially the same. A hard corn begins as an ill-defined thickening of the epidermis at one point. As irritation continues the excessive growth of epidermis increases, and the papillæ beneath also enlarge, giving the deeper part of the growth a fibrous appearance, popularly described as the roots of the corn. Pressure upon the sensitive nerves of these papillæ causes the usual pain of corns. Soft corns occur between the toes, where the warmth and moisture promote early separation of the epidermis and growth of the papillæ; they are therefore more vascular than the other forms, and often extremely painful.

Corns affect horses as well as men. In the foot of the horse they occur in the angle between the bars and outer crust, and consist in a bruise of the sensitive secreting sole. Corns cause a short, careful, tripping gait; are the most frequent source of lameness in roadsters; abound in badly-shod horses, and usually occur in the inside heels of the fore-feet. See Britannica, Vol. XXII, p. 121.

CORN SALAD, or LAMB'S LETTUCE. See Britannica, Vol. XII, p. 281.

CORN SAWFLY (*Cephus pygmaeus*), an insect that injures corn in Europe. The larva bores into the stalk of the cereal, and prevents the filling of the ears. The genus *Cephus* is found in the United States, but none of its species exhibit that habit.

CORNSTONE, an arenaceous or siliceous limestone, often mottled, and not infrequently concretionary. It usually occurs in those systems which are largely composed of reddish sandstones.

CORN-THRIPS, an insect. See Britannica, Vol. XXIV, p. 534.

CORNUCOPIA, the horn of plenty, regarding whose origin several fables are told by the ancient poets. It is frequently used in architecture. On the arms of banks and other public buildings, it is often represented pouring forth coins.

CORNWALL, a port of entry of Ontario, at the mouth of the Cornwall canal, and separated by the St. Lawrence from New York State. It is on the Grand Trunk railway, 67 miles southwest of Montreal. Population, 2,033.

CORNWALLIS, CAROLINE FRANCIS, daughter of the rector of Wittersham and Eltham, in Kent, England, born in 1786, died Jan. 8, 1858. She early acquired a thorough knowledge of Latin and Greek,

and made herself conversant with nearly every study which occupies thoughtful men. She was the author of a series of twenty *Small Books on Great Subjects*; and *Pericles: a Tale of Athens* (1847).

CORN WEEVIL, a wheat pest. See Britannica, Vol. XXIV, p. 536.

COROLLARY, a proposition, the truth of which appears so clearly from the proof of another proposition as not to require separate demonstration.

CORONA, or CROWN: in botany, an appendage of the corolla, sometimes assuming very peculiar forms. It occasionally has the appearance of an interior corolla, very different from the true corolla.

CORONA BOREALIS, a small and bright constellation near Hercules.

CORONADO, a celebrated summer and winter resort of California, situated on the Pacific coast, near San Diego, and just north of the Mexican boundary line. It is noted for its medicinal spring, its fine bathing facilities, its exhilarating climate, and its magnificent scenery.

CORONATION GULF, an inlet of the Arctic Ocean, forming the southeast part of the landlocked and isle-studded bay that receives the Copernic.

CORONELLA, a genus of non-venomous serpents of the family *Colubridæ*, of small size, having a somewhat compressed and pentagonal body, and rather long conical tail. They inhabit the warm and temperate parts of the world.

CORONER. See Britannica, Vol. VI, pp. 490-31.

CORPORAL, the grade of non-commissioned officer next below that of sergeant. In the United States army the corporal is the lowest non-commissioned officer. He has charge of a squad, places and relieves sentinels, and in barracks or camp he exercises certain disciplinary control over the privates.

CORPORATION. See Britannica, Vol. VI, pp. 492-35.

CORPS D'ARMEE: in the military system of the greater continental European states, a part of the army divided into several corps, each complete in itself as an army with everything needful for service. In the French system a military force of 100,000 men is regarded too large for one army; it is therefore divided into 20 corps, and Germany has even a larger number.

CORPUS CHRISTI, a city, county-seat of Nueces county, Texas. It is on Corpus Christi bay, and has a harbor unsurpassed by any on the coast.

CORPUS DELICTI, a criminal law term, used to signify the substance or essential actual fact of the crime or offense charged. Thus, in a case of murder the fact that the accused had feloniously caused the death of the victim must be clearly shown, and this is called the *corpus delicti*. Without proof of this fact, no matter how suspicious the other circumstances, such as the clandestine disposal of the body, the presence of actuating motive, opportunity for the commission of the crime, and innumerable other criminating facts, a conviction of murder would not be justified. So, in case of larceny, proof of the felonious taking supplies the *corpus delicti*.

CORPUS JURIS CIVILIS, the whole body of the Roman or civil law, as comprised in the Institutes, the Digest, the Code, and the Novellæ.

CORREGIDOR, the name given in Spain to the principal magistrate of a town.

CORRESPONDENCE CLASSES, a method of instruction first fully developed in the United States by the Chautauqua Literary and Scientific Circle, and since adopted in England.

CORRIDOR, a gallery or passage leading to several rooms. Spacious corridors are necessary in all public buildings, such as hospitals, prisons, etc.

CORROBOREE, CORROBORY, the Australian name for a gathering of aborigines, generally in large numbers, at which dances and other exercises are performed with much excitement. They usually take place on moon-light nights, and frequently last the whole night through.

CORRY, a city of Pennsylvania. See *Britannica*, Vol. VI, p. 439.

CORSAC, a species of fox (*Vulpes corsac*), found in the deserts of Tartary and in India. It resembles the *Vulpes velox*, or swift fox, of North America. It is gregarious, burrows, prowls during the day, and lives chiefly on birds and their eggs.

CORSAIR, one who seizes and plunders merchant-vessels, now generally limited in its application to the pirates who in former times were the terror of merchantmen in the Mediterranean.

CORSICANA, a flourishing city, railroad center, and county-seat of Navarro county, Texas. It has several seminaries and asylums and manufactories of flour, ice, and brick.

CORSITE, a variety of rocks composed essentially of anorthite-feldspar and hornblende. The name was given from the occurrence of rocks of this kind on the island of Corsica.

CORSNED, or morsel of execration, was a piece of bread made use of in early times to ascertain whether persons suspected of crime were guilty or innocent. The bread was consecrated with a form of exorcism, and caused to be swallowed by the suspected person as a trial of his innocence. If it produced convulsions and paleness, and could find no passage, the person was guilty, and innocent if it would cause no harm.

CORSO, an Italian word used to express racing of horses, and processions of handsome equipages driving through the principal streets of a town, such as almost always takes place in Italy on festivals. This custom has given a name to many streets in the larger towns of Italy.

CORTLAND, a railroad junction and the county-seat of Cortland county, N. Y. It has a State normal school and various manufactories.

CORUNDUM. See *Britannica*, Vol. XVI, p. 385.

CORVALLIS, a thriving town of Oregon, county-seat of Benton county, situated on the west bank of the Willamette River. It is the seat of the State Agricultural College.

CORVÉE, the name usually given in France to the obligation on the inhabitants of districts to perform gratuitous labor for the sovereign or feudal lord.

CORVETTE, a flush-decked vessel, frigate rigged without a quarter-deck, and having only one tier of guns.

CORVIDÆ. See *Britannica*, Vol. VI, p. 617, and Vol. XVIII, p. 48.

CORWEN, a town in North Wales, situated on the right bank of the Dee, 10 miles west of Llangollen. Population of parish, 2,646.

CORWIN, THOMAS (1794-1865), an American statesman. He was admitted to the bar in 1818, and four years later became a member of the Ohio legislature, serving seven years. From 1830 to 1840 he was a member of Congress, when he resigned to become governor of Ohio, holding this office two years. In 1844 he became a United States Senator, and served in this capacity till 1850, when he was made Secretary of the Treasury. Mr. Corwin was elected to Congress in 1858 and again in 1860, and later was appointed by President Lincoln as minister to Mexico.

CORYDON: a town of Indiana, county-seat of Harrison county, and former capital of the State, situated on Indian Creek, 115 miles south of Indianapolis. It is the seat of an academy, contains

various manufactories, and is noted for its sulphur spring.

CORYMB: in botany, a form of indefinite and centripetal inflorescence, in which the flowers are arranged as in a raceme, but the lower flower-stalks are elongated so as to bring the flowers almost to the level of those of the upper.

CORYMBUS, the particular mode of dressing the hair among the Greeks, with which the statues of Venus have rendered us familiar. The hair was often covered with a sort of open ornamental work.

CORYPHENE (*Coryphæna*), a genus of fishes of the family *Scomberidæ*, remarkable for the beauty and metallic brilliancy of their color. They are natives of the seas of warm climates.

COSCINOMANCY, a divination practiced in early times by suspending a sieve from the point of a pair of shears. A mystical form of words and names of persons suspected of theft were then repeated, and if the sieve moved when a name was pronounced the person named was deemed guilty. See *Britannica*, Vol. VII, p. 293.

COSHERY, or **COSHERING**: in Ireland, the ancient feudal right of a chief to quarter himself and his retainers on his tenantry at his own discretion. This exaction was afterwards commuted for *quit-rent*.

COSHOCOTON, county-seat of Coshocoton county, Ohio. It has a railroad junction on the Muskingum River, and has a paper mill and iron and steel works.

COSMETICS, chemical preparations employed for improving the appearance of the skin and hair.

COSTA, ISAAC DA, an eminent poet and religious writer, born at Amsterdam in 1798, died in 1860. In his 20th year he acquired the degree of LL.D., and embracing Christianity was baptized. This subjected him to considerable persecution, which, however, subsided as his genius gradually gained recognition. The most interesting of his writings are his translation of Byron's *Cain*, *Harmony of the Gospel*, etc. His *Battle of Nieuwpoort*, the last of his poems, is one of his master-pieces.

COSTA, SIR MICHAEL, musician and composer, born at Naples in 1810. He was sent to the conservatoire in his native city for education, where he greatly distinguished himself. In 1830 he was appointed conductor of music in the Italian Opera, London—an office, which in 1847, he resigned for a similar one in the Royal Italian Opera, Covent Garden. He was knighted by Queen Victoria in 1869, and in the same year received the Royal Order of Frederick from the king of Wurtemberg.

COSTA RICA (Republica de Costa Rica), the most southern Republic of Central America (see *Britannica*, Vol. VI, pp. 449-51). The legislative power is vested in a Chamber of Representatives—one representative to every 10,000 inhabitants—chosen in electoral assemblies, the members of which are returned by the suffrage of all who are able to live "respectably." In 1889 there were 537 electors and 26 deputies. The last official census was taken in 1888, and gave the area as 23,000 square miles, and the population as 203,780. In 1889 the population was estimated at 209,644. The capital is San José, with a population of 18,000. The revenue of the Republic in 1890 was \$4,300,000, and the expenditures \$4,200,000; foreign debt, \$13,000,000. The chief exports are coffee and bananas. Valuable metals exist in various parts of the country, and mining industry is making progress. In 1888 there were 180 miles of railway, and 420 miles of telegraph. Education is compulsory and free. In 1890 there were 300 primary schools with 15,000 pupils, besides 90 private schools with 2,500 pupils. The army consists of 600 men in time of

peace, and on a war footing can command 81,824 militia, as every male between 18 and 50 is bound to serve. The imports for 1889 amounted to 6,306,408 pesos, and the exports to 6,965,371 ps. To facilitate agricultural operations and immigration, a concession has been granted for an agricultural bank with a capital of \$5,000,000. The bank will not only make advances on the security of lands and produce, but will bring out colonists and settle them on lands which will be ceded to the company.

COSTMARY ("plant of Mary," *Balsamita vulgaris*), a perennial plant of the natural order *Compositæ*, sub-order *Corymbiferae*, a native of the south of Europe, long cultivated in gardens for the agreeable fragrance of its leaves.

COSTROMA, or **KOSTROMA**, a town of European Russia, situated at the confluence of the Costroma with the Volga. It has manufactories of linen, leather, soap, and Prussian blue. Population, 27,187.

COSWAY, **RICHARD**, the most famous painter in his day, born at Tiverton, Devonshire, in 1740, died in 1821. As a miniature painter he was particularly famous, and gained nearly all the patronage of the nobility of his time. Many of his works were distinguished by great delicacy, correctness and beauty.

COT: on shipboard, a bed or hammock made of canvas, stiffened by a wooden frame, and having upright sides of the canvas, which forms a protection for the sleeper.

COTGRAVE, **RANDLE**, an English lexicographer, of whose life little is known save that he was a native of Cheshire, and was admitted scholar of St. John's College, Cambridge, in 1587; became secretary to William Cecil, Lord Burghley, and was living as late as 1632. He was author of our earliest French dictionary, the first edition of which appeared in 1611. Cotgrave's dictionary was a remarkable book for its time, and is still of great value to the philologist, not only as a storehouse of older English words, but because it fixes the actual forms of French words at the time when they were first borrowed.

COTICE, or **COST**: in heraldry, one of the diminutives of the bend. The cotice is the fourth part of the bend, and is usually borne in couples with a head between them.

COTICE, the French term to express that an escutcheon is divided bendwise into many equal parts.

COTILLON, the name of a brisk dance originated in France in the eighteenth century, consisting of a variety of steps and figures, known in the United States as the *german*. The term is now often used for several different kinds of quadrille.

COTINGA, a genus of birds of the family *Ampelidæ*, remarkable for the splendor of the plumage of the males during the breeding season. They are natives of South America, inhabiting moist places.

COTONEASTER, a genus of *Rosaceæ* closely allied to the hawthorn and medlar. The species are shrubs or small trees, some evergreen; with simple entire leaves, more or less woolly beneath; small flowers in lateral cymes; and small, unpalatable bright-colored fruit, persistent in winter. *C. vulgaris* and other species are common mountain plants of Central Europe and Asia. They are all adapted for shrubberies.

COTTA, **BERNHARD** (1808-79), a German geologist. In 1842 he became professor at Freiburg; he wrote various valuable works on geology.

COTTAGE CITY, a summer resort of Massachusetts, and a noted camp-meeting ground, situated on the northeast shore of Martha's Vineyard, about thirty miles from New Bedford.

COTTON, **JOHN** (1535-1652), an Anglo-American clergyman. After preaching extensively in England, he came to the United States in 1633, and settled in Boston, Mass. Within a fortnight after his arrival he became connected with the first church in Boston, and retained this connection until his death. He wrote various important works on religious subjects.

COTTON CROP IN THE UNITED STATES. For general article on Cotton and Cotton Supplies, see *Britannica*, Vol. VI, pp. 482-508. The statistical returns of the cotton crop in the United States for the last ten years are as follows: In 1880, 5,757,307 bales; 1881, 6,589,329; 1882, 5,435,845; 1883, 6,992,234; 1884, 5,714,052; 1885, 5,669,021; 1886, 6,550,215; 1887, 6,513,624; 1888, 7,017,707; 1889, 6,935,082; 1890, 7,313,726. These returns are for the years ending September 1. The average net weight per bale is 440 lbs. The exports of cotton to Europe for the last seven years have been as follows: In 1884, 3,880,406 bales; 1885, 3,898,906; 1886, 4,296,825; 1887, 4,414,326; 1888, 4,802,248; 1889, 4,700,198; 1890, 4,885,326. During the same period there were exported from the United States to Canada from 1,764,326 bales to 2,431,757 bales per year—the lowest amount being in 1885, and the largest in 1890. The total export of cotton to Europe and to Canada in 1890 was 7,317,083 bales. The total cotton consumption of the entire world during the year 1890 was 11,035,000 bales. Of this amount Great Britain used 4,027,000; Continental Europe, 4,277,000; the United States 2,731,000. Ellison & Co. report the estimated sources of cotton supply for the year 1891 as follows: From America, 7,434,000 bales; East Indies, 1,740,000 bales; Egypt, 460,000 bales; Brazil and West Indies, 290,000 bales; Smyrna, 40,000 bales; Total, 9,964,000 bales, with an average weight of 455.1 lbs. The number of spindles in operation in 1886 was: Great Britain, 42,700,000; European Continent, 22,900,000; United States, 13,850,000; East Indies, 2,260,000; total, 81,210,000. Great Britain, 43,750,000 spindles; Continent, 24,755,000; United States, 14,550,000; East Indies, 3,270,000; total, 86,145,000.

COTTON-GRASS (*Eriophorum*), a genus of plants of the natural order *Cyperaceæ*, common in swampy land. It has spikes resembling tufts of cotton, and the cottony substance has been used for stuffing pillows, making candle-wicks, etc.

COTTON-RAT, a rat of the order *Rodentia*, belonging to the family *Muridæ*, for which see *Britannica*, Vol. XV, p. 418.

COTTON-SEED and **COTTON-SEED OIL**, products from the cotton plant, of which there are several species. The best known and most valuable are the *Gossypium*, *Barbadense*, *Herbaceum*, et al. The seed has an irregular, oval form, and measures about 1-6 by 1-3 of an inch. As it comes from the cotton gin there clings to it a delicate, linty fiber. An average of 22 pounds of short lint is ordinarily taken from a ton of seed. This product, called "linters," brings from six and a half to seven cents a pound, and is principally used in the manufacture of cotton batting. The hulls of the seed are used as fuel for the engines which furnish the power for the mills extracting the oil. It is generally estimated that three to four bushels of seed will afford one bushel of hulls, while the average percentage of oil is put at 15 to 20 per cent., and sometimes as high as 25 per cent.

The cotton plant has been known for hundreds of years, but no use was made of its products except the fiber from the boll until a very late period. It has been demonstrated that every part of the plant is valuable and available in many ways. The fiber of the plant-stalk can be made

into a coarse bagging of great strength; the root is susceptible of use in dyeing and pharmacy; the seeds are valuable in many ways besides the production of oil, and the oil is growing more and more valuable as its peculiar properties are being developed. The utilization of cotton seed was attempted in 1770, and samples of oil were exhibited by the Moravian brotherhood in Bethlehem, Pa. Before that time the seed had been regarded worthless, and the majority of planters allowed it to rot on the ground. Some few had discovered its nutritive qualities, and utilized it as food for their cattle sheep, and horses, although horses did not take to it as kindly as the other stock. By some it was fed raw, while others boiled it for their animals, but the great majority disposed of the accumulations of seed piles by digging furrow-trenches and burying the refuse seeds in the rows over which the next crop of cotton would be planted. For ages the seed was but a waste product and cumbered the premises.

The use of cotton-seed meal as food for horses and other stock is increasing largely from year to year. In its composition it is similar to the flat beans, which form so important an item of horse-feed in England. But it is a highly concentrated food, and great caution is necessary in its use. It is sprinkled on cut and dampened hay, straw, or corn fodder, not more than half a pound of the meal at first, increasing slowly until the amount is four pounds, or even more, per day, for a horse of ten to eleven hundred pounds.

Cotton-seed meal free from hulls contains about seven per cent. of nitrogen. The hulls are especially rich in potash, the ashes of the hulls having 86 or more per cent. of potash in them. Acid phosphate supplies from 10 to 18 per cent. of phosphoric acid. A mixture of the phosphate, cotton seed, and the ashes of the hulls, which are procured at the oil mills, or the hulls themselves in compost, would be a complete fertilizer for any crop. As watermelons do not require potash in larger quantity than the soil of South Carolina naturally contains, a mixture of the cotton meal and the phosphate would make a good fertilizer for that crop.

In 1785 the Society for Encouragement of Arts and Commerce offered a prize for the manufacture of cotton-seed oil on a commercial scale; in 1851 specimens of oil and cake were placed in the English Exhibition; in 1852 cotton-seed oil was exported from Egypt to France; in 1830 a patent was granted in the United States on a process for extracting the oil from the seed; in 1834 the first attempts to extract oil as a merchantable product were made at Natchez, Miss.; in 1855, L. Klapp produced a decorticating machine which separated the hulls from the kernels, and since that time the production of oil has become an enormous industry. The seed, after being cleared of the adhering lint, is passed into a "decorticating" or hulling machine, in which the seed is cut open by knives of steel, or chilled iron. A solid cylinder armed with the knives revolves within a second cylinder, also armed with knives, playing in opposition. Revolving wire screens separate the kernels from the hulls. The hulls are crushed between iron rollers and are then ready for the pressing. The first oil product is thick and turbid, has a deep brown-red color and a slimy sediment. Subsequent processes produce the following grades: Crude oil, summer yellow, summer white, winter yellow and winter white.

Cotton-seed oil consists chiefly of palmetin and olein. The elementary composition is given as—

Carbon.....	76.4	per cent.
Hydrogen.....	11.4	" "
Oxygen.....	12.2	" "
Specific gravity at 60° F.....	0.922 to 0.930.	

The refined oil has been largely introduced into general use for various purposes, including its substitution when highly refined for olive oil in table use. It is also largely used as a substitute for lard, being cheaper, more delicate, preserving its sweetness longer, and involving less risk of injury to health.

In the arts, cotton-seed oil stands midway between the drying and the non-drying oils. In its drying properties it is inferior to linseed oil. It is used as an adulterant, or as a substitute for various oils, such as linseed, sperm, lard, olive, almond, etc., also for treating leather, in dressing wool, as a lubricator, an illuminant, and in soap making. It is officially stated that nine-tenths of the "salad oil" in use in the United States consists wholly of cotton-seed oil. In 1831-33 the Italian government put a high import duty upon it, evidently with the intention of preventing the adulteration of olive oil.

One hundred pounds of cotton-seed will afford an average of

Lint or hulls.....	46	pounds.
Cake.....	38	" "
Crude oil.....	16	" "
	100	

The cake is an extremely important product. It contains when prepared from the hulled seed—

Moisture.....	9	parts.
Albumenoids.....	43	" "
Oil.....	15	" "
Crude fiber.....	4	" "
Other constituents.....	22	" "
Mineral matter.....	7	" "
	100	

Cows fed with meal made from the cake show an improvement in the quantity and quality of milk; beef is greatly improved; but for cows carrying young its free use is not deemed advisable, it being productive of miscarriage. In 1881, 150,000 barrels of oil were exported, three-quarters of which were shipped to France and Mediterranean ports. The home consumption is estimated at from 40,000 to 80,000 barrels per annum. The value of the cake is put at about \$6,000,000 annually. In 1889-90 the oil produced in the United States was valued at \$12,386,305, and the lint, hulls, and oil cake at \$11,860,509.

COTTONWOOD SPRINGS, a popular health and pleasure resort of Colorado, about five miles from Buena Vista. It is noted for its medicinal springs and for its charming scenery.

COTTON-WORM, a common name for the larva of *Aletia xyliana*, which is in some years very destructive to the cotton crop of the United States and of Central and South America. The caterpillar is green, with yellow stripes and black dots, and grows to a length of an inch and a half. The boll-worm, the caterpillar of an allied form, is also very destructive to cotton-buds and other crops.

COUCHANT; in heraldry, a beast lying down, with his head up. If the head is down, he is dormant.

COUCH-GRASS (*Triticum repens*), a species of grass common in Europe and North America, known to farmers as a troublesome weed; it spreads over the field with great rapidity, and on account of its tenacity of life is eradicated with difficulty. The roots are sweet and mucilaginous, and are collected at Naples for feeding horses.

COUCY, RENAUD, CASTELLAN OF, a court-poet belonging to the North of France, who flourished in the latter part of the 12th century. He became a crusader; it is supposed that he accompanied Philippe Auguste and Richard Cœur de Lion to the Holy Land, probably in the service of Raoul Sieur de Coucy, with whom he is often confused.

COUES, ELLIOTT, an American naturalist, born in 1842. He entered the United States army in 1862 as medical cadet, and from 1864 to 1881 was assistant surgeon. He was in 1869 professor of comparative anatomy at Norwich University, Vt., and in 1873, surgeon and naturalist in the United States northern boundary commission. Subsequently he was collaborator at the Smithsonian Institution; secretary and naturalist to the United States geological and geographical survey of the Territories; professor of anatomy in the National Medical College; and professor of biology in the Virginia agricultural and mechanical college. Prof. Coues is a member of several scientific societies, and has written many papers on scientific subjects.

COULANGES, FUSTEL DE, a French essayist, born in 1830. He became a professor of history in the University of Strasburg in 1859, and in 1879 a professor at the Sorbonne. His published essays are principally on historical subjects.

COUNCIL BLUFFS, a city of Iowa, and county-seat of Pottawattamie county (see Britannica, Vol. VI, p. 512). The city was incorporated in 1853, and is now the largest city in the western part of the State. It contains a fine court-house and other county buildings; a Roman Catholic seminary, a high school, several graded schools, and a State institution for deaf mutes, founded in 1855. Its manufactories produce iron, paper, agricultural implements, machines, carriages, etc. Population in 1880, 18,063; in 1890, 21,388.

COUNCIL GROVE, the county-seat of Morris county, Kan., located on the Neosho River. It is a large shipping-point for cattle, hogs, and grain.

COUNCIL OF WAR, a conference of officers on some matter in which the commander wishes to fortify his judgment by an appeal to that of others. The governor or commandant may summon the heads of departments to meet him in consultation whenever he may think such a step desirable.

COUNSELOR, a name applied, in the United States to lawyers who have been admitted to practice in the higher courts. It most nearly corresponds to barrister in England, and advocate in Scotland.

COUNTERCHANGED. When several colors and metals are intermixed, one being set against the other, they are said to be counterchanged.

COUNTER-APPROACH, a trench or passage cut by the defenders of a fortified post from some of the outworks towards the besiegers, and leading to a battery in a small work.

COUNTERFORT: in fortification, a mass of stone or brick work added to the revetment of a rampart, in such a way as to form a buttress for resisting the pressure of the mass of earth.

COUNTER-GUARD, a rampart or outwork designed to defend the two faces of a bastion from a direct fire, so as to retard a breach. It consists of two lines of rampart parallel to the faces of the bastion, and separated from them by a narrow ditch.

COUNTER-IRRITANTS, agents applied to the skin so as to produce artificial inflammation, in order to relieve a diseased condition existing in another part.

COUNTERMINE, a gallery or chamber excavated under the glacis or some other part of a defense-work of a fortress. Its purpose is to foil a besieger.

COUNTER-PASSANT: in heraldry, two beasts passing each other the contrary way.

COUNTER-PROOF, an impression which is obtained from a freshly printed proof of an engraving, by laying it, before the ink is dry, upon plain paper, and passing it through the press.

COUNTERSIGN, a signal, in the form of a word or phrase given to sentinels with orders to let no one pass unless he gives that sign.

COUNTER-SIGNATURE, the signature of a secretary, minister or other subordinate, to any writing signed by the principal or superior as a guaranty for its authenticity.

COUNTER-TENOR, the highest adult male voice, and the lowest female voice. Alto or contralto is the correct term.

COUNTER-VAIR, an heraldic fur. It differs from *vair* by having its cups or bells of the same tinctures placed base against base, and point against point.

COUNTRY DANCE, a dance in which as many couples take part as can be accommodated by the space allotted them. The partners are arranged opposite each other in lines, and dance in couples down the lines and back to their original places. The name comes from the French *contre dance*, of which term it is a corruption.

COUNTY. See Britannica, Vol. VI, pp. 512-14.

COUNTY RATE, a local tax levied in Great Britain and Ireland for the purpose of defraying the expenses to which counties are liable, such as the maintenance of bridges, jails, lunatic asylums, coroners, etc.

COUP, a French word signifying "stroke," used in English in various French phrases; as, *coup d'état*, stroke of state; *coup de main*, a stroke of the hand; *coup d'œil*, a stroke or glance of the eye; and *coup de soleil*, a sunstroke.

COUPED, in heraldry, is used to describe the head or any limb of an animal cut off from the trunk, and smooth. It is distinguished from *erased*, that is, forcibly torn off, and therefore ragged and uneven.

COUPLE, the name given in statics to a pair of equal forces acting on the same body in opposite and parallel directions. The effect of a couple is to rotate the body about a certain definite line (the axis) perpendicular to the plane in which the forces constituting the couple lie.

COUPLET, any two lines which rhyme together, but more frequently used to denote two lines which contain the complete expression of an idea.

COUPLING, an organ register, by which two or more rows of keys can be connected by a mechanism, so that they can be played together.

COUPON, a term signifying any slip of paper cut from its counterpart. It is, however, applied chiefly to a dividend or interest warrant, which is presented for payment by holders of debentures.

COURANT: in heraldry, always used for running. Specifically said of a horse or other beast so represented.

COURBET, GUSTAVE, a French painter, born at Ornans, Franche-Comté, June 10, 1819, died at Vevey, Switzerland, Dec. 31, 1877. His hunting scenes and animal subjects are vigorous and spirited. They created a great sensation when shown in the Salon of 1850.

COURBEVOIE, a town of France in the department of Seine, about 5 miles northwest of Paris. Its chief manufactures are white lead and brandy. Population, 11,811.

COURGNE, a market-town of Piedmont, 12 miles southwest of Ivrea. Population, 5,600.

COURIERS, a term applied to persons hired to accompany travelers abroad. Their special duty is to make all arrangements for the journey, and to relieve their employers as far as possible of all anxiety about passports, exchange of money, hotel negotiations, and the like.

COURSE: in building, a continuous range of stones or bricks of uniform thickness.

COURSES: on shipboard, a name given collectively to all the lower sails. The courses comprise the mainsail, foresail, main-staysail, fore-staysail, and mizen-staysail.

COURT. See Britannica, Vol. VI, pp. 516-17.

COURTALLUM, a town of the district Tinnevely, in the presidency of Madras, near the junction of the eastern and western Ghauts.

COURT-HAND, the name given to the old Gothic or Saxon handwriting used in records and judicial proceedings in England.

COURTLAND, a town of Alabama, 45 miles west of Huntsville. It is the seat of two academies, and contains a number of steam mills.

COURTNEY, LEONARD HENRY, M. P., born at Penzance, in Cornwall, July 6, 1832, graduated in 1855 at St. John's College, Cambridge, as second wrangler and first Smith's prizeman, and became fellow of his college the following year. In 1858 he was called to the bar, and from 1872 to 1876 he filled the chair of political economy at University Col-

lege, London. Elected to Parliament as Liberal member for Liskeard (1876-85), he was successively under-secretary of state for the home department, under-secretary of state for the colonies, and financial secretary to the treasury. Elected in the Liberal interest as a member for Southeast Cornwall in 1885, he was reelected as a Liberal-Unionist in 1886, and was made privy counselor in 1889.

CAUSEY, JOHN W., of Milford, Del., a farmer, born in Milford, Sept. 19, 1841. He was educated at the Albany, N. Y., academy and the Pennsylvania Agricultural College. In politics he is a Democrat, and was elected a member of the Delaware State Senate in 1875 and 1887; was a delegate to the National Democratic Convention of 1884; served as collector of internal revenue for the district of Delaware during President Cleveland's administration, and in 1890 was elected a Representative at large from the State of Delaware to the 52d Congress.

COUTRAS, a town of France in the department of Gironde, situated on the left bank of the Dronne. It has considerable trade in flour, and the district produces red wine. Population, 2,200.

COUSIN, a kinsman; more especially the son or daughter of an uncle or aunt. The children of brothers or sisters are *cousins-german* (german being the Lat. *germanus*, "brother"). The children of cousins-german are *second cousins*; and if A and B are cousins, A is a *first cousin once removed* to the children of B, as B is to the children of A.

COVENANT: in law, an agreement by deed in writing, signed, sealed and delivered.

COVINGTON, a town of Georgia, county-seat of Newton county, about forty miles east of Atlanta. It is the seat of the Southern Masonic Female College.

COVINGTON, a railroad town and county-seat of Fountain county, Ind., on the Wabash River and Wabash and Erie Canal. It has coal companies and a foundry.

COVINGTON, a city of Kentucky, and county-seat of Kenton county (see Britannica, Vol. VI, p. 531). Its principal public buildings are a new United States court-house, city hall, high school, Roman Catholic hospital, founding asylum, orphanage, convent and two Roman Catholic academies. It has also a large public library. A suspension bridge 2,252 feet in length, and costing \$2,000,000 crosses the Ohio River at this point. Population in 1880, 29,720; in 1890, 37,375.

COWAGE, or COWHAGE, short, slender, brittle hairs, which grow on the pods of plants of the genus *Mecuna*, of the natural order *Leguminosæ*. The hairs readily stick to the skin, and produce intolerable itching. Cowage is employed medicinally as a mechanical vermifuge.

COW-BIRD (*Miolothrus pecoris*), also called cow-pen bird, cow blackbird, etc., a native of North America, nearly allied to the Troupials, remarkable for its cuckoo-like habit of utilizing the nests of other birds. The cow-bird is about seven inches in length, predominantly brownish-black in color, and has a short but sharp-pointed beak. The females are far more numerous than the males, and polygamy is therefore in vogue. The males have deeper, glossier coats than the females. It is said to damage the fields of sown maize, but feeds largely on insects. The name refers to its habit of frequenting cow-pens for the sake of the attracted insects.

COWBRIDGE, a town of Wales, in the county of Glamorgan, situated on the river Ddan, 12 miles west of Cardiff. Population, 1,100.

COWLEY, HENRY RICHARD CHARLES WELLESLEY, EARL, born June 17, 1804, died July 14, 1884.

He was successively secretary and ambassador at Constantinople, minister plenipotentiary to Switzerland (1848), to the Germanic Confederation (1851), and in 1852 he became ambassador at Paris. He was created Earl Cowley in 1857, and made a Knight of the Garter in 1866.

COWPENS, a village of Spartanburg county, S. C., important as the battle-field where General Morgan's forces defeated Tarleton's, Jan. 17, 1781.

COW-PLANT (*Gymnema lactiferum*), a perennial plant of the natural order *Asclepiadaceæ*, a native of Ceylon. The milky juice was supposed to be used as a substitute for milk by the Singhalese.

COW-TREE, a name given to a number of trees of different natural orders, the juice of which is used instead of milk. The most famous of these is the Palo-de-Vaca, *Galactodendron (Brosimum) utile*, of the Cordilleras and Caraccas. The milk is obtained by piercing the bark of the trunk or branches. It has an agreeable taste, somewhat like that of cow's milk, and its nutritive value is considerable. It is much used by the negroes and Indians.

COW-WHEAT, a genus of plants of the natural order *Scrophulariaceæ*, having an oblong two-celled capsule, with a few seeds somewhat resembling grains of wheat.

COX, ISAAC N., of Ellenville, N. Y., a merchant, born in Tallsburgh, N. Y., Aug. 1, 1846. He received an academic education; in politics was a Democrat; was elected a supervisor of his town in 1875, 1883-86, being chairman of the board the latter year; was a member of the Democratic State Committee; in 1890 was elected a Representative from the Seventeenth Congressional District of New York to the 52d Congress.

COX, SIR GEORGE WILLIAM, an English clergyman and historian, born in 1827. He was ordained in 1850, and for several years was a curate. In 1860 he became assistant master in Cheltenham College. He has written several valuable histories.

COX, JACOB DOLSON, an American statesman, born in 1828. He was admitted to the bar in 1853 and settled in Warren, O. From 1859 to 1861 he was a member of the State Senate, and held a State commission as brigadier-general of militia. At the beginning of the civil war he entered the Union army, and was present in many important battles. In 1863 he was commissioned major-general. He was governor of Ohio in 1866-67, and Secretary of the Interior, 1869-70. He was elected president of the Wabash Railroad in 1873, and from 1877 to 1879 was a member of Congress. Gen. Cox has published *Atlanta*, and *The March to the Sea*.

COX, SAMUEL, an English Baptist minister, born in 1826. In 1851 he became pastor of the church in St. Paul's Square, Southsea, and in 1855 went to Ryde. After he had been at this last-named place about four years, his health failed him, and he virtually gave up preaching and devoted himself to authorship. His subjects are principally Scriptural.

COX, SAMUEL HANSON (1793-1881), an American clergyman. He studied law in 1812, but later studied theology, and in 1817 was ordained pastor at Mendham, N. J. In 1821 he settled in New York. He was pastor of various Presbyterian churches in that city and took a leading part in the establishment of the University of the city of New York. In 1833 he visited Europe, and delivered a series of lectures. In 1834 he became professor of pastoral theology in the Theological Seminary at Auburn, and in 1837 was made pastor of the First Presbyterian congregation in Brooklyn. He was for years connected with the faculty of the Union Theological Seminary of New York city.

COX, SAUMEL SULLIVAN, an American statesman, born in 1824, died Sept. 10, 1889. In 1853 he became the editor of the Columbus, Ohio, "Statesman," and from 1857 to 1865 was a member of Congress. In 1866 he became a resident of New York city, and in 1868 was elected to Congress, and reelected three times. In 1872 he was elected as candidate at large for the State, and reelected in 1874, 1876, 1878 and 1880. In 1885 he was made Minister to Turkey, but returned to the United States in October of the following year, and in November was again elected to Congress. He was twice reelected, and was a member of the House of Representatives at the time of his death. He was the founder of the Life-saving Service, and the author of several works on political and other subjects.

COXE, ARTHUR CLEVELAND, an American P. E. bishop, born in 1818. He studied theology, became a deacon in 1841, and the following year was made priest. From 1843 to 1854 he was rector of St. John's church, in Hartford, Conn., and then of Grace church, Baltimore, Md. In 1863 he accepted the rectorage of Calvary church, New York city, and a year later became assistant bishop of Western New York. In 1865 he succeeded bishop DeLancey as the second bishop of Western New York. Bishop Coxe has published extensively in both prose and verse.

COXE, JOHN REDMAN (1773-1864), an American physician. He studied medicine in the United States and in Europe, and in 1796 settled in Philadelphia. For several years he was a physician in the Pennsylvania hospital, and later in the Philadelphia dispensary. In 1809 he became professor of chemistry in the University of Pennsylvania, and from 1818 to 1835 was professor of materia medica and pharmacy in the same institution. He published many works on medicine and kindred subjects.

COXE, TENCH (1755-1824), an American political economist. He joined the militia at an early age, but in 1776 resigned to become a loyalist. He next turned Whig, and in 1786 was sent to the Annapolis convention, and two years later to the Continental Congress. In 1788 he turned Federalist, and in 1800, Republican. In 1789 he was Assistant Secretary of the Treasury, in 1792 Commissioner of the Revenue, and in 1803 Purveyor of Public Supplies. He wrote many important works on political economy.

COXSACKIE, a town of Greene county, N. Y., on the Hudson River, 22 miles south of Albany. It is extensively engaged in brick manufacturing.

COYPU. See Britannica, Vol. XV, p. 20, and Vol. XVI, p. 301.

CRAB, ROGER, hermit, born about 1621 in Buckinghamshire, died at Bethnel Green, Sept. 11, 1680. He believed it sinful to eat any kind of animal food, or to drink anything stronger than water. In 1651 he took up his residence in a hut and subsisted on bran, turnip-tops, dock-leaves, and grasses. He published *The English Hermit, Dagon's Downfall*, and a tract against Quakerism.

CRAB-APPLE, a term applied somewhat vaguely to any sour and uncultivated variety or species of apple; more strictly, however, to the wild varieties of the true apple (*P. malus*, var. *sylvestris*).

CRACKED HEELS. From careless grooming, washing horses' legs and imperfectly drying them, permitting them to stand in accumulations of filth or exposed to draughts, the skin becomes inflamed, tender, itchy, thickened, and by and by cracked. An ichorous discharge exudes, and lameness often results.

CRACKLIN, a variety of chinaware whose enamel is covered with fine cracks.

CRACOVIANNE, the national dance of the Polish peasantry. It is of a graceful and fanciful character, somewhat like the mazurka.

CRAG, a local term given specially to those masses of shelly sand which have been used from very ancient times in agriculture to fertilize soils deficient in calcareous matter.

CRAG AND TAIL, a term used to designate a peculiar hill conformation in which a bold and precipitous front exists on one aspect of a hill, while the opposite is formed of a sloping declivity. It is believed to have been in most cases caused by moving ice.

CRAIK, DINAH MARIA (Mulock), an English novelist, born in 1826. Her first novel appeared in 1849 and received some favor, as did those which immediately followed; but not until the publication of *John Halifax, Gentleman*, in 1857, did she achieve a decided success. She has written numerous other popular novels.

CRAIK, GEORGIANA M., an English novelist, born in 1831. She wrote for various periodicals, and in 1857 appeared her first novel, *Riverston*. She has since written numerous other important books, many of which are for children.

CRAKE. See Britannica, Vol. VI, pp. 542-43.

CRAMBE, a genus of plants of the natural order *Cruciferae*, natives of Europe and Western Asia. They have been used as a pot-herb from ancient times. The young shoots and blanched leaves are cooked and served like asparagus.

CRAMPTON'S GAP, a pass in the South Mountains near Burkittsville, Franklin county, Md. McClellan's army defeated the Confederates at this point, Sept. 14, 1862.

CRANBROOK, GATHORNE, VISCOUNT, born Oct. 1, 1814, at Bradford, England, educated at Shrewsbury and at Oriol College, Oxford. He was called to the bar in 1840, and in 1856 was returned as a Conservative by Leominster. In 1865 he defeated Mr. Gladstone in the celebrated Oxford University election. He was under-secretary of state for the home department 1858-59, president of the poor-law board 1866-67, home secretary 1867-68, war secretary 1874-78, secretary of state for India 1878-80, and lord president of the council 1885-1889.

CRANE. See Britannica, Vol. VI, pp. 546-47.

CRANK: in machinery, a lever or arm on a shaft, driven by hand (e. g., a winch-handle) or by a connecting-rod, its object being to convert reciprocating motion into rotary motion.

CRANE, CHARLES HENRY, a distinguished American surgeon, born in Newport, R. I., in 1825, died in 1883. He graduated at Yale College and at Harvard Medical School. He entered the United States army in 1847, as acting assistant surgeon. In May, 1861, he was promoted surgeon, and in June, 1862, was appointed medical director in the department of the South. In the following year he was transferred to the surgeon-general's office in Washington, and in 1866 was appointed assistant surgeon-general, with the rank of colonel. July 3, 1862, he became surgeon-general, which position he held until his death.

CRANE, WILLIAM CAREY, a distinguished Baptist clergyman and educator, born at Richmond, Va., in 1816, died in 1885. He graduated at Columbia College and at Hamilton Theological Seminary. He was ordained in 1838, and for several years was pastor of various Baptist churches in Alabama, Mississippi, and Texas. Subsequently he became president of Mississippi Female College, of Semple Broadus College, of Mount Lebanon College, and of Baylor University, which latter position he occupied at the time of his death. "Crane College,"

at Independence, Texas, was named after this eminent divine.

CRAPE MYRTLE, a handsome lythraceous shrub of the genus *Lagerstræmia*, otherwise known as the Indian Lilac. It is a native of China, but has been successfully cultivated in the United States. It bears beautiful large rose-colored flowers.

CRAPO, HENRY H., born at Dartmouth, Mass., in 1804, died in 1869. He removed to Michigan in 1857, engaged extensively in the lumber business and held several important political offices. He served as mayor of Flint, Mich., as State Senator, and was governor of the State for two terms, 1864-68.

CRASSULACEÆ, a natural order of exogenous plants, remarkable for their succulency. About 300 species are known, among which are the houseleek, stone-crop, roseroot, etc. They are distributed all over the world, chiefly in South America.

CRATER, the central cup-shaped cavity in the summit of a volcano through which the lava, stones, scoria, etc., are ejected. Some craters have a very regular form, while others are broken down more or less on one side.

CRAVEN, TUNIS AUGUSTUS MACDONOUGH, a distinguished American nava officer, born at Portsmouth, N. H., in 1813, died in 1864. He entered the United States navy in 1829, and served in different vessels, and in various capacities until 1857, when he commanded the Atrato expedition for the purpose of surveying the Isthmus of Darien. Subsequently he was engaged as commander of the *Mohawk* in the suppression of the slave trade. He was very efficient in rendering assistance to merchant vessels, and for his service in this direction the New York board of underwriters presented his wife with a silver service of plate, while the Queen of Spain presented him with a gold medal. In 1861 he commanded the *Tuscarora* while engaged in the search for Confederate cruisers. Subsequently he was given command of the monitor *Tecumseh*, and was attached to Admiral Farragut's squadron in the attack on Mobile. In the battle which followed his vessel was accorded the post of honor. While attempting to attack the Confederate ram *Tennessee*, the *Tecumseh* was destroyed by a torpedo, and sank with nearly all on board. The general orders directed the commanders of the different vessels to pass to the eastward of a certain buoy in order to avoid the torpedoes; but Com. Craven, in his eagerness to engage the ram, had ordered the monitor to pass to the westward of the buoy. It is related of the brave commander that while the vessel was sinking he and his pilot, John Collins, met at the foot of the ladder leading to the top of the turret. Craven, knowing it was by his own command that the fatal change in the vessel's course had been made, stepped back, saying: "After you, pilot." The result was, the pilot escaped, and the commander went down with the ship.

CRAVEN, THOMAS TINGREY (1808-87), an American naval officer. He entered the navy in 1822; became sailing-master of the *Erie* in 1828; commissioned lieutenant in 1830, and in 1838 commanded the *Vincennes*. He subsequently served on the *Boxer*, *Fulton*, *Monroe*, *Macedonia*, *Porpoise*, *Ohio*, and *Independence*, and commanded the *Congress*, *Brooklyn*, and *Niagara*. In June, 1861, he was assigned to the command of the Potomac flotilla, and while in command of the *Brooklyn* took a prominent part in the capture of New Orleans. He was commissioned as rear-admiral in 1866, and placed in command of the navy yard at Mare Island, Cal. He was retired in 1869.

CRAWFORD, GEORGE WASHINGTON, an American statesman, born in Columbia county, Ga., 1798.

He graduated at Princeton College in 1820, and was admitted to the bar in 1822. For four years, 1827-31, he was attorney-general of Georgia. With the exception of one year he was a member of the State legislature, from 1837 to 1842, and in 1843 was elected to Congress. During the same year he was elected governor of Georgia, and reelected in 1845. In March, 1849, President Taylor appointed him Secretary of War, which position he held until the death of the President, which occurred July 9, 1850. He has since lived in retirement at his home in Richmond county, Ga.

CRAWFORD, SAMUEL WYLIE, an American soldier, born in Franklin county, Pa., 1829. A graduate of the University of Pennsylvania, he became an assistant surgeon in the United States army in 1851. In 1860 he was stationed at Fort Sumter, and had command of a battery during the bombardment of that fort at the outbreak of the civil war. In 1862 he vacated his commission as assistant surgeon, and accepted the appointment of major in the 13th N. Y. infantry. Shortly afterwards he was commissioned brigadier-general of volunteers, and brevetted from colonel in 1863 to major-general in 1865. He rendered efficient service in the Shenandoah campaign, and was conspicuous for his bravery in the battles of the Wilderness, Winchester, Cedar Mountain, Spottsylvania, Petersburg, Five Forks, and other engagements. In 1873 he was retired with the rank of brigadier-general.

CRAWFORD, WILLIAM, a Revolutionary soldier, born in Virginia in 1732, died in 1772. Served in the French and Indian war as an ensign. During the Pontiac war he served as captain, having been promoted on the recommendation of Washington. During the Revolutionary war he raised a company of Virginians, and joined Washington's army. For several years after the close of the Revolutionary war he was engaged in defending the frontier settlements against the attacks of the Indians, and in 1772 was captured by the latter, and after several days of cruel torture, was burned to death.

CRAWFORD, WILLIAM HARRIS (1772-1834), an American statesman. He began the practice of law in Lexington, Ga., in 1799. In 1802 he was made a member of the State Senate, and in 1807 of the United States Senate. He was reelected in 1811, and in 1813 became minister to France. In 1816 he was appointed Secretary of the Treasury, and in 1824 was a candidate for President, but was defeated by John Quincy Adams. On his return to Georgia he became circuit judge, retaining this office until nearly the end of his life.

CRAWFORDSVILLE, a city and railroad center; also the county-seat of Montgomery county, Ind. It is the seat of Wabash College.

CREASY, SIR EDWARD SHEPHERD, English author, born at Bexley in Kent, in 1812, died in London, Jan. 27, 1878. From Eton he passed to King's College, Cambridge, in 1832, and in 1834 was elected a fellow. Called to the bar in 1837 he practiced on the home circuit for more than twenty years, presided for several years as assistant judge at the Westminster sessions court, and in 1860 was appointed chief-justice of Ceylon, and knighted. Creasy was the author of *The Fifteen Decisive Battles of the World* (1851), *Invasions of England* (1852), *History of the Ottoman Turks* (1854-56), etc.

CREDENCE: in the Roman Catholic and Anglican churches, a small table beside the altar or communion-table, on which the bread and wine are laid before being consecrated. Sometimes the place of the credence is supplied by a niche in the sanctuary wall. The term was also used for a side-board, on which the food was placed to be tasted

before serving, as a precaution against poison. Hence the origin of the word.

CREDENTIALS, papers or letters given to an ambassador, or other public minister, to a foreign court, to enable him to claim the confidence of the court to which he was sent.

CREDIT, LETTER OF, a term applied to a letter addressed to a correspondent at a distance, requesting him to pay a sum therein specified to the person named, or to hold the money at his disposal, and authorizing the correspondent to reimburse himself for such payment either by debiting it in account between the parties, or by drawing on the first party for the amount. This arrangement may take place between merchants or others, but in general it occurs between bankers residing in different places. It is designed to enable any one who has money lodged at one place to obtain the use of it at another for a small charge or commission, without the risk or trouble of actually carrying money between the two cities.

CREEDMOOR, a village of Long Island, 12 miles east of New York by rail, with an extensive rifle-range.

CREEK: in geography, the term applied to small inland rivers.

CREEKS. See **INDIANS, AMERICAN**, in these Revisions and Additions.

CREEPER, a genus of birds, the type of the family *Certhiadae*. The best known North American species are the brown creeper (*Certhia Americana*) and the *Certhia albifrons* of the Southwestern States.

CREEPS, a miner's term for the depression which takes place on the surface from the removal of beds of coal beneath. Masses of the coal-seam, like huge pillars, are left by the miners for the support of the superincumbent strata.

CREES. See **INDIANS, AMERICAN**, in these Revisions and Additions.

CREMATION. See *Britannica*, Vol. VI, pp. 565-67.

CRENELLE, an embrasure or indentation in a battlement; an indentation.

CRENIC ACID, one of the constituents of vegetable mold, produced wherever leaves and other plant matter are decaying.

CRESCENDO: in music, a gradual increasing of sound, or changing from piano to forte and fortissimo. The swell of an organ, when well constructed, produces a most perfect crescendo.

CRESCENT, in heraldry, is used both as a bearing or charge, and as a difference. In the latter case, it designates the second son, and those that descend from him.

CRESCENT, a decoration, sometimes called order of, in Turkey. In 1799, after the battle of Aboukir, the sultan, Selim III, testified his gratitude to Nelson by sending him a crescent richly adorned with diamonds. It was not intended as an order, but Nelson wore it on his coat; and Selim, flattered by the value attached to his gift, resolved that a similar decoration should be conferred on foreigners who had done service to the state. There was an old order of the Crescent, instituted by Rene, Duke of Anjou, in 1464.

CRESCENTINO, a town of North Italy, in the province of Novara, 22 miles northeast of Turin, situated near the confluence of the Dora Baltea with the Po. It has manufactories of silk and woolens. Population, 6,800.

CRESCO, a railroad village, the county-seat of Howard county, Iowa. It is a great shipping point for wheat; it has foundries and other manufactories; also a good union school.

CRESETT, a lamp or torch, or a light fixed on a pole. The name owes its origin to the fact that beacons were usually surmounted by a cross.

CRESSON, a summer resort of Cambria county, Pa., situated on the top of Alleghany Mountains, 800 feet above the sea.

CRESTE: in architecture, an ornamental finishing, either in stone, or of tiles or metal, running along the top of a wall or the ridge of a roof.

CRESTLINE, a railroad junction in Crawford county, Ohio, where are located railroad shops and manufacturing establishments.

CRESTON, a city of Iowa, about two hundred miles west of Burlington. It is an important railroad and trade-center. It contains a variety of manufactories and large railroad shops.

CRESWELL, JOHN A. J., an American statesman, born in Port Deposit, Md., in 1828. He graduated from Princeton, and was admitted to the bar in 1850, a member of the State legislature, 1860-62, of Congress in 1863, and in the United States Senate in 1865. In 1869 President Grant made him postmaster-general, which position he held till 1874.

CRETE, a manufacturing city and railroad junction of Saline county, Neb. It is the seat of Doane College.

CRÉTIN, JOSEPH, R. C. bishop, born in Lyons, France, in 1800, died in St. Paul, Minn., in 1857. He studied in his native diocese, and in 1839 was appointed vicar-general at Dubuque, Iowa. From 1848 to 1849 he was at Prairie du Chien, among the Winnebagoes, when he was appointed to the new see at St. Paul, Minn., where later he erected a hospital, an asylum, and novitiate. Subsequently he established churches among several tribes of Indians, and erected a convent of the Benedictine order at St. Cloud, which has since grown into a great school and abbey. When he was appointed to Minnesota, there was in his diocese one log church and three priests. A few years later there were twenty-nine churches and twenty priests, with a Catholic population of more than 50,000.

CREVAUX, JULES NICHOLAS (1847-82), French explorer, born in Lorquin, Lorraine, in 1847. He became assistant surgeon in the French navy in 1868, and surgeon five years later. Subsequently he explored the Tumuc-Humac Mountains, and descended the Yaru to the Amazon. He afterwards explored the Yapoura, the Pilaya and the Pilcomayo Rivers. In April, 1882, while prosecuting his explorations in the region of the Teyo, he was murdered by the Tapeti Indians.

CREVECŒUR, the name of a Dutch port in the province of North Brabant, on the left bank of the Meuse. It figured prominently in the wars of the Dutch and Spaniards.

CREVILLENTE, a town of Spain, in the province of Alicante. It has a population of about 7,800, chiefly engaged in agricultural pursuits and weaving.

CREW, a collective name for all the persons employed on a ship, but usually limited to designate non-commissioned officers and seamen.

CREWKERNE, a town in the southeast of Somersetshire, 10 miles southwest of Lichester. Population, 4,489.

CRIB-BITING, an injurious habit of horses, especially those spending a considerable amount of leisure in the stable. The act consists in seizing with the teeth the manger, rack or any other object, and taking in at the same time a deep inspiration with a peculiar noise known as wind-sucking. It usually interferes with thriving and leads to attacks of indigestion.

CRILLON, LOUIS DES BALBES DE BRÉTON DE, a French knight, surnamed "Le Brave," born at

Murs in Provence in 1541, died at Avignon in 1615. He distinguished himself in battles at Calais, Guines, Dreux, Jarnac and Moncontour, receiving numerous church benefices, as a reward for his heroism. His last days were spent in piety and penance.

CRIMINAL LAWS. See *Britannica*, Vol. VI, pp. 587-90.

CRIMINALS, IDENTIFICATION OF. While various systems have been in use from time immemorial for the identification of persons charged with crime, it remained for Alphonse Bertillon, of Paris, to perfect in 1882 a system that was adopted by the French government, affording a positive means of immediately recognizing and identifying a person who had ever at any time been examined according to the rules laid down in the code established by him. The measurements as established are applicable to individuals, tribes or races. The list embraces height, length and width of head, length of left middle and little fingers, forearm and foot, full stretch of arms, and length and breadth of right ear. All marks and scars are fully described, recorded and exact position noted; all peculiarities of the eyes and hair are given. In defining a scar its precise location is noted as being either on the right or left of the vertebral column, as well as above or below the plane of the seventh vertebra. For scars on the face the localities and measurements are reckoned from the nostrils, the bridge of the nose, the corners of the mouth, chin, cheek, eyebrows; on the breast, the median line, the nipples, the sternum, are taken as bases; for the arm the measurements are reckoned from the shoulder, elbow, wrist; for the fingers, the phalanges and articulations. It was found that in the measurements of 130,000 individuals by the police in Paris, no two cases were alike, and it was very seldom that the same kind of scar or mark was on two different persons in the same position. In the practical working of the system, three divisions are made: tall, medium and short. This is designated as the first classification. Each of these classes is further subdivided under head-measurement, followed in turn by other classifications and divisions until the whole number is divided into groups of about 10 persons each. As an example of the speed and accuracy with which a criminal can be identified, when he refuses to give his name, it is necessary to take, first, his height, thereby locating him in one of the grand divisions, tall, medium or short, and thereby locating the series of compartments or drawers where his recorded measurement and photograph are to be found. The measurement of the length of the head brings still nearer; the color of the eyes; the length of the outstretched arms, and the length of the foot will bring the searcher to the exact spot where the full description and pictures identify the culprit beyond a doubt. Two photographs are usually taken, one with a profile view, the second a three-quarter face.

The plan adopted by the police of the United States is regarded as an improvement and simplification of the methods as given in the foregoing description. The method in vogue for many years has been to take the height and weight; note the complexion; the color and any other peculiarity of the hair; the teeth, eyes, nose, etc. In the matter of the nose care is taken to describe it as either regular, irregular, Roman, pug or Grecian. All scars are located and described; birth marks and India-ink marks, with all deformities, and evidences of accidents are recorded. The measurements can be taken by one policeman, but for rapid work two are usually required; one for the

measuring and one for the recording. The instruments used are calipers, compasses and graduated rules, which, although inexpensive, are so exact that the diameters of the head and the length of the fingers can be given to within one millimeter. In searching for prominent criminals duplicate descriptions can readily be sent out, and accuracy secured beyond a doubt. Among scientists the name Anthropometry, from the Greek *anthropos*, a man, and *metron*, a measure, the department of the science of anthropology which relates to the proportions of the human body, is usually applied, but in ordinary life is seldom used.

CRINED: in heraldry, when the hair of a man or woman, or the mane of a horse, differs in tincture from the rest of the charge, the object is said to be crined of such a metal or color.

CRINGLES, short pieces of rope, with each end spliced into the bolt rope of a sail, confining an iron or brass ring or thimble. Smaller ropes are passed through them, to aid in managing the sails.

CRINOLINE, the name originally given by French *modistes* to a fabric of horsehair, capable of great stiffness, and employed to distend women's attire.

CRINUM, a genus of bulbous-rooted plants of the natural order *Amaryllidæ*. There are about 60 species, natives of tropical and subtropical countries. *C. amabile*, an Indian species, is much esteemed for its fragrance and beauty. *C. Asiaticum* has powerful emetic bulbs, which are used in case of poisoning.

CRISIS, a name used by physicians to denote the rapid or sudden determination of an acute disease in the direction of convalescence or of death.

CRITTENDEN, GEORGE BIBB (1812-80), an American general, born in Russellville, Ky., March 20, died in Danville, Nov. 27. He served in the Texan revolution of 1835, and in the Mexican war, being one of the first to enter the City of Mexico. On the outbreak of the civil war he resigned his commission as lieutenant-colonel in the U. S. Army, and entered the Confederate service. He was commissioned brigadier-general and speedily promoted to major-general. An unsuccessful attack by his forces on the Union troops at Fishing Creek led to his severe censure, and soon afterwards he resigned his commission. After the war he resided in Frankfort, Ky., and was State librarian from 1867 to 1871.

CRITTENDEN, JOHN JORDAN, an American statesman, born in Woodford county, Ky., 1787, died July 26, 1863. He graduated at William and Mary College, and in 1809 was appointed attorney-general of the Territory of Illinois. He served as a volunteer in the war of 1812, and in 1816 was elected to the legislature. In 1817 he was elected to the U. S. Senate, serving three years, when he resigned and entered upon the practice of law at Frankfort, Ky., where he speedily became eminent, especially as a criminal lawyer. He served several terms in the State legislature, and in 1835 was again elected to the U. S. Senate. He was Attorney-General of the United States under President Harrison, and, after the death of the latter, was returned to the Senate to fill the vacancy caused by the retirement of Mr. Clay, and was subsequently reelected for a full term, but resigned in 1848 to become governor of Kentucky. After the death of President Tyler he again entered the cabinet as Attorney-General under President Fillmore. In 1855 he again entered the U. S. Senate, where he exerted to the utmost his influence to preserve the Union. He remained in the Senate until March 4, 1861, when he retire

but was promptly returned to Congress as a member of the House of Representatives, where he was esteemed as one of the most able debaters.

CRITTENDEN, THOMAS LEONIDAS, an American soldier, born in Russellville, Ky., in 1815. He studied law with his father, John J. Crittenden, and became commonwealth's attorney for his native State in 1842. He served under Gen. Taylor in the Mexican war, and was consul at Liverpool from 1849 to 1853. On the outbreak of the civil war he entered the Union Army, and in 1862 was promoted major-general and given command of a division of the Army of the Tennessee. He subsequently served under Gens. Buell and Rosecrans, being in command of one of the two corps that were routed at Chickamauga. He resigned his commission in 1864, but entered the Regular Army two years later as colonel of the 32d Infantry. For his gallantry at Stone River he was brevetted brigadier-general in 1867. In 1869 he was assigned to the 17th Infantry, and served on the frontier until his retirement in 1881.

CROCKETT, a thriving city, the county-seat of Houston county, Texas. It has a male and female seminary.

CROCKETT, DAVID, an American pioneer, born in Green county, Tenn., in 1786, died in 1836. He lived with his parents until he was 12 years of age, when he was indentured to a German, with whom he tramped 400 miles. Disgusted with his occupation he ran away and returned home, and for several years worked for teamsters and drovers. When eighteen years of age he went to school for a few weeks and learned to read and write. In 1811 he removed to Franklin county, one of the wildest parts of the State, where he engaged principally in hunting, acquiring a reputation as one of the most skillful hunters of his age. In 1813 he served in the war with the Creek Indians, and at its close settled on Shoal Creek, and was appointed a local magistrate by his neighbors. In 1821 he was elected to the State legislature, and, although uneducated and entirely ignorant of the art of public speaking, made a most creditable record. He was returned to the legislature in 1823-24, and in 1826 was elected to Congress. He served two terms, and from 1833-35 served a third term. He was noted in Washington for his thorough independence, shrewdness, strong common sense and humorous eccentricities of manner. After his career in Congress he joined the Texans in their contest for independence, and was one of the 140 defenders of Fort Alamo, in San Antonio de Bexar, being one of the six survivors who surrendered to Gen. Santa Anna, and who were treacherously massacred by his orders.

CROCUS OF ANTIMONY, the oxy-sulphide of antimony. Crocus of Mars is the finely divided red oxide of iron.

CROFTON, SIR WALTER FREDERICK, an English prison reformer, born in 1815. In 1833 he entered the royal artillery, retiring in 1844 as captain. Subsequently he became interested in the improvement of prisons and reformatories. He has done much to advance the merits of refuges and reformatories throughout the civilized world. He was knighted by the Queen in 1862.

CROGHAN, GEORGE, an American soldier, born near Louisville, Ky., in 1791, died in 1849. He graduated at William and Mary College; entered the army in 1810; was promoted captain in 1812, and major in 1817. For his gallant defense of Fort Stephenson, at Lower Sandusky, he was brevetted lieutenant-colonel, and Congress voted him a gold medal. In 1817 he resigned from the army, and after filling several civic positions, he

joined Gen. Taylor in Mexico in 1846, taking part in the battle of Monterey.

CROIA, or **CROJA**, a town of Albania, Turkey, 42 miles southeast of Scutari. It is situated on a lofty mountain-spur, about 500 feet above the plain, and is defended by a strong castle. Population, 5,000.

CROLY, DAVID, an eminent American journalist, born in New York city, in 1829. He entered the profession of journalism about 1854, since which time he has been prominently connected, either as correspondent or as editor, with many of the daily papers of his native city.

CROLY, JENNIE CUNNINGHAM, better known as "Jennie June," born in Leicestershire, England, whence she came in early life to the United States. She married David Croly in 1856, and has since been continuously engaged as correspondent of many of the principal daily and weekly papers of New York, New Orleans and Baltimore. The first two women's congresses (1856 and 1869) were called by Mrs. Croly; and in 1868 she inaugurated the women's society known as the Sorosis. She is now editor of the "Home Maker," a monthly magazine published in New York.

CROMDALE, a place in Elginshire, on the right bank of the Spey, 5 miles northeast of Grantown. Here, May 1, 1690, 800 Jacobite Highlanders were surprised and routed by a body of King William's dragoons.

CROMER, a town and watering-place of England, in the county of Norfolk, 21 miles north of Norwich. The inhabitants are mostly engaged in fishing. Cromer Bay is called the Devil's Throat, on account of the danger of its navigation.

CROMWELL, RICHARD, a son of Oliver Cromwell, Lord Protector of England, born at Huntingdon, Oct. 4, 1628, died in 1712. When Oliver attained the dignity of lord protector, he called his son from the obscurity of a country-house to have him elected for the counties of Monmouth and Southampton, appointed him first lord of trade and navigation, and made him chancellor of Oxford. In none of these capacities did Richard Cromwell exhibit any aptitude; and his failure as protector, to which high office he succeeded, on the death of his father, was still more conspicuous. The result was his demission a little more than seven months after he had assumed the scepter of the commonwealth. He retired to Hampton Court, whence Parliamentary stinginess and pressing creditors soon drove him to the Continent, where he resided for a considerable time. At length, returning to England, he had a house provided for him at Cheshunt, near London, where he resided in strict privacy until his death.

CRONHOLM, ABRAHAM PETER (1809-79), Swedish historian. From 1849 to 1855 he was professor of history at Lund. After his retirement from that post he devoted himself exclusively to literature. He published a large number of valuable historical works.

CROOK: in music, a short tube, which may be inserted into various wind-instruments, so as to lower their fundamental tone or key. The term is also applied to the circular tube which fits into the end of the instrument next the mouth-piece.

CROOK, GEORGE, an American soldier, born near Dayton, Ohio, 1828. A graduate of the United States Military Academy, he entered upon active service with the 4th Infantry in California in 1852. From 1852 to 1861 he participated in various expeditions against the Indians, in one of which he was wounded by an arrow. At the breaking out of the civil war he became colonel of the 36th Ohio infantry, and subsequently commanded the 3d pro-

visional brigade in the West Virginia campaigns. In the summer of 1862 he was engaged in the Virginia and Maryland campaigns, and was brevetted lieutenant-colonel, United States Army. July 1, 1863, he was transferred to the 2d cavalry division, and participated in the battles of Tullahoma and Chickamauga. In February, 1864, he was assigned to the command of the Kanawha district in West Virginia, and in the latter part of that year took part in Sheridan's celebrated Shenandoah campaign. In March, 1865, he was brevetted major-general, and was in command of the cavalry of the army of the Potomac until the close of the war. He was mustered out of the volunteer service in January, 1866, and shortly afterwards was commissioned lieutenant-colonel of the 23d infantry, United States army, and sent to Idaho to settle the Indian disturbances. During the six years which followed, Gen. Crook was actively engaged in Indian campaigns. In 1872 he went to Arizona, and compelled the Pi-Utes and Apaches to submit, and in 1875 he subdued the Sioux and Cheyenne Indians in the Northwest. In 1882 he drove the Mormons and squatters from the Indian lands upon which they had encroached, and in the following year forced the Chiricahuas to cease their depredations. In this latter campaign Gen. Crook marched over 200 miles, made over 400 hostiles prisoners, and captured all their horses and plunder. He introduced many reforms in the management of the Indians, the principal one being to compel the contractors to pay the Indians in cash for supplies instead of store orders. Under his vigorous management the tribes speedily became self-supporting.

CROOKED ISLAND, one of the Bahamas, valuable chiefly for its salt, of which it produces about 12,000 bushels annually. Its area is about 160 sq. miles.

CROOKES, WILLIAM, an English chemist and physicist, born in 1832. In 1855 he became an instructor in the Science College, Chester. In 1859 he founded the "Chemical News," of which he is still editor. He has since made numerous important discoveries in chemistry, and has written various works on the subject.

CROOKS, GEORGE RICHARD, an American author, born in 1822. In 1841 he became a minister in the Methodist Episcopal Church, and was sent as a missionary to Illinois. In 1842 he was appointed a professor in Dickinson College, and in 1843 became principal of the collegiate grammar school. In 1848 he returned to the ministry, and was pastor successively in Philadelphia, Wilmington, New York and Brooklyn. In 1860 he became editor of "The Methodist." He has published works on various subjects.

CROOKSTON, a flourishing town of Minnesota, county-seat of Polk county, situated on Red Lake River, about 65 miles north of Glyndon, in the fertile Red River Valley of the North.

CROP, or **OUT-CROP**, the edge of a stratum where it rises to the surface, or, as miners say, comes out to the day.

CROPREDY BRIDGE, a bridge which gives name to a battle between the royalists under Charles I, and the parliamentarians under Waller, June 29, 1644.

CROP REPORTS, a term technically applied to reports made in advance of the harvesting of agricultural products with regard to the probable yield of such products at the time of such harvest. They are based upon early and accredited information by capable observers as to the amount of acreage planted or sown; the condition of the growth and the "friendliness" of the season at any given date;

the present or prospective prevalence of noxious insects, or of blight in any form. Such information is collated with that of previous years under similar conditions (and whose harvests have become a matter of record), and a resultant opinion is thus formed as to the probabilities of the ensuing harvest. These reports made either by officers appointed by State or national governments, or by enterprising newspaper publishers, or agents of commercial corporations and business houses, largely affect the contract prices of all farm products for future delivery.

CROPSEY, JASPER FRANCIS, an American landscape painter, born in Rossville, N. Y., 1823. He first devoted himself to architecture, but developing unusual genius as a landscape painter, he received instruction from Edward Maury, and in 1847 visited England, France, Switzerland and Italy, spending three years in the latter place, and producing, among other paintings, *The Pontine Marshes* (1850). In 1855 he again went abroad, and resided seven years in London, his productions being exhibited at the Royal Academy and at the International Exhibition of 1862. He returned to America in 1863, and established a studio in New York. In 1885 he removed his studio to Hastings-upon-Hudson. He was elected a member of the National Academy in 1851.

CROSBY, HOWARD (1826-91), an eminent American Presbyterian clergyman, born in New York city, Feb. 27, 1826, died there March 29, 1891. He graduated at the University of the city of New York in 1844, and became professor of Greek in that institution in 1851, and a professor at Rutgers College, N. Y., in 1859. In 1861 he was ordained a minister, and became pastor of the First Presbyterian church of New Brunswick. In 1863 he was called to the pastorate of the Fourth Avenue Presbyterian church in New York city, which position he retained until his death. In 1859 Harvard College conferred the degree of D. D. upon him, and in 1871 Columbia College gave him that of LL. D. From 1870 to 1881 he was chancellor of the New York University. He was one of the founders and chief promoters of the Society for the Prevention of Crime, and from its organization in 1877 was its president. He was a delegate to the first Presbyterian General Council at Edinburgh in 1877. He wrote numerous books, the most noteworthy being: *Lands of the Moslem* (1851); *Edipus Tyrannus of Sophocles* (1851); *Life of Jesus* (1870); *Bible Companion* (1870); *The Humanity of Christ* (1880); and *Commentary on the New Testament* (1885). He was a member of the American section of the New Testament Revision Committee.

CROSBY, PIERCE, an American naval officer, born in Delaware county, Pa., in 1823. He became a midshipman in the navy at the age of 15. From 1842 to 1860 he served on various vessels, having in the mean time been commissioned lieutenant. At the opening of the civil war he was assigned to duty in Chesapeake Bay, and rendered efficient service in keeping communications open between Annapolis and Havre de Grace. He took a prominent part in the battle of Big Bethel, and in the attack on Forts Hatteras and Clark. He was given command of the gun-boat *Pinola* during the winter of 1861-62, and in addition to other engagements participated in the capture of New Orleans, and in the passage of the batteries at Vicksburg. He became fleet captain of the North Atlantic squadron in 1862, having been promoted to commander in September of that year. He subsequently commanded the *Florida*, the *Keystone State*, the *Metacomet*, and *Shamokin*. While in command of the *Metacomet* he removed with drag-nets a large number of torpedoes

from the approaches to Mobile. He was promoted to a captaincy in 1868, to commodore in 1874, and rear-admiral in 1882. After 48 years of active service he was retired in 1883.

CROSIER, or **CROZIER**, archbishop's staff. See *Britannica*, Vol. VI, pp. 463, 614.

CROSS, MARY ANN (1820-80), "George Eliot," *née* Evans, an English novelist. She commenced contributing to various reviews at an early age, but her first novel, *Scenes of Clerical Life*, appeared in 1857. Among her popular books are: *Adam Bede*; *The Mill on the Floss*; *Silas Marner*; *Romola*; *Felix Holt* and *Middlemarch*, besides a volume of poems.

CROSS, SIR RICHARD ASSHETON, a British statesman, born in 1823. He was admitted to the bar in 1849, and from 1857 to 1862 was a member of Parliament. In 1868 he was again in Parliament, and was reelected in 1874. The same year he became home secretary and privy counselor, and in 1876 was chosen a bencher of the Inner Temple. In 1885 he became again home secretary, and was raised to the peerage and appointed secretary for India in 1886. The latter position he holds at the present writing, 1891.

CROSS-BILL, a bill of exchange or promissory note given in consideration of another bill or note.

CROSS-BOW, a weapon largely used in war and sport in mediæval times. See **ARBALEST**.

CROSS-BUNS, a small cake specially prepared for Good Friday. These buns were appropriately marked with a cross, hence the name. The origin of the practice is obscure; most probably it is a relic of some heathen observance, to which the early church gave a Christian significance.

CROSS, ANDREW, electrician, born at Fyne Court, Somersetshire, June 17, 1784, died July 6, 1855. His principal researches in science were as to the artificial formation of minerals by processes of electrical deposition, and the application of electricity as a means of improving wines, cider, etc. In 1837 he announced that, under certain circumstances, organisms (of the genus *Arcarus*) appeared in solutions of inorganic substances; a discovery which attracted much attention, but which exposed him to the ridicule of opponents.

CROSS-EXAMINATION: in law, the examination or interrogation of a witness of the adverse party.

CROSS-KEYS, a village of Rockingham county, Va., where a battle took place June 8, 1862, between the armies under Generals Fremont and Jackson.

CROSSLEY, SIR FRANCIS (1817-72), an English manufacturer and philanthropist. Among his benefactions to Halifax, his native town, were a public park at a cost of £40,000, almshouses and orphan homes, besides large donations to the London Missionary Society and to the Congregationalists. A baronetcy was conferred on him in 1863, and from 1852 to 1872 he represented Halifax in the Liberal interests.

CROSSRAGUEL, a ruined abbey in Ayrshire, dating from 1244. A notable "disputation" took place in 1662 between John Knox and the abbot, Quenton Kennedy; and in 1570 the commendator was tortured by fire by the Earl of Cassilis, to force him to resign certain lands.

CROSS, SOUTHERN, the most conspicuous constellation of the Southern hemisphere. It consists of four bright stars in the shape of a cross. The two brilliant stars which mark the summit and foot of the cross have nearly the same right ascension. The constellation, therefore, is almost perpendicular when passing the meridian, and these two stars act as pointers to the Antarctic pole.

CROTALARIA, a genus of plants of the natural order *Leguminosæ*, sub-order *Papilionaceæ*, contain-

ing several hundred species, all natives of warm climates, but cultivated in hot-houses. Many of them have long, straight, slender stems and branches, and some yield valuable fiber, particularly *C. juncea*, the Sunn hemp of India, the fiber of which is now an important article of commerce. *C. sagittalis*, or rattle-box, is a common species of the eastern United States.

CROTALIDÆ, family of snakes. See *Britannica*, Vol. XXII, pp. 193, 198.

CROTON, a genus of plants of the natural order *Euphorbiaceæ*. There are about 500 known species, natives of warm and tropical climates. The most important is the *C. tiglium*, a native of the East Indies, which possesses active purgative properties. Croton oil is extracted from the seeds of this species. The balsamic sap of some South American species is dried and used as incense.

CROTON RIVER rises in Duchess county, New York, flows in a southerly direction through the counties of Putnam and Westchester, and, about 35 miles above New York city, enters the Hudson. This river is the chief source of the water-supply for the city of New York, and is about 50 miles long.

CROTOPHAGA, a genus of birds of the sub-family *Crotophaginæ*. The best-known species are *C. ani* and *C. sulcirostris*, natives of the United States. They are gregarious in habit, and nest in bushes.

CROW. See *Britannica*, Vol. VI, pp. 617-19.

CROWBERRY, or **BROOM-CROWBERRY** (*Empetrum nigrum*), a small procumbent shrub, of the natural order *Empetraceæ*, common on heaths in Scotland and the North of England, and found in the northern part of the United States.

CROW-BLACKBIRD. See under **GRACKLE**, *Britannica*, Vol. XI, pp. 26-27.

CROWE, MRS. CATHERINE, née Stevens (1800-76), an English authoress. Her mind was morbid and despondent, and at one time she had a violent but brief attack of insanity. She wrote supernatural stories, tragedies, juvenile books, and novels.

CROWE, JOSEPH ARCHER, an English art writer, born in 1825. He was a special correspondent in the Crimean war, the Indian mutiny, and the Franco-Austrian war; and in 1857-59 was director of the School of Art at Bombay. In 1860 he was appointed British consul-general at Leipsig, and afterwards at Düsseldorf. In 1882 he was made commercial attaché at Paris.

CROWN: in architecture, a species of spire or lantern, formed by converging flying buttresses.

CROWN DEBTS. It is a prerogative of the crown to take precedence of all other creditors, and in England, to recover its debts by a summary process called *extent*. The rule in Scotland, however, was limited to movable or personal property, and the crown has no privilege over a subject in a competition for heritage.

CROWN LANDS, the demesne lands of the English crown. They are now contracted within narrow limits, having been almost entirely granted away to subjects. The superintendence of such property as still belongs to the crown is now vested in commissioners appointed for the purpose, called the commissioners of woods, forests and land revenues.

CROWN PIECE, an English silver coin of the value of five shillings, introduced by Henry VIII. It has a standard weight of 436.56 grains. The name crown is also used as the translation of the French *écu*, which varied in value from 6 francs to 3 francs.

CROWN POINT, a post-village of New York, on Lake Champlain, near the site of a British fort of

the same name surprised and captured by Ethan Allen in 1775.

CROWN POINT, a railroad village and county-seat of Lake county, Ind. It is 41 miles southwest of Chicago.

CROWN-WORK, in fortification, is formed to strengthen a weak front, or to occupy ground which might facilitate the enemy's operations. It consists of two faces inclined to each other at an angle, with a bastion in the middle, and half bastions at the two ends; and it is connected with the main body of the work by two long sides.

CROW-STONE, the top stone of the gable end of a building.

CROWS. See **INDIANS, AMERICAN**, in these Revisions and Additions.

CROZET ISLANDS, a volcanic group to the south of the Indian Ocean, which lies between Kerguelen on the east and Prince Edward Islands on the west, about midway between Patagonia and New Zealand.

CRUCIAN (*Cyprinus carassius*), a fish of the same genus with the carp, from which it differs in the want of barbules at the mouth, and in the almost square tail. It inhabits lakes, ponds, and slowly-flowing rivers, in the north of Europe and Asia. In Sweden it is called *Karusa*.

CRUCIBLES, vessels made of materials capable of being exposed to high temperatures without alteration, and used for fusing substances together, such as the materials for glass-making or metallic ores, with various fluxes to obtain the several metals they yield. Crucibles are generally made of fire-clay, porcelain, graphite, iron, platinum, and, for some special operations, of silver.

CRUISER, a small war vessel, employed chiefly in watching an enemy by sailing about in a suspected latitude.

CRUCIFERÆ, an important natural order of dicotyledonous plants, of about 1,500 known species, found in all countries. The flowers have a calyx of four sepals, which fall off after flowering; and a corolla of four petals, which are placed in the form of a cross, whence the name. The order includes many important vegetables, as the turnip, cabbage, radish, mustard, cress, etc. It also includes many fragrant flowering and ornamental plants, as the sweet alyssum, candytuft, rocket, etc. The order is equivalent to the Linnean class *Tetradynamia*.

CRUELTY TO ANIMALS, AMERICAN SOCIETY FOR THE PREVENTION OF, an organization founded in New York city in 1866, by Henry Berg, Elbridge T. Gerry, Gov. John T. Hoffman, Judge James T. Brady, Gen. John A. Dix, Judge Charles P. Daly, Francis B. Cutting, John Van Buren, Hamilton Fish, Samuel B. Ruggles, James J. Roosevelt, James W. Gerard, and other distinguished citizens, and incorporated by special legislative act in 1867. See **ANIMALS, PREVENTION OF CRUELTY TO**, and **BERG, HENRY**, in these Revisions and Additions.

CRUGER, JOHN, colonial mayor of New York, born in New York city in 1710, died in 1792. When quite young he embarked in commercial pursuits, and became one of the principal shipping merchants of New York. He was elected to the common council in 1754, and mayor from 1756 to 1765. In 1769 he represented the city in the general assembly and was a member of the committee which prepared the memorial to the home government relative to the dangers of "taxation without representation." In 1769 he again represented the city in the general assembly, and was chosen speaker. He was one of the organizers of the New York chamber of commerce, and was its first president.

CRUIKSHANK, GEORGE (1792-1878), an English artist. His first works of note were a series of po-

litical caricatures, entitled *Life in London*. He later made numerous other designs on various subjects. The number of his works is so large that it has never been computed. Among some of his best plates are those illustrative of *John Gilpin*, *Tom Thumb*, *Sketches by Boz*, *Oliver Twist*, *Jack Sheppard*, *The Tower of London*, and *Windsor Castle*. See **BRITANNICA**, Vol. V, p. 105.

CRUIVES AND ZAIRES, contrivances erected upon the rivers in Scotland for the purpose of catching salmon. They are of great antiquity, and consist of a kind of hedge formed by stakes driven into the ground, the interstices being filled with brush.

CRUMMELL, ALEXANDER, an American clergyman, born in 1820. He was the grandson of a king of Timanee, near Sierra Leone. He was ordained a deacon in the P. E. church, and later a presbyter. For several years he was a missionary in Liberia. He has since been rector of St. Luke's church, Washington, D. C.

CRUSE, CHRISTIAN FREDERIC, an American clergyman and educator, born in Philadelphia, Pa., in 1794, died in New York, Oct. 5, 1865. He graduated at the University of Pennsylvania in 1817, and was ordained as a Protestant Episcopal minister in 1822. He made a special study of ancient languages, and from 1831 to 1833, was assistant professor in the University of Pennsylvania. He was also at one time professor in St. Paul's College, Minn., and in Flushing Institute on Long Island. From 1847 to 1853 he was rector of Trinity church, Fishkill, N. Y., after which he removed to New York, becoming librarian of the general theological seminary. He translated several important works, the more noteworthy being the *Eccelesiastical History of Eusebius*, which is considered the standard English translation.

CRUSHERS or **BRUISERS**, implements used for reducing to small fragments, corn, beans, linseed, oil-cake, and other similar hard food for livestock, in order that it may be more thoroughly subjected to the action of the gastric juice, and that no part of it may pass through the animal undigested.

CRUYS, CORNELIUS (1657-1727), the founder of Russian maritime power, born June 14, 1657. He was a rear-admiral in the Dutch service, when Czar Peter the Great, noticing his abilities, persuaded him to go to Moscow. There, in 1698, he was received with great splendor, and soon appointed vice-admiral. His services to Russia were of various kinds; to him it owed its first dock-yards, canals, and charts, the organization of its navy, and its victories over Sweden and Turkey in 1706-1710. He died in 1727, possessor of an imperial domain in Kexholm, and owner of the island Birken in Finland. It is in memory of him that the white flag with the blue cross still floats from the Russian men-of-war.

CRYSTAL FALLS, in Cascade Creek, Montana, a series of cascades which, together, measure 129 feet. They are one mile from the mouth of the creek where it flows into the Yellowstone River.

CRYSTALLINE ROCKS, a name given to all rocks having a crystalline structure. The crystalline texture may either be original or superinduced. Thus, most crystalline rocks, such as certain calcareous masses, owe their origin to chemical precipitation from water, while others, again, such as lavas, have been consolidated from a state of igneous fusion. There is another large class of crystalline rocks, the crystalline granules, some of which present a remarkable foliated character—that is, they are arranged in more or less parallel layers. This peculiar structure appears to have been

superinduced—the original rocks having been either fragmental or crystalline or both, and the result of great heat and pressure.

CRYSTALLOMANCY, a mode of divination by means of transparent bodies, at one time very popular. A precious stone, crystal globe, or other transparent object, was employed; but a beryl was deemed most effective. In using it the operator first muttered over it certain formulas of prayer, and then gave it into the hands of a youth or virgin, who beheld in it the information required.

CSABA, a town of Hungary, seven miles southwest of Bekes. It has an extensive trade in corn, cattle, fruit, wine, hemp and flax. Population, 30,000.

CSAT or **CSATH**, a town of Hungary, in the county of Borsod, 13 miles from Miskolez. Population, 5,000.

CSANAD, a town of Eastern Hungary, capital of the county, 44 miles north of Temesvar, on the Maros. The county has an area of 699 square miles. Population, 95,000.

CSONGRAD, a town of Hungary, in the county of the same name, at the confluence of the Theiss and the Koros, 70 miles southeast of Pesth. Population, 17,500.

CTENOID FISHES, an order of fishes, characterized by ctenoid scales. The name is from the Greek *kteis*, a comb. The scales are horny or bony and unenameled. Living ctenoid fishes are numerous, fossil ones comparatively few. Perches, flounders, and turbot may be mentioned as examples.

CUAUHTEMOTZIN (Pronounced kwau-tay-motsein), 13th and last Mexican king, born in 1495, ascended the Mexican throne in 1521, and surrendered with the City of Mexico to Cortez in August of the same year. He was subjected to torture in a vain attempt to induce him to disclose the hiding place of his treasures, and, after being kept in confinement three years, was executed. An elaborate monument, surmounted by a bronze statue of Cuauhtemotzin was erected to his memory in the City of Mexico in 1887.

CUBA, one of the West India Islands, and a colony of Spain. For its history and productions, see Vol. VI, p. 678; Vol. XXII, p. 298; Vol. XXIV, p. 510; Vol. XXII, p. 142. An English consular report stated that in August, 1889, the public debt amounted to over \$150,000,000, which absorbed about \$9,000,000 to meet the annual interest. The same authority estimated the annual income at \$80,000,000. The estimated budget for 1890-91 placed the receipts for the year at 25,815,376 pesos, and the expenditures 25,446,807 pesos, of which 10,447,267 pesos would be required for the debt, 6,229,427 pesos for the ministry of war, and 4,237,862 pesos for the ministry of the interior. Sugar is the chief export. It was estimated that in 1888, 656,719 tons were produced. During the last two years the molasses production reached 153,015 tons, and 157,791 tons. The yearly produce of tobacco in Cuba is about 300,000 bales. In 1887 nearly 220,000,000 of cigars were also exported from Havana. The total value of the principal articles of export from Havana for 1888 was about \$29,000,000, and the imports about \$12,000,000. In Cuba there were, in 1891, 2,810 miles of telegraph and about 1,000 miles of railway. In 1885 a loan of \$40,000,000 was authorized to complete the Cuban railroads.

CUBAGUA, a small island of Venezuela, 30 miles north of Caracas, in the Caribbean Sea, between Margarita and the mainland.

CUCURBITACEÆ, an important order of corollifloral dicotyledons, of which the 500 species are mostly herbaceous climbers, inhabiting the warmer regions of the globe. The young shoots and leaves of many species are used as pot-herbs, and the per-

sistent rhizomes or roots of others are sometimes esteemed on account of their store of starch. The central importance of the order is due to the characteristic fruit, which is technically known as a *pepo*, but which may be regarded as a large and many-seeded berry, with its more or less succulent pulp protected by a hardened wall. The many specific and varietal forms are known as cucumbers, melons, gourds, pumpkins, squashes, vegetable-marrows, bottle-gourds, etc.

GUCKOO. See *Britannica*, Vol. VI, pp. 685-87.

CUDDY, the name first applied in East India trading ships to a cabin under the poop, where the men messed and slept. The same name was afterwards given to the only cabin in very small vessels, and sometimes to the cooking-room.

CUDLIP, **ANNIE THOMAS**, an English novelist, born in 1838. Among her most popular books are: *Sir Victor's Choice*, *Barry O'Byane*, and *Denis Donne*. Her stories are principally society novels.

CUDWEED, a popular name of many species of plants belonging to the natural order *Compositæ*, sub-order *Corymbifera*, whose stems and leaves are more or less covered with a whitish cottony down. They may be kept a long time without undergoing much apparent change, and may therefore be reckoned among *everlasting flowers*.

CUERO, a city of Texas, county-seat of DeWitt county, situated on the Guadalupe River, 80 miles east of San Antonio. It contains a number of large cotton-gins and a variety of manufactories.

CUEVA DE VERA, a town of Spain, 42 miles northeast of Almeria, situated on the Almanzor. It has manufactories of hardware, earthenware, wine and oil. Population, 7,500.

CUFFEE, **PAUL**, an American negro philanthropist, born of free parents at Westport, Mass., 1759, died Sept. 7, 1818. When but 15 years old his father died, and Paul was thrown upon his own resources. He first learned to read and write, and then applied himself to the study of navigation. At 16 he shipped on board a whaler, but was captured by a British cruiser, and imprisoned in New York three months. During the last two years of the Revolutionary war he worked on a farm in Massachusetts. Through his efforts the right of suffrage was granted to all persons of African descent in Massachusetts. In 1781 he became the owner of an open boat, and with his earnings was soon able to secure a schooner, which he manned with members of his own race. The schooner was soon exchanged for a brig, and the latter for a ship, with which he made voyages to Russia, England, and the West Indies. In a few years he amassed considerable wealth, which he devoted to the amelioration of the condition of his race. He built a school-house at Westport, maintained a teacher at his own expense, and opened it for the free instruction of his neighbors. He became closely identified with the efforts then being made by several philanthropists to found a colony of free negroes in Africa, and in 1811 visited Sierra Leone, where he founded the "Friendly Society of Sierra Leone." From there he sailed to England. On his return to America he collected a company of 38 negroes, whom he carried to Sierra Leone in 1815, and founded the first colony of free blacks. In his early life he had joined the Society of Friends, and subsequently became one of their ministers. In accordance with their principles, while engaged in commercial pursuits, he never dealt in either slaves or rum. While in the midst of his colonization schemes, he was seized with a fatal illness, which terminated in his death, Sept. 7, 1818.

CUISSARTS, small strips of iron plate laid horizontally over one another round the thigh, and

riveted together; in ancient times they were worn by troopers.

CUIRASS, originally a jerkin, or garment of leather for soldiers, so thick and strong as to be pistol-proof. The name was afterwards applied to a portion of armor made of metal, consisting of a back-plate and breast-plate hooked or buckled together.

CULENBORG, or **KULENBURG**, a fortified town of the Netherlands, situated on the river Leck, 10 miles northwest of Thiel. It has manufactories of arms, silk fabrics and twist. Population, 6,200.

CULIACAN, a town of Mexico, 90 miles southeast of Cuialoa, in a fertile tract, on the river Culiacan. It is a depot for goods passing between Guyamas and Mazatlan. Population, 10,000.

CULLAWAN BARK, also called clove bark, a valuable aromatic, the product of the *Cinnamomum Cullawan*, a tree of the same genus as the cinnamon-tree, growing in the Molucca Islands. Its use is commended in cases of indigestion, diarrhoea, etc.

CULLEN, a fishing town of Banffshire, on the Moray Firth, 67 miles northwest of Aberdeen by railway. It has a cruciform parish church, founded by Robert Bruce, whose second queen died here, and which in 1543 was made collegiate. Cullen has been a royal burgh since about 1200, and unites with Elgin and five other places to return one member to Parliament. Population, 2,000.

CULLEN, PAUL (1803-78), an Irish prelate and cardinal. At one time he was professor of Hebrew in the College of the Propaganda, and later became rector of the Irish College at Rome. In 1849 he was appointed primate of all Ireland. In 1852 he was transferred from Armagh to the see of Dublin, and was made delegate apostolic for life. In 1866 he became a cardinal priest.

CULLEN, GEORGE W., an American soldier, born in New York in 1809, graduated at the United States Military Academy in 1833, entered the engineer corps, rising to the rank of colonel. Until the outbreak of the civil war he was chiefly engaged in the construction of fortifications and public works at New London, Boston harbor, New York city, Charleston and New Bedford. In 1861 he was appointed aid-de-camp to Lieutenant-Gen. Winfield Scott, and later was commissioned brigadier-general of volunteers. He was chief of staff to Gen. Halleck, chief of engineers at the siege of Corinth, and projected many engineering undertakings. He was superintendent of the United States Military Academy at West Point from 1864 to 1866. From 1867 to 1874 he was a member of the board of engineers for improving the defense of the territory of the United States. In January, 1874, he retired from active service, since which time he has devoted himself to literary, scientific and military studies. He is vice-president of the American Geographical Association, and has been president of the Geographical Library Society for several years. He has published several military memoirs and historical sketches.

CULMINATION, an astronomical term, signifying the passage of a star across the meridian. The star is then at the highest point (*culmen*) of its course; hence the name. The sun culminates at midday.

CULPA, a fault which leads to legal liability for the immediate consequences. It may arise under a contract, especially where many of the obligations of the parties are left to implication—for example, in the contract of carriage of passengers, or from the mere relative position of parties, as where a member of the public, or a neighbor, is injured by the negligent use of property.

CULPEPER, or **COLEPEPER, THOMAS, LORD**, a colonial governor of Virginia, born in England. In 1673 King Charles II granted to him and others of the royal favorites the territory of Virginia for a period of 31 years, and in 1675 Lord Culpeper was proclaimed governor of Virginia for life. He removed to the colony in 1680, remaining three years, during which time an act of indemnity was passed for offenses committed during the rebellion under Governor Berkeley. On his return to England he was charged with having violated his orders, and was arrested and his commission as governor declared forfeited. Through bribery and extortion he had greatly enriched himself, his estates, descending through his daughter, Catherine, to Lord Fairfax. He died in England in 1719.

CULTIVATED PLANTS. Like the mineral and animal world, the progress in the vegetable kingdom is measured by its utilization by man. We find positive evidence of the existence of agriculture long before written records; yet researches of times even more ancient contain no traces of cultivated plants. Since the rise of modern botany our knowledge of species at least possibly useful has been greatly extended; but the majority of species of primary nutritive importance to man at present are among those which have been in cultivation for more than 2,000 years. The plants in cultivation for the past 2,000 years are of a quality more delicate than necessary.

CULTRIOSTRES, a tribe of birds of the order *Grallatores*, distinguished by a long, thick, stout and generally pointed and trenchant bill, and including cranes, herons, storks, etc.

CULM: in botany, the peculiar cylindrical hollow and jointed stem of grasses.

CUMMINS, GEORGE DAVID, an American bishop, born in Delaware in 1822, died in 1876. He graduated at Dickinson College in 1841, and was at first licensed as a Methodist minister, but subsequently entered the Protestant Episcopal church, and after officiating as rector in Baltimore, Norfolk, Richmond and Chicago was ordained assistant bishop of Kentucky in 1866. In 1873 he abandoned his office, and organized a new sect called "The Reformed Episcopal Church." He became the first bishop of the new denomination.

CULVERIN, one of the earlier forms of cannon, of great length, generally an 18-pounder, weighing 50 hundred weight, the *demi-culverin* being a nine-pounder weighing 30 hundred weight.

CULVERT, the name given to an arched channel of masonry for the conveyance of water underground.

CUMBERLAND, a city of Maryland, and county-seat of Alleghany county, located on the north bank of the Potomac River, at the mouth of Wells Creek, at the western terminus of the Chesapeake and Ohio canal, and at the southeastern terminus of the Pittsburgh, Washington and Baltimore Railroad. A bridge crosses the Potomac River at this point. The city contains five public schools, and one academy. Its principal public buildings are the courthouse, city hall and jail. Bituminous coal is mined in the vicinity, and large quantities are shipped from this point. It is the third city in the State in population, and has extensive manufacturing interests. Population in 1880, 10,963; in 1890, 10,030. See *Britannica*, Vol. VI, p. 700.

CUMBERLAND GAP, a narrow mountain pass on the line between Kentucky, Tennessee and Virginia, which was considered an important point during the civil war. The Confederates held it till June 18, 1862, when the national army took possession. It passed successively into the hands of the opposing armies, General Burnside's troops being

the last to hold it. The gap is 500 feet deep, and in some places wide enough for only one road.

CUMBERLAND ISLAND, a peninsula of Baffin Land, extending into Davis Strait.

CUMBERLAND PRESBYTERIAN CHURCH. See RELIGIOUS DENOMINATIONS IN THE UNITED STATES, in these Revisions and Additions.

CUMBERLAND RIVER, a branch of the Ohio. It rises in the Cumberland Mountains, flows westward, enters Tennessee, returns to Kentucky, flows north and enters the Ohio. Its length is about 650 miles, and at certain favorable seasons it is navigable for 600 miles.

CUMBRE, LA (Sp., top or height), one of the principal passes across the Andes, on the high road between Santiago, in Chili, and Mendoza, in the Argentine Republic. The altitude of its crest is 12,454 feet.

CUMBRAIN MOUNTAINS, a great knot of mountains nearly 50 miles in length and breadth, in the northwest of England, occupying part of Cumberland, Westmoreland and Lancashire. There are 25 mountain tops upwards of 1,500 feet high.

CUMIANA, a town of Italy, in the province of Turin, seven miles north of Pinerolo, near the right bank of the Cisola. Population, about 6,000.

CUMMING, JOHN (1810-81), a British divine. In 1833 he was ordained minister of the Scotch Church in London. Among his most popular works are *Apocalyptic Sketches*; *God in History and in Science*; *The Destiny of Nations*; *The Sounding of the Last Trumpet*; and *The Fall of Babylon Foreshadowed*.

CUNAXA, a place in Babylonia, on the eastern bank of the Euphrates, about 45 miles north of Babylon, noted for the battle fought there (B. C. 401) between Cyrus the Younger and his brother Artaxerxes Mnemon, in which the former was killed. See Britannica, Vol. VI, p. 753.

CUNNINGHAM, ALEXANDER, an English archaeologist, born in 1814. He received a military education, and in 1831 was second-lieutenant of engineers; in 1834, aid-de-camp to the governor-general of India; in 1839, was on a special mission to Cashmere; and in 1840, became engineer to the king of Oudh. In 1858 he was chief engineer of the North-west Provinces, and in 1870 became surveyor-general of Indian archaeology. He has published numerous articles on archaeological topics.

CUNNINGHAMIA, a genus of trees of the natural order *Coniferae*, nearly allied in botanical characters to the pines and firs, but in foliage resembling the *Arancarias*.

CUP, DIVINATION BY, a mode of foretelling events, practiced by the ancient Egyptians. One of the Eastern methods consisted in throwing small pieces of gold or silver leaf into a cup of water, in which also were placed precious stones, with certain characters engraved upon them. The infernal powers were then invoked, and were believed to return answer, either in an intelligible voice, by signs on the surface of the water, or by a representation in the cup of the person concerning whom inquiry was made.

CUPAR-ANGUS, a town of Scotland, in the counties of Perth and Forfar, situated on the left bank of the Isla. It has extensive linen manufactories and considerable traffic in timber. Population, 2,150.

CUPULE: in botany, a sort of cup formed by a number of cohering bracts, and surrounding the fruit or the base of the fruit in certain plants; as the oak, in which it is the cup of the acorn, and the hazel, in which it is the husk of the nut.

CUPULIFERÆ, a natural order of exogenous plants, consisting of trees and shrubs, natives of temperate climates. The leaves are alternate and

furnished with stipules; the male flowers, and sometimes the female flowers, are disposed in catkins; the fruit is a one-celled nut, and the seed is usually solitary. This order contains many of the most important trees of Europe and America, including all the different species of oak, beech, chestnut, hazel, etc.

CURAOA ORANGES, small oranges which have fallen from the tree long before maturity. They have properties similar to those of orange-peel, but are more bitter and acrid.

CURARI, OURARI, WOORALI, or WOORARA, a celebrated poison, consisting of the aqueous extract of *Strychnos torifera*, and various other species of the same genus, used by the South American Indians for poisoning their arrows. The poison when introduced into the blood acts on the nervous system, and produces paralysis, with convulsive movements, and death ensues. Like snake poison, it is comparatively inert when taken into the stomach.

CURCI, CARLO MARIA, an Italian theologian, born in 1810. He has preached in several cities in Italy, and founded and edited "La Civiltà Cattolica." He has written extensively on religious topics, and has published an Italian translation of the New Testament.

CURCULIO. See under WEEVIL, Britannica, Vol. XXIV, p. 277. See also, Vol. XIII, p. 149.

CURCUMA, a genus of plants of the natural order *Scitamineæ*, having the tube of the corolla gradually enlarged upwards, and the limb two-lipped, each lip three-parted. *Curcuma longa* is widely cultivated in Southern Asia, its rhizomes being the source of Turmeric. *Curcuma zedoaria* yields a tonic medicine, and is also used as food. *Curcuma amada* is the mango ginger of Bengal.

CURLEW. See Britannica, Vol. VI, pp. 711-12.

CURRACH, COURACH, or CORACLE, a name applied in the British Islands to a canoe or boat made of a slender frame of wood, covered with skins. Skiffs of this sort, as well as canoes hollowed out of the trunks of trees, were in use among the Britons in the earliest times of which we have record. The currach still continues to be used on the Severn, and on many parts of the Irish coast, especially on the shores of Clare and Donegal.

CURRENTS. See Britannica, Vol. VI, p. 715.

CURRENT WINE, a wine made of the juice of red, black or white currants, to which is added about one pint of water for every four pints of berries employed. About a pound and a half of sugar is afterwards added to each pint of the liquor, a little spirits being generally also added before it is set aside to ferment. Fermentation requires several weeks, and the wine is not fit for use for at least some months afterwards.

CURRENT RIVER, a stream of Missouri and Arkansas, 250 miles in length. It rises in Texas county, Mo., flows southeast into Arkansas, where it reaches the Black River. Its waters are very clear and abound in fish.

CURRENTS, OCEAN. See Britannica, Vol. X, p. 283; Vol. XII, p. 468; Vol. XXIV, p. 416.

CURRY-COMB, a kind of scraper used for grooming horses. It consists of a number of iron plates notched on one edge to form rough teeth. These plates are fastened in parallel lines to an iron back, to which a handle is attached, and the horse is curried by scrubbing with the teeth.

CURRY, DANIEL, a distinguished Methodist clergyman and author, born near Peekskill, N. Y., in 1809, died in 1887. He graduated at Wesleyan College in 1837. Subsequently he was principal of Troy Conference Seminary and a professor in the female college at Macon, Ga. He entered the

Methodist ministry in 1841, and was pastor of churches at Athens, Savannah, and Columbus. On the separation of the Northern and Southern branches of the Methodist church he became a member of the New York Conference, filling pastorates in New Haven, Hartford, Brooklyn, and New York. In 1864 he was elected editor of the "Christian Advocate," the official organ of the M. E. church, and continued at the head of that paper until 1876. From 1876 to 1880 he was the editor of the "National Repository." From 1880 to 1884 he engaged in pastoral work, and then became editor-in-chief of the "Methodist Review," which office he held at the time of his death. Besides his laborious editorial work, he published *New York: a Historical Sketch* (1853); *Life-Story of D.W. Clark* (1873); *Fragments, Religious and Theological* (1880); and *Platform Papers* (1880). He received the degree of D.D. from Wesleyan University in 1852, and the degree of LL.D. from Syracuse University in 1878.

CURTAIN, in fortification, the portion of rampart connecting one bastion with another.

CURTESY, or **COURTESY**: in law, the right by which a husband enjoys a life estate in the property left by his deceased wife. It is called *right of curtesy*, or *tenancy by the curtesy*, and four circumstances are requisite to its enjoyment: namely, marriage, seizin of the wife, the birth of living issue, and death of the wife. In some of the United States title by curtesy is not recognized.

CURTILAGE: in law, the inclosed land occupied by a dwelling and its outbuildings.

CURTIN, ANDREW GREGG, born in Bellefonte, Pa., April 22, 1815. He was admitted to the bar in 1839, and soon became a prominent politician. In 1854 he was appointed secretary of the Commonwealth, and ex-officio superintendent of public schools, and in this capacity did much for the advancement of the school system of the State. In 1860 he was elected governor of Pennsylvania, and was one of the "war governors" during the civil war. In 1863 he was reelected governor. In 1869 he was appointed minister to Russia, which position he held until 1872, when he returned to this country. In 1881 he was elected to Congress and served for three successive terms.

CURTIN, JEREMIAH, a noted American linguist, born in Milwaukee, Wis., in 1835. He graduated at Harvard College in 1863. He developed a wonderful facility for acquiring languages, and on leaving college had a good knowledge of French, Spanish, Portuguese, Italian, Roumanian, Dutch, Danish, Swedish, Icelandic, Gothic, German, Finnish, Greek, and Latin. He subsequently mastered the Hebrew, Persian, Sanskrit, Russian, Polish, Bohemian, Lithuanian, Lettish, Hungarian, Turkish, Slovenian, Croatian, Servian, Bulgarian, Mingrelian, Abkasian, and Armenian languages. Of late years he has been making a study of the American Indian dialects, and is said to be proficient in over fifty different tongues.

CURTIS, BENJAMIN ROBBINS, an American jurist, born in Watertown, Mass., in 1809, died in 1874. He graduated at Harvard College in 1829, was admitted to the bar in 1832, and soon acquired a large practice. In 1851 President Fillmore elevated him to the United States Supreme Court bench. His judicial duties were distasteful to him, and in 1857 he resigned and returned to the practice of his chosen profession in Boston, Mass. He served two years in the Massachusetts legislature, and was one of the counsel for the defense in the impeachment trial of President Johnson, the answer in that celebrated case being mainly his work. While on the Supreme Court bench he stoutly maintained the right of Congress to abolish

slavery, and dissented from the majority of the court in the "Dred Scott" case. After retiring from the bench he edited several series of reports and digests.

CURTIS, GEORGE TICKNOR, a lawyer and author, brother of Benjamin Robbins Curtis, born in Watertown, Mass., in 1812. He graduated at Harvard College in 1832; was admitted to the bar in 1836, and until 1862 practiced his profession in Boston, when he removed to New York. He published: *Digest of English and American Admiralty Decisions* (1839); *Digest of the Decisions of the Courts of Common Law and Admiralty in the United States* (1840-46); *Rights and Duties of Merchant Seamen* (1841); *American Conveyancer* (1846); *Law of Copyright* (1847); *Law of Patents* (1849); *Equity Precedents* (1850); *Inventors' Manual; Commentaries on the Jurisprudence, Practice, and Peculiar Jurisdiction of the Courts of the United States* (1854-58); *History of the Origin, Formation, and Adoption of the Constitution of the United States* (1855-58); *Life of Daniel Webster* (1870); *Life of James Buchanan* (1883); and *Creation or Evolution* (1887).

CURTIS, GEORGE WILLIAM, an American editor and author, born in Providence, R. I., in 1824. In 1839 he removed to New York and became a clerk in a mercantile establishment. In 1842 he and his elder brother joined the Brook Farm Community, remaining there a little more than a year, and then spent eighteen months longer with a farmer at Concord, Mass. In 1846 Mr. Curtis went to Europe, and spent four years in travel and study, visiting Egypt and Syria. Shortly after his return to this country he became one of the editors of the "New York Tribune." He was also one of the editors of "Putnam's Monthly" from 1852 to 1857. He was a partner in the firm which published this magazine, and was heavily involved in their failure in 1857, sinking his private fortune in meeting the firm's obligations. In 1853 he established the *Editor's Easy Chair* in "Harper's Monthly," and ten years later became the political editor of "Harper's Weekly." He also edited a series of papers in "Harper's Bazaar," entitled *Manners Upon the Road*. For years he has been one of the most earnest and consistent advocates of civil-service reform, and was one of the members of the commission appointed by President Grant to promulgate rules for the regulation of the civil service. Among the important political offices he has filled may be mentioned those of delegate to the Republican national convention of 1860, 1864, and 1876; delegate-at-large to the Constitutional convention of New York in 1867; Presidential Elector in 1868, and chairman of the Civil Service Commission in 1871-73.

CURTIS, JOSEPH BRIDGEMAN (1836-62), United States soldier. He served in 1861 in the 9th New York volunteers as captain; the same year as second-lieutenant in the 4th Rhode Island volunteers, and then first-lieutenant of the same regiment. In 1862 he was appointed as adjutant-general on Gen. Rodman's staff; then became lieutenant-colonel of the 4th Rhode Island regiment. He served in numerous engagements, and was killed while in charge of his regiment at Fredericksburg, Va., Dec. 13, 1862.

CURTIS, JOSIAH, an American physician, born in 1816. He graduated at Yale and at Jefferson Medical College, and later visited Europe twice in order to study the sanitary condition of the large cities. In 1860 he superintended the mortality statistics of the United States census, and the same year entered the army, remaining with it until 1865. In 1872 he became surgeon and naturalist to the United States geological survey, and one year later chief medical officer of the Indian service. H

has written numerous articles on sanitary surroundings.

CURTIS, NEWTON MARTIN, an American soldier, born in 1835. He was commissioned captain in the 16th New York regiment in 1861, and later lieutenant-colonel, and then colonel of the 142d New York infantry. He acquitted himself in various battles with distinction, and for his services at the capture of Fort Fisher was promoted to brigadier-general, and received a vote of thanks from the legislature of New York. He was brevetted major-general of volunteers in March, 1865, and was mustered out in January of the following year. After the conclusion of the war, Major-General Curtis occupied various important political offices, and was a member of the legislature.

CURTIS, SAMUEL IVES, Ph.D., D.D., an American educator, born in 1844. He graduated at Amherst in 1867, and at Union Theological Seminary in 1870. He traveled in Ireland and Scotland, and was pastor of the American chapel at Leipsic. In 1878 he became professor of Biblical Literature in the Congregational Theological Seminary, Chicago, and the following year was transferred to the chair of Old Testament Literature and Interpretation. Prof. Curtis has written several books on theological subjects.

CURTIS, SAMUEL RYAN (1807-66), an American soldier. He joined the army in 1831; resigned in 1832; became a civil engineer, and then from 1841 to 1846 practiced law in Ohio. During this time he served as captain, lieutenant-colonel, and colonel of the militia, and adjutant-general of Ohio for the purpose of organizing the State's quota of volunteers for the Mexican war. He served in that war as colonel of the 2d Ohio regiment on Gen. Wool's staff, and as governor of Saltillo, Mexico. At the conclusion of the war he settled in the West, and later served two terms and part of a third as Congressman from Iowa, resigning in 1861 to become colonel of the 2d Iowa regiment. He was in several important battles, and in March, 1862, was promoted to major-general of volunteers. At the close of the war he became United States commissioner to examine the Union Pacific Railroad. He died in Council Bluffs, Iowa, Dec. 26, 1866.

CURTIUS, ERNST, a German classical archaeologist and historian, born at Lübeck, Sept. 2, 1814. For sometime he taught in two Berlin gymnasiums; next became extraordinary professor at the University there, and (1844-49) tutor to the Crown Prince of Prussia. In 1856 he was made professor at Göttingen, whence he was recalled in 1868 to become ordinary professor at Berlin. Since 1853 a member of the Royal Academy of Sciences, he became in 1871 one of its permanent secretaries. Among his works are: *Klassische Studien*; *Ancedota Delphica*; *Inscriptiones Atticæ Duodecim*; *Die Akropolis von Athen*; *Naxos*; *Olympia*; *Die Ionier*; *Die Topographie Kleinasiens*; *Ephesos Peloponnesos*; and *Griechische Geschichte*.

CURTIUS, GEORG, a German philologist, born in 1820. In 1842 he taught in Dresden, and in 1849 he became a professor at Prague. In 1854 he was made professor at Kiel, and in 1862 took charge of the department of classical philology in the University of Leipsic. He has published extensively on philology.

CURULE CHAIR, the chair of honor of the old Roman kings, and later of consuls, prætors, "curule ædiles," and some of the other higher magistrates of the Republic having senatorial rank. It was a folding-stool originally of ivory, then of metal, with curved legs crossing.

CURWEN, JOHN (1816-80), an English teacher of chorus singing. He was assistant minister at the Independent Church of Basing Stoke, Hants,

and later was co-pastor at Stowmarket, in Suffolk. In 1844 he became pastor at Plaistow, Essex, but resigned in 1867 to become a printer and publisher. He published various books on the *Tonic Sol Fa* system of teaching chorus singing.

CUSACK, MARY FRANCES, philanthropist, born in Ireland in 1830. In 1859 she became a Roman Catholic, and joined a community of Franciscan nuns engaged in teaching poor girls. In 1861 she established a convent of the Sisters of Kenmare. In 1884 she opened the first house of the new order of the Sisters of Peace at Nottingham, England, and the following year a similar house in Jersey City, N. J. She has published over fifty works, principally on religious subjects.

CUSHING, CALEB, LL.D., an American statesman, born in Salisbury, Mass., in 1800, died at Newburyport, Jan. 2, 1879. He graduated at Harvard College in 1817; studied law; was admitted to the bar, and speedily established a large practice. He served in the Massachusetts legislature in 1825, 1826 and 1833. From 1834 to 1843 he represented the Essex north district of Massachusetts in Congress. In 1843 he was sent to China as a United States commissioner and negotiated the first treaty between those two countries. In 1846 he was again elected a representative in the Massachusetts legislature. During the heated debates upon the question of war with Mexico, he zealously advocated the declaration of war, and on the breaking out of hostilities raised a regiment, which he armed and equipped at his own expense, became its colonel, and accompanied it to Mexico in 1847, reporting to Gen. Taylor. He was subsequently commissioned brigadier-general, and served until the close of the war. During his absence in Mexico his friends nominated him for governor of Massachusetts, but failed to elect him. In 1850 he was again elected to the State legislature, serving two years, when he became by appointment associate justice of the State Supreme Court. From 1853 to 1857 he was United States Attorney-General, and after his retirement returned to the State legislature for three years. In 1860 President Buchanan sent him on a confidential mission to the South Carolina secessionists to try and induce them to defer open hostilities until after the close of his administration. This he failed to accomplish. In 1866 he was appointed one of the commissioners on the revision and codification of the laws of Congress, a work which engaged him several years. In 1868 he visited Bogota on a special diplomatic mission, and in 1870 assisted in the preparation of the protocol of the Treaty of Washington. In 1872 he was one of the counsel for the United States before the Geneva tribunal for the settlement of the Alabama claims. In 1874 he was appointed United States Minister to Spain, where he remained three years. He published a *History of the Town of Newburyport* (1826); *The Practical Principles of Political Economy* (1826); *Historical and Political Review of the Late Rebellion in France* (1833); *Reminiscences of Spain: the Country, Its People, History and Monuments* (1833); *Growth and Territorial Progress of the United States* (1839); *Life of William H. Harrison* (1840); and *The Treaty of Washington* (1873).

CUSHING, FRANK HAMILTON, ethnologist, born in Erie county, Pa., in 1857. At an early age he manifested a love for archæological pursuits, and assisted Dr. Charles Rau in the preparation of the Indian collections of the National Museum for the Centennial Exposition at Philadelphia, and was curator of the entire collection until the close of the Exhibition. He went, in 1879, as assistant ethnologist with Maj. J. W. Powell's expedition among the Zuffi Indians of New

Mexico. Two months had been spent among them, when the expedition returned, leaving Mr. Cushing behind. He adopted the costume, habits and life of the race, and lived as an Indian for three years, studying their habits, language and history. Mr. Cushing has published several works on the Indian customs.

CUSHING, LUTHER STEARNS, a distinguished American jurist, born in Lunenburg, Mass., in 1803, died in 1856. He graduated at the Harvard law-school in 1826, and subsequently became clerk of the Massachusetts assembly, member of the legislature, judge of the court of common pleas, and reporter of the supreme court. He was the author of several important works, but he is chiefly known as the author of *Manual of Parliamentary Practice*, known as *Cushing's Manual*, and recognized as the standard text-book on the subject.

CUSHING, THOMAS, LL.D., an American statesman, born in Boston, Mass., 1725, died in 1788. He graduated at Harvard College in 1744. In 1766 he became a member of the Massachusetts assembly, and was speaker of that body for several years. He was elected to the first Continental Congress in 1774, and was reelected in 1775. He was a candidate for reelection in 1776, but, owing to his opposition to the Declaration of Independence, was defeated. Subsequently he became lieutenant-governor of Massachusetts, and in 1788 was a member of the convention that ratified the Federal Constitution.

CUSHING, WILLIAM (1732-1810), an American jurist. He studied law; was made attorney-general of Massachusetts, judge of probate of Lincoln county, Me., in 1768; judge of the superior court of Massachusetts in 1772, and chief justice in 1777. In 1789 he was appointed Associate Justice of the United States, and in 1796 declined the chief justiceship. Before the Revolution he was almost alone among the superior officers in supporting the cause of Independence. He was one of the founders of the American Academy of Arts and Sciences. He died at Scituate, Mass., the place of his birth, Sept. 13, 1810.

CUSHING, WILLIAM BARKER, an officer of the United States navy, born in Delafield, Wis., in 1842, died in 1874. He entered the Naval Academy in 1857, but did not graduate, resigning in 1861. A few weeks later he entered the naval service as a volunteer officer, and at once commenced a brilliant career. He secured the first prize taken by the United States navy during the war—a tobacco-schooner. His most distinguished service was the destruction of the Confederate iron-clad ram *Albatross*, Oct. 27, 1864. With a steam launch and a volunteer crew, Cushing was able to approach within a short distance of the huge iron-clad before he was discovered. Fire was opened upon him from picket-posts and from the iron-clad, but he ran the launch straight at the huge monster, and swinging the torpedo-boom under the vessel's overhang, coolly discharged the torpedo, the explosion destroying both the iron-clad and the launch. Cushing swam to the shore and escaped. For this affair he was officially thanked by Congress and promoted. In 1872 he was advanced to the rank of commander, and was the youngest officer of that rank in the service.

CUSHMAN, CHARLOTTE SAUNDERS (1816-76), an American actress, born in Boston, Mass., 1816. While a mere child she developed a rich contralto voice, and at the age of twelve sang in church choirs in Boston and aided in the support of her widowed mother's family. Through the assistance of friends of her father she was provided with the best musical instructors, and in 1835 made her dé-

but as an operatic singer in the *Marriage of Figaro*. She sang with great success, but having attempted to sing soprano, her voice suddenly failed. She then studied for the dramatic stage, making her first appearance as *Lady Macbeth* in 1835. In this she achieved even greater success than in opera. Removing to New York, she appeared at the Bowery Theater in leading roles. She subsequently accepted a five months' engagement in Albany, and then became connected with the Park Theater, from 1837 to 1840. In 1842 she undertook the management of the Walnut Street Theater in Philadelphia, remaining there two years. In 1844 she visited England, where she achieved a triumphant success as *Lady Macbeth*, *Roalind*, *Mrs. Haller*, *Bianca*, and *Emilia*. She also impersonated *Romeo*, her sister Susan assuming the role of *Juliet*. She returned to the United States in 1849, and played throughout the country. In 1852 she again visited England, remaining there till 1857, when she filled a short engagement in the United States, and then went to Rome. She returned to the United States in 1860, and gave several performances for the benefit of the United States Sanitary Commission, the commission realizing over \$8,000 from these benefits. After several years' residence in Rome, she again visited the United States in 1871, and, in addition to her dramatic engagements gave a series of Shakespearian readings, in which she excelled. She closed her dramatic career in Boston, May 15, 1875, and retired to Newport, R. I., where she had erected a handsome villa. Here she was seized with her final illness, and went to Boston to submit to a surgical operation, and died there Feb. 18, 1876.

CUSHMAN, ELISHA (1788-1838), an American clergyman. At an early age he was ordained Baptist pastor in Hartford, Conn., and in 1814 was prominent in the establishment of the Connecticut Baptist Missionary Society. In 1822 he founded a denominational journal called the "Christian Secretary." In 1825 he became pastor of a church at Philadelphia; in 1829, at Fairfield, Conn.; in 1831 at New Haven, and in 1835 at Plymouth, Mass. He died in 1838, a few weeks after his return to Hartford, whither he had gone to take charge of the "Christian Secretary."

CUSHMAN, PAULINE, a United States government spy, born in 1838. She was employed in 1863 to discover the Southern sympathizers and spies in Louisville, and their method of conveying supplies across the lines. The same year she went beyond the lines in order to gain information of the strength of the Confederates, and their contemplated movements. She was captured and sentenced to be hanged, but was left behind at the evacuation of Shelbyville, where she was found by the Union soldiers, who gave her the title of major. Her knowledge of the roads in the South were of great service to the Army of the Cumberland.

CUSHMAN, ROBERT, a Plymouth pilgrim, born in Kent, England, in 1580, died in England in 1625. He was instrumental in obtaining the patent in which the king granted toleration for their form of religion to the American colonists, and Cushman embarked with his family on the *Speedwell*, Aug. 5, 1620. The same year he returned to England to attend to the finances of the colony and send supplies. In 1621 he delivered the first discourse in New England that was published. The same year, while returning to England, he was captured by the French, held two weeks, and then released. In 1623 he obtained a grant of territory on Cape Ann, where a new band of Puritans made the first permanent settlement within the limits of the Massachusetts Bay colony.

CUSSET, a small town in the French department of Allier, 2 miles northeast of Vichy. It has two mineral springs. Population, 5,356.

CUSTARD, a composition of milk or cream, eggs, etc., sweetened with sugar, and flavored according to taste. Custards are of various kinds, such as plain, baked, lemon, orange, almond, and coffee custards.

CUSTER, GEORGE ARMSTRONG (1839-76), an American soldier, born at New Rumley, Ohio, 1839. He graduated at West Point in 1861, and was assigned to duty as lieutenant in the 5th cavalry, taking part in the first battle of Bull Run. He was first aid-de-camp to Gen. Philip Kearney, and subsequently served on Gen. William F. Smith's staff, superintending the balloon ascensions to make reconnaissances. 'On one occasion, when ordered to select a place for the army to ford the Chickahominy, he plunged into the river alone, waded across, and while on the other side reconnoitered the enemy's position. Gen. McClellan, who witnessed the feat, at once appointed him aid-de-camp with the rank of captain, and at Custer's solicitation permitted him to take some troops with which he crossed the river during the night, and at daybreak the next morning, attacked the picket-post he had discovered the day before, routing them, capturing some prisoners, and the first colors taken by the Army of the Potomac. In May, 1863, he was attached to Gen. Pleasanton's staff, and for his brilliant services at Brandy Station and other engagements of the Rappahannock campaign he was promoted brigadier-general of volunteers, and given command of a brigade. He participated in the battle of Gettysburg, was wounded at Culpeper Court-house, was with Gen. Sheridan during his celebrated cavalry raid in May, 1864, and took part in the battles of Yellow Tavern, Trevillion Station, Winchester, Fisher's Hill, Woodstock, Cedar Creek, Waynesboro, Five Forks, Dinwiddie Court-house, Appomattox and in fact in all but one of the battles of the Army of the Potomac. In 1865 he was appointed major-general of volunteers. In March, 1866, he was mustered out of the volunteer service, and accepted the lieutenant-colonelcy of the 7th United States Cavalry, and went to Kansas, and served there and on the Plains until 1871. He was then sent to Kentucky, and in 1873 was ordered to Dakota. In July, 1874, he commanded the expedition into the Black Hills. In May, 1876, Gen. Custer led his regiment in a campaign against the Sioux Indians, and on the 25th of June, while in command of a detachment of 277 troopers, fell into an ambush, and the entire force was massacred. His remains were removed to the National Cemetery at West Point in 1877.

CUSTER, THOMAS WARD (1845-76), U. S. soldier, brother of Gen. G. A. Custer. He joined the army at an early age, and after service in the West was made aid-de-camp on his brother's staff. In 1864 he was appointed second-lieutenant of the 6th Michigan cavalry, and captured two Confederate flags, for which he received a medal from Congress. In 1865 he served with Gen. Custer in Texas, receiving the brevets of captain, major, and lieutenant-colonel. In 1866 he was second-lieutenant in the 1st infantry of the Regular Army, and afterwards first-lieutenant in his brother's regiment of cavalry. Gen. Custer said of him: "Tom should be the general and I the captain." He was killed in the battle of the Little Big Horn, June 25, 1876.

CUTHBERT, a railroad junction and county-seat of Randolph county, Ga. It is the seat of the Southwestern Georgia Agricultural College, of two female colleges, and a high school.

CUTHBERTSON, JOHN (1718-91), a Scottish-American clergyman. He was ordained in 1749, and went to Ireland to preach to the Covenanters who had taken refuge there during the Scottish persecutions. In 1751 he came to America, and preached to some of his followers on the Cumberland River. In 1773 he labored in Chester, Lancaster, and York counties, Pa. His diary shows that he preached on 2,452 days, baptized 1,806 children, officiated at 204 marriages, and rode on horseback over 70,000 miles.

CUTLASS, a sword about three feet long, broad and straight, with a japanned hilt. Cutlasses are mostly used by sailors in the navy, when boarding and taking possession of the enemy's ships.

CUTLER, MANASSEH, LL. D., an American clergyman, born in Killingly, Conn., May 3, 1742, died at Hamilton, Mass., July 23, 1823. After graduating at Yale in 1765, he engaged in the whaling business, but continued his studies, and in 1767 was admitted to the Massachusetts bar. Finding the practice of the law uncongenial he entered upon a course of theological study, and in 1770 was licensed to preach. In 1771 he was ordained pastor of the Congregational society of Hamlet parish, now the town of Hamilton, and continued in this relation until his death. During the closing years of the Revolutionary war his parish was without a physician, and Mr. Cutler at once applied himself to the study of medicine, and soon acquired a sufficient knowledge of the science to provide the community with intelligent and skillful medical service. He was one of the founders of the Ohio Company, an association of Revolutionary officers, formed for the purpose of having their bounty lands located together, and Mr. Cutler secured from the government for this company a grant of 1,500,000 acres of land northwest of the Ohio River. In 1787 an expedition consisting of forty-five men left Cutler's house, and settling on this tract of land, founded the town of Marietta, Ohio. Cutler visited the colony, making the journey of 750 miles in a sulky, but did not remain. He received the degree of LL. D. from Yale in 1791, and in 1795 was tendered the appointment of judge of the supreme court of Ohio territory, but declined the commission. Later he became a member of the Massachusetts legislature, and from 1801 to 1805 served as a Federalist in Congress, declining a reelection.

CUTLERY. See *Britannica*, Vol. VI, pp. 733-735.

CUTT, JOHN, colonial governor of New Hampshire, born in England in 1625, died at Portsmouth, N. H., March 27, 1681. He came to America some time prior to 1645, and settled in Portsmouth, where he established himself as a merchant and mill-owner. In 1679 he was appointed president of the province by Charles II, and continued in that office till his death. His descendants now spell the name "Cutts."

CUTTER, a name given to two kinds of small vessels. The cutters which are used by yachtsmen, smugglers, and revenue cruisers, and are built with special reference to speed, are small vessels with one mast and a bowsprit. They are much like sloops in rig, the distinction being that in a cutter the jib has no stay to support it. The cutters belonging to ships of war are clincher-built boats, from about 24 to 28 feet in length. Two such cutters are supplied to every ship of war, except those of the smallest kind.

CUTTINGS, branches or portions of branches of trees or shrubs, employed to produce new plants, by the insertion of the lower end into the earth. Willows, fuchsias, currants, gooseberries, etc., are easily propagated in this way; but many other

plants, commonly propagated by cuttings, require great attention on the part of the gardener. The branches which are young, but not less than a year old, are best adapted for this purpose.

CUTTING, JOHN T., of San Francisco, Cal., a merchant, was born in Westport, N. Y., Sept. 7, 1844; removed to Wisconsin in 1855, and lived in that State and Illinois until 1877, receiving his education in Illinois. He served in the Union army during the war of the Rebellion; removed to California in 1877; was an active member of the National Guard, State of California, retiring in February, 1891, with the rank of brigadier-general. In politics he is a Republican, and was chairman of the Republican county committee in San Francisco. In 1890 was elected a Representative from the Fourth Congressional District of California to the 52d Congress.

CUTTING, SEWALL SYLVESTER, D. D., educator, born in Windsor, Vt., Jan. 19, 1813, died in Brooklyn, N. Y., Feb. 7, 1882. He was a graduate of the University of Vermont, and in 1836 was ordained pastor of the Baptist church in West Boylston, Mass., and subsequently became pastor of the Baptist church in Southbridge, Mass. In 1845 he became editor of the "Baptist Advocate" in New York. The name of the paper was changed to the "New York Recorder," and under his management rapidly grew in circulation and influence. He retired from the "Recorder" in 1850, and for a short time was secretary of the American and Foreign Bible Society. He was editor of the "Christian Review" from 1849 to 1852, and one of the editors of the "Watchman and Reflector," a Boston publication, from 1851 to 1853. In the latter year he again became editor of the "New York Recorder." In 1855 the "New York Baptist Register" was consolidated with the "Recorder," and the name changed to "The Examiner." From 1855 to 1868 he held the chair of professor of rhetoric and history in the Rochester University. He published *Historical Vindications* (1859), *Struggles and Triumphs of Religious Liberty* (1876), and *Ancient Baptistries*.

CUT-WORM, a term used loosely of worms or grubs destructive to cabbage and beans.

CUYAHOGA FALLS, a town of Summit county, Ohio, on the Cuyahoga River, which is here inclosed by walls of rock 200 feet high. The river furnishes an abundant water-power, which is applied in running wire-mills, paper-mills, rolling-mills, soap and glue factories.

CUYLER, THEODORE LEDYARD, clergyman, born in Aurora, N. Y., Jan. 10, 1822. He graduated at Princeton College in 1841, and at the Princeton Theological Seminary four years later. In 1848 he was ordained pastor of the Presbyterian church in Burlington, N. J., and shortly afterwards became pastor of the 3d Presbyterian church in Trenton, N. J. In 1853 he accepted the pastorate of the Market Street Reformed Dutch church in the city of New York. He continued to minister to this society until 1860, when he accepted the invitation of the Lafayette Avenue Presbyterian church, of Brooklyn, N. Y., to become its first pastor. Under Dr. Cuyler's charge this society has grown to be one of the largest and most prosperous in the denomination. In addition to his ministerial labors Dr. Cuyler has been a regular contributor to the religious press, and has also published *Stray Arrows* (1851); *The Cedar Christian* (1863); *The Empty Crib* (1868); *Heart Life* (1871); *Thought Hives* (1872); *Pointed Papers* (1876); *From the Nile to Norway* (1881); *God's Light on Dark Clouds* (1882); *Wayside Springs* (1884); and *Right to the Point* (1884). He has also written a large number of temperance tracts.

CYANITE, KYANITE, or DISTHENE, a mineral composed of alumina and silica. It often occurs crystallized, and generally in broad prisms; varies in color, but is frequently of a fine sky-blue, slightly tinged with violet; is transparent, and sometimes beautifully opalescent. It is found in different parts of Europe, Asia, and America, and in several localities in Scotland.

CYANOSIS, or CYANOPATHIA, a condition in which the skin of a new-born infant becomes blue. It is the result of congenital disease or malformation of the heart. Cyanosis may cause death a few days after birth, normal development may take place and the child recover, or he may live for years with this undeveloped condition of the blood-vessels.

CYANOTYPE PROCESSES: in photography, those processes in which the compound radical cyanogen is employed; they were discovered by Sir John Herschel, and depend for their successful practice on the reduction of a persalt of iron to the state of protosalt, by the action of light, in the presence of organic matter.

CYATHOPHYLLUM, a genus of fossil stony corals, with a simple or branched polyparium, internally lamellated, the lamella having a quadripartite arrangement. The older portions are cut off by transverse "tables" or septa, and the base of the stem is often supported by root-like processes. This genus first appeared in the Silurian, was abundant in the Devonian, and disappeared at the close of the Carboniferous epoch.

CYCHLA, a genus of fishes of the family *Chromidæ*, of which many species are found in the rivers of tropical America. They have small and crowded teeth, forming a large band; are remarkable for the beauty and brilliancy of their colors, and some of them are highly esteemed for the table.

CYCLE, a term used in chronology to denote an interval of time in which certain phenomena recur in the same order. Cycles have chiefly arisen from the fact that neither the year (the period of the earth round the moon), nor the month (the period of the moon round the earth), can be measured by days, or even by hours, so exactly as not to leave fractions. Cycles have been invented to swallow up these fractions of time in whole numbers expressing days, in such a way that after a certain number of revolutions of the body whose period has been put against that of the earth on her axis, the body shall at last occupy the same place in the heavens and calendar as it did when the cycle commenced. Of the numerous cycles or periods of this kind that have been established the more important are noticed under CALENDAR, Britannica, Vol. IV, pp. 669-70, and ASTRONOMY, Vol. II, p. 747.

CYCLOID. If a circle roll along a straight line in its own plane, any point on the circumference describes a curve which is called a cycloid. This is the most interesting of what are called the transcendental curves, both from its geometrical properties and its numerous applications in mechanics. In dynamics, for example, we find that a heavy particle descends from rest from any point in the arc of an inverted cycloid to the lowest point in the same time exactly, from whatever point of the curve it starts.

CYCLOBRANCHIATA, an order of gasteropodous mollusks, in which the gills usually form a series of lamellæ, surrounding the body between the foot and the mantle. To this order belong the univalve *Patellidæ*, or limpets, and the multivalve *Chitonidæ*, or chitons.

CYCLONES (Gr., *kuklon*, whirling), a circular or rotatory storm, revolving around a calm-center, or

whole advancing at a rate of from two to fifty miles an hour. They are formed by the meeting of opposing currents of air, to wit: polar or equatorial winds flowing side by side, or one above the other, each constantly struggling for the mastery. Wind, or the motion of the air, is the consequence of a disturbance of equilibrium in the layers of the atmosphere, and the tendency of its motion is to restore the equilibrium which has been previously destroyed. Cyclones have never been observed on the equatorial line. North of the equator, their rotation is invariably from right to left; south of the equator, from left to right. The center of the monster vortex is invariably calm, and travels forward with the storm. According to Humboldt, a velocity of 200 to 300 miles an hour has frequently been reached in portions of the storms. In an official statement regarding these singular atmospheric outbursts made by the Signal Service of the United States from obtainable data for a hundred years, it was authoritatively stated that in 600 cyclonic storms, the direction of the "whirl" in the cloud was invariably from right to left, and that the temperature preceding the storm was sultry, sometimes oppressively so.

A marked peculiarity of the storm is in the formation of the cloud. It often resembles a body of smoke issuing from a burning building, and rolling upward in fantastic shapes to a great height. If dark, and presenting a deep greenish hue, it forebodes a great destruction. The form is various, but inclines to the funnel shape, and as it passes over the country is productive of an angry and terrifying roar. In all directions the clouds around the central storm seem to be in consternation. They break up into small portions, dash over and into each other, at one time darting toward the earth, and then rushing far upward, but steadily joining the monster whirl as it rapidly advances. The roaring accompanying the approaching cyclone is compared to the heavy rumbling of an immense freight train moving over a bridge or through a tunnel, intensified to a degree that paralyzes the senses of man and beast alike. The cyclone may or may not be attended by thunder and lightning. In the effects produced many apparently fantastic freaks are indulged in. The path of the storm is so closely marked that many cases are noted where one side of a tree has been trimmed of its branches clear to the trunk, as if by monster knives, while not a leaf on the other side was disturbed. Paths are made in forests which for accuracy of bordering would seem to have been the result of careful engineering skill. Portions of houses have been completely wrecked and carried to enormous distances, while other portions remained untouched.

CYCLOPS, a genus of small fresh-water crustaceans, type of a family (*Cyclopidæ*) in the order *Copepoda*. Various species are common as active swimmers in fresh-water pools or slow-flowing brooks, and a few forms have been recorded from the sea. They have an elongated body without a shell, with four forked thoracic feet and a five-jointed abdomen. The head region is not distinct from the first ring of the thorax; there is a pear-shaped segmented body and a long abdomen; both pairs of antennæ are long, and in the male the anterior pair form claspers; the mandibular and maxillary palps are degenerate; and a heart is said to be absent. The average length of the commonest species is from two to three millimeters. A marked feature is the single median eye, usually bright crimson and sparkling like a gem, and not less noticeable are the two large egg-bags carried by the females. They eat both animal and vegetable matter, and are very prolific

CYCLORAMA, a series of views, which, being wound round cylinders, are made to pass in consecutive order before the spectator, so as to produce the effect of motion on his part, as the banks of a river are seen from a boat, or the country from a railway-car.

CYCLOSIS, the name employed to designate certain still very imperfectly understood movements of the contents of cells in plants, first observed and described by C. H. Schultz. As they have been observed in plants of the most dissimilar natural orders, it is not unreasonably presumed that they prevail throughout the entire vegetable kingdom, and characterize the active life of all vegetable cells.

CYMA: in architecture, a molding consisting of a hollow and round conjoined. When hollow in the upper part, it is termed *cyma recta*; when hollow in the lower part, it is called *cyma reversa*.

CYMBALS, a pair of concave metal plates, which, when struck one against the other, produce a loud harsh sound of no fixed pitch. They vary in size from small finger-cymbals or castanets to large orchestral cymbals intended for use with the large drum. The notes in music for this instrument are all placed on the same line or space, in rhythmical succession. Instruments somewhat similar in character are known to have been in use since the earliest historic times. The best cymbals are those made in Turkey and China. The name is also applied to a musical instrument made of steel wire, in a triangular form.

CYME, a term employed in botany to designate those forms of inflorescence which are *definite* or centrifugal—that is, in which the main axis ends in a flower, but bears one or more lateral branches which again terminate in flowers, but not before producing secondary branches which continue the same process as far as growth permits.

CYNANCHE, a term applied to the severer forms of sore throat.

CYNANCHUM, a genus of *Asclepiadaceæ*, of which some species have been used medicinally. The Indian *Cynanchum extensum* yields fiber, and *Cynanchum ovalifolium*, a native of Penang, yields caoutchouc of excellent quality.

CYNODON, a genus of grasses, having digitate or racemose spikes, so named from its sharp-pointed underground shoots. The most important species, *C. dactylon*, is the widely distributed and well-known Bermuda grass. It is the principal fodder and pasture grass of India, where it is known by the names of *dhob*, *doorba*, etc.

CYNOMORIUM, a genus of the curious parasitic order *Balanophoraceæ*. *C. coccineum*, a plant of a strange fungus-like appearance, is found in the islands of Malta and Gozo. It was long known as *Fungus Melitensis*, and enjoyed the highest reputation as a styptic, besides being used as an astringent in dysentery and other maladies. These uses, however, depended on the doctrine of signatures alone, its scarlet color and blood-like juice being interpreted as providential indications of its curative destination for all injuries or diseases accompanied by bleeding.

CYNOSURE (Gr., *kynosoura*; literally, the dog's tail), the constellation of the Little Bear. As the pole star is the principal star of the constellation, the eyes of mariners are frequently directed to it, hence the common application of the term cynosure to anything that strongly attracts attention; a center of attraction.

CYNTHIANA, a city and county-seat of Harrison county, Ky. It has a female college, flour mills, and carriage factories, and manufactures the famous "Bourbon" whiskey. There is a fine race-course

here. The place was named from Cynthia and Anna Harrison, daughters of an early settler. Three battles between the Union and Confederate forces were fought here, the dates being July 17, 1862, June 11, 1864, and June 14, 1864.

CYPERACEÆ, the order of reeds and sedges, nearly akin to grasses, but easily distinguished by their solid, unjointed, generally triangular stems, undivided leaf-sheaths, and absence of paleæ. There are about 2,000 species, widely distributed throughout all climates, but more especially in temperate and cold regions, and in marshy soils, of which they often take almost entire possession.

CY-PRES. See *Britannica*, Vol. VI, p. 745.

CYPRESS. See *Britannica*, Vol. VI, pp. 745-46.

CYPRINIDÆ, a large family of fresh-water bony fishes, with open swim-bladders. Babel, bream, carp, chub, dace, gold-fish, gudgeon, minnow, roach, tench, are familiar examples. They are distinguished by their small toothless mouths, naked head, usually scaled body, and by the absence of the adipose fin. The family includes over a hundred genera, and eight times as many species.

CYPRINODONTIDÆ ("toothed-carp"), a family of small bony fishes, with open swim-bladders. They are allied to carps (*Cyprinidæ*), but the mouth bears teeth, the head and body are scaled, and there are never barbules. The family includes 20 genera and over a hundred species, widely distributed in the warm and tropical zones, both fresh-water and marine.

CYPRIOTE ART. See under *CYPRUS*, *Britannica*, Vol. VI, pp. 747-50.

CYPRIS, a very common small fresh-water crustacean, type of a family (*Cypridæ*) in the order *Ostracoda*. Like other ostracods, this small "water-flea" has an unsegmented body, seven pairs of appendages, a rudimentary abdomen, and a bivalve mollusk shell inclosing all. The shell of cypris is dainty and elastic; the posterior antennæ bear a long tuft of bristles on their second joint; the second pair of maxillæ have a small gill appendage; the posterior limbs are very irregular.

CYPRUS, an island and British colony in the Levant, 60 miles from the coast of Asia Minor and 41 from the coast of Syria (see *Britannica*, Vol. VI, pp. 747-50). It is administered by Great Britain, under a convention concluded between the representatives of England and the Sultan of Turkey at Constantinople, June 4, 1878. Its area is 3,584 square miles, and the population is 186,173.

The island is divided into six districts with Nicosia as its capital. There is no public debt, and the revenue for 1890 was £174,499, the expenditures being £106,338. The chief products of Cyprus are corn, cotton, carobs, linseed, olives, silk, raisins, fruit, vegetables, cheese, wool, hides, and wine; and the minerals are lead, building and ornamental stones, and salt. The imports for 1890 amounted to £244,824, and the exports to £314,628. English, French and Turkish coins, and Turkish weights and measures are current.

CYRENIUS, a Grecized form of Publius Sulpicius Quirinus, named in Luke II as governor of Syria. He received his appointment as governor A. D. 6, but the difficulty in harmonizing this with Luke is overcome by admitting that he had been governor also at an earlier date—according to Zumpt, from 4 B. C. to 1 B. C.

CYSTIN, or **CYSTIC OXIDE**, forms a rare variety of urinary calculus. Its chemical composition is $C_2H_4NSO_2$, and it forms a whitish or dirty yellow deposit consisting of six-sided crystalline tablets. It is soluble in ammonia, and is thereby distinguished from the similar crystals of uric acid.

CZAR, **TSAR**, a title of the Russian emperor. The word is derived from the old Slavonic language, and signifies much the same as German *Kaiser*, Latin *Cæsar*, to which it probably owes its origin. After the twelfth century, the Russian annalists gave the title of czar to the Mongol princes of Russia. In general, however, the rulers of the various Russian provinces were called grand dukes till the 16th century. Ivan IV, crowned in 1547, was the first independent Russian prince who assumed the title. From this time the Russian monarchs called themselves Czars of Moscow; and after the conquest of Little Russia and Smolensk, Czars of All the Russias. The title *czar*, though the equivalent of *emperor*, was not recognized as involving imperial rank at the time it was assumed by Ivan; and when Peter I, in 1724, assumed the additional title of *imperator*, several European powers at first refused to sanction it, but ultimately consented to do so.

CZERMAK, JOHANN NEPOMUK, a German physiologist, born in Prague, June 17, 1828, died Sept. 16, 1878. He studied at Vienna, Breslau and Würzburg, and was professor successively at Cracow, Pesth, Jena and Leipzig. Prof. Czermak was the founder of laryngoscopy. His principal work is *Der Kehlkopfspiegel*.

D

DAA-DAGG

DAA, LUDVIG KRISTENSEN, a Norwegian politician and publicist, born in Saltdalen, Aug. 19, 1809, and in 1862 became professor of history in Christiania. He has written much on political and historical subjects. His chief works are: *Svensk-norsk Handorbog* (1841), *Udsigt over Ethnologien* (1855), *Jordbeskrivelse for den norske Almue* (1857), and *Om Nationaliteternes Udvikling* (1868).

DAAE, LUDVIG LUDVIGSSON, Norwegian historian, born in Aremark, December 7, 1834. He was elected professor of history in 1876. He has written the history of Christiania, and has traced the chronicles of Norway during the Danish possession. His works are remarkable for thoroughness and impartiality.

DAB (*Platessa limanda*), a small, flat fish closely resembling the plaice and flounder, but differing from them somewhat in form and color. It is common on all sandy parts of the British coasts. It is about 12 inches in length and light brown in color. A larger but less plentiful species is known as the lemon dab (*P. microcephala*). The rusty dab (*P. ferruginea*) is occasionally found on the New England coast.

DABOLL, NATHAN, a teacher of Connecticut, born about 1750, died at Groton, Conn., March 9, 1818. He was the author of the famous "Daboll's Arithmetic," and also of a treatise on navigation.

DACELO, a genus of king-fishers. The best known species is the *Dacelo gigas*, of New South Wales, commonly called the "laughing jackass." The name was suggested by its harsh cry, uttered at early dawn. It inhabits hollow tree trunks, and feeds upon fish, reptiles, etc.

DACI, inhabitants of Dacia, a barbarous people, supposed to have emigrated from Thrace. They were also called Getæ, which is thought by some critics to identify them with the Goths.

DA COSTA, JACOB M., M. D., born in the island of St Thomas, West Indies, Feb. 7, 1833. He acquired his classical education in Germany, and his medical in Philadelphia, where he graduated at Jefferson College in 1852. He was appointed lecturer on clinical medicine in that institution, and in 1872 was chosen professor of the theory and practice of medicine. He has made a number of valuable contributions to medical literature. His specialty is disease of the heart and lungs.

DACRES, SIR SYDNEY C., K. C. B. (1804-84), English admiral, born at Totnes, Devonshire, England, Jan. 9, 1804, died March, 1884. He entered the British navy at 18 years of age, was lieutenant in the reduction of the Morea Castle in 1828; captain in the Crimean war, and commanded the first iron-clad squadron. He was second in command in 1861 on the North American and West India station when the Trent affair was pending between England and America, and held various other offices of honor.

DACRYDIUM, a genus of trees of the natural order *Taxaceæ*, chiefly natives of Australia and New Zealand. The Huon Pine (*D. Franklinii*) is valuable for its timber, which is excellent for spars for naval purposes. *D. tarifolium*, the Kakaterra tree of New Zealand, attains a height of 200 feet, and is also valuable for timber.

DACTYL, a metrical foot in Greek and Latin poetry, consisting of one long and two short syllables. In English it is applied to a measure consisting of one accented and two unaccented syllables.

DACTYLOLOGY, the art of communicating thoughts by the fingers.

DACTYLOS, a Greek measure, equal to 0.7586 inches.

DADD, GEORGE H., M. D., veterinary surgeon, born in England about 1813. He removed to the United States in 1839, where he became well known as a writer on veterinary science.

DADEVILLE, a village of Alabama, situated about 50 miles northeast of Montgomery. It is the capital of Tallapoosa county. It has a mineral spring.

DADO (*It.*, a die), a term applied in architecture to the body of a pedestal, the cubic block between the base and cornice. It is also applied to a protection running around the bottom of the walls of a room, more commonly known as wainscoting.

DADUR, a town of Beloochistan, five miles east of the Bolan Pass. It contains about 3,000 inhabitants. It is said to be one of the hottest places in the world, although situated in the 30th degree of north latitude. The British troops here routed a Kelat force in November, 1840.

DÆDALUS, according to Greek mythology the inventor of the auger, saw, and other tools. The building of the Labyrinth of Crete is also ascribed to him, together with various artistic inventions. By ascribing inventions to Dædalus the Greeks seem to have meant that they belonged to the time when the arts first sprang up.

DAENDELS, HERMAN WILHELM, a Dutch general, born at Hattem, in Gueldres in 1762, died June, 1818. He participated in the revolution in Holland in 1787, and was compelled to seek refuge in France. He rendered important service to Dumouriez in the campaign of 1793, and was made general of brigade. He also rendered service in 1799. While in the service of the king of Holland he conquered East Friesland, and, beside other rank was made governor-general of the Dutch East Indian possessions. He published a work upon his administration in Java, which was an important contribution to knowledge concerning the island.

DAET, a town of the island of Luzon, one of the Philippines. It is situated on a river of the same name, and is the capital of the province of North Camarines. Population, 7,702.

DAG, a clumsy pistol, used in the 15th and 16th centuries. In the *Spanish Tragedy*, published in 1603, one of the characters is represented as shooting the dag.

DAGG, JOHN LEADLEY, D. D., LL.D., born in Middleburg, Va., Feb. 13, 1794, died June 11, 1884. He was pastor of the Fifth Baptist church of Philadelphia from 1825 to 1834, and principal of Alabama Female Athenæum from 1836 to 1844. During the following ten years he was president of Mercer University, and professor of systematic theology from 1854 to 1856. He was the author of a number of valuable and popular works, one of them *Moral Science*, being used as a text-book in several colleges.

DAGGETT, DAVID, LL.D., an American lawyer and jurist, born at Attleborough, Mass., Dec. 31, 1764, died April 12, 1851. He was United States Senator from 1813 to 1819, and was appointed in 1828 Kent professor of law at Yale College, of which he was a graduate. He became chief justice of Connecticut in 1832.

DAGGETT, OLIVER E., D.D., an American clergyman, born at New Haven, Conn., Jan. 14, 1810, died at Hartford, Aug. 31, 1890. He graduated at Yale College, and in 1828 became pastor of the South Church in Hartford, Conn. In 1837 he was ordained pastor of the First Congregational church of Canandaigua, N. Y., which position he held for nearly twenty-three years. He was subsequently professor of divinity in Yale College, and pastor of the Second Congregational church of New London, Conn. He assisted in the compilation of the *Connecticut Hymnbook*, was a frequent contributor to the "New Englander" and author of printed sermons.

DAGO, an island in the Baltic Sea, belonging to the Russian government of Estonia. It is about 34 miles in length and 15 in breadth. The soil is sterile, and the coasts rocky. The population, numbering about 10,000, are chiefly Estonians employed in fishing and cattle-rearing.

DAGO, a name originally given by sailors to Spaniards, Portuguese, and Italians in general. It is claimed by some to be a corruption of the frequent Spanish name *Diego*, equivalent to the English name James or Jack. By others it is a title given exclusively to those born of Spanish parents, especially in Louisiana. By others, again, it is claimed to be purely a corruption, or a nickname derived from *hidalgos*, which, though a Spanish and not an Italian word, came by some accident to be sneeringly applied to a foreigner of Latin Europe, who chanced to be out of his element. Whatever the royal or semi-royal derivation of the word *hidalgos* may have been, the prostituted derivative is especially applied to that lower class of the Southern Europe Latin element employed in America in the cheaper labor pursuits. The peculiar class of unskilled laborers to which the term especially applies, is that whose members herd together as closely as they can dispose themselves, in anything that is covered by the semblance of a roof, performing every office of nature in a promiscuous way in the same tumbled quarters.

DAGOBERT I, king of the Franks, a scion of the Merovingian family, born about 602. He was elected king of Austrasia in 622, and at the death of his father in 628, he succeeded to the kingdom of Neustria, and to these two added a third, that of Aquitaine, after the death of his brother Charibert, in 631. He thus became ruler of the whole Frankish empire, and turned his attention to restricting the power of the feudal lords and prelates. One of his greatest feats was reducing the Frankish laws to a code. Before his death he placed his son Siegbert on the throne of Austrasia. See *Britannica*, Vol. IX, p. 580.

DAGOBA, or DAHGOFA, the name in Ceylon for monumental structures containing relics of Buddha. The more general name is Stupa, or Tope.

DAHL, KONRAD, a Norwegian writer, born near Troughjem, June 24, 1843; resided for several years in the extreme north of Norway, and subsequently removed to Bergen, where he has occupied the position of prison chaplain since 1873. He is author of a series of stories descriptive of life in the North of Norway. Among them are: *Loven* (1874); *Finnegutten* (1874); *Edda Mansika* (1875); and *Ishavsskipperen* (1878).

DAHLEN, a town of Germany in the Prussian Rhine province. It has extensive manufactories. Population, 6,000.

DAHLGREN, FREDRIK AUGUST, a Swedish poet and critic, born in Wermland, Aug. 20, 1816. He has been secretary of the society of Swedish antiquarians since 1843, and has edited the annual *Handlingar af Svenska Akademien* since 1854. His songs (2 vols., 1875-76) are exceedingly popular. Among the best of his dramas are *Vermländingarne* (4th edition, 1879); *Ett Eventyr pa Hegeberg* (1854), and *Kaffeförbudet* (1855). Besides editing a number of valuable works, Dahlgren has translated dramas from Shakespeare, Heiberg, Lessing, and others; and in 1866 he published *Anteckningar om Stockholms Teatrar*, a history of the Swedish theaters, containing a list of all the dramas played from 1737 to 1863.

DAHLGREN, JOHN ADOLPH (1809-70), American rear-admiral, was born in Philadelphia, Nov. 13, 1809, died July 12, 1870. He entered the navy as a midshipman Feb. 1, 1826, and was successively passed midshipman, lieutenant, and commander. On the outbreak of the civil war he was placed in charge of the defenses of Washington on the left, and the preservation of the navy-yard from falling into the hands of the Confederate forces was due to his firmness and sound judgment. In 1862 Dahlgren was appointed chief of the bureau of ordnance, and in 1863 commissioned rear-admiral. The following July he was placed in command of the South Atlantic blockading squadron, a fleet of about 90 vessels. As a result of his active operations Fort Sumter was silenced and a safe anchorage secured for the monitors, thus putting a stop to blockade-running. In 1866 he took command of the South Pacific squadron, and in 1869 was appointed commandant of the Washington navy-yard. He was the inventor of the gun which bears his name, and the author of several works on ordnance which have been used as text-books by the Government.

DAHLGREN, ULRIC (1842-64), son of Rear-Admiral Dahlgren, born in 1842. He served as aide-camp to Gens. Burnside and Hooker, and distinguished himself by his gallantry. He was commander of a body of cavalry in a raid upon Richmond, and was killed in the retreat from that city, March 4, 1864.

DAHLGREN GUN, an improved form of ordnance named for its inventor, Admiral Dahlgren. It was the result of a careful series of experiments on the construction of large guns. The chief improvement consisted in having relatively less metal in front of the trunnions, and more behind, where there is the greatest strain in firing. The 9-inch and 11-inch Dahlgren are still the favorites of American seamen, and are unsurpassed by any boat-gun in the world.

DAHLONEGA, a village of Georgia, county-seat of Lumpkin county. Before the war it contained a branch mint of the United States, and the building has been converted into the North Georgia Agricultural College. Gold mines have been opened in the vicinity.

DAHN, JULIUS SOPHUS FELIX, a German publicist, historian and poet, born at Hamburg, Feb. 9, 1834; studied law, philosophy and history at Munich and Berlin; became extraordinary professor at Munich in 1862; ordinary professor at Wurzburg in 1863, and in 1872 was appointed to the chair of German jurisprudence at Königsberg. Among his contributions to public law are: *Das Kriegsrecht* (1870); *Handelrechtliche Vorträge* (1875); *Deutsches Rechtsbuch* (1877); and *Deutsches Privatrecht* (1878). Of his historical works the chief are: *Prokopius von Cæsarea* (1865); *Die Könige der Germanen* (1861-71);

Westgotische Studien (1874), and *Geschichte der Deutschen Urzeit* (1885). He has also written a series of popular historical romances and many lyrical and dramatic poems.

DAHOMY. For its earlier history, climate, productions, physical features, native customs, etc., see *Britannica*, Vol. VI, pp. 764-67. The kingdom of Dahomey, formerly the most powerful on the Slave Coast, Upper Guinea, has in recent years been greatly reduced in size and strength, especially by the long and disastrous wars waged against Abeokuta and other petty Yoruba states on its eastern frontier. It now comprises an area of about 15,000 square miles, with an estimated population of a little over 200,000, extending from Yoruba eastward to the river Volta, separating it from Ashanti, and bordering northwards on the Wangera territory. It is now entirely an inland state. According to the recent treaty of delimitation between British and French West African possessions, Dahomey is within the sphere of France. Early in 1890 complications arose with France respecting the disputed stations of Porto Novo and Kotonu on the south coast; but after a brief series of hostilities peace was concluded in September, 1890, Dahomey recognizing the French claims to those places.

DAHOON, or **DAHOON HOLLY**, the *Ilex dahoon*, a small evergreen tree, having a white soft, close-grained wood. It is allied to the holly, and is found in the warmer parts of the United States.

DAHRA, a district of Algeria, the scene of a massacre in 1845. The Ouled Riahs, a Kabyle tribe, being pursued by the French under Colonel Pelissier, took refuge in the immense caverns of the district, where, upon their refusal to surrender, they were suffocated by the smoke from fascines kindled at the entrances. The deed was formally condemned by Marshal Soult, then minister of war.

DAIMIO, the title of feudal lords of Japan. They were petty sovereigns, 264 in number. This old feudalism was abolished by the recent revolution in Japan. See *Britannica*, Vol. XIII, pp. 578-83.

DAINGERFIELD, county-seat of Morris county, Texas, situated 17 miles southeast of Mount Pleasant.

DAIR-EL-KAMAR, a town of Syria, the capital of the Druses, situated on the edge of a picturesque glen of Mount Lebanon. On the opposite side of the glen are the ruins of the palace Bteddin, formerly the residence of Emir Beshir, a ruler of Lebanon. It has a population of about 8,000, chiefly engaged in the cultivation of mulberries, olives, and vines.

DAIS, a term used with considerable latitude by mediæval writers. Probably the word with all its significations was introduced from its French meaning, a "canopy." It is most frequently applied to the platform at the upper end of a dining-hall, where the table is spread for distinguished guests, also a canopied seat at that table. See *Britannica*, Vol. II, p. 463.

DAISY. See *Britannica*, Vol. VI, p. 773.

DAKOTA CITY, a railroad junction, the capital of Humboldt county, Iowa. Humboldt College is situated one mile north of the town.

DAKOTA CITY, capital of Dakota county, Neb. It is located on the west bank of the Missouri.

DAKOTA INDIANS, or **Sioux**, a collection of bands of American savages, inhabiting parts of Nebraska, Wyoming, the Dakotas, etc. Their language differs from that of most of the Indian tribes. They were found by the French in 1640, and were then occupying the extensive regions bounded on the north by Lake Winnipeg, south by the Arkansas River, east by the Mississippi, and west by

the Rocky Mountains. All their lands east of the Mississippi were ceded to the United States in 1837, and of the land west of the Mississippi they sold 35,000,000 acres in 1851. The Government failing to keep its agreement with them, hostilities broke out, which were only put down by armed force. A new treaty was concluded, and again unfulfilled by the Government. As a result there was a general rising of the Dakotas in 1862, and more than a thousand settlers were killed. Order was, however, soon restored. New complications arose in 1876, occasioned by the discovery of gold in the Black Hills, a part of the Sioux reservation. The Indians refused to sell to the Government except at an enormous price. Surveyors being sent into the country, the Sioux prepared for war, and defeated Gen. Custer in 1876. Soon after this a large number fled to British dominions, materially reducing the strength of the tribe. See *Britannica*, Vol. XII, pp. 827-31.

DAKOTA RIVER rises in the northeastern part of North Dakota and flows south through South Dakota, emptying into the Missouri River about eight miles below Yankton. Estimated length, 800 miles.

DAKOTA. See *Britannica*, Vol. VI, pp. 773-74. See also **NORTH DAKOTA** and **SOUTH DAKOTA**, in these Revisions and Additions.

DALAMOW, a city of India, on the Ganges. It is a reputed holy place, containing two antique temples of Siva. Population, 10,000.

DALARIADA, the ancient name of a territory in Ireland which is now the southern half of the county of Antrim and the greater part of the county of Down.

DALBERG, the name of an ancient German family of great renown. At every coronation of a German emperor a representative of the family received from him the dignity of "first knight of the empire." Several members of the family have been celebrated patrons of literature and art.

DALBERGIA, a genus of trees and shrubs named in honor of the Swedish botanist, Nicholas Dalberg. They are of the natural order *Leguminosæ*, having pinnate leaves, and bearing a flat pod containing one to three seeds. All the species are natives of warm climates and several of them are valuable timber-trees, the *Dalbergia Sissoo* of Bengal being especially prized.

DALE, **ROBERT WILLIAM**, an English Congregational minister, born in London Dec. 1, 1829, and educated at Spring Hill College, Birmingham, and at the University of London. In 1853 he became associate pastor in the Congregational church at Carr's Lane, Birmingham, and in 1859 succeeded to the sole pastorate. For several years editor of the "Congregationalist," he delivered the Congregational Union lectures in 1873, and has taken a prominent part in the movements of the churches of his denomination in England during recent years. Mr. Dale has traveled in the East, and in 1877 visited America at the invitation of the theological faculty of Yale College to deliver the Lyman-Beecher lectures on preaching. On his return to England he published, in the "Nineteenth Century," his *Impressions of America*. He has been a frequent contributor to the English reviews; and is author of numerous works, among which are: *Week-day Sermons* (1867); *The Ten Commandments* (1871); *Nine Lectures on Preaching* (1877); and *Lectures on the Epistle to the Ephesians* (1882).

DALECARLIA, the län or county of Fahlun, formerly a province of Sweden. The Dalecarlians are celebrated for bravery and patriotism, especially for the part they took in freeing their country from the rule of Christian II of Denmark. As

a reward they are accorded special privileges by the king. Area, 12,127 square miles. Population, 175,927.

DALEITES, a name given to one or two congregations of Scotch Independents, followers of David Dale.

DALFSEN, a town in Holland, situated on the Vecht, four miles east of Zwolle. Population, 5,549.

DALHOUSIE, a seaport town of New Brunswick, situated at the mouth of the Restigouche, and capital of Restigouche county. It exports large quantities of fish and lumber. Population, 2,353.

DALIAS, a town of Spain, in the province of Almeria, about twenty miles from the city of that name, and four miles from the Mediterranean Sea. It is poorly built and subject to earthquakes. It has lead mines. The people are chiefly employed in mining, smelting and fishing. Population, 9,000.

DALKISSORE, a river of Bengal, rising in lat. 23° 30' N., and long. 86° 34' E. It has a southeasterly course of about 170 miles, emptying into the Hoogly at Diamond harbor.

DALL, CAROLINE HEALY, born in Boston, Mass., in 1824. She was a contributor to "The Liberty Bell" and in 1852 became corresponding editor of "The Una." She delivered a number of lectures, and published *Egypt's Place in History, Historical Pictures Retouched*, etc.

DALL, WILLIAM HEALY, son of Caroline Dall, born in Boston, Mass., Aug. 21, 1845. He held several positions on geological surveys, and had charge of the works of the Western Union telegraph expedition to Eastern Siberia in 1866. In 1884 he became palæontologist to the U. S. Coast Survey, and has made several expeditions to Alaska in their interests. He is also a member of many scientific societies, and has published numerous scientific papers.

DALLAS, the capital of Paulding county, Ga., the scene of a battle between Gen. Sherman and Gen. Johnston, in May, 1864.

DALLAS, capital of Polk county, Oreg., located on the Rickreal River.

DALLAS, a city of Texas, the metropolis of the northern portion of the State, county-seat of Dallas county, on the Trinity River, about one mile below the mouth of the West Fork. Although it was first settled in 1841, it has become one of the most important cities in the State. It is situated in the midst of a productive agricultural region, and has large grain elevators and commercial warehouses. It is an important railroad center, being at the crossing of the Houston and Texas with the Texas and Pacific Railways. It is abundantly supplied with good water, obtained from artesian wells; has gas-works, street railways and electric lighting systems. Its principal manufactures are flour, cotton seed oil, agricultural implements, cement, artificial stone, wagons and carriages. It also carries on an immense trade in cotton, grain, hides, etc. The Texas State Fair and Dallas Exposition buildings are located here, and cover eight acres of ground. Its educational interests are liberally provided for, and it is fully equipped with literary and benevolent institutions. The population in 1880 was 10,358; in 1890, 38,140.

DALLAS, ALEXANDER JAMES, statesman and author, born in the Island of Jamaica, June 21, 1759, died in Trenton, N. J., Jan. 14, 1817. He was the son of a Scotch physician, studied in Edinburgh and Westminster, read law in London, and then removed to Philadelphia, Pa., and practiced law. In 1791 he became secretary of the Commonwealth. He was editor of the "Columbian Magazine," and he also edited the laws of the State with

notes, and compiled *Reports of Cases* ruled and adjudged by the courts of the United States and Pennsylvania. In 1794 he was appointed Paymaster-General, and in 1796 Secretary of State; he was Secretary of the Treasury under President Madison in 1814. Mr. Dallas advised the establishment of a national bank, and a bill to this effect was passed, but vetoed by the President; in 1816, however, the President signed an act to incorporate such a bank, and treasury notes, which before were scarcely current, were sold at par, plus interest. In March, 1815, Dallas was obliged to discharge the duties of Secretary of War; the year following he died a few weeks after having retired from public service.

DALLAS, GEORGE MIFFLIN, statesman, born in Philadelphia, Pa., July 10, 1792, died there Dec. 31, 1864. He graduated at Princeton, studied law, and accompanied Albert Gallatin to Russia as private secretary. He assisted his father, when the latter was Secretary of the Treasury; practiced law in New York city; was solicitor of the U. S. bank, and in 1817 was appointed deputy attorney-general for Philadelphia county. In 1831 he was sent to the U. S. Senate. From 1833 to 1835 he was attorney-general of Pennsylvania, and in 1837 was minister to Russia. After two years he was recalled and resumed his legal practice. He was elected Vice-President in 1844, and was minister to England from 1856 to 1861.

DALLES CITY, capital of Wasco county, Oreg., located on the south bank of the Columbia River. It has a large woolen factory.

DALLES of the Columbia, a name given to a portion of the Columbia River. For a considerable distance above the stream is bounded by basaltic rocks, and at this point they suddenly confine the stream to about one-third its usual width, with perpendicular walls on either side. The river plunges violently through the chasm, which is but fifty-eight yards wide.

DALLES of the St. Louis, a series of rapids in the St. Louis River, extending about four miles over a bed of slate, near Duluth, Minn.

DALL' ONGARO, FRANCESCO, born at Odezzo, Italy, in 1808. He was a priest, but being suspended for preaching independent doctrine, he left the church and engaged in revolutionary journalism in Trieste, from which place he was expelled in 1847, and a year later was compelled to leave Italy altogether, and did not return until 1859. During the interim he was a contributor to Parisian journals. On his return to Italy he became professor of literature at Florence. He has published lyric poems, tales and dramas.

DALMANIA, a genus of trilobites. The best known species is *Dalmania limulurus* of the Niagara limestone.

DALMATICA, a long-sleeved robe formerly worn by the Greeks and Romans, and still worn by deacons in the Greek and Roman Catholic churches, though in a somewhat different form. It was originally of linen, but is now generally made of some heavy silk.

DALRIADA, the ancient name of a territory in Ireland now called "the route," the northern half of the county of Antrim. It signifies "the country of the race of Riada," an Irish chieftain of the 3d century. About 506 some of his descendants made a permanent settlement in Argyleshire in Albany, as Scotland was then called, founding the kingdom of "Dalriada in Albany." More than twenty kings of this state preceded Kenneth Mac-Alpine, who, in 843, united the Dalriads and Picts, and became the first king of Albany. About two centuries later it began to be known as Scotland.

DALRYMPLE, ALEXANDER, a younger brother of Lord Hailes, was born at New Hailes, near Edinburgh, in July 1737, died June 1808. In 1752 he entered the East India Company's service, but soon relinquished this appointment. Having become interested in the commerce of the Eastern Archipelago, he made a voyage of observation among the islands. He concluded a treaty with the Sultan at Sooloo, but being unsuccessful in securing the interest of home authorities his scheme proved a failure. In 1775 he was sent out to Madras as a member of council, and in 1779 appointed hydrographer to the East India Company. In 1795 the admiralty established a similar office and bestowed it on Dalrymple. This position he held until within a short period of his death. He left a valuable library, which was purchased by the admiralty.

DALTON, a railroad junction, capital of Whitfield county, Ga. It is surrounded by extensive mineral fields of iron, limestone, manganese, etc.; manufactures cotton, iron and leather, and has besides a large trade in fruit, grain, etc. It was the headquarters of the Confederate army under Gen. J. E. Johnston in 1864, and several battles were fought in the vicinity. At the beginning of Sherman's Atlanta campaign it was abandoned.

DALTON, a town of Berkshire county, Mass., on the Boston and Albany Railroad. It has important manufactories of machinery, paper, woollens, and cotton goods.

DALTON-IN-FURNESS, a town of England, in Lancashire. The ruins of Furness Abbey, founded by Stephen in 1127, are near Dalton. It has iron-works and iron-mines. Population, 13,350.

DALTON, EDWARD BARRY, born in Lowell, Mass., Sept. 21, 1834, died at Santa Barbara, Cal., May 13, 1872. He was a graduate of Harvard, served in the war from 1861 to 1865 as army surgeon, and became medical director of the 9th army corps. After the war he was appointed sanitary superintendent of the New York board of health, which office he held till 1869. He originated the city ambulance system now in use.

DALTONISM, a want of sensibility in the eye to differences of color; color-blindness. It was so called because John Dalton, a celebrated chemist, suffered from it. See *Britannica*, Vol. VI, p. 781.

DALY, CHARLES PATRICK, born in New York city, Oct. 13, 1816. He went to sea before the mast, and on his return became a mechanic's apprentice. Afterwards he studied and practiced law, was elected to the legislature, became justice of common pleas court, judge and chief justice, 1871-86. He is the author of legal, biographical and scientific papers.

DALY, AUGUSTIN, dramatist and theatrical manager, born in North Carolina in 1838. His first decidedly successful literary work was *Leah*, produced in 1862, though a farce. *A Bachelor's Wardrobe*, previously written, had met with favor. Mr. Daly's original dramatic works and his adaptations are numerous and clever.

DAMAGES. See *Britannica*, Vol. VI, pp. 787-89.

DAMANHOOR, capital of the province of Bahreh, in Lower Egypt. It has manufactories of wool and cotton. Population, 10,000.

DAMAR, a town of Yemen, Arabia, situated about 120 miles north-northwest of Aden. It has a college, and is the residence of a governor. It contains about 5,000 houses.

DAMASCUS BLADES, a name given to sword-blades made of Damask steel, having a peculiar watered or streaked appearance. They were originally made at Damascus in Syria, and have been

famous since the time of the Crusades for their beauty and excellent temper. It is said that bars of iron could be cut with them, and that, being bent into a hoop, they would resume their original shape without injury. See *Britannica*, Vol. VI, p. 793.

DAMASTES, a Greek historian, about B. C. 440. Several works are ascribed to him, the few remaining fragments of which are collected in Müller's *Fragm. Histor. Græcæ*.

DAMBOOL, a village of Ceylon, remarkable for a vast rock-temple of the Buddhists. It is partly artificial, and was constructed about 100 B. C. Among a profusion of sculpture it contains an enormous image of Buddha, hewn from the rock.

DAME, formerly a title of honor given to high-born ladies to distinguish them from the wives of citizens. In France the Virgin Mary was called *Notre Dame* (our mistress), and madame was the sole title of the wife of the king's eldest brother. Though little used by the English, it is now applied to married women of all classes. Madame, shortened to madam, is a respectful form of address.

DAME'S VIOLET (*Hesperis*), a genus of plants of the natural order *Cruciferae*, of which there are several species, natives chiefly of the Middle and South of Europe. One only, the common dame's violet, or white rocket (*H. matronalis*), is found in Britain. The night rocket (*H. tristis*) is a favorite flower in Germany.

DAMIANI PIETRO, or **SAINT PETER DAMIAN**, born at Ravenna in 1007, was made cardinal-bishop of Ostia in 1057. In morals and intellect he was the superior of most men of his time, and he is honored as one of the doctors of the church. He originated a system of penance which became very popular; was a voluminous writer, and opposed simony and other corrupt practices of the clergy.

DAMIANISTS, a religious sect of the sixth century, sometimes called Angelists. They were followers of Damianus of Alexandria.

DAMIANUS, a sophist and rhetorician of Ephesus, of whom an account is given by Philostratus. He was a successful teacher of rhetoric, a man of wealth and liberality. He erected a fine portico at Ephesus.

DAMM, CHRISTIAN TOBIAS, a Greek scholar and theologian, born near Leipsic in 1699. He made a translation of the New Testament and of the works of several Greek authors. His *Homeric and Pindaric Lexicon*, first published in 1765, was his principal work, and the one by which he is now known among scholars.

DAMMUDAH, a river of India, rises in Ramgur, Bengal, about lat. 23° 55' N., and long. 84° 58' E.; pursues a southeasterly course of about 850 miles, and empties into the Hoogly from the right.

DAMO, a daughter of Pythagoras. His memoirs were left in her care, and by her transmitted to her daughter Ditale.

DAMON, a musician and sophist of Athens. Plato speaks of him as a person of distinguished abilities, and Plutarch credits him with the invention of a form of the Lydian melody. He was teacher and adviser of Pericles.

DAMOPHON, a staturary of Messene, about 370 B. C. His works were chiefly statues of Parian marble and of wood. Among the most important are mentioned a statue of Lucina, one of the mother of the gods, of Mercury and of Venus.

DAMOPHYLE, a female Greek poet, a follower of Sappho. None of her works are in existence, and very little more is known of her than that she was a Pamphylian by birth and lived about 610 B. C.

She instructed young women, and composed hymns to Artemis, which were sung at Perga.

DAMPER, a door or valve used to diminish the aperture of a chimney, or air-flue for the purpose of checking combustion. The damper of a piano-forte is a padded drop which, after a key is struck and the finger lifted, immediately falls upon the string and stops vibration, giving clearness to the sound. Damper is also a name given in the Australian bush to a kind of unleavened bread made of wheat-flour and baked among the ashes.

DAMPIER ARCHIPELAGO AND STRAIT take their name from the noted navigator and buccaner, William Dampier. The strait is 35 miles in width.

DAMPING OFF: in horticulture, the death of plants from excess of moisture in the soil and atmosphere, to which young seedlings are especially liable.

DAMPS: in mining, the name given to the gaseous products eliminated in wells, coal mines, etc. There are two kinds: *choke-damp*, mainly composed of carbonic acid, and so called from its extinguishing flame and life; and *fire-damp*, consisting principally of light carbureted hydrogen, and so called from its tendency to explode when mixed with atmospheric air and brought into contact with flame.

DAMROSCH, DR. LEOPOLD (1832-85), composer, conductor, and violinist; founder of German opera in the United States, and of the Oratorio and Symphony Societies of New York, was born in Posen, Germany, in 1832, and developed a talent for music at an early age. He studied medicine, however, at the wish of his parents, and took his degree in Berlin in 1854. In 1856 he made his first public appearance as a violin virtuoso. In the same year he became Liszt's concert-master at Weimar, and while there became intimate with Bülow, Raff, Tausig, Lassen, Cornelius, and other celebrities. From 1858 to 1871 he occupied positions of honor in Breslau, and made frequent concert tours through Germany as a solo violinist. In 1871 he accepted a call from the Arion Society of New York to become its conductor, and made his first public appearance in America as a conductor, composer, and violinist. In 1873 he founded the Oratorio Society, the foremost choral society in the United States, and in 1878 the Symphony Society. During one season he also conducted the concerts of the Philharmonic Society. His last great work, and the one that cost him his life, was the establishment of German opera in New York. The enormous amount of work involved in the leadership of these great societies undermined his health so that he became an easy prey to pneumonia, and died suddenly Feb. 15, 1885. Dr. Damrosch was married in Breslau, to Helena von Heimburg, a well-known soprano singer, and had two sons and three daughters. He was a man of refined intellectual culture and sound scholarship, the most untiring energy, and much personal magnetism. His literary attainments and oratorical brilliancy were remarkable, and his taste in all matters was broad and catholic. The service he rendered music in New York and the whole country is hardly to be estimated. He came at a time when a better taste in musical matters was awakening, and he was able to guide the course of affairs into the broadest and deepest channel, and by his enthusiasm he gave an impetus to music that will not cease to be felt. "He did a great and noble work, and he did it in a great and noble way." As a composer Dr. Damrosch ranks high. Among his works are an opera, a symphony, four violin concertos, two large works orchestra, solos and chorus, twelve books of songs, several works for the violin, and some large works for male chorus.

DAMROSCH, WALTER JOHN, son of the foregoing, born in Breslau, Prussia, in 1862, and removed with his father's family to the United States at the age of nine. In his childhood his improvisations on the piano were remarkable. He studied under his father, Max Pinner, Rischbieter, Hauptmann, and Hans von Bülow.

At the age of nineteen he became conductor of the Harmonic Society of Newark, N. J., and produced successfully a number of important works. At the age of twenty-three he was called to fill the places left vacant by the death of his father, and proved himself so able a leader that he was elected the following year to the permanent leadership of the Oratorio and Symphony Societies, and was also made assistant musical director of the German opera.

As a conductor Mr. Damrosch is eminently successful. Although still so young he has brought out many of the greatest works, such as Liszt's *Christus*, the whole of Parsifal, arranged for concert performance, *Berlioz' Damnation de Faust*, *Messe des Morts*, and *Te Deum*, and Grell's *Missa Solemnis*. He is a strict disciplinarian and indefatigable in the performance of duty. While exerting a strong personal magnetism over the members of his societies he does not depend upon that to carry through a performance, but is exacting in rehearsals, insisting upon a devotion from each individual member equal to his own. He is particularly at home in the Oratorio Society, and has brought that organization to a state of efficiency almost unrivaled in any country.

Among Mr. Damrosch's services to music not the least is the pioneer work he has done in the lecture field. In 1891 he had delivered over two hundred lectures on musical subjects, illustrating them upon the piano. The Wagner Music Dramas have been interpreted in this manner, and the explanatory lectures on the works performed by the Symphony Society have done a great educational work. Through his influence, too, New York secured its permanent orchestra (of which he is leader), and the Music Hall, given by Andrew Carnegie, which was opened with a music festival in May, 1891.

Personally Mr. Damrosch is very popular. His genial and extremely sympathetic nature has gained for him many friends, while his brilliant attainments have compelled general admiration. Notwithstanding his remarkable success, he remains an earnest and hard-working student, and it is safe to predict for him a great future. As a composer he is not yet widely known, but a number of his works have been performed in various cities. In 1890 he was married to Margaret Blaine, daughter of James G. Blaine, Secretary of State.

DAMSON, a rather small oval fruit, variety of the common plum. There are many sub-varieties bearing fruit of different colors—black, dark purple, yellow, bluish, etc. The name is a corruption of *Damascene*, from Damascus.

DANA, CHARLES A., editor of the "Harbinger;" connected with the "New York Tribune," and since 1868 editor of the "Sun;" was Assistant-Secretary of War 1863-64; and is one of the editors of the *New American Cyclopaedia*.

DANA, FRANCIS, LL.D., American statesman and jurist, born at Charlestown, Mass., June 13, 1743, died at Cambridge, April 25, 1811. He graduated at Harvard College in 1762, and was admitted to the bar in 1767. He was chosen member of the first provincial congress of Massachusetts in 1774; member of the council which acted as the executive of Massachusetts, 1776-80, and delegate to the Continental Congress in 1777 and 1778. Appointed minister to Russia in 1781, he returned to America in

1788, and was again elected to Congress. In 1785 Governor Hancock appointed him a justice of the supreme court of Massachusetts, and in 1791 he was appointed chief justice, which position he held for fifteen years. After his retirement he devoted himself chiefly to enterprises for the benefit of the public, and was one of the founders of the American Academy of Arts and Sciences.

DANA, JAMES DWIGHT, born at Utica, N. Y., Feb. 12, 1813. He graduated at Yale in 1833 and became successively instructor in mathematics to midshipmen, assistant in chemistry to Professor Silliman, and Government mineralogist and geologist. He accompanied Captain Wilkes to the Southern and Pacific Oceans in 1838, and Mr. Dana returned about four years later, having been wrecked at the mouth of the Columbia River. About 1850 he became assistant editor and subsequently the senior editor of the "American Journal of Science and Art," and the same year was appointed Silliman professor of natural history and geology in Yale College.

DANA, JAMES, born at Cambridge, Mass., May 11, 1785, died in New Haven, Conn., Aug. 18, 1812. He graduated at Harvard College and became a Congregational minister; was pastor of the First church at New Haven for sixteen years.

DANA, RICHARD HENRY, American poet and essayist, born in Cambridge, Mass., Nov. 15, 1787, died in Boston, Feb. 2, 1879. He was the son of Francis Dana; was educated at Harvard; studied law at Newport, R. I.; was admitted to the bar of Massachusetts in 1811, and engaged in politics. He was associated in the editing of the "North American Review" (1818-21). In this periodical appeared some of his first prose articles. He was an invalid for many years, but retained his intellectual vigor to the age of ninety-two.

DANA, RICHARD HENRY, JR., LL.D., lawyer and author, born at Cambridge, Mass., 1815, died in Rome, Jan. 7, 1882. He entered Harvard in 1832, but did not graduate until 1837, his college course being interfered with by an affection of the eyes. Unable to study, he shipped as a common sailor on the ship *Pilgrim* for a voyage round Cape Horn, and the record of his adventures appeared in his book, *Two Years Before the Mast*. On his return he studied law, was admitted to the bar of Massachusetts, and soon became eminent. He wrote on legal subjects and accounts of travel, taking special interest in seamen and laws referring to them. Harvard gave him the degree of LL.D. in 1866.

DANAIDE, an hydraulic machine of great ingenuity, whose name was suggested by the Danaides. It consists of a vertical axis with a cone attached, the latter being perforated longitudinally with holes. Water enters in a jet at the top of the cone, and by its momentum imparts motion to the axis.

DANBURY, a city of Connecticut, and one of the county-seats of Fairfield county (see *Britannica*, Vol. VI, p. 797). Danbury is chiefly noted for its manufactures of hats, an industry which has flourished there for more than a century. It has also manufactures of sewing-machines, boots and shoes, shirts, etc. There are also iron foundries, extensive water-works, a town farm for the indigent, a cemetery of remarkable beauty, a high school, several graded schools, and a fine public library. The population of the city in 1880 was about 8,000; of the township, 11,666. In 1890 the population of the city was 19,385.

DANBY, THOMAS O., EARL OF (1631-1712), minister and lord treasurer of Charles II. Being charged with treason in 1678, he was imprisoned in the Tower for five years, but was released by William III, and made president of the council. See *Britannica*, Vol. VIII, pp. 349-50.

DANCE OF DEATH, a name given to a certain class of allegorical representations illustrative of the universal power of death, and dating from the 14th century. The drama was simply constructed, consisting of short dialogues between death and a number of followers, and was enacted in or near churches by religious orders. After a time an illustration was attached to each strophe, and these eventually became the chief point of interest. Being transferred from the quiet convent to more public places they gave a new impulse to popular art, and series are to be found treated in painting, sculpture, and tapestry all over the continent (see *Britannica*, Vol. V, p. 104). The more ancient name was Dance Macabre.

DANCETTE, one of the lines of partition in heraldry, which differs from indented only in the greater size of the notches.

DANCING MANIA, a form of epidemic disorder allied to hysteria, evidently resulting from imitative emotions acting upon susceptible subjects, influenced by a craving for sympathy or notoriety. Undoubtedly imposture has entered considerably into all the epidemic forms of the dancing mania.

DANE, NATHAN, LL.D. (1752-1885), a popular lawyer of Massachusetts. He served in the Continental Congress from 1785 to 1788, and framed the ordinance for the Northwest Territory, inserting a clause prohibiting slavery; he was United States Senator from 1794 to 1798, and he established the Dane professorship of law at Harvard.

DANEBROG, "the Danish banner," the second in dignity of the Danish orders, instituted by King Waldemar in 1219, as a sort of glorification of the flag. The decoration consists of a cross of gold *pattée*, enameled with white, suspended by a white ribbon embroidered with red.

DANEGELT, or DANEGOLD, a tribute levied on every hide of land by the Anglo-Saxons for the purpose of meeting the outlay requisite for defending the country against the Danes. The tax was continued after the Conquest, as one of the rights of the crown, till the time of Stephen. See *Britannica*, Vol. VIII, pp. 294, 567.

DANENHOWER, JOHN WILSON, Arctic explorer, born in Chicago, Ill., Sept. 30, 1849. He graduated from the United States Naval Academy in 1870; served on the *Portsmouth* on a surveying expedition in the Northern Pacific; took part in subduing an insurrection at Honolulu, Hawaii, in 1873; served on board the *Vandalia* when Gen. Grant visited Egypt, and in 1878 joined the *Jeannette*, which was sailing from Havre, France, on an Arctic exploration. The expedition left San Francisco harbor July 8, 1879; sailed through Bering Straits, and cruised in the Arctic Ocean until the steamer was crushed in the ice. The crew marched for ninety-five days over the ice, dragging their boats, then embarked in the open waters; but a storm arose and separated the boats. Lieut. Danenbower's boat reached the Lena delta, but the other crews perished. With his crew he arrived in America in June, 1882. Lieutenant Danenbower has published *The Narrative of the Jeannette*.

DANIEL, Book of. See *Britannica*, Vol. VI, pp. 803-07.

DANIELSONVILLE, a town of Connecticut, situated on the Quinnebaug River, about twenty-five miles north of Norwich. It contains a number of extensive cotton-mills and several shoe manufactures.

DANITES, a secret organization among the Mormons, whose members are believed to have been the authors of the Mountain Meadow massacre, and to have committed other atrocities.

DANKALI, an independent state of Abyssinia, extending along the southwest border of the Red Sea. It is a sterile territory, being almost destitute of water. The heat is excessive, often reaching 110° F. The population of about 70,000 is Arabic, and the people are treacherous, indolent and cruel.

DANSVILLE, a town of New York, situated at the head of the Genesee Valley. It is an important railroad center, and contains a variety of manufactories, a seminary, and a hygienic institute.

DANTE. See *Britannica*, Vol. VI, pp. 809-15.

DANVERS, a town of Massachusetts, about twenty miles north of Boston. It contains extensive manufactories of shoes, iron, brick, carpets, and lumber, and is the seat of a State insane asylum.

DANVILLE, a city of Illinois, and county-seat of Vermillion county (see *Britannica*, Vol. VI, p. 820). Danville is an important railroad center, on the Chicago, Danville and Vincennes, the Paris and Danville, the Wabash, the Indianapolis, Bloomington and Western, and the Evansville, Terre Haute and Chicago Railroads. It has varied manufactories, and is largely engaged in the mining and shipment of coal, which crops out in abundant quantities from the bluffs in the immediate vicinity. The car and machine shops of the Chicago, Danville and Vincennes Railroad are located here. Population in 1880, 7,733; in 1890, 11,528.

DANVILLE, a city of Kentucky, county-seat of Boyle county, about a hundred miles southeast of Louisville. It is the seat of Centre College, the Southern Collegiate Institute, Danville Theological Seminary, and Caldwell Female Institute, and contains a State asylum for the deaf and dumb.

DANVILLE, a city of Pennsylvania, county-seat of Montour county, situated on the north branch of the Susquehanna, fifty miles southwest of Wilkes Barre. See *Britannica*, Vol. VI, p. 820.

DANVILLE, a flourishing city of Pittsylvania county, Virginia, situated on the Dan River Falls, 65 miles south of Lynchburg. It is a railroad center on the Richmond and Danville Railroad, and the terminus of the Virginia Midland Railroad. It is an important tobacco market, being in the center of the fine yellow tobacco section. It is estimated that 25,000,000 pounds of tobacco have been sold at Danville in a year. It has superior educational advantages, and is the seat of the Danville Male Academy, the Danville Female Academy, and the Roanoke Female College. The population in 1880 was 7,526; in 1890, 10,785.

DARAGUNJ, an Indian town, in the British district of Allahabad, and connected with the town of the latter name by a ferry. Here the bed of the Ganges is about one mile wide, and in the dry season two-thirds of the width is covered with wet sand and mud, rendering the passage across it difficult.

DARBUNG, a mountain torrent of Bussaher, Hindoostan. It rises about 15,000 feet above sea-level, and, after flowing for twenty-seven miles, is lost in the Sutlej, the most easterly of the five rivers of the Punjab. A wooden bridge about 33 feet in length crosses this river about seven miles above its junction, at a descent of 6,000 feet from its source, the banks of the river, still farther up, being bordered by several villages. Its source, which consists of fields of snow and ice half concealed beneath stones and rubbish, is described as a scene of terrific desolation.

DARBY, JOHN NELSON, an English theologian, born at Westminster, London, Nov. 18, 1800, died at Bournemouth, April 9, 1882. He was educated

at Trinity College, Dublin; became a barrister, and subsequently took orders in the church of England. Becoming interested in doctrines advocated by Mr. Edward Cronin, of Dublin, Mr. Darby published a pamphlet *On the Nature and Unity of the Church of Christ* (1828), which had the effect of spreading these views. In 1832 he withdrew from the Established Church, and going to Plymouth there formed and became leader of a sect of Christians known as Plymouth Brethren, or Darbyites. In 1838 he went to Switzerland, where he labored with considerable success, and here he prepared and issued a *Synopsis of the Books of the Bible*, in five volumes. He continued to labor much on the Continent of Europe, especially in France, Switzerland, Spain and Italy; visited Canada in 1860, and ten years later extended his work into the United States. In 1876 he visited Australia and New Zealand. His writings comprise controversial, doctrinal, and devotional treatises, but he gave most prominence to the exposition of the Scriptures. He translated the Bible into German, and the New Testament into French.

DARCET, JEAN P. J. (1777-1844), a French chemist, who improved the manufacture of gunpowder and the composition of bronze and steel. His father directed the manufacture of porcelain at Sèvres, and proved that the diamond was combustible.

DARDANELLE, a town of Arkansas, situated on the Arkansas River, about eighty miles above Little Rock. It is an important transportation point for cotton and other products, and contains a variety of manufactories.

DARGAN, WILLIAM (1800-67), born in County Carlow, Ireland, where his father had a large farm. He was contractor for the Dublin and Kingston Railroad, the first built in Ireland, and subsequently he connected himself with most of the important undertakings of a similar character in that country, as the constructing of canals, embankments, tunnels, and railways, and he also figured prominently as a railway stockholder, a steamboat proprietor, a farmer and flax-grower. He planned the Industrial Exhibition of Dublin (1853), which was opened by the lord-lieutenant, May 12, 1853, and was visited by the Queen and Prince Albert, when the honor of knighthood was offered to him, but declined.

DARIEN, a town of Georgia, county-seat of McIntosh county, and a port of entry; situated on the Altamaha River, about 60 miles south of Savannah. It is an important shipping point for the exportation of lumber.

DARK AGES, the period between the fall of the Roman Empire and the revival of letters in the 15th century; or, according to some, dating from the invasion of France by Clovis in 486 to the invasion of Naples by Charles VIII in 1495, a period of about 1000 years.

DARK DAYS: in history, days when, from different causes, the sun has been so darkened that artificial light has been indispensable in transacting business. A phenomenon of this kind occurred in New England, May 19, 1780, during the session of the Connecticut legislature at Hartford, which occasioned a proposition to adjourn. The years 295 B. C. and A. D. 252, 746, and 775 are notable for the occurrence of remarkable dark days, and the account of the darkness which was "over all the earth" during the three hours of the crucifixion is familiar to all. In England, a dark day occurred in January, 1807, and another October 21, 1816, and on the 19th of October, 1762, one occurred in Detroit. A remarkable instance of darkness of brief duration took place in Canada, Oct. 16, 1863.

London, usually enveloped in fog and smoke, has been greatly subject to dark days, among which may be mentioned May 10, 1812; December 27, 28, and 29, 1813, and November 27, 1816. There have been several causes given for these phenomena, as vapors generated by internal heat, smoke from meteors, volcanic smoke and ashes, terrestrial dust from deserts, the smoke of burning forests, cosmical dust drifting from outer space into the atmosphere, ordinary clouds reinforced by smoke from furnaces and factories, etc., the last of which appears to most nearly meet all the conditions, especially with the additional idea of a double rather than a single stratum of clouds; each suggestion, however, has been made the subject of learned discussion.

DARKHAN, Mt., a Mongolian granite mountain of great height; an annual meeting is held here at the monument of Genghis Khan, whom the Mongolians thus honor.

DARLEY, FELIX OCTAVIUS CARR, born in Philadelphia, Pa., June 23, 1822, died in Claymont, Del., March 27, 1888. He became an artist, although in his youth he engaged in mercantile pursuits, and was employed by Philadelphia publishing houses as an illustrator. He attained celebrity in this department. Among the works which he illustrated are the novels of Cooper and Dickens, some of Longfellow's poems, Irving's *Sketch Book* and *Rip Van Winkle*, and Sylvester Judd's *Margaret*.

DARLING, GRACE, born in Yorkshire, England, in 1815, died of consumption in 1842. She was the daughter of William Darling, light-house keeper on Longstone, one of the Farne Islands. During a storm on the morning of September 7, 1838, the *Forfarshire*, with sixty-three persons on board, was wrecked among the Farne Islands, and Darling, at the solicitation of his daughter, put off for the wreck, accompanied by her. Through their united efforts they reached and rescued the nine remaining persons.

DARLING, HENRY, D. D., LL. D., born in Reading, Pa., Dec. 27, 1823. He graduated at Amherst (1842), studied theology at Union and Auburn seminaries, and, after being ordained to the Presbyterian church, was settled as pastor at Columbia, N. Y. He subsequently occupied pastorates at Vernon, New York, Clinton Street church, Philadelphia, and the 4th Presbyterian church of Albany. From here he was called in 1881 to the presidency of Hamilton College at Clinton, N. Y., and still continues in that office (1891). In the same year he presided over the Presbyterian general assembly. He is the author of numerous pamphlets and magazine articles, and several books.

DARLINGTON, a city of Wisconsin, county-seat of La Fayette county, situated on the Pecatonica River, about fifty miles southwest of Madison. It contains a number of manufactories, and is the center of an extensive trade in grain and livestock.

DARLINGTON, WILLIAM, an American scientist, born in Birmingham, Pa., April 28, 1782, died in West Chester, April 23, 1863. He studied medicine, graduated from the Pennsylvania University in 1804, and sailed for India as ship's surgeon. His *Letters from Calcutta* describe the trip. On his return to America he engaged in politics; raised a company of soldiers for the war of 1812; founded a society of natural history, published *Flora Cestrica* (a description and classification of every plant known in Chester county), and served two terms in Congress. He was a member of many learned societies of America and Europe. A most remarkable species of pitcher plant found in California was named in his honor. Yale, in 1848, conferred

on him the degree of LL.D., and Dickinson College in 1855 that of Doctor of Physical Science.

DARTMOOR. See under DEVONSHIRE, Britannica, Vol. VII, pp. 139-46.

DARTMOUTH, a town of Nova Scotia, connected by ferry with Halifax. It contains a number of manufactories, a provincial lunatic asylum, and many handsome residences.

DARTMOUTH COLLEGE. See COLLEGES, in these Revisions and Additions.

D'ARUSMONT, FRANCES (Fanny Wright), a reformer and lecturer on social, religious and political questions; born in Scotland in 1795, died in Cincinnati in 1852. She was especially known through her not very successful experiments to elevate the colored race.

DARWIN, CHARLES ROBERT (1809-82), an English naturalist, born at Shrewsbury, Feb. 12, 1809. He was educated at Shrewsbury grammar-school, Edinburgh University, and Christ's College, Cambridge. It was at the latter institution that his biological studies seriously began. On December 27, 1831, shortly after taking his degree of B. A., he sailed as naturalist to the expedition of H. M. S. *Beagle* for a scientific survey of South American waters, and did not return to England till October 2, 1836. It was during this long expedition that he obtained that intimate knowledge of the fauna, flora, and geological conditions of many tropical, sub-tropical, and temperate climates which so admirably equipped him for the great work he was afterwards to perform. On his return to England he formed the friendship of several scientific leaders, through whose influence he was appointed secretary of the Geological Society in 1838. In 1839 he was elected to the Royal Society, and in the early part of this year his marriage with Miss Wedgwood took place. In the same year he published his *Journal of Researches Into the Geology and Natural History of the Various Countries Visited by H. M. S. Beagle*. From 1840 to 1843 Darwin was occupied with the publication of the *Zoology of the Voyage of the Beagle*, under government auspices. In 1842 appeared his work on *The Structure and Distribution of Coral Reefs*; in 1844, *Geological Observations on Volcanic Islands*; and in 1846, *Geological Observations on South America*. These works placed him at once in the front rank of contemporary scientific thinkers. Three years after his marriage Darwin settled at Down, in Kent, where the remainder of his life was passed, private means enabling him to devote himself unremittingly to the pursuit of science. In 1858 Darwin set to work seriously to condense his vast mass of notes and put into shape his great work *The Origin of Species by Means of Natural Selection*, published in November, 1859. From the day of its publication he worked at a great series of supplemental treatises. Of these the *Descent of Man* (1871) has been hardly less famous than the *Origin of Species*. He was author of a number of later works, but it is as the great leader of evolutionary biology that Darwin will be mainly remembered. Though not himself the originator of the hypothesis, he was undoubtedly the first to gain for that conception a wide acceptance among biological experts. He died April 19, 1882, and was buried with unusual honors in Westminster Abbey.

DARWIN, GEORGE HOWARD, son of Charles Robert, born in 1846. In 1870 he took part in the eclipse expedition to Sicily. He became a fellow of the Royal Society in 1879; since which time his labors have been mainly directed to investigation in physical astronomy. In 1882 he assisted in the revision of Thomson and Tait's *Natural Philosophy*. He became professor of astronomy and experi-

mental philosophy at Cambridge in 1883. Among his published works is a life of his father.

DARWINISM. See *Britannica*, Vol. VIII, p. 769; and Vol. XXII, p. 219.

DASENT, SIR GEORGE WEBBE, an English author, born in 1820 at St. Vincent in the West Indies, of which island his father was attorney-general. He was educated at Westminster School and King's College, London, and at Magdalen College, Oxford; was called to the bar in 1852, in which year also he received the degree of D.C.L. An accomplished linguist, he had frequently acted as examiner in English and modern languages for civil service appointments when in 1870 he was appointed a civil service commissioner. In 1876 he was knighted for public service. Dasesnt published a translation of *The Prose, or Younger Edda* (1842); *Popular Tales from the Norse* (1859), and *Tales from the Fjeld* (1874), both from the Norwegian of Asbjørnsen; translations from the Icelandic of the *Saga of Burnt Njal* (1861), and the *Story of Gisti, the Outlaw* (1866). His introduction to Asbjørnsen's *Popular Tales* is an admirable exposition of the Aryan theory of story transmission. He has also written several novels.

DATAMES, a Persian general, who successfully quelled a confederate revolt, but subsequently losing favor with Artaxerxes was betrayed and assassinated, 362 B. C. See *Britannica*, Vol. XVIII, p. 579.

DATE PLUM, a genus of plants of the order *Ebenaceæ*. The trees are deciduous with a globose berry fruit, and grow in a warm or temperate climate. Some species produce ironwood, which is a hard timber, and the black-heart wood of others is ebony. The common date plum or pishamin, although a native of the coasts of the Caspian Sea, Mauritania, etc., is naturalized and cultivated in Southern Europe, and is also called the European lotus and the date of Trebizond. It is a tree growing from 20 to 40 feet high, having shining oblong leaves; the small flowers are reddish-white; the fruit, usually the size of a cherry, grows larger in favorable climates, and is then sweet and astringent and yellow in color. When over-ripe it is eaten like the medlar, or is used for conserves. One species, known as the Virginia date plum, and found in the Southern States, bears an edible fruit of a reddish color.

DATISCEÆ, a small natural order of plants, allied to *Begoniaceæ*, and consisting of herbs and trees, mostly found in the temperate regions of the Northern hemisphere. *Datisca cannabina*, a plant much resembling hemp in its general appearance, a native of Crete, possesses very marked tonic properties. It contains also an amylaceous substance, called *datiscin*, resembling *inulin*. It affords a yellow dye.

DAUBER, the name given to a mud-wasp whose nest is built in successive clay-cells, in each of which it stores live spiders and then deposits an egg, and when the grub is hatched it feeds upon the spiders till it goes into the pupa state, at which stage, having become strong enough to burst its cocoon, it gnaws through the walls of its cell.

DAUDET, ALPHONSE, a French dramatist and novelist, born at Nîmes, May 13, 1840, and educated at the Lyons Lycée. At the age of seventeen he went to Paris, where he secured an appointment as clerk or private secretary in the office of the Duke of Morny. M. Daudet's literary efforts began with poetry, and his first book, published in 1858, was entitled *Les Amoureux*. He devoted some—not too successful—years of experiment to theatrical work, writing by himself or with a collaborator, *La Dernière Idole* (1862); *L'Œillet Blanc* (1865); *Le Frère Aîné* (1868); *Le Sacrifice* (1869);

Lise Tavernier, and *L'Arlésienne* (1872). He contributed to many journals, especially "Figaro," and in this form appeared some of his best work, the *Lettres de Mon Moulin* (collected 1869); *Robert Helmont* (1871); the *Contes du Lundi*, and others. It was not till many years after his literary beginnings that M. Daudet adopted the style which has made him famous. He sketched something of the kind in *Le Petit Chose* (1868), a story founded on his own childhood; the quality is still further developed in *Jack* (1873), and the publication of *Fromont Jeune et Risler Aîné* (1874) established his reputation. These have been followed by *Le Nabob* (1877), a caricature of well-known personages under the Empire; *Numa Roumestan* (1882); *L'Évangéliste* (1883); *Sapho* (1884); and *L'Immortel* (1888). Daudet is generally admitted to be one of the most powerful writers of the present day. His wife, *Madame Daudet*, is a lady of talent, who is understood to have rendered him much assistance in his literary work. She has contributed literary articles and criticisms to various journals.

DAUDET, ERNEST, a French author, brother of Alphonse, born at Nîmes, May 31, 1837, removed to Paris in 1857. For a time in the employment of M. de Morny, he became successively president of the Legislative Assembly, editorial secretary of the proceedings of the Assembly, and chief clerk of the Senate. While occupying these positions he was a constant contributor to various journals, and in 1873 he was appointed director of the "Journal Officiel." Since 1877 he has been chief editor of "L'Estafette." He is author of numerous novels, of work on the political questions of the day, and some of his later works have dealt with matters of history. *L'Histoire des Conspirations Royalistes du Midi sous la Révolution* (1881) has been crowned by the French Academy and a prize granted to the author.

DAUMER, GEORGE FRIEDRICH, a German poet and philosopher, born at Nuremberg, March 5, 1800, died at Würzburg Dec. 14, 1875. He studied at the gymnasium of his native city, took the courses in divinity and philosophy at Erlangen, and was subsequently professor in the gymnasium of Nuremberg. Abandoning the pietism of his student days, he passed through Schelling's philosophy to a position of bitter antagonism to Christianity; but in 1859 he joined the Ultramontane party and became one of its foremost champions. His many philosophical writings reflect his varying positions. His poetical works, especially *Mahomet* (1848) and the *Liederbluten des Hafis*, two graceful imitations of Persian poetry, have gained a high reputation.

DAUNG, a tract of land in the presidency of Bombay, area 960 square miles. It is composed of several unimportant states under the general government of the Rajah of Daung. Population, 70,300.

DAUVRAY, HELEN, an actress, born in San Francisco, Cal., Feb. 14, 1859. As a child she played in *Uncle Tom's Cabin*, *Richard III*, *The Scarlet Letter*, *Fidela*, *No Name*, *Katy Did*, in many different States of America, in Australia, and in France. She recently married John M. Ward, president of the Brooklyn Base Ball Club.

DAVENPORT, flourishing city of Iowa, and county-seat of Scott county (see *Britannica*, Vol. VI, p. 836). Davenport is on the Chicago, Rock Island and Pacific Railroad, and is the southern terminus of the Davenport and St. Paul Railroad. It is connected with eastern cities by other railroads, terminating on the opposite or eastern bank of the Mississippi River. It has extensive manufactories of carriages, farming implements, woolen goods, cars, furniture, lumber, flour, etc., and has

high schools, a normal school, a convent, the Academy of the Immaculate Conception, the Catholic Seminary of St. Charles Borromeo, a well-endowed Catholic hospital, and a large public library. It is also the seat of Griswold College (Protestant Episcopal), which was founded in 1859. Davenport is an important depot for the shipment of grain. On the other side of the river, opposite the city, is Rock Island, a beautiful island several miles in length, owned by the United States government. Rock Island is the site of a United States arsenal and military headquarters, and is connected with Davenport by a notable wrought-iron bridge, costing \$1,000,000. Population of Davenport in 1880, 21,831; in 1890, 25,161.

DAVENPORT, ABRAHAM, great grandson of John Davenport, one of the founders of New Haven, born in Stamford, Conn., in 1715, died there Nov. 20, 1789. He graduated at Yale, practiced law, and during the Revolution was a staunch and generous patriot. He was a member of the council in Hartford on the "dark day" of 1780, and when it was suggested that it might be the Judgment-day, and that the session would better adjourn, he said: "That day is either at hand or it is not; if it is not, there is no cause for adjournment; if it is, I choose to be found doing my duty. I wish, therefore, that candles may be brought."

DAVENPORT, EDWARD LOOMIS, an American actor, born in Boston, Mass., Nov. 15, 1814, died in Canton, Pa., Sept. 1, 1877. As an actor he was equally good in tragedy and comedy. His *début* was at Providence, R. I., when he appeared as Parson Will in *A New Way to Pay Old Debts*, Junius Brutus Booth taking the role of Sir Giles Overreach. He achieved success in Philadelphia, New York, Boston and in England, becoming very popular in London.

DAVENPORT, FANNY ELIZABETH VINING, born in London, July 6, 1829, the daughter of Frederick Vining, manager of the Haymarket Theater. When three years old she began her dramatic career, acting in baby parts. After a few years at school she returned to the stage, and in 1849 married Mr. Davenport. Afterwards she accompanied her husband in his starring engagements and played in the chief American cities. Her daughters, Fanny Lily Gipsy, Blanche Maria, Lily Antoinette, and Marion Caroline have all appeared on the stage.

DAVENPORT, FANNY LILY GIPSY, born in London, April 10, 1850; was educated in the Boston public schools, and at an early age made her first appearance at the Howard Athenæum in the play *Metamora*, in which she took the child's part. In 1862 she acted at Niblo's Garden, New York; subsequently at Little Tremont Theater in Boston, and in the Arch Street Theater in Philadelphia. In 1869 Augustin Daly secured her services for his Fifth Avenue theater in New York. She played here in *London Assurance*, *As You Like It*, *Oliver Twist*, *School for Scandal*, *Divorce*, *Leah*, and *Pique*. In the last mentioned her success was great. She has made starring tours through the United States. She brought out Miss Anna Dickinson's *An American Girl*, and Sardou's *Feodora*. Of late she has been giving *Cleopatra*. In 1879 she married Edwin H. Price, but secured a divorce and afterwards married Melbourne McDowell.

DAVENPORT, HENRY KALLOCK, born in Savannah, Ga., Dec. 10, 1820, died in Franzensbad, Bohemia, Aug. 18, 1872. He entered the navy (1838) as midshipman; served until 1844 on various vessels; was appointed to the Coast Survey, sailed afterwards on the *Columbia*, and for the four years following was connected with the mail-

steamship service. He was present in 1856 when the Barrier forts of the Canton River were taken, and later he was detailed to duty at the National Observatory in Washington, D. C. He was attached to the *Cumberland* during the civil war. From 1864 to 1866 he was with the Pacific squadron and commanded the *Lancaster* and *Powhatan*. In 1868 he was made captain, and in 1870 was placed in command of the frigate *Congress* of the European squadron.

DAVENPORT, JOHN, born in Coventry, England, in 1597, died in Boston, Mass., March 15, 1670. He was educated at Oxford and ordained to the Anglican priesthood. He preached in London, and became famous for his learning and faithfulness to his duties. He was suspected of Puritan principles and summoned before Archbishop Laud to answer the charges. About this time his friend John Cotton, having left the Established Church, Davenport was persuaded to do the same. He left England for Holland and spent two years in pastoral work, then returned to England. In 1637 he sailed for Massachusetts, and was welcomed cordially by the people of Boston. He afterwards became one of the founders of the New Haven Colony, one of the "seven pillars" of government, a protector of the regicides Goffe and Whalley, and died while he was pastor of the First Church in Boston.

DAVENPORT, THOMAS, inventor, born in Williamstown, Vt., July 9, 1802, died in Salisbury, Vt., July 6, 1851. In 1835 he had invented a rotary engine, whose motive power was electricity. He patented this invention and another, a small electric engine similar to a steam engine, and published a newspaper, "The Electro-Magnet," which was printed on a press run by one of these engines. He invented a method for applying electricity to the wires of a musical instrument, by means of which the tone is changed in fullness and power at the will of the player. His inventions were the result of costly experiments, which exhausted his resources.

DAVID, King of Israel. See Britannica, Vol. VI, pp. 836-42. See also Vol. XIII, p. 404; and Vol. XXI, p. 253.

DAVIDS, THOMAS WILLIAM REYS, a British Orientalist, born at Colchester, May 12, 1843, and educated at the University of Breslau. He has held various appointments in Ceylon. His works include *Buddhism* (1878); a *Translation of the Faust Collection of Buddhist Birth-Stories* (1880), and *Buddhist Suttas from the Pali* (1881).

DAVIDSON, SAMUEL, D.D., LL.D., English exegete, born near Ballymena, Ireland in 1807; educated at the Royal College of Belfast; entered the Presbyterian ministry, and was called in 1835 to the chair of Biblical criticism in his own college. Becoming a Congregationalist, he was called in 1842 to the chair of Biblical literature and Oriental languages in the Congregationalist College at Manchester, a position which he was compelled to resign on the publication of the volume which he contributed to a new edition of Horne's *Introduction*, though his theological opinions are moderately conservative. He was a member of the Old Testament revision committee. Among the best known of his works are *Biblical Criticism* (1852), *The Canon of the Bible* (1877), and his *Critical and Exegetical Introductions both to the Old and New Testaments*.

DAVIDSON, GEORGE, A. M., Ph. D., born in England in 1825; served in the United States Coast Survey on the Pacific and Atlantic during the civil war, and commanded the Alaska expedition to observe the total eclipse in 1869. In 1873 he determined the 120th meridian, and the year follow-

ing conducted the United States transit of Venus party to Japan. He is a member of many scientific societies, president of the California Academy of Sciences, and has published many valuable works on transit observations, transit instruments, irrigation, and river and harbor improvements.

DAVIDSON, LUCRETIA M., an American poetess, born in 1808, died in 1825. She began writing in childhood, and is said to have written 278 poems.

DAVIDSON, MARGARET MILLER, sister of Lucretia, born in Plattsburgh, N. Y., March 26, 1823, died in Saratoga, N. Y., Nov. 25, 1838. At the age of six she began writing poetry. When four years old she wrote in two days a drama, *Tragedy of Alethia*. Washington Irving introduced her poems to the public. The poems of the sisters have been published together.

DAVIDSON, ROBERT, educator, born in Elkton, Md., 1750, died Dec. 13, 1812. Graduating at the University of Pennsylvania, he taught there for some time; then in 1774 was licensed to preach, and was ordained the following year, becoming the assistant of Dr. Ewing in the first Presbyterian church of Philadelphia. He was chosen vice-president of Dickinson College in 1784, and from 1804 to 1809 he acted as its president. He was a fine scholar, and especially fond of the study of astronomy.

DAVIDSON, ROBERT, clergyman, born at Carlisle, Pa., Feb. 23, 1808, died in Philadelphia, April 6, 1876. He graduated at Dickinson College in 1828, and at Princeton Theological Seminary, and held pastorates at Lexington, Ky., New Brunswick, N. J., New York city, and Huntington, Long Island. For some time he was superintendent of public instruction in Lexington, Ky., and in 1840 became president of Transylvania University in that city. He was a commissioner of the American Board of Foreign Missions for twenty-five years; permanent clerk of the general assembly from 1845 to 1850; delegate to the general assembly of the Scottish Free church in 1869, and author of numerous writings, among which were *History of the Presbyterian Church in Kentucky*; *The Christ of God*; and *Elijah, a Sacred Drama*.

DAVIDSON, THOMAS, philosopher, born in the parish of Deer, Aberdeenshire, Scotland, Oct. 25, 1840; graduated at Aberdeen University, and afterwards was rector of the grammar school of Old Aberdeen, and then taught in various English schools. In 1866 he removed to London in Canada, and then to the United States, residing in Boston, Mass., for a time, and in St. Louis, Mo., where, besides doing literary work, he taught in the high schools. His contributions to various periodicals were usually on philological and philosophical subjects. He was connected with the "Round Table," and the "Western Educational Monthly." He removed from St. Louis to Cambridge, Mass., in 1875. Much of his life has been spent on the Continent, where he has made a study of Catholicism, archaeology, modern Greek, and the scholastic philosophy of Rosmini and Dante. He is an accomplished linguist, has been a lecturer before the Lowell Institute of Boston and elsewhere; was one of the founders of "The Fellowship of the New Life" (an organization having branches in London and New York), has undertaken a translation of Aristotle's complete works, and is author of *The Fragments of Parmenides*; *On the Origin of Language*; *The Place of Art in Education*; *Hand-book of Dante, from the Italian of Scartazzini*, and several other translations.

DAVIDSON, THOMAS, naval constructor, born in Nottingham, England, Aug. 28, 1828, died in Philadelphia, Pa., Feb. 18, 1874. He was the brother of the astronomer, George Davidson. His parents

moved to Philadelphia in 1832. A taste for mechanical invention was early shown, and the boy was apprenticed to a ship-builder. When but twenty-two years old he built his first ship. He was appointed quartermaster of the ship-carpenters in the Philadelphia navy yard. He became commander in 1866, holding this office up to his death. During the civil war he accomplished some remarkable feats. He built the *Tuscarora* in fifty-eight working days, the *Miami* in twenty-seven and the *Juanita* in seventy days. The last was his greatest achievement, as this was a ship of 1,240 tons and 7 guns. At one time during the war he was at work repairing forty-two ships and building several new ones. Under his directions the *Monongahela*, which by earthquake had been driven forty feet upon the beach at Santa Cruz, was safely moved lengthwise to the ocean and then over a coral reef 2,500 feet wide, when it once more floated in deep water.

DAVIDSON, WILLIAM, soldier, born in Lancaster county, Pa., killed at the battle of Cowan's Ford, N. C., Feb. 1, 1781. He served in the war of the Revolution at the battles of Brandywine, Germantown and Monmouth. He was severely wounded near Carlson's Mill, but within two months was back in service with the rank of brigadier-general. While on duty with 250 men to oppose the passage of the Catawba River by Cornwallis, his men were seized with a panic and fled before the fire of the British, and General Davidson was killed. Davidson College, N. C., was named in his honor.

DAVIDSON COLLEGE. See COLLEGES, in these Revisions, and Additions.

DAVIE, WILLIAM RICHARDSON, soldier, born in Egremont, near Whitehaven, England, June 20, 1756, died in Camden, S. C., Nov. 8, 1820. He came to America in his boyhood, and resided near the Catawba in South Carolina, graduated at Princeton; served as a volunteer in New York; studied law in Salisbury, N. C.; again entered the army; joined Pulaske's legion, and at the battle of Stone Ferry (June 12, 1779) was severely wounded. He fought at Hanging Rock and Rocky Mount; at Wahab's Plantation, and at Charlotte, N. C.; he withstood three charges of Tarleton's legion. He was made commissary-general of the Southern army. After the war he served in the legislature; drew up the act establishing the University of North Carolina; acted frequently as boundary commissioner; was elected governor of the State in 1799, and was sent to France by President Adams on a special embassy. President Jefferson appointed him to draw up a treaty with the Tuscarora Indians in 1802.

DAVIES, CHARLES, mathematician, born in Washington, Litchfield county, Conn., Jan. 22, 1798, died at Fishkill Landing, N. Y., Sept. 17, 1876. He graduated from West Point; served in New England garrisons and at West Point, where he resigned his commission and became professor of mathematics in the school, and from 1839 to 1841 he held the same position in Trinity College, Hartford, Conn. From 1841 to 1845 he was United States Army Paymaster. In 1848 he accepted the chair of mathematics and philosophy in the University of New York. He held the position for a year, taught in the Albany Normal School and returned to New York, where he became professor of higher mathematics in Columbia College (1857-65). He devoted much time to the preparation of a series of books on mathematics. *Descriptive Geometry*; *Differential and Integral Calculus*; *Logic and Utility of Mathematics*; and *The Metric System* were some of his best works.

DAVIES, HENRY EUGENE, born at Black Lake, near Ogdensburg, N. Y., Feb. 8, 1806; died at New

York city, Dec. 17, 1881. He studied law with Judge Alfred Conkling, and was admitted to the bar at Utica in 1826. After living in Buffalo he removed to New York, and in 1850 was chosen corporation counsel, and justice of the State supreme court five years later. From 1860 to 1869 he was in the court of appeals, and afterwards became the partner of Judge Noah Davis.

DAVIES, HENRY EUGENE, son of Henry Eugene, born in New York city, July 2, 1836. He was educated at Harvard, Williams and Columbia, graduating at the last-named college, and became a lawyer. He served throughout the war, and rose to the rank of major-general of volunteers. From 1868 to 1869 he was public administrator of New York city, and from 1870 to 1872 assistant district attorney of the southern district of the State.

DAVIES, JOHN LLEWELYN, English clergyman and author, born at Chichester, Feb. 26, 1826, and educated at Repton school and Trinity College, Cambridge, becoming a fellow of the college in 1850. Ordained in 1852, he was appointed incumbent of St. Mark's Church, London, and subsequently became rector of Christ Church. He was for some years principal of Queen's College, London, is chaplain in ordinary to the Queen, and has been a frequent contributor to periodical literature. He has published *Theology and Morality, Belief and Practice* (1873), and *The Christian Calling* (1875).

DAVIES, LOUIS HENRY, Canadian statesman, born in Charlottetown, Prince Edward Island, May 4, 1845. He received his education at Central Academy and Prince of Wales College in his native town, and then fitted himself for the legal profession. He was twice chosen solicitor-general of his province, was opposition leader in the legislative assembly, and premier and attorney-general. These offices he held from 1876 to 1879. He was in the local legislature for most of the time from 1872 to 1879. From 1882 to 1886 he represented Queen's county of his island in the Dominion parliament. In the international fishery commission, which held its sessions at Halifax, Nova Scotia, in 1877, he was one of Great Britain's representatives. In politics Mr. Davies is a Liberal.

DAVIES, SAMUEL, clergyman, born near Summit Ridge, Newcastle county, Del., Nov. 3, 1724, died in Princeton, N. J., Feb. 4, 1761. He was ordained to evangelical work in Hanover county, Va., and some years later he went to England to assist in obtaining funds for the College of New Jersey. He was well received and obtained the funds. He became president of Princeton in 1759, succeeding Jonathan Edwards. Mr. Davies was eminent as a pulpit orator.

DAVIES, THOMAS ALFRED, soldier, born in St. Lawrence county, N. Y., December, 1809. In 1829 he graduated from the United States Military Academy, and served on frontier duty. In 1831 he resigned his commission and served as one of the Croton Aqueduct engineers. When the civil war broke out he entered the army as colonel of the 16th New York, and was present at Bull Run, the defenses of Alexandria, siege of Corinth, and the battle of Corinth (Oct. 3-4, 1862). From 1862 to 1865 he commanded various districts, and in the last-named year was brevetted major-general of volunteers. He has published several works on theological subjects.

DAVIESS, JOSEPH HAMILTON, lawyer, born in Bedford, county, Va., March 4, 1774, killed in the battle of Tippecanoe, Nov. 7, 1811. He studied for the legal profession, and attained considerable fame as lawyer and patriot. He became United States attorney for Kentucky, and his most notable

act in that capacity was the bringing of charges against Aaron Burr for "levying war against a nation with which the United States was at peace." Witnesses against Burr failed to appear, and thus the charges were not sustained. In 1811 he fought the Indians under Gen. William H. Harrison, and was killed in battle. Several counties have been named for him.

DAVIS, ANDREW JACKSON, spiritualist, born in Orange county, N. Y., Aug. 11, 1826. In his youth he lived in great poverty, and obtained very little education; but he developed great clairvoyant powers, and is reported to have frequently fallen into trances in which he asserted he conversed with spiritual beings, and received instruction concerning the future state. While in a trance he dictated to Rev. William Fishbough his first book on *The Principles of Nature*. He has lectured and written many books in the interests of spiritualism. The ideas advanced by him are startling, and are concerning things incapable of verification.

DAVIS, CHARLES HENRY, naval officer, born in Boston, Mass., Jan. 16, 1807, died in Washington, D. C., Feb. 18, 1877. In 1823 he entered the navy, served in the Pacific, and was ordered to the Mediterranean squadron. He subsequently was engaged in coast duty (1842-56). While surveying in the vicinity of Nantucket he discovered several small shoals in the track of ocean steamers sailing between Europe and New York, and some hitherto unexplained accidents seemed to be accounted for. In 1861 he became a member of a board to inquire into the condition of Southern coasts, harbors, and defenses. The investigations resulted in a decision to send an expedition against Port Royal. He was made flag-officer of the Mississippi squadron, and joining Admiral Farragut, engaged in the Vicksburg operations and an expedition up to Yazoo River. In 1863 he was made rear-admiral, and from 1867 to 1869 was commander of the South Atlantic squadron. When he returned he was appointed commander of the United States navy-yard at Norfolk. Commodore Davis was a member of several scientific societies; he was also a writer on mathematical, astronomical and geodesic subjects.

DAVIS, DAVID, jurist, born in Cecil county, Md., March 9, 1815, died in Bloomington, Ill., June 26, 1886. He graduated from Kenyon College, O., studied law in Massachusetts and at New Haven, and settled in Bloomington, Ill. He sat in the legislature in 1844, and was three times elected judge of the eighth judicial circuit of the State, but resigned his position in 1862. President Lincoln, whose intimate friend he was, appointed him as a justice of the United States Supreme Court, and he was executor of Lincoln's estate. In 1872 he was nominated as candidate for the Presidency by the Labor Reform party. He left the supreme bench in 1877 to take his place in the United States Senate, having been elected to succeed John A. Logan. At the death of President Garfield he was chosen President of the Senate; in 1883 he resigned his seat. Judge Davis was an Independent, but usually voted in Congress with the Democrats.

DAVIS, EDWIN HAMILTON, physician and archaeologist, born in Ross county, O., Jan. 22, 1811, died in New York city, May 15, 1888. He was educated for the medical profession, and became professor of materia medica and therapeutics in New York College. He is best known by his interest in American antiquities, his exploration of Indian mounds and his collections of mound relics. He wrote *Ancient Monuments of the Mississippi Valley*, which was the first volume published by the Smithsonian Institution.

DAVIS, GARRET (1801-72), American lawyer and statesman, born at Mount Sterling, Ky., Sept. 10, 1801, received a classical education, and was admitted to the bar in 1823. He was elected to the State legislature in 1833, was in 1839 member of the State constitutional convention, and in the same year was elected to Congress, serving till 1847. At the commencement of the civil war he exerted himself to prevent the secession of his native State, and was elected to the United States Senate to succeed John C. Breckinridge. He served in the Senate till his death, which occurred Sept. 22, 1872.

DAVIS, HENRY WINTER, statesman, born in Annapolis, Md., Aug. 16, 1817, died in Baltimore, Dec. 30, 1865. His father, a Protestant Episcopal clergyman, was president of St. John's College. Surrounded by and associating with slaves, the son's opinions were colored by what he early learned of the institution of slavery. He studied law, was admitted to the bar, gained a reputation as an orator, in 1854 was elected to Congress and served for three consecutive terms. On the dissolution of the Whig party he became a radical Republican. In 1860, when Mr. Lincoln was nominated for President, the Vice-Presidency was offered to Mr. Davis, but he declined the honor, and later refused to accept any cabinet position. From 1863 to 1865 he was again in Congress and served as chairman of the committee on foreign affairs. He favored the enlistment of negroes, and the extension of the right of suffrage to them. A day was set apart by Congress, at his death, for the commemoration of his public services—an honor never before paid to an ex-congressman.

DAVIS, JEFFERSON, born in Christian (now Todd) county, Ky., June 3, 1808, died Dec. 6, 1889. He studied at Transylvania College, and in 1828 graduated at West Point, having been appointed to the Military Academy by President Monroe. His first military service was during the Black Hawk war, after which he resigned his commission and became a cotton planter near Vicksburg, Miss. In 1843 he entered politics, gained a reputation as a popular speaker, and two years later was sent to Congress, resigning his seat in 1848 to enter the Mexican war. With his regiment, the 1st Mississippi volunteers, he joined Gen. Taylor on the Rio Grande and fought at Monterey and Buena Vista, where Col. Davis was wounded. He declined a brigadier-generalship offered by President Polk, on the ground that a "military appointment by a federal executive was unconstitutional." From 1847 to 1851 he was in the United States Senate, where he held the office of chairman of military affairs, and in debate was known as the champion of slavery and State rights. Resigning his seat in 1851 he canvassed the State for the office of governor, but was not elected, although he received a large vote.

In 1852 he assisted in the election of Franklin Pierce, and when the latter became President Mr. Davis was made Secretary of War, and he introduced various improvements—such as the use of the Minié ball, iron gun-carriages, etc. In 1857 he reentered the Senate, becoming the Democratic leader of the 36th Congress. Here he opposed the French spoliation bill, and the "popular sovereignty" doctrine, but favored the passage of the Kansas conference bill. In 1860 he received several votes for Presidential nomination at the Democratic national convention, but his friends said he did not care for the honor. In a speech in 1860, shortly before leaving Congress, he discriminated between Independence, which had been dearly bought, and the Union, which had cost "little time, little money, and no blood." Appointed on

the Senate committee to examine into the condition of the country, he reluctantly consented to serve, and made an address, in which he affirmed his willingness to do anything to avert the impending struggle.

When Mississippi seceded from the Union Mr. Davis resigned his seat, and the following month was appointed commander-in-chief of the Southern army. On Feb. 18, 1861, he was elected president of the Confederate States. He formed his cabinet, and in his first message to the provisional Confederate congress commended the attack on Fort Sumter and characterized President Lincoln's action in calling for volunteers as unconstitutional and absurd, saying: "All we ask is to be let alone." In April, 1861, Mr. Davis issued a proclamation inviting applications for letters of marque and reprisal. Two vessels thus commissioned were captured, their crews tried for piracy and sentenced to death, but an exchange of prisoners was finally agreed upon.

On Feb. 22, 1862, Mr. Davis was reelected president for a term of six years. When President Lincoln issued the emancipation proclamation, which went into effect Jan. 1, 1863, Mr. Davis, in a retaliatory message, declared Gen. Butler, then in command of New Orleans, a felon and deserving of death, should he fall into Confederate hands; his officers were also denounced. In the message to the Southern congress that year Mr. Davis took a sanguine view of the condition of affairs, but there were defeats at Vicksburg and Gettysburg; coin was scarce, taxation was excessive, the conscription law gave offense, and the army food-supply was inadequate. Trouble arose in the cabinet, the secretary of the treasury resigned, and financial ruin threatened the country.

The year 1864 opened favorably for the Southern army, but by the middle of July the tide had turned. When Atlanta fell, Mr. Davis visited Georgia and tried to raise the spirits of the people, but he was not very successful. The Southern peace party was gaining in numbers, and Mr. Davis sent three commissioners to treat for peace with the United States. The meeting took place on a steamer in Hampton Roads, but no good resulted. On the return and report of the commissioners meetings were held and attempts made to revive popular enthusiasm; but Sherman had gained the sea, Grant was drawing his lines closer about Richmond, and Mr. Lincoln was reelected President. The Confederate congress began to grow uneasy and to show lack of confidence in the administration, and the secretary of war resigned his portfolio.

Mr. Davis's last message was dated March 13, 1865, and in it he confesses the gravity of the situation, yet asserts that there are ample means for bringing things to a successful termination. Twenty days later he left Richmond, and on April 9, 1865, Lee surrendered to Grant. Mr. Davis went to Danville, then to Greensborough, N. C., where he conferred with Gens. Johnston and Beauregard; to Charlotte, and at Irwinsville, Georgia, on May 10, he was captured by a company of Union soldiers under Lieut.-Col. Pritchard. He was taken to Fortress Monroe and confined for two years, while the authorities at Washington were deciding what should be done with him. He was indicted for treason in 1866, but it was difficult to come to an agreement as to the time and place of his trial. On May 13, 1867, Mr. Davis was brought into court at Richmond and admitted to bail. He was never brought to trial, but was included in the general amnesty declared in December, 1868.

After regaining his freedom Mr. Davis was enthusiastically received in the South. In a speech

made in the summer of 1871, he declared himself still in favor of State rights, and affirmed that he did not "accept the situation." When the bill to remove all political disabilities from those who had taken part in the Southern cause came before the House of Representatives in 1876, James G. Blaine, in an amendment speech, proposed that Mr. Jefferson Davis should alone be excepted, saying that he was "the author of the gigantic murders and crimes at Andersonville." To this charge Senator Benjamin H. Hill, of Georgia, replied with a defense of Jefferson Davis. In 1881 Mr. Davis published in two volumes *The Rise and Fall of the Confederate Government*.

DAVIS, JEFFERSON C., soldier, born in Clark county, Ill., March 2, 1828, died in Chicago, Ill., Nov. 30, 1879. He served in the Mexican war, was one of the defenders of Fort Sumter, served in Missouri, was at the battle of Pea Ridge, siege of Corinth, fight at Stone River; commanded the 14th corps in Sherman's army in Georgia; was brevetted major-general, and after the war was put in charge of the United States troops in Alaska. In 1873 he was at the head of the troops sent to subdue the Modoc Indians. In a quarrel with General William Nelson, at Louisville, Ky., Gen. Davis shot and killed him, Sept. 29, 1862. He was arrested, but after a time was liberated, and the case was never brought to trial.

DAVIS, JOHN, a farmer and journalist, born in Sangamon county, Ill., Aug. 9, 1826. He was educated at the Springfield, Ill., Academy and the Illinois College at Jacksonville, Ill. He removed to Kansas in 1872, and engaged in farming and conducted a newspaper at Junction City. In politics he adhered to the principles of the Farmers' Alliance, and was an active member of various farmers' political organizations, and of the Knights of Labor; was president of the first State farmers' convention held in Kansas. In 1890 he was elected a Representative from the 5th Congressional District of Kansas to the 52d Congress.

DAVIS, JOHN, statesman, born in Northborough Mass., Jan. 13, 1787, died in Worcester, Mass., April 19, 1854. He graduated at Yale, studied law and began to practice in Worcester. In 1824 he was elected to Congress, where he opposed Henry Clay's tariff bill. He was elected governor of Massachusetts in 1834, and afterwards was sent to the United States Senate; when he was again, in 1841, elected governor. From one of his protection speeches originated the epithet "Ten-Cent Jimmie," which afterwards clung to James Buchanan; Mr. Davis claiming that Mr. Buchanan would like to have the wages of American workmen reduced to ten cents a day. From 1845 to 1853 he served in the United States Senate and then declined a reelection. Mr. Davis, when in Congress, opposed the Mexican war; advocated the exclusion of slavery from the Territories, and for his uprightness was frequently called "Honest John Davis."

DAVIS, JOHN CHANDLER BANCROFT, American jurist and diplomatist, born at Worcester, Mass., Dec. 29, 1822, graduated at Harvard College in 1840, and became a lawyer. In 1849 he went to London as secretary of legation, where he remained until 1852. On his return he settled to the practice of law in New York, and in 1860 was elected to the State legislature. Appointed Assistant Secretary of State at the commencement of President Grant's administration, he became American secretary in the joint commission which concluded the Treaty of Washington in the spring of 1871; prepared the American case for submission to the tribunal of arbitration for the settlement of the Alabama claims; went to Geneva as the agent of the United

States at the meeting of the tribunal, and on his return in 1873 resumed the position of Assistant Secretary of State. He served as United States minister to Germany from 1874 to 1877, and on his return was appointed a judge of the court of claims. He has published several law-books, was American correspondent of the London "Times" from 1854 to 1861, and has contributed to "Fraser's Magazine" and the "Edinburgh Review."

DAVIS, SIR JOHN FRANCIS, K. C. B., born in London in 1795, died Nov. 13, 1890. He was long a resident in China as chief superintendent of Canton, and afterwards as governor and commander-in-chief of the colony of Hong-Kong; was one of the best and most trustworthy authorities on China and the Chinese. He was created a baronet in 1845. His *China During the War and Since the Peace*, appeared in 1852, and was followed in 1857 by his *China: a General Description of that Empire*.

DAVIS, NATHAN SMITH, author and physician, born in Greene, Chenango county, N. Y., Jan. 9, 1817. He received his medical education in Fairfield, N. Y., resided in Binghamton, and in New York city, and then went to Chicago to accept the professorship of physiology and pathology in Rush medical school. He was one of the founders of the Northwestern University; the Washingtonian Home for Inebriates, and the Chicago Academy of Sciences. While in New York he was editor of the "Annalist," and in Chicago he conducted successively the "Medical Examiner," "Northwestern Journal" and "Journal of the American Medical Association." In 1886 he became professor of the principles and practice of medicine in Chicago medical college, and is also dean of the faculty. He has held many offices connected with scientific or educational institutions, and among his numerous writings are the following: *Essay on the Philosophy of Medicine; Remedial Value and Proper Use of Alcoholic Drinks; History of Medical Education; and Clinical Lectures*.

DAVIS, NOAH, jurist, born in Haverhill, N. H., Sept. 10, 1818. He graduated from the Lima seminary, and practiced law in Gaines and in Buffalo, and in 1844 he entered into partnership with Sanford E. Church, at Albion. From 1857 to 1868 he was a justice of the New York supreme court, and in the latter year he was sent by the Republican party to Congress. In 1870 he accepted President Grant's appointment as United States attorney for the southern district of New York, and in 1872 became justice of the supreme court in the same district. The William M. Tweed trial, and the trial of Edward Stokes for the murder of Fisk, were celebrated cases which came before him. In 1887 he was retired from office and resumed his practice.

DAVIS, REBECCA HARDING, born in Washington, Pa., June 24, 1831; is a clever magazine writer, the wife of L. Clark Davis, a journalist. Her early days were spent in West Virginia, and her first notable story was called *Life in the Iron Mills* and appeared in the "Atlantic Monthly" in 1861. After her marriage she removed to Philadelphia, Pa., and in 1869 she was given a place on the editorial staff of the "New York Tribune."

DAVIT, in ship-building, a piece of timber projecting over the bow or front part of a vessel, and used as a crane for hoisting the anchor clear of her bow; two such pieces of timber or iron on her side or stern are used for hoisting or lowering the boats.

DAVITT, MICHAEL, founder of the Irish Land League, born near Straide, Ireland, in 1846. The family were evicted in 1851, and went to England. He lost his right arm in 1857 in a Lancashire cotton mill. In 1866 he became connected with the Fenian movement, and in 1870 he was sentenced

to fifteen years' penal servitude. Being released in 1877, he visited the United States, and afterwards began a crusade in Ireland, which resulted in the foundation of the Land League in 1879. In 1881, after a second visit to America, he was imprisoned for breaking his ticket-of-leave. In 1885 he published his *Leaves from a Prison Diary*. His popularity was attested by the national present of Land League Cottage, near Dublin, on his marriage in 1887. In 1889 he made a powerful and effective speech in his own defense before the Parnell Commission. In 1890 he began the publication of the "Labour World," acting as its editor; and since the division of the Irish Parliamentary party he has been in opposition to Mr. Parnell.

DAVOUST, LOUIS NICHOLAS, marshal of France, born in Burgundy in 1770, died in 1823. He was educated with Napoleon at Brienne, and distinguished himself in nearly all the wars of the period in the service of Napoleon, who conferred honors on him, making him marshal of the Empire, duke of Auerstadt, and prince of Eckmühl. He was governor of Poland, and governor-general of the Hanse towns, and held many other positions of honor, displaying firmness and courage, but he was rapacious and cruel.

DAWES, HENRY LAURENS, statesman, born in Cummington, Mass., Oct. 30, 1816. He graduated from Yale, taught school, and edited successively the "Greenfield Gazette," and "Adams Transcript." He became a member of the legal profession and was sent to the legislature. Since 1857 he has been a member of Congress, where he has been a diligent worker for the Indian cause; the author of several tariff bills; and has served on important committees. He inaugurated the measure for the completion of the Washington Monument; was delegated to investigate disturbances in the Indian Territory; was author of the severalty bill, the Sioux bill, and the bill which makes the Indians subject to and protected by United States criminal laws. At the suggestion of Prof. Cleveland Abbé, Senator Dawes introduced the "Weather Bulletin" measure in 1869; weather reports from all parts of the country are collected, and by comparisons the probabilities concerning coming storms can be approximately predicted.

DAWKINS, WILLIAM BOYD, F. R. S., English geologist, born near Welshpool, Montgomeryshire, Dec. 26, 1838, and educated at Rossall School and Jesus College, Oxford. He joined the Geological Survey in 1862, became curator of Manchester Museum in 1869, and professor of geology in Owens College, Manchester, in 1874. He presided over the anthropological section at the Southampton meeting of the British Association in 1882, and in the same year was employed by the Channel Tunnel committee to make a special survey of both coasts. Professor Dawkins, as a member of the Royal and other learned societies, has contributed numerous papers to issues relating especially to fossil mammalia. His books are *Cave-hunting Researches on the Evidences of Caves Respecting the Early Inhabitants of Europe* (1874), and *Early Man in Britain and His Place in the Tertiary Period* (1880), the latter a work of great interest.

DAWSON, a town of Georgia, county-seat of Terrell county, about twenty-five miles northwest of Albany. It contains a manufactory of railroad cars, and is the seat of the South Georgia Male Institute.

DAWSON, SIR JOHN WILLIAM, a Canadian geologist, born in Pictou, Nova Scotia, Oct. 13, 1820. He was educated at Pictou College and Edinburgh University, and in 1842 was with Sir Charles Lyell in his scientific expedition in Nova Scotia, when he

made discoveries in paleontology. He was appointed superintendent of education in Nova Scotia in 1850, and principal of M'Gill College, in 1855. He established the M'Gill normal school, and a school for civil engineering, which he afterwards incorporated as a department of the college. Dr. Dawson is a member and an officer in many scientific societies, and he was knighted in 1885. He has discovered and described a number of fossils of which the most important is named *Eozoon canadense* (see *Britannica*, Vol. IX, p. 384). He opposes the extreme Darwinian theory, and contends that the discoveries of science are in harmony with Revelation. Dr. Dawson has written numerous scientific papers.

DAY, HORACE HOLLISTER, born in Massachusetts, 1813, died in 1878. A man of large views, generous impulses, and most active business habits; he acquired a large fortune, most of which he lost in speculation in the manufacture of India rubber, and in various important projects, that somehow were taken out of his hands. He was an inventor of great skill, and an unflinching champion of the working classes. At the time of his death, which occurred suddenly, he was engaged in large business operations near Montreal, Canada, which promised to be very successful. He was a powerful speaker and writer, devoting much of his time to the labor question.

DAY, JEREMIAH, educator, son of Rev. Jeremiah Day, born in New Preston, Conn., Aug. 3, 1773, died in New Haven, Aug. 22, 1867. He graduated with honors at Yale in 1795, then became tutor at Williams, and subsequently at Yale, where in 1803 he became professor of mathematics and natural philosophy, and in 1817 was elected president of the college. He was ordained to the ministry on the day of his inauguration. He held office until 1846, when he resigned. He was author of a work on algebra and plane trigonometry, and wrote *Mensuration of Superficies and Solids*; *Navigation and Surveying*; and *An Inquiry on the Self-Determining Power of the Will, or Contingent Volition*.

DAY, SIR JOHN CHARLES, an eminent English barrister and jurist, born in 1826. He joined the Middle Temple in 1845, was called to the bar in 1849, and became queen's counsel in 1872. In 1882 he was knighted by the queen, and appointed a judge of the queen's bench division of the high court of justice. He is more particularly known in the United States as having been chairman of the Belfast riots commission and a member of the Parnell Commission. He is editor of the *Common Law Procedure Acts*, and of *Roscoe's Nisi Prius*.

DAY, THOMAS, a political writer and poet, born in London, June 22, 1748, died in 1789. He studied law, but turned his attention to literature, and the American War of Independence, a cause with which he strongly sympathized, roused his energies. He is, however, most widely known as the author of *Sandford and Merton*, and of the *History of Little Jack*. His death in 1789 was caused by a fall from a horse.

DAYE, STEPHEN, the first printer in the English-American colonies, born in London, 1611, died in Cambridge, Mass., Dec. 22, 1668. When Harvard College was established, a wealthy Non-conformist minister shipped a printing-press to America; with it came Mr. Glover, the donor, and Mr. Daye. The former died on the voyage and Mr. Daye set up the press and printed "The Freeman's Oath." Later he printed a metrical version of the Psalms (1640), a *Catechism*, and *Body of Liberties*, containing the one hundred laws of the colony. Massachusetts granted him 300 acres of land for "being the first that sett upon printing."

DAY-LILY (*Hemerocallis*), a genus of plants of the order *Liliaceæ*, having a perianth with bell-shaped limb, and sub-cylindrical tube, and globose seeds with *testa*.

DAYS OF GRACE. The time at which a bill is actually *due*, or at *maturity*, is in general three days after the time expressed on the face of it. The additional days, which are generally allowed by the custom of merchants, are called days of grace. If the third day of grace should fall on Sunday, the bill is payable the day before.

DAYSMAN, a name formerly given in England (and still in use in some of the northern countries), to an arbitrator, umpire, or elected judge. It has its origin in the judicial language of the Middle Ages, when the word *day* was specially applied to the day appointed for hearing a cause, or for the meeting of an assembly. A daysman was thus a judge appointed to decide between parties at a judicial hearing. The word occurs in Scripture, where Job sorrowfully says, in reference to his relation to God: "Neither is there any daysman betwixt us, that might lay his hand upon us both" (Job ix, 33).

DAYTON, a mining town of Nevada, county-seat of Lyon county, situated on the Carson River, about twelve miles east of Virginia City. It is engaged in the mining of silver, and contains a number of quartz mills.

DAYTON, a city of Ohio, and county-seat of Montgomery (see *Britannica*, Vol. VI, p. 848). Dayton is an important railroad center, being the terminus of no less than eight railroads. The city is regularly laid out, with broad streets, 100 feet wide, crossing each other at right angles. Its manufactures include cotton and woolen goods, oil, flour, machinery, railroad cars, paper, stoves, hollow-ware, agricultural implements, furniture, carriages, etc. Dayton supports an admirable system of public schools, and has also a high school, two Catholic schools, and several high-grade preparatory schools for boys. It is also the seat of the Westfall Female Academy. Its public buildings are beautiful and imposing, the more noteworthy being the county court-house, jail, public markets, and the group of buildings which comprise the National Soldiers' Home. The court-house is an elegant structure, 127 feet in length and 62 in width, built of white marble, quarried in the vicinity. It cost \$170,000. The jail is a stone edifice, and cost \$400,000. An abundant water power, which contributes greatly to the prosperity of its manufacturing interests, is provided by a hydraulic canal, which brings the water of the Mad River through the city. Population of the city in 1880, 38,678; in 1890, 58,868.

DAYTON, a town of Washington, county-seat of Columbia county, about thirty miles northeast of Walla Walla, contains a variety of manufactures, and is the trade-center of a rich agricultural district.

DAYTON, AMOS COOPER, born in Plainfield, N. J., Sept. 4, 1813, died in Perry, Ga., June 11, 1865. He graduated from the medical college of New York, but his health being poor he went South, joined himself to a church of Presbyterians, but, becoming dissatisfied, united with a Baptist church and afterwards was the author of controversial writings; his religious novel, *Theodosia*, is an example. He was associated editor of the "Tennessee Baptist," and he wrote another novel, *The Infidel's Daughter*.

DAYTON, WILLIAM LEWIS, an American statesman, born at Baskingridge, N. J., Feb. 14, 1807, died in Paris, Dec. 1, 1864. He graduated at Princeton College in 1825, and was admitted to the bar in 1830. He was elected to the State Senate in 1837, and in 1838 was made a justice of the State su-

preme court. He served in the United States Senate from 1842 to 1851, and as attorney-general of New Jersey from 1857 to 1861. In 1861 he was appointed by President Lincoln minister to France.

DAZA, HILARION, Bolivian statesman, born in Sucre, in 1840. He is partly of Indian blood, and his parents were of humble origin. At the age of eighteen he entered the army of liberals, and through a series of revolutions became popular and won the regard of Melgarejo. In 1871 he turned against his friend, and for his service in quieting the turbulent factions, President Morales, who had supplanted Melgarejo, promoted Daza and made him secretary of war. Morales died in 1872, and in a subsequent election Daza claimed to be elected, seized the government and was inaugurated May 4, 1876. His administration was popular, and as quiet as any previous one. In 1879 the war with Chili broke out. Daza left the government in the hands of his foreign minister while he marched with 4,000 Bolivian soldiers into Peru, and southward to Chili. His march was slow and timid, and when he had entered Chili, he left his army to its fate and hurried back to the capital. Before reaching here he heard there had been a revolution in La Paz, and Gen. Narciso Campero had been chosen as his successor. Daza had lost favor with the people, and his soldiers had threatened to shoot him as a coward. He made no attempt to regain his authority, and went abroad.

D'AZARA, DON FELIX, an eminent naturalist, born in Aragon in 1746, died in 1811. He published an important work, entitled *Notes on the Natural History of Paraguay and La Plata*.

DEACONESS, an order of women in the early church whose duties closely resembled those of the deacons (see *Britannica*, Vol. VII, p. 1). In 1836 it was revived, with modifications, by pastor Fliedner, at Kaiserwerth, Germany, and since that time the order, with the name, has gradually made its way into England and the United States, in the Protestant Episcopal and Methodist Episcopal Churches. A full account of the modern deaconess movement, which is modeled on that of Pastor Fliedner, will be found in *Britannica*, Vol. IX, p. 307; Vol. XIII, p. 825.

DEAD: in seafaring language, a term very frequently employed as a part of a designation or phrase, having in general a meaning somewhat opposite to that of *active*, *effective*, or *real*. The chief of such phrases are the following: *dead eyes* are circular, flattish wooden blocks, which, with other apparatus, form a purchase or tackle for extending the standing rigging and other purposes. *Dead flat* is the name for one of the midship-timbers. *Dead lights* are strong wooden shutters to close cabin windows. *Dead rising* is a name for that part of a ship's bottom where the floor-timbers terminate, and the lower futtocks or foot-hooks begin. *Dead ropes* are such as do not run in blocks. *Dead wood* consists of blocks of timber laid upon the keel, especially fore and aft; it is piled up, and fastened to the keel with iron spike-nails; the chief object is to give solidity and strength to the ends of the ship.

DEAD-FREIGHT, the compensation paid by the merchant who freights a whole ship to the shipmaster for the space which is not occupied. It is rather a claim for damages for the loss of freight, and consequently, apart from positive stipulation. The shipmaster has no lien for dead freight over the goods on board. His claim must, consequently, be made effectual by a personal action against the freighter.

DEAD, JUDGMENT OF THE (in ancient Egypt). The papyrus rolls found with Egyptian mumm-

mies contain a description of the fate of the departed subsequent to their death. Usually, even the most unfinished specimens bear the most important scene, representing Ma-t, the Goddess of Truth and Justice, leading the dead into the judgment hall of the nether world, before Osiris, the judge of the dead (see Britannica, Vol. VII, p. 718). The throne of the god faces the entrance. A large balance stands in the center of the hall, containing in one scale an ostrich feather, the symbol of truth, and in the other a vessel formed like a human heart. The accuser is a female hippopotamus. The deceased must clear himself from forty-two sins, each of which is presided over by one of the forty-two gods sitting above (see Britannica, Vol. II, p. 148). The balance is attended to by the gods Horus and Anubis, and the result, which is naturally assumed to be favorable, is written down by the justifier, the ibis-headed Thoth-Hermes.

DEAD-LETTER OFFICE, a postal department for the reception of unclaimed letters, after the office to which they were originally directed has held them for a specified time. In the United States all letters, not called for within a month, are sent to this department, after which they are destroyed unless the writer's name and address can be determined. In that event they are returned to him. During the fiscal year ending June 30, 1890, there were received at the dead-letter office 6,694,962 pieces of dead mail matter. Of this number nearly 5,500,000 contained nothing of value. About 2,350,000 contained no signature which would enable the department to return them to the writers; 319,000 of the letters opened contained valuable inclosures, including about \$1,400,000 in negotiable paper and \$40,000 in money; 11,000 letters containing lottery tickets, and 200,000 containing pictures and papers unfit for circulation, were destroyed. About 200,000 pieces were returned unopened to the owners; and 1,500,000 were restored after they had been opened, the information necessary to restoration having been ascertained from the contents. Of 89,000 parcels of merchandise unclaimed for two years, and sold at auction, the proceeds were \$2,766. There were distributed among the inmates of hospitals, asylums, and other charitable institutions, 17,673 magazines, illustrated papers, picture cards, and valentines which could not be traced to their owners.

DEAD NETTLE (*Lamium*), a genus of plants of the natural order *Labiatae*, having a five-toothed calyx and a two-lipped corolla, the upper lip arched and the lower lip trifid. The name is given for its resemblance to the true or stinging nettle.

DEAD'S PART: in Scotland, the portion of the movable estate of the deceased which remains over, after satisfying the legal claims of his wife and children, should he have left such. It is so called because it is with reference to this portion of his possessions alone that he possessed the power of disposal by will or testament.

DEAF-MUTES, EDUCATION OF THE. See **DEAF AND DUMB**, Britannica, Vol. VII, pp. 3-12.

DEADWOOD, a city of South Dakota, county-seat of Lawrence county, situated at the junction of Whitewood and Deadwood Gulches, about 250 miles north of Cheyenne, Wyo. It contains a variety of manufactories, and is the mining and trade-center of the Black Hills.

DEAL, a quaint old village and summer watering place in Monmouth county, N. J., five miles from Long Branch. It has a hotel, an academy and several boarding houses.

DEALFISH (*Trachypterus*), a genus of the ribbon-fish family. See Britannica, Vol. XX, p. 531.

DEALS, the trade-name in England for fir-boards exceeding six feet in length and seven inches in width. They are also occasionally called "planks," though this term is now somewhat loosely applied. Pieces of smaller dimensions are called "battens." Deals are usually 3 inches thick, and when sawed into thinner pieces, these are called "boards." When deals are sawed into twelve or more thin planks, they are called "leaves."

DEAN, Amos, lawyer, born in Barnard, Vt., Feb. 16, 1803, died Jan. 26, 1868. A graduate of Union and a law student, he was admitted to the bar and acquired a high reputation in the legal profession. He was one of the leaders in founding the Young Men's Association at Albany; was a professor in the law school, and professor of medical jurisprudence in the Albany medical school. He delivered lectures and wrote books on legal and medical subjects.

DEAN FOREST, a picturesque hilly tract of 22,500 acres between the Severn and the Wye, in the western part of Gloucestershire, England. It is mainly crown property, and about half of it, separated within an inclosure, is used for the growth of timber for the navy. It contains oak, beech, and other trees, and orchards from which is procured the famous Styre apple-cider; also coal and iron mines, and stone-quarries for building, grinding, and making troughs and rollers. It is divided into six walks. The inhabitants are mostly miners. Many ancient privileges were enjoyed by the early inhabitants, acquired by birth and by working a year and a day in this forest. These privileges were exemption from rates and taxes, free pasturage, right of mining—a sixth of the produce being due to the sovereign—and access to the woods for timber for their works. See **COAL-FIELDS**, Britannica, Vol. VI; and **FORESTS**, Vol. IX.

DEAN OF FACULTY, the president of the incorporation of advocates in Scotland, who, like the other officers of the faculty, is elected annually. He is usually reelected till promoted to the bench, when he has no further share in the deliberations, but is, however, still a member of the body.

DEAN, WILLIAM, a Baptist missionary, born in Eaton, N. Y., June 21, 1807. He graduated at Hamilton Literary and Theological Institution (now Colgate University), and the same year, 1833, left Boston on a ship bound for Siam. He settled as a missionary in Hong-Kong, remaining there till 1867 with but one year's exception, 1845, when he visited the United States. From 1867 to 1884 he resided in Bangkok, and then returned to America. He made several translations into Chinese, among them: *The New Testament; Revision of the Pentateuch; Commentary on Matthew; Commentary on Genesis; Commentary on Mark; and Commentary on Exodus.*

DEANE, CHARLES, born in Biddeford, Me., Nov. 10, 1813, educated at Thornton academy, Saco, Me., and became a merchant in Boston. Since 1864 he has resided in Cambridge, having retired from business. Besides being the author of a number of valuable historical papers he has made a collection of rare books relative to early New England history. He is a member of various historical societies, and in 1856 the degree of LL.D. was conferred on him by Bowdoin College.

DEANE, JAMES, geologist, born in Colerain, Mass., Feb. 14, 1801, died in Greenfield, Mass., June 8, 1858. He studied law and medicine, but practiced the latter. Much of his life was given to geological research, and he was the discoverer of fossil foot-prints in the new red sandstone of the Connecticut Valley. An illustrated work containing the results of his geological labors has been issued.

since his death by the Smithsonian Institution. Mr. Deane was a contributor to scientific and medical journals.

DEANE, JAMES, Indian missionary, born in Groton, Conn., Aug. 20, 1748, died in Westmoreland, Oneida county, N. Y., Sept. 10, 1823. He graduated at Dartmouth in 1773, was missionary to the Canadian Indians from 1773 to 1774, and during the Revolutionary war was commissioned major and served as an Indian agent and interpreter at Fort Stanwix. At the close of the war the Indians gave him a tract of land near Rome, Oneida county, which he exchanged for a tract in Westmoreland, to which he removed in 1786. He was for some time judge in Oneida county.

DEANE, JOHN (c. 1679-1761), a seaman of England in command of a vessel wrecked off the coast of Maine in 1710. After twenty-one days of suffering from hunger and exposure the party were finally rescued. Deane became a naval officer under Peter the Great, and was for a long time British consul at Ostend.

DEANE, SILAS, diplomatist, born in Groton, Conn., Dec. 24, 1734, died in Deal, England, August 23, 1789. He graduated at Yale, was a delegate from his State to the Continental Congress of 1774-76, and in the last year was ordered to France with Dr. Franklin and Arthur Lee, on a financial and political mission. Through his influence La Fayette, DeKalb and other Frenchmen were induced to serve in the American cause. Congress recalled him in 1777, as suspicions had arisen that he had persuaded them by profuse promises and had made extravagant contracts. Being obliged by Congress to account for his operations he returned to France for papers to substantiate his declarations, and found the government embittered against him by the publication of certain private dispatches. He died among strangers and poverty, and an investigation, made in 1842, showed that he had been wronged by his country and his political enemies. A large sum of money shown to be due him by the government was paid at that time to his heirs.

DEARBORN, HENRY ALEXANDER SCAMMELL, son of General Henry Dearborn, born in Exeter, N. H., in 1783, died in Portland, Me., in 1851. He graduated at William and Mary College and studied law. In 1812 he succeeded his father as collector of the port of Boston, retaining this office for seventeen years. He was in both houses of the State legislature, and served in Congress from 1831 to 1833. As acting adjutant-general of Massachusetts during the Dorr rebellion, he loaned the State arms to the State of Rhode Island, which act occasioned his removal. From 1847 to 1851 he was mayor of Roxbury. He was one of the promoters of the Western Railroad of Massachusetts, and advocated the construction of the Hoosac Tunnel.

DEARBORN, HENRY, GENERAL, born in Hampton, N. H., Feb. 23, 1751, died in Roxbury, Mass., June 6, 1829. He studied and practiced medicine at Nottingham Square (1772), and during his leisure made a study of military tactics, making his knowledge available during the Revolutionary war. The day following the battle of Lexington, with 60 minute-men he marched to Cambridge and covered the American retreat at Bunker Hill; he accompanied Arnold's expedition to Canada, where he was taken prisoner in the attack on Quebec; he fought at the battles of Stillwater, Saratoga, Monmouth and Newtown, and at the siege of Yorktown. After the war he was appointed U. S. marshal for Maine, twice elected to Congress, was Secretary of War under President Jefferson, collector of the

port of Boston, and in 1812 was advanced to major-general, U. S. A., assigned to the northern department, and took part in the war, capturing York (now Toronto) and Ft. George. He was suspected of political intrigues and recalled, but was at once appointed commander of New York city, and in 1822 President Monroe sent him as minister to Portugal.

DE ARMOND, DAVID A., a lawyer, born in Blair county, Pa., March 13, 1844; educated in the common schools and at Dickinson Seminary, Williamsport, Pa., and was a teacher for several years. In politics he is a Democrat, and served as State Senator, circuit judge, and Supreme Court commissioner in Missouri. In 1890 he was elected a Representative from the Twelfth Congressional district of Missouri to the 52d Congress.

DEATH, the cessation of life in animals or plants, when the vital functions cease to perform their work. In a human being death may result from natural decay as in old age, or from failure of the heart, the lungs or the brain. See Britannica, Vol. XVII, p. 686.

DEATH'S-HEAD MOTH, a species of Hawk-moth, or lepidopterous insect of the family *Sphinxidae*, not uncommon in some parts of England and of the Continent of Europe, and very widely distributed over the world (see Britannica, Vol. IV, p. 596). With the wings extended, it measures nearly five inches from tip to tip; the color is dark, the yellow body bearing black markings and the thorax pale ones, somewhat resembling a skull from which its name is derived; the upper wings are mottled with brown, black and yellow. The caterpillar is greenish-yellow, the back speckled with black, with transverse lines partly blue and partly white. It is frequently found feeding on the leaves of the potato in countries where that plant is cultivated. According to popular belief this insect is most frequently seen in times of great mortality.

DEATH VALLEY, a gloomy and desolate district of California, lying in the southeastern part of Inyo county. It is so called because a party of emigrants, attempting to cross the valley in 1849, perished of hunger and thirst. Though near the highest peaks of the Sierra Nevada Mountains, this arid region is everywhere from 150 to 250 feet below the level of the sea.

DEATH-WATCH, a ticking or rapping noise produced by various insects, particularly *Anobium*, in houses. From the fact that the sound is, in consequence of the prevailing quietude, oftenest heard during times of sickness and anxiety, it has been regarded as indicative of approaching death. See Britannica, Vol. VI, p. 132.

DEBATABLE LAND, a tract of land, mainly level and of a moory character, on the western border of England and Scotland, between the Esk and Stark. Its name has come from the fact that it was once claimed by both kingdoms, until in 1542 "it was divided by royal commissions appointed by the two crowns," who separated the disputed land by a line drawn between the two rivers from east to west, assigning the upper half to Scotland and the more easterly part to England. The Armstrongs and Grahams, troublesome clans of freebooters, then inhabiting this region, were at the commencement of the 17th century transported to Ireland, and forbidden to return upon pain of death.

DEBATE, an exchange of opinions, differing from conversation in that the speakers succeed each other according to certain regulations, and that the subject is treated formally, and usually with a view to arriving at some practical conclu-

sion. The term is generally applied to the discussions of political representative bodies.

DEBLAI: in fortification, any hollow space or excavation in the ground made during the construction of fortifications or siege works. The cavity itself is the *deblai*, while the earth taken from it is the *remblai*.

DEBORAH ("bee"), a Hebrew prophetess, the wife of Lapidoth, who lived in the time of the Judges. She dwelt in Mount Ephraim, and uttered her judicial oracles from her tent under the palm-tree between Bethel and Ramah. Her narrative may be found in the Book of Judges.

DE BOW, JAMES DUNWOODY BROWNSON, statistician, born in Charleston, S. C., July 10, 1820, died in Elizabeth, N. J., Feb. 27, 1867. He graduated at Charleston College in 1843, and the following year was admitted to the bar, but subsequently devoted himself to statistical science and literature. Removing to New Orleans in 1845, he became professor of political economy and commercial statistics in the University of Louisiana, which position he held until 1850, when he assumed charge of the census bureau of the State. He was superintendent of the census in 1853. Mr. De Bow was author of an *Encyclopædia of the Trade and Commerce of the United States* (1853), and compiled *Statistical View of the United States* (1854).

DEBRUISED, a term in English heraldry, used to indicate the grievous restraint of an animal, and its being debarred of its natural freedom by having any of the ordinaries laid over it.

DEBT, that which one person owes to another, or the duty which, as responsible beings, all owe toward God. Life is figuratively spoken of as a loan, and the act of dying is called "paying the debt of Nature." The term debt is, however, more commonly limited to money legally due, and exigible by process of law. To speak in legal phraseology, debt may originate either in agreement or by operation of law, or as a consequence of injury, though in the latter case it more commonly assumes the form of a claim for damages. Liquidated debt is where the exact amount has been ascertained; contingent debt is where the liability depends on the occurrence of an event which may or may not happen; future debt is where the liability is existing, but the time for payment has not yet arrived. This may sometimes be secured by certain legal processes; but there is in general no method of affixing a liability upon property before the debt becomes payable, except in the case of bankruptcy, when a future or contingent debt may be proved against the estate.

DEBTS, NATIONAL. See **NATIONAL DEBT**, *Britannica*, Vol. XVII, pp. 243-48. The national debts of individual countries will be found under their respective headings, in these Additions and Revisions.

DEBTS, RECOVERY OF: Courts of law, besides serving to decide cases in which questions of fact or law are really in dispute, serve an important purpose in facilitating the recovery of debts against which the debtor has no defense other than that he is unable or unwilling to pay. The great majority of the cases in which the services of courts are required are of this kind. The statistics of the English county courts give a striking illustration of this. Of the number of cases entered for judgment it appears that about ninety-five per cent. end in favor of the plaintiff; whereas, had there been any question really in dispute, the defendants, with the advantages they possess, might have been expected to be at least as often right as the plaintiffs.

DEBUT, a French word which has been adopted into the English language, and signifies generally

a beginning or entrance; especially applied to the first appearance of an actor or actress on the stage, or to a first appearance in a particular theater.

DECA (Gr., signifying *ten*), often occurring in composition, as in *decapolis*, a union of ten cities; *decamètre*, a measure of ten meters; *decalogue*, the Ten Commandments, etc. *Decade*, a group of ten, is formed from *deca*, which, as applied to time, was used in the calendar of the French Republic to designate their week of ten days, each month of thirty days being divided into three decades. The days of each decade were named *primidi*, *duodi*, *tridi*, *quartidi*, *quintidi*, *sextidi*, *septidi*, *octidi*, *nonidi*, *decadi*. The tenth was devoted to the practice of and exhortation to virtue, no definite religion being acknowledged by the Republic. Thirty-six decades, consisting of 360 days, constituted the republican year, the remaining five days, or six in leap year, being devoted as holidays at the end of the year without being numbered.

DECACHORD, a sort of guitar, similar to the common instrument, only larger in the body and with a broader finger-board, having ten strings. The lower strings have no frets, being simply used as open notes.

DECADENCE, a term referring to those works of art produced after the school to which they belong has passed the period of its highest excellence. In the days of Pericles, art in all its branches attained its greatest perfection in Greece, and the many exquisite works produced at a later date belong, more or less conspicuously, to the decadence of Greek art. Art and literature culminated in Rome in the days of Augustus, and obvious and rapid decadence followed. The school of the *Renaissance* again came into perfection with Raphael; even the Caracci belong to its decadence, and the decline continued through the *rococo* of Louis Quinze, till throughout Europe art became almost extinct, and in England it probably reached as low a point at the beginning of the reign of George IV as it ever reached in any civilized country.

DECAGON, a plane geometrical figure of ten sides. A regular decagon is one with equal sides.

DECAISNEA, a genus of plants of the natural order *Berberidaceæ*. There is but one species, found in the Himalaya Mountains, where it grows at an elevation of 7,000 feet, and is the only one of its natural order which is not a climber. From the root project several straight branches, like walking-sticks, bearing pinnate leaves two feet in length, which stand out horizontally. The green flowers, growing in racemes, are unisexual, and the yellow fruit, having a length of about four inches and a diameter of one inch, resembles a short cucumber and contains large black seeds. The soft, milky pulp is sweet and wholesome, and is eaten by the inhabitants of the region.

DECALCOMANIE, a process of transferring pictures, designs, etc., to various fabrics. A picture slightly covered with cement is pressed tightly against the surface to which it is to be transferred, with a roller or damp cloth, after which the paper may be removed and the picture will remain.

DECANDOLLE, ALPHONSE LOUIS PIERRE PYRAMUS, a Swiss botanist, son of Augustin Pyramus (see *Britannica*, Vol. VII, p. 18), born in 1806. In 1831, he became professor of botany in the Academy of Geneva, but resigned a few years later. He was elected president of the International Botanical Congress at London in 1866, and the following year of the congress at Paris. He has held important offices in several scientific societies, and published many valuable books on botany.

DECANDOLLE, ANNE CASIMIR PYRAMUS, a Swiss botanist, son of Alphonse L. P. DeCandolle, born in 1836. He assisted his father in editing some of his books, and wrote an important work on the arrangement and formation of leaves.

DECATUR, a village of Alabama, county-seat of Morgan county, situated at the northern terminus of the South and North Alabama Railroad. It is in the northern part of the State and on the Tennessee River. It has three railroads, an academy, churches, hotels, and lumber mills.

DECATUR, a small village of Georgia, the county-seat of DeKalb county. It is five miles northeast of Atlanta, and is the home of many people who do business in that city. It has a railroad, schools, churches, and a furniture factory.

DECATUR, a city of Illinois, and county-seat of Macon county (see Britannica, Vol. VII, p. 18). Decatur has seven lines of railway, a system of water works, a large woolen mill, three flouring mills, two breweries, a planing mill, and manufactories of iron, carriages, engines and boilers, farming implements, furniture, linseed oil, bagging, etc. It has an excellent system of public schools, a high school, a Roman Catholic academy, and a convent. Population in 1880, 9,547; in 1890, 16,841.

DECATUR, a village of Van Buren county, Mich., on the Michigan Central Railroad. It has a foundry, tannery, and manufactures lumber and flour.

DECATUR, a small village of Mississippi and the county-seat of Newton county.

DECATUR, a small village, the county-seat of Meigs county, Tenn., on the Tennessee River.

DECATUR, a village, the county-seat of Wise county, Tex., situated 65 miles northwest of Dallas. Flour is here manufactured.

DECATUR, STEPHEN, naval officer, born in Newport, R. I., in 1751, died in Frankford, near Philadelphia, Nov. 14, 1808. He fought in the war of the Revolution, commanding successively the *Royal Louis* and *Fair American*. In 1798 he commanded the *Delaware*; captured two French ships; was made commander of a fleet of thirteen vessels in 1800 on the Guadeloupe station. In the following year peace was proclaimed, and he returned to his business in Philadelphia.

DECATUR, STEPHEN, son of Captain Decatur, born in Sinnepuxent, Md., Jan. 5, 1779, died near Bladensburg, Md., March 22, 1820. His first voyages were made on board his father's ships. He became a midshipman in 1798, and shipped under Com. Barry on the frigate *United States*, on which he saw much service and earned a noble reputation. He served during the naval war with France, and when peace was declared and Congress reduced the navy to six ships and nine commanders, Stephen Decatur was one of the thirty-six lieutenants retained in the service. When trouble arose with Tripoli and Com. Richard Dale was hastily fitted out with a squadron and sent to bring the Tripolitans to terms, Lieutenant Decatur accompanied him as first-lieutenant of the *Essex*. His most conspicuous act while on this expedition was the burning of the *Philadelphia*. Decatur volunteered for the hazardous task. He entered the harbor of Tripoli, boarded the *Philadelphia*, set fire to her, and then escaped to the *Intrepid* through a rain of shot. "The most daring act of the age," was what Admiral Nelson said of the deed. For this exploit he was made captain. During the war of 1812 Commodore Decatur, commanding the *United States*, captured the British frigate *Macedonian*, and a gold medal was voted him by Congress for the victory. After this war Decatur and Bainbridge were sent with two squadrons to punish the Dey of Algiers, who had been

capturing American merchantmen. Com. Decatur captured the *Mashouda* and *Estedio*, Barbary warships, and made a treaty with Algiers whereby all Christian captives were to be released without ransom, and no more tribute was to be paid to Algiers. To Tunis and Tripoli somewhat similar terms were dictated, and all Europe rejoiced to see the power of the Barbary states broken. Com. Decatur's last public services were rendered as naval commissioner. Com. Barron took exceptions to certain remarks which Com. Decatur made about him. The latter refused to retract, but did all else in his power to restore friendliness, but Barron challenged Decatur. A duel was fought at Bladensburg, March 22, 1820, in which both were wounded, and Decatur died that night.

DECATURVILLE, the county-seat of Decatur county, Tenn. It is 50 miles east of Jackson, and has religious and educational institutions.

DECHAMPS, AUGUSTE ISIDORE VICTOR (1810-82), a Belgian cardinal. He distinguished himself as a pulpit orator, and in 1865 was consecrated bishop of Namur. In 1879 he became a cardinal priest. He wrote many books on religious subjects.

DECIDUOUS TREES, those trees which lose and renew their leaves every year. In cold and temperate countries the fall of leaves in autumn and the restoration of verdure to the woods in spring are among the most familiar phenomena of Nature. For deciduous ornamental trees, see Britannica, Vol. II, pp. 320-21.

DECIMATION, a Roman military punishment, rarely inflicted in the present day. When a considerable body of troops committed some grave military offense, which would be punishable with death if committed by an individual, the punishment was awarded to one-tenth of them by lot, instead of to the whole number, in order that the army might not be too much weakened.

DECIMI: in music, an interval of ten diatonic degrees, as from C to E, or third above the octave, as which it is always treated in harmony. There are but two cases in which it is treated differently from the third: first, in double counterpoint, where a necessary difference must be made, although the same harmonic rules apply; second, in thorough bass, where the figure 9 rises a degree to 10, instead of falling a degree to 8.

DECKER, SIR MATHEW, a political economist, born at Amsterdam toward the end of the 17th century, died in 1749. In 1702 he went to London, and the next year was naturalized as an English subject; having embarked in commerce, he attained much success. In 1716 he became baronet, three years after which he entered Parliament as member for Bishop's Castle.

DECLARATION, in place of an oath. Quakers, Moravians, and Separatists, who object to swearing on religious grounds, have been permitted, by several statutes, to substitute a simple *declaration* or *affirmation*, as it is called, for an oath.

DECLARATION, DYING: The rule that secondary or hearsay evidence is inadmissible, suffers an exception in the case of a declaration made by a person under the conviction of his impending death, and who does not survive the trial. Such declarations are of peculiar value for the ends of justice where the party emitting them dies of injuries which are the subject of the prosecution. In a case of murder, the dying declaration of the victim as to the circumstances of the crime is always admitted as evidence on the trial of the prisoner, provided it was deliberately emitted while the deceased retained his faculties, and that it is proved by credible witnesses. Digitized by Google

DECLENSION, a term in grammar applied to the system of modifications called *cases*, which in many languages nouns, pronouns, and adjectives undergo. How the words declension (Latin, *declinatio*, a declining or leaning away) and case (Latin *casus*, a fall) came to be applied to this kind of inflection, has never been fully understood. There are two methods of expressing the relation of one thing to other things, some languages using for this purpose separate words, called prepositions, while others merely change the termination of the word. Thus, in Latin, *reg* being the root or crude form of the word for "king," *regis* or *rex*, is the word in the nominative case signifying "a king," as subject or agent; *regis*, in the genitive case, "of a king," *regi*, in the dative, "to a king," etc.

DECLINATION NEEDLE. A magnetic needle, when suspended or made to rest on a point so that it can move in a horizontal plane, rests in a line connecting two fixed points of the horizon; to which position, when turned aside in any direction, it invariably returns after several oscillations. These two points at certain places on the globe are the north and south points of the horizon, although there is usually a slight deviation from these points. A magnetic meridian is the vertical plane passing through the points on the horizon indicated by the needle; and a similar plane, passing through the north and south points, is called the astronomical meridian of the place. See *Britannica*, Vol. XV, pp. 220, 238.

DECOLORIMETER, an instrument by which the power of portions of bone-black or animal charcoal to abstract coloring matter is ascertained.

DECOMPOSITION, a term in chemistry signifying the separation of more simple substances from a compound. Thus, the red oxide of mercury, when heated, resolves into mercury and oxygen, thus undergoing decomposition; and water under a current of voltaic electricity is decomposed into hydrogen and oxygen.

DECORAH, a city, the county-seat of Winneshiek county, Iowa, on the Upper Iowa River; is the seat of the Norwegian Luther College (Lutheran), and contains churches, banks, mills, and newspaper offices. Three Norwegian periodicals are published here.

DECORATION DAY, formerly called memorial day, is the day set apart in the United States for commemorating the services of the soldiers and sailors who lost their lives in the civil war. Orations and processions are made in their honor, and their graves visited and decorated. It is observed by North and South alike, and, in most of the States of the Union, on the same day—May 30th.

DECREPITATION, a term applied to the crackling sound heard when a substance like common salt is thrown into the fire. A series of minute explosions occurs, owing to the water between the plates of the crystalline particles becoming expanded by the heat, and ultimately bursting them.

DECRESCENDO: in music, the reverse of crescendo; namely, gradual diminishing of the sound. The execution of the decrescendo is very difficult, whether on one or more notes. Like the crescendo, it is also frequently combined with a slight ritardando, especially in descending passages.

DECRETALS, FALSE, a collection of Papal letters, canons, etc., chiefly forgeries, ascribed to Isidorus Mercator, and dating from the first half of the ninth century. See *Britannica*, Vol. V, p. 17.

DEDHAM, a manufacturing town of Massachusetts, southwest of Boston, the county-seat of Norfolk county, situated on the Charles River. It is a railroad center, and manufactures brooms, woolen

goods and pianos. It contains religious, charitable and educational institutions.

DE DONIS, THE STATUTE, a law passed in England A. D. 1285, the object of which was to prevent the alienation of property by one who held a limited interest therein. Similar statutes are now enforced in many of the United States.

DEED, a sealed instrument in writing, containing some transfer, bargain or contract. See *Britannica*, Vol. VII, p. 23.

DEEMS, CHARLES FORCE, D. D., LL. D., author, editor, and clergyman, born in Baltimore, Md., Dec. 4, 1820. Graduating at Dickinson College he entered the Methodist ministry, and left pastoral work to become agent in North Carolina for the American Bible Society, and subsequently professor of logic, rhetoric, and natural sciences in North Carolina University and Randolph-Macon College, Virginia. Returning to church work, he held positions of honor in the denomination, and was for a time president of Greensboro College. Since 1865 he has resided in New York city, where he established the Church of the Strangers, of which, at the present writing (1891) he is the pastor. He has been president of Rutgers Female College, and the American Institute of Christian Philosophy, has edited "Frank Leslie's Sunday Magazine," and has done much other literary work. In 1890 he collected many of his formerly published addresses and minor articles on various subjects into a volume called, *Chips and Chunks for Every Fireside*.

DEEP BOTTOM, a point on the James River, in Henrico county, Va., 12 miles below Richmond. It was a strategic point during the civil war, and important battles were fought in the vicinity in the year 1864.

DEEP RIVER, of North Carolina, rises in Guilford county, follows an easterly course and unites with Haw River at Haywood, to form the Cape Fear River. Deep River is about 130 miles long; coal is found in its banks in Chatham county.

DEEP River, a village of Connecticut, situated near the west bank of the Connecticut River, about 35 miles south of Hartford. The chief industry is the manufacturing of hardware.

DEEP RIVER COAL-BEDS, a tract of land containing about 40 square miles, lying along the Deep River valley in Chatham and Moore counties, N. C. The coal is of good quality, varying from bituminous to anthracite. Although the coal is abundant, and its location known for over a century, yet it has not been mined. In the same region good copper and iron ores are found.

DEEP-SEA DREDGING, a method of exploring the bottom of the ocean, and discovering the forms of life that inhabit great depths. Naturalists employ a dredge composed of a narrow rectangular frame, with two scraping edges, the ends of the frame being of round iron, and each supporting a forked iron arm, each fork being bent round the end piece of the frame at the corners, so as to turn upon it freely. The other end of each arm is furnished with a ring, to which the guided rope is attached. To the back of the frame a bag of strong, open meshes of twine is fastened, by means of holes drilled through the back part of the scrapers, close to the edge, and a plan is adopted to prevent the bag from turning over the mouth of the dredge during its descent. The drag rope is generally attached to one of the arms of the dredge, the other arm being fastened to it by a smaller rope. Heavy weights are used to sink the rope, and to keep the dredge down upon the bottom.

DEERFIELD, an historic town in Franklin county, Mass. In 1675 it was the site of "Bloody Brook massacre," and in 1703 the French and

Indians burned the village. It is a railroad centre, and possesses many attractions of scenery for the tourist.

DEER LODGE CITY, the county-seat of Deer Lodge county, Montana, situated on a creek of the same name. It is in the western part of the State, about fifty miles southwest of Helena. The region is mountainous, and gold is found here.

DEERMOUSE, or **JUMPING MOUSE**, a genus of American rodent quadrupeds allied to mice and to jerboas. See *Britannica*, Vol. XIII, p. 626.

DEER PARK, a township of Orange county, N. J., drained by the Neversink River and intersected by the Erie Railroad. The Delaware River bounds it on the southwest.

DEER-STALKING, the art of pursuing the red deer for the purpose of shooting it with the rifle, "Deer Forests" is the Scottish term for the extensive hilly, treeless regions over which this animal roams.

DEFAULT, the non-performance of a duty, whether arising under a contract or otherwise. In practice, the non-appearance of a plaintiff or defendant at court within the time prescribed by law to prosecute his claim or make his defense. When the plaintiff makes default, he may be nonsuited; and when the defendant makes default, judgment by default (*q. v.*) is rendered against him.

DEFESANCE, **DEED** or, an instrument which defeats the force or operation of some other deed or estate; and that which in the same deed is called a condition, in a separate deed is called a defeasance.

DEFENDER OF THE MARRIAGE TIE, an office created by Pope Benedict XIV, in 1741. Its object is, in all cases of actions for divorce, or any attempt to annul the marriage tie, to defend the sanctity of the marriage bond in every feature of its integrity. Marriage, being a sacrament in the Catholic church, is, like the other sacraments, most jealously guarded. The "defender," or officer appointed to defend, is clothed by ecclesiastical authority with the same or similar powers that the prosecuting attorney has in civil law in criminal procedure. It is his duty to protect and defend the sacredness of the marriage tie in every case presented within his jurisdiction. He usually acts as a referee in civil court procedure. The office was instituted in America by the Third Plenary Council in 1884, and is now extended until each Catholic diocese has its own "defender" ecclesiastically appointed. The first appointment in the United States, resultant on the action of Baltimore Council in 1884, was Rev. Dr. Burtzell, who was made "defender," etc., by Archbishop Corrigan, and elected by the synod of 1886.

DEFIANCE, capital of Defiance county, Ohio, on the Maumee River, about fifty miles southwest of Toledo, and about forty-four miles northeast of Fort Wayne, Ind. It is on the Wabash Railroad, the Wabash and Erie Canal, and the Baltimore, Pittsburgh and Chicago Railroad. It publishes two weekly newspapers, and contains a female seminary and several manufactories.

DEFICIENT NUMBERS, numbers whose aliquot parts, or factors, added together, make a sum less than the number itself; thus 16, whose parts, 1, 2, 4, 8, make together but 15, is a deficient number.

DEFILE, a military term applied to any passage which can be traversed by troops in column, only with a narrow front. A defile is any place where free movement is obstructed, and it is a "pass" when it cannot be avoided without a long circuit.

DEFLAGRATION is the rapid combustion of ignited charcoal where a nitrate, such as nitrate of potash, or a chlorate, such as chlorate of potash, is

thrown thereon. As chlorates do not occur naturally, it follows that deflagration with a natural salt indicates a nitrate; and if the deflagration be accompanied by a violet flame, it is characteristic of nitrate of potash (ordinary nitre or saltpeter); and if by a strong yellow flame, it is indicative of nitrate of soda (cubical nitre).

DEFLECTION, generally a change of course, or line of motion of a moving body. The word deflection is also used as synonymous with diffraction. Also the depression of the upper surface of a beam below its original level. Also used to describe that variation of a projectile from the absolutely straight line it would pursue, were there no disturbing causes, as wind, etc.

DEFORCEMENT: in English law, an abatement, intrusion, disseizin, or discontinuance, or any other wrong whatsoever, whereby he that has the right to the freehold is kept out of possession.

DE FOREST, JOHN WILLIAM, soldier and author, born in Humphreysville (now Seymour), Conn., March 31, 1826. His education was largely obtained abroad. During the civil war he served as captain of volunteers, quitting the service with the rank of major. Before the war he had written several books, and stories for periodicals; and now being on the field of operations, he sent to "Harper's Monthly," descriptions of many battles fought in Louisiana and Georgia. Since 1868 he has resided principally in New Haven, Conn. He is the author of many essays, poems, and some fifty short stories.

DE FOREST, ROBERT E., lawyer, born in Guilford, Conn., in 1845. He was a farmer until 1863, when he entered Yale College and took the name De Forest in order to receive the benefit of the De Forest fund for deserving students. His name until then had been Griswold. He graduated at Yale College in 1867. He was elected a member of the State House of Representatives in 1881, and a member of the State Senate in 1883; afterwards was elected mayor of Bridgeport, which office he held when, in 1890, he was elected a Representative from the Fourth Congressional District of Connecticut to the 52d Congress. In politics he is a Democrat.

DE FUNIAK SPRINGS, a village of Florida, county-seat of Walton county, the seat of the Florida Chautauqua and State Normal School.

DEGOLLADO, SANTOS, a Mexican general, born in Morelia, Mexico, July 30, 1819, died in June, 1861. In 1854 he took part in the revolt against Santa Anna, and raised an army of 2,000 men, who marched under the command of Gen. Juan Alvarez. This general deposed Santa Anna and became president, while Degollado, belonging to the liberal party and opposed to the church party, devoted his energies to the establishment of the government. He was elected governor of his native State, Michoacan, 1859, and then elected to Congress. In the meantime the Church party had become powerful and aggressive; it had sent an army into the field, and now threatened the government. Its latest outrage was the capture and unprovoked assassination of Melchor Ocampo, the friend of Degollado. The latter asked permission to lead an expedition against the rebels. He started out with 150 men, fell into an ambush and was assassinated.

DEGREE: in music, the difference of position or elevation of the notes on the lines and spaces. When notes are on the same line or space, they are on the same degree, even though one of the notes should be raised by a sharp or lowered by a flat. When two notes follow diatonically, so that one of them is on a line and the other on a space adjoining, the interval is of one degree. Subtracting one from an interval gives the degrees which separate

the two notes; thus, a third is separated by two degrees, a fourth, by three, etc.

DEGREE OF LATITUDE, the space along the meridian through which an observer must pass to alter his latitude by one degree; that is, in order to see the same star one degree nearer to or farther from the zenith. This space must be found by actual measurement; and owing to the earth being an oblate spheroid, and not a sphere, it varies with the place of observation—the degrees being generally longer toward the poles, where the earth is flatter, and shorter at the equator, where the earth is more curved. If the earth were a sphere, a degree would be exactly one 360th part of the meridian. As it is the length of a degree of latitude depends on the latitude of the place. From various observations made at different times and places, dating as far back as the time of Eratosthenes (250 B. C.), tables have been constructed showing the length of degrees at different latitudes.

DEGREE OF LONGITUDE, the space between two meridians that make an angle of one degree at the poles, measured by the arc of a circle parallel to the equator passing between them. It is clear that this space is greatest at the equator, and vanishes at the poles; and it can be shown that it varies with the cosine of the angle of latitude.

DE HAAS, WILLIAM FREDERICK, born in Rotterdam, Holland, in 1830, died in Fayal, Azores, July 16, 1880. He was a marine painter, who studied in his native city and emigrated to America. Some of his paintings were: *Sunrise on the Susquehanna*; *Fishing-Boats off Mt. Desert*; *Boon Island*; *Coast of Maine*; and *Narragansett Pier*.

DE HAAS, MAURICE FREDERICK HENDRICK, born in Rotterdam, Holland, in 1832; the brother of William F. De Haas, and, like him, a marine painter. He studied art in his native country, made sketches of Dutch and English coasts, and was appointed artist of the Dutch navy. In 1859 he came to New York, where he became an associate of the National academy and one of the original members of the American Water-colors Society. Among his works are: *Storm off the Isle of Jersey*; *After the Wreck*; *Off the Coast of France*; *Sunset at Sea*; *Drifting Ashore in a Fog*; *Early Morning off the Coast*; and *Farragut Passing the Forts*.

DE HAVEN, EDWIN J., Arctic explorer, born in Philadelphia, Pa., in 1819, died there Oct. 2, 1865. At the age of ten he entered the marine service, continuing in it for thirty-six years. From 1839 to 1842 he was with Wilke's exploring expedition, and for sixteen months he was in command of the first expedition sent by Henry Grinnell in search of Sir John Franklin.

DEIANIRA, daughter of Eneus; she poisoned the tunic of Hercules with blood of the centaur Nessus, preserved under the impression of its being a love charm. See *Britannica*, Vol. XI, p. 726.

DEI GRATIA (Lat., "by the favor of God"), a formula taken from several apostolical expressions in the New Testament. It is believed to have been first formally used by the bishops at the council of Ephesus, A. D. 431. Afterwards it came to be appended by archbishops, bishops, abbots, abbesses, deans, monks, and even chaplains to their titles, in letters, and other documents, as an humble expression of dependence on the Most High. After the middle of the thirteenth century, when the sanction of the Pope began to be considered necessary to ecclesiastical offices, the higher clergy wrote *Dei et Apostolicæ sedis gratia*, "by the favor of God and the apostolic see." At a later period many of them preferred to write, *Miseratione*

divina, permissione divina, and the like, but they still continued to be styled by others *Dei Gratia*.

DE KALB, a city in the northern part of Illinois, county-seat of De Kalb county, about sixty miles west of Chicago. It has manufactories of plows, furniture, gloves, and mittens.

DE KALB, JOHN BARON (1731-80), a Bavarian general, who entered the French army, and, accompanying Lafayette to America, fought under Washington and Gates.

DE KAY, GEORGE COLEMAN, a naval officer, born in New York city in 1802, died at Washington, D. C., Jan. 31, 1849. He volunteered in the war of the Argentine Republic against Brazil, and won a captain's commission. He commanded the ship *Macedonian*, which during the famine of 1847 carried supplies to the sufferers in Ireland; it was through his efforts that Congress allowed the employment of a Government frigate for such a purpose. In 1833 he was married to Janet, only child of Joseph Rodman Drake. They became the parents of four sons: Joseph Rodman Drake, born Oct. 21, 1836, died June 9, 1886. He won the rank of lieutenant-colonel in the civil war. George Coleman, Jr., born Aug. 24, 1842, died June 27, 1862. He was a lieutenant of artillery and member of Gen. Thomas Williams's staff. Sidney, born March 7, 1845. He joined the 71st N. Y. volunteers, and was on the staff of Gens. B. F. Butler, Devens and Terry, and after the civil war fought in the Greek army against the Turks. Charles, born July 25, 1848. He became an author, publishing *The Bohemian*; *Hesperus*; *Vision of Nimrod*; *Vision of Esther*; *Mamtha*, his best work; and *Love Poems of Louis Bar-naval*.

DE KAY, JAMES ELLSWORTH, naturalist, born in Lisbon, Portugal, in 1792, died in Oyster Bay, Long Island, N. Y., Nov. 21, 1851. He studied for the medical profession in Edinburgh; visited Turkey with his father-in-law, Henry Eckford; was sent by the latter on business connected with the navy to the South American countries, and on his return settled at Oyster Bay. During the cholera outbreak in New York he gave his services to the victims. He wrote for the press; was engaged in a State survey—the departments of botany and zoölogy being assigned him. His researches are in five volumes of the *New York State Survey*. He also published *Travels in Turkey*.

DEKKER, EDWARD DOWDES, a Dutch author, born in 1820. He has published two dramas, several works on the Dutch Indies, and various other popular books.

DE KOVEN, JAMES, clergyman, born in Middletown, Conn., Sept. 10, 1831, died in Racine, Wis., March 9, 1879. He was a graduate of Columbia, and the General Theological Seminary and was made rector at Delafield, Wis., of the church of St. John Chrysostom. The care of the school, St. John's Hall, was placed in his hands, and in 1859 he was elected warden of Racine College, and introduced various innovations, such as the wearing of the Oxford cap and gown by teachers and pupils, and the first surpliced choir west of New York. He did much for the upbuilding of this college by the extension of its grounds and the erection of a new chapel and other buildings. He declined the call to be the assistant rector of Trinity church, New York, and a little while before his death he was chosen rector of St. Mark's, Philadelphia. He was a brilliant conversationalist and a powerful pulpit orator.

DE KROYFT, SARAH HELEN ALDRICH, author, born at Rochester, N. Y., Oct. 29, 1818. She received an excellent education, and graduated at the Lima Seminary in New York. In 1845 she wa

married to Dr. William De Kroyft of Rochester, but he was killed by a fall from his carriage on his wedding-day. Within a month after the accident she became totally blind and never recovered her sight. She went to New York and studied in the institution for the blind. She there began to write for newspapers and was quite successful; a collection of letters, entitled *A Place in Thy Memory*, became so popular that 200,000 copies were sold. *Little Jakey*, a true story of a blind boy, was her best sketch. She has delivered in many cities a lecture entitled *Darwin and Moses*.

DEL (*Artocarpus pubescens*), a tree of Ceylon, valued for its lumber, which is used in building houses and ships. It is of the same genus as the bread-fruit.

DELAFIELD, EDWARD, an American physician and surgeon, born at New York, May 17, 1812, died Feb. 13, 1875. He graduated at Yale, and studied medicine in New York and London. He assisted in founding the New York Eye and Ear Infirmary, and the New York Ophthalmological Society, of which he afterwards became president, and was president also of Roosevelt Hospital, and of the New York College of Physicians and Surgeons.

DELAFIELD, FRANCIS, M. D., born in the city of New York, Aug. 3, 1841, educated at Yale, and in the New York College of Physicians and Surgeons. He has been surgeon in the New York Eye and Ear Infirmary, physician to Bellevue Hospital, professor of pathology and practical medicine in the New York College of Physicians and Surgeons, and, among other medical works, has published a *Hand-book of Post-Mortem Examination*.

DELAFIELD, RICHARD, soldier, born in New York city, Sept. 1, 1798, died in Washington, Nov. 5, 1873. After graduating at West Point in 1818, he became a military engineer, and was appointed to duty on the northern boundary survey of the United States under the Ghent treaty. Subsequently he was employed on the defenses of Hampton Roads, the Mississippi, Delaware, and Hudson Rivers. He was twice superintendent of West Point. From 1861 to 1863 he served on the staff of Gov. Morgan, of New York; from 1864 to 1866 had charge of the bureau of engineers of the war department, was inspector of the Military Academy, and in 1866 was retired from service.

DE LANCEY, JAMES (1703-60), an American jurist, born in New York city, and educated in England, where he studied law. He became chief justice of the Supreme Court in New York, lieutenant-governor of the State, presided over the first Congress held in the colonies, and was the first person on whom the freedom of the city of New York was conferred. He was one of the founders of King's College. The De Lancey family was prominent in Revolutionary times, and several of its members were men of remarkable talent.

DE LANCEY, WILLIAM HEATHCOTE (1797-1865), an American P. E. bishop. He was ordained deacon in 1819, and priest in 1822. From 1828 to 1833 he was provost of the University of Pennsylvania. In 1835 he became rector of St. Peter's church, Philadelphia, having been assistant for the two previous years. He was chosen bishop of Western New York in 1839, and in 1852 was a delegate to the 150th anniversary of the London Missionary Society—this being the first occasion on which the American church was formally represented in England.

DELANO, COLUMBUS, Congressman, born in Shoreham, Vt., June 5, 1809. He became an eminent criminal lawyer in Ohio, was elected to the legislature, and to Congress. He was a delegate to the convention which nominated Abraham Lincoln to

the presidency. President Grant appointed him commissioner of internal revenue. From 1870 to 1875 he was Secretary of the Interior.

DE LA RAMEE, LOUISA ("Ouida"), an English novelist, born in 1840. Her books are full of exaggerations and improbabilities, and are written in a meretricious style.

DELAVAN, a railroad town of Tazewell county, Ill., situated near the center of the State, about 157 miles southwest of Chicago. It has a variety of manufactories, a park, and a high school.

DELAVAN, a village in the southern part of Wisconsin, situated in Walworth county, on Turtle Creek, 58 miles southwest of Milwaukee. A State institution for the deaf and dumb is located here.

DELAVAN, EDWARD CORNELIUS, temperance reformer, born in Schenectady county, N. Y., in 1793, died in Schenectady, Jan. 15, 1871. He acquired a large fortune in the wine business and owned considerable real estate in Albany, including the Delavan house, which was erected by him. He became interested in the temperance cause, and with the assistance of Dr. Eliphalet Nott he organized in Schenectady a State temperance society; he lectured, wrote, and gave largely for the cause. In 1835 he charged an Albany brewing company with using filthy water for malting. Suit for libel and other suits were brought against him, but he won the first and the others were dropped. He published a temperance periodical, which became later the "Journal of the American Temperance Union."

DELAWARE, one of the Middle States, and, with the exception of Rhode Island, the smallest State in the Union. For its geographical location, history, map, and earlier statistics, see Britannica, Vol. VII, pp. 44-45. According to the official census of 1890 the area of Delaware was 2,050 sq. miles, and the population 168,498. The population by counties was as follows:

Counties.	1880.	1890.
Kent.....	32,574	32,664
New Castle.....	77,716	97,182
Sussex.....	36,018	38,647
Total.....	146,308	168,498

Agriculture is the chief industry in the middle and southern portions of the State, while manufacturing is the prevailing industry in the northern part. The agricultural productions are chiefly Indian corn, wheat, oats, and fruits, peaches being raised in immense quantities. The principal manufactured products are flour, boots and shoes, carriages and wagons, lumber, iron, leather and bricks. In 1888 the total acreage of Indian corn was 220,927, yielding 3,844,000 bushels, valued at \$1,691,360; wheat, 94,790 acres, yielding 1,194,000 bushels, valued at \$1,194,000; rye, 857 acres, yielding 8,000 bushels, valued at \$4,628; oats, 21,839 acres, yielding 450,000 bushels, valued at \$157,500; potatoes, 4,224 acres, yielding 317,000 bushels, valued at \$152,064; hay, 56,240 acres, yielding 66,363 tons, valued at \$862,719. On Jan. 1, 1890, Delaware contained 23,000 horses, 4,184 mules, 29,543 milch cows, 28,866 head of oxen and other cattle, 22,294 sheep, and 51,185 swine.

The educational system was entirely remodeled in 1875, and is now under the direction of a State board of education and a general superintendent. Instruction is given to teachers by the Wilmington Normal School; and higher education is afforded by

Delaware College at Newark, and the Wesleyan Female College at Wilmington.

The following is a complete list of the governors of the State to and including 1891 :

Joshua Clayton.....	1789-96	Caleb P. Bennett.....	1833-37
Gunning Bedford.....	1794-97	Charles Polk.....	1837-39
Daniel Rogers.....	1797-98	Wm. B. Cooper.....	1840-44
Richard Bassett.....	1798-1801	Thomas Stockton.....	1844-46
James Sykes.....	1801-02	Joseph Maul.....	1846
David Hall.....	1802-05	William Temple.....	1846
Nathaniel Mitchell.....	1805-08	William Thorp.....	1846-51
George Truett.....	1809-11	William H. Ross.....	1851-55
Joseph Haslett.....	1811-14	Peter F. Cansey.....	1855-59
Daniel Rodney.....	1814-17	William Burton.....	1859-63
John Clarke.....	1817-20	William Cannon.....	1863-65
Jacob Stout.....	1820-21	Gove Salisbury.....	1865-69
John Collins.....	1821-22	James Ponder.....	1869-79
Caleb Rodney.....	1822-23	John P. Cochran.....	1875-79
Joseph Haslett.....	1823-24	John W. Hall.....	1879-83
Samuel Paynter.....	1824-27	Chas. C. Stockley.....	1883-87
Charles Polk.....	1827-30	Benj. T. Biggs.....	1887-91
David Hazard.....	1830-33		

DELAWARE, a city, and the county-seat of Delaware county, Ohio, on the Olentangy River. Among its educational institutions are the Ohio Wesleyan University and the Ohio Wesleyan Female College. The city is well built, has medicinal springs in its vicinity, and has many mills and factories. Among the articles manufactured are flour, beer, chairs, iron fences, carriages and lumber.

DELAWARE, or **DE LA WARR**, **THOMAS WEST**, Lord, died at sea, June 7, 1618. He became in 1602 third Lord Delaware, and seven years later was appointed governor of Virginia, and the following year he arrived at Jamestown. The colonists were discouraged, and on the point of sailing for England, but his coming and prudent measures inspired them with hopes of better times. The colony flourished under his management. He built and named the forts Charles and Henry, established the settlement where Hampton now is, and discovered the river called, in his honor, the Delaware. Illness obliged him to go back to England, but so much was he respected that the colonists petitioned him to return. While attempting to do so he died, and was buried at sea.

DELAWARE CITY, a village in the northern part of Delaware, situated in New Castle county, on the Delaware River, 40 miles below Philadelphia. It is at the eastern terminus of the canal which connects the Chesapeake and Delaware bays.

DELAWARE INDIANS. See **INDIANS**, **AMERICAN**, in these Revisions and Additions.

DELAWARE WATER GAP, a village of Monroe county, Pa., 92 miles northwest of New York and 57 miles southeast of Scranton. It is a summer resort famous for the beauty of its scenery. The Delaware River at this point breaks through a gorge in the Kittatinny Mountains, and the steep, rocky banks rise nearly 1,300 feet above the water.

DELBRÜCK, **MARTIN FRIEDRICH RUDOLPH**, a German statesman, born in 1817. He practiced law at the bar of Halle in 1839-40, and later entered the civil service, becoming assistant in the ministry of finances, then in that of commerce. In 1859 he became a director of the division of commerce and industry, and in acknowledgment of his services was made president of the federal chancery in 1867. He afterwards held various important public offices, but retired to private life about 1880.

DELECTUS PERSONÆ: in some legal relations, a choice of the person, for some qualification possessing value in the eyes of one of the parties to the contract, is assumed; and the individual so chosen cannot consequently transmit his rights and obligations to another without the consent of the person who is supposed to have chosen him.

DELEGATE, one sent with power to transact business for another. The members of the First Continental Congress were delegates, and those now sent to represent the Territories are also called delegates.

DELEGATION, the term formerly applied in Lombardy, Venice, and the States of the Church to a province and to its governing court. Lombardy formerly contained nine delegations and Venice eight, each of these being presided over by a delegate, a vice-delegate, and others in lower positions. By a decree of 1816 seventeen delegations were established in the States of the Church, but the number was several times changed. Delegates were directly appointed by the Pope, and were always prelates. If the delegate was a cardinal he was called a legate, and his province a legation. In Spain, the superintendents of the police administration of a province are called *Delegados del fomento*.

DELEPIERRE, **JOSEPH OCTAVE** (1802-79), a Belgian historian and antiquary. He practiced law at Brussels, and in 1849 was appointed secretary of legation and consul-general at London. He wrote works on historical topics.

DELESCLUZE, **LOUIS CHARLES**, the leading spirit of the French commune, born in 1809, died from a shot received on the barricade in the Rue d'Angoulême, May 28, 1871.

DELVE, a heraldic charge representing a square sod or turf; the term is derived, as is supposed, from the verb to delve or dig. A *delf tenné* is the appropriate abatement for one who revokes his challenge, or otherwise goes back on his word.

DELHI, a village and county-seat of Delaware county, Iowa, on the Maquoketa River, 40 miles southwest of Dubuque.

DELHI, a village and county-seat of Delaware county, N. Y., on the west branch of the Delaware River. It contains manufactories of sash and blinds, carriages, and woolen goods.

DELILAH ("the languishing"), a Philistine woman who took advantage of Samson's love for her, and by her flattery won from him the secret that in his locks lay his God-given strength. She treacherously betrayed him into the hands of his enemies, after having cut off his hair while he lay asleep.

DELIQUESCENCE, the term given to the property which certain substances have of absorbing moisture from the air, and becoming damp, even running into liquid. Examples of such substances are caustic potash, and the chlorides of calcium and magnesium.

DELIRIUM EBRIOSUM, a term intended to denote a form of acute mania, of which the exciting cause is intoxication. It is often mistaken for delirium tremens, and in criminal cases has probably been frequently dealt with as such. A single fit of intoxication, or a short period of intemperance—often occurring periodically—gives rise to this delirium in those who have inherited mental excitability or received previous injury of the head, and who may have experienced some cause for depression of spirits. An uncontrollable desire for drink characterizes it; this thirst, when gratified, only leading to further imperious demands, until the thing is loathed, and a fit of sickness brings about recovery.

DELIRIUM NERVOSUM, or **TRAUMATICUM**, a term applied by Baron Dupuytren, the famous French surgeon, to an attack of delirium with tremors, which often supervenes on severe bodily injuries, as burns, fractures, and gunshot wounds. Some have considered it identical with delirium tremens; but it only simulates that affection, being but a symptom of a sympathetic typhoid fever.

DELITZSCH, ADOLF FRANZ, theologian and Hebraist, born at Leipzig in 1813, died in 1890. He studied at the University of Leipzig, and in 1846 became professor of theology at Rostock, whence he was called to Erlangen in 1850, and back to Leipzig in 1867. He held a foremost place among conservative German theologians, while his great personal influence over a generation of Leipzig students, and a series of learned books, contributed to extend a knowledge of Old Testament exegesis not only in Germany, but in England and America. His new commentary on Genesis (1887) marked a large concession to the modern critical theory of the Pentateuch.

DELIUS, NICOLAUS, a German author, born in 1813. In 1841 he began lecturing; in 1855 became professor extraordinary in the University of Bonn, and in 1865 was made full professor. He gave particular attention to romance literature, and especially to Shakespeare, being noted as a critic of that author. He has published numerous criticisms and other works.

DELLA CRUSCAN ACADEMY, an institution founded in 1582 in Florence, Italy, with a view to purifying and perfecting the Tuscan tongue. See *Britannica* Vol. I, p. 73.

DELLA CRUSCAN SCHOOL. About the year 1785 there was published *The Florence Miscellany*, a collection of verses written by a number of English residents at Florence as an amusement during their idle hours. The insipidity, affectation, and fantastic silliness of the productions transcend all belief, but at that period poetry was at so low an ebb that a crowd soon admired and began to imitate them. The Della Cruscans, taking their name from the academy at Florence, now began to print their works in England, mainly in two daily newspapers, called "The World" and "The Oracle." "While the epidemic malady was spreading from fool to fool," as Gifford says, "one of the brotherhood, a Mr. Robert Merry, came from Florence, and immediately announced himself by a sonnet of Love," which was answered by a certain Anna Matilda, who (as was the custom) praised it immoderately in language even more absurd than Merry's own. Gifford says: "The fever now grew to a frenzy; Laura, Maria, Carlos, Orlando, Adelaide, and a thousand other nameless names caught the infection, and from one end of the kingdom to the other all was nonsense and Della Crusca."

DELMAR, ALEXANDER, political economist, born in New York city, Aug. 9, 1836. He has been editor of several New York papers, and in 1864 established the *Social Science Review*. He organized the United States bureau of statistics, attained distinction as a mining expert, and is the author of *Money and Paper Money*; *Treatise on Taxation*; *Essays on Political Economy*; *The National Banking System*; *What is Free Trade?* *Letter on the Finances*; and *History of Money*.

DEL NORTE, capital of Rio Grande county, Colo., on the Rio Grande. It is one of the chief towns of southwestern Colorado, and is situated at an elevation of 7,807 feet, amid a beautiful surrounding scenery. This place is the base of supplies for the San Juan mines.

DE LONG, GEORGE WASHINGTON, explorer, born in New York city, Aug. 22, 1844, died in Siberia, Oct. 30, 1881. He was educated in the schools of Brooklyn, N. Y., and the United States Naval Academy, graduating in 1865. He served with the European squadron in the South Atlantic fleet, and in the North Atlantic, and in 1873 was a member of the expedition which went on the *Juniata* in search of the *Polaris*. In 1879 De Long was sent on an arctic exploration expedition in command

of the *Jeannette*. The vessel left San Francisco July 8, and two months later became inclosed in an ice-pack, which twenty-two months later crushed the ship. The crew then started southward, traveling by boats and sledges until they reached Thaddeus Island, one of the New Siberian group, where they entered three boats, commanded respectively by De Long, Lieut. Chipp, and Engineer Melville. A storm separated the boats, and De Long and fourteen men, after traveling 2,800 miles, reached the mouth of the Lena. Here they abandoned the boat and traveled over land until Oct. 9, when they could go no farther, and with the exception of two men sent for help, perished from the effects of cold and starvation. Search was made for De Long without success; but in March, 1882, it was renewed and the dead bodies were discovered on the 23d of the month. The records in De Long's journal were brought down to October 30, when it appears that two men besides himself were living. Their bodies were brought to New York and buried with appropriate ceremonies.

DELORME, MARION (c. 1612-c. 1651), a Frenchwoman who became notorious in the 17th century. She made her house the rallying-point of the chiefs of the *Frondeurs* during the first disturbances of that party, and for this Mazarin was about to imprison her, when she suddenly died. Victor Hugo made her the subject of one of his historical dramas.

DELPHI, a city and county-seat of Carroll county, Ind., on the Wabash River, and on the Wabash and Erie Canal. The water-power is excellent, and is utilized in running paper and planing mills.

DELPHIN CLASSICS. See *Britannica*, Vol. III, p. 667.

DELPHINORHYNCHUS, a genus of cetacea of the family *Delphinidae*, resembling the true dolphin in having one dorsal fin, but the beak is not distinguished from the forehead by a furrow. One species about eight feet in length, black on the upper surface and reddish beneath, known as *Delphinorhynchus Bredanensis* or *Delphinorhynchus rostratus*, has been washed ashore on the Atlantic coast of France. *Delphinorhynchus coronatus*, a much larger species, from thirty to thirty-five feet long, is a whale found in high northern latitudes, numerous flocks having been seen among the ice-islands, near Spitzbergen.

DELPHOS, a village of Van Wert county, O., situated on the Miami canal. It contains a Franciscan convent, and manufactories of barrels, staves, and wheels.

DELTA, the parish-seat of Madison parish, La., situated on the Mississippi River, opposite Vicksburg.

DELUNDUNG, a carnivorous animal found in the forests of Java, referred to the family *Viverridae*, although it is regarded as a connecting link between that family and *Felidae*. It is prettily streaked and spotted, and has a slender form and a long cylindrical tail.

DELVINO, a town in the province of Albania, European Turkey. The women wear a peculiar garb consisting of a long, white wrapper extending from head to foot, which makes them appear like animated monumental figures.

DEMAVEND, MOUNT, an extinct volcano in Persia, forming the highest peak of the Elburz chain, which separates the low shores of the Caspian Sea from the high table-land of Persia. The summit is covered with a deposit of sulphur, which is brought to the plains in bags to be disposed of as an article of commerce. No European ascended this peak until 1837. The Russian survey ascertained the height to be 18,600 feet. (See *Britannica*, Vol. V, pp. 176, 177.)

DEMBEA, **TSANA**, **TZANA**, or **TANA LAKE**, situated in Abyssinia, 6,000 feet above sea-level, its southern part being traversed by the Blue Nile. It contains many beautiful islands. See *Britannica*, Vol. XVIII, p. 507.

DEMESNE: in the law of England in the present day, the right which the owner in possession of lands in fee simple has in his estate. But the original signification of *demesne* was that portion of the lands of a manor which the lord of the manor reserved for his immediate use and occupation.

DEMESNE, ANCIENT: in English law, a tenure by which all manors belonging to the crown, in the reign of William the Conqueror, were held. The number, names, etc., of these were all entered in a book called "Domesday Book."

DEMETZ, FREDERICK AUGUSTE (1796-1873), one of the founders of the colony at Mettray, in France, for the reformation of juvenile offenders.

DEMI, or **DEMY** (half). In heraldry, an animal is said to be *demi* when only the upper or fore half of it is represented. In inanimate objects the dexter half per pale is usually intended when it is said to be *demi*, though a *demi-fleur-de-lis*, for example, may be a *fleur-de-lis* divided per fess.

DEMI-BASTION: in fortification, a kind of half-bastion, which frequently terminates the branches of a crown-work or horn-work, and which is also occasionally used in other places.

DEMIDOFF, NIKITA, the founder of the family bearing his name. See *Britannica*, Vol. VII, p. 59; Vol. XVII, p. 389.

DEMI-LUNE: in fortification, a work constructed to cover or defend the curtain or wall of a place, and the shoulders of the adjoining bastions. It is composed of two faces, forming a salient angle toward the open country outside the place. It has two demi-gorges, formed near the counter-scarp and is surrounded by a ditch.

DEMING, a city of New Mexico, and an important railroad center, situated on the south bank of the Rio de los Mimbres, about fifty miles below Silver City. It was founded in 1881 in the center of an extensive stock-range. Lead and silver are found in the vicinity in abundance. A United States custom-house is located here, and there is a thriving trade with the mining camps of the district and with Mexico.

DEMIR-HISSAR ("Iron Castle"), a fortified town of European Turkey, situated on a tributary of the Struma, at the base of an old fort-crowned hill. Here are several mosques and a Greek church.

DEMISEMIQUAVER: in musical notation, a note equivalent in time-value to half a semiquaver, or the 32d part of a semibreve.

DEMOCRATIC-REPUBLICAN PARTY. See *UNITED STATES*, *Britannica*, Vol. XXIII, pp. 729-830.

DEMOGEOT, JACQUES CLAUDE, a French author, born in 1808. He was professor in the colleges of Beauvais, Rannes, Bordeaux, and Lyons, and in 1834 became professor of rhetoric at the Lycée Saint Louis in Paris. He is the author of text-books on French literature and many other works.

DEMOISELLE (*Anthropoides*), a genus of birds of the crane family, differing from the true cranes in having the head and neck quite feathered, and the *tertails* of the wings elongated and hanging over the tail, so as in some species to touch the ground. The Demoiselle, or Numidian crane (see *Britannica*, Vol. VI, p. 548), is about three feet long from the point of the bill to the tip of the tail, and about three and one-half feet high from the top of its head. Its plumage is gray except for two white tufts formed by elongation of the ear coverts,

and a tuft of blackish feathers, which hangs from the breast. Demoiselle is also a French name for the dragon-fly.

DEMONSTRATION: in mathematics, a proof of any proposition which excludes doubt, as the demonstrations of the propositions in Euclid. The method of demonstration in mathematics is the same with that of drawing conclusions from principles in logic, and is usually syllogistic, the premises being omitted to be stated at each turn. The principle of *reductio ad absurdum* is also employed.

DEMONSTRATION: in military operations, an apparent movement or manœuvre, the chief object of which is to deceive the enemy and induce him to divide his force, as if to meet dangers from various quarters. When thus divided and weakened he may be attacked with greater chance of success.

DEMULCENTS, bland and lubricating liquid substances, taken by the mouth, for the purpose of soothing irritation of the mucous membranes, and promoting the dilution of the blood and the increase of the secretions. Demulcents are chiefly composed of starch, or gum, or of substances containing these dissolved in water; sometimes also of oily matters, or the white of eggs, and other albuminous or gelatinous substances largely diluted. The decoction of *Althæa*, or marsh-mallow, is a favorite form of demulcents.

DENDRERPETON, a small lizard-like batrachian, found by Lyell and Dawson in Nova Scotia, in the hollow trunk of an upright *sigillaria*. The tree was about two feet in diameter, and consisted of an external cylinder of coal, and an internal axis of mud and sand cemented together with fragments of wood into a solid rocky mass. In this were discovered the shell of a *pupa*, the first air-breathing mollusk met with in the coal, and the bones of a small reptile, probably two and a half feet long. It was described and figured by Owen as *Dendrerpeton Acadianum*. He showed it to be nearly related to *Archegosaurus*, from the plicated structure of the teeth, the sculpturing of the cranial plates, and the structure and proportion of certain limb-bones. It receives its name, "tree-lizard," from its having been found in a tree; and this was supposed to show that it had arboreal habits; it is, however, probable that the remains had been washed in with the mud and sand, which form the matrix in which they are preserved.

DENDRITE, the name given to a peculiar branching mineral crystallization on the surfaces of the fissures and joints or in the substance of rocks, having the appearance of moss, and often mistaken for fossil plants. The hydrous oxide of manganese is the mineral that generally assumes this form, occurring frequently in great abundance in limestone, steatite, trachyte, and other substances.

DENDROLITES, petrified stems of trees or shrubs, found in all parts of the world in the formations called Secondary, especially in the coal formation. They vary in size, and may be considered the remains of a former creation. In some instances gigantic stems occur, which often contain branches, fruit and even the impressions of leaves; and in other places mere fragments are found, which bear no resemblance to the trees now growing in the same regions, the fossil stems of beautiful palms having been discovered at Chemnitz, in Saxony, and other similar places. Such woods, when preserved in ancient strata altered by volcanic fire, are changed into agate, or into pitchstone. Opinion is divided regarding their origin.

DENGUE, or **BREAK-BONE FEVER**, also called **DANDY** and **BUCKET FEVER**, a disease known in the Southern States of North America and in the West Indies, where it was first described as having ap-

peared in 1827 and 1828. It is seldom fatal, though very violent in its access, mainly consisting of an attack of inflammatory fever, accompanied by pains of the limbs, in the joints and muscles. It usually terminates by a copious perspiration after a few days.

DENISON, a rapidly growing city of Grayson county, Texas, situated within three miles of the northern boundary of the State. It is an important railroad, shipping, and trading center, having a large trade with the fine agricultural region in its vicinity. The city is especially noted as a fruit market. It has excellent water works and considerable manufactures. It contains St. Xavier convent, a business college, good schools, ice factory, meat refrigerator, planing mill, iron foundry, etc. It has also railroad machine shops. Population in 1880, 3,975; in 1890, 10,959.

DENISON, county-seat of Crawford county, Iowa, situated on the Boyer River. It has thriving manufactures.

DENISON, GEORGE ANTHONY, an eminent English prelate, brother of John Evelyn Denison, born in 1806; became vicar of East Brent in 1843, and archdeacon of Taunton in 1851. On a charge of teaching the doctrine of the real presence he was condemned by an ecclesiastical court, in 1854, to be deprived of his preferments; but the judgment was quashed by the court of arches and the privy-council. He is a leader of the high church party, an opponent of secular education, and an advocate of the confessional. He was for many years editor of the "Church and State Review;" and was chairman of the committee of convocation which condemned Bishop Colenso's works. His principal literary productions are his delightful *Notes of My Life and Mr. Gladstone*.

DENISON, JOHN EVELYN (1800-73), for many years speaker of the House of Commons and privy councillor. He was a D. C. L. of Oxford, and was created Viscount Ossington. He retired from the speaker's chair in 1872.

DENISON, MARY ANDREWS, author, born in Cambridge, Mass., May 26, 1826. Her husband, Charles W. Denison, was a clergyman, author and editor. She has lived in London and British Guiana, and written for American and English magazines. Among her books the most popular have been *That Husband of Mine*, and *That Wife of Mine*.

DENISON UNIVERSITY. See COLLEGES, in these Revisions and Additions.

DENMARK (Kongeriget Danmark). For the early history, climate, productions, commerce, etc., of the kingdom of Denmark, see *Britannica*, Vol. VII, pp. 80-94. According to the last decennial census, taken Feb. 1, 1890, the total area of Denmark was 14,124 square miles, and the total population 2,185,159. The population in 1870 was 1,794,733, and in 1880 1,980,259, showing an increase during each of the two decennial periods of nearly 10 per cent., or 1 per cent. per annum. In Denmark proper the town population has increased from 515,753 in 1880 to 663,121 in 1890, or at the rate of 28.7 per cent.; while the rural population has increased from 1,453,281 in 1880 to 1,509,084 in 1890, or at the rate of 3.77 per cent. The population is almost entirely Scandinavian. Out of every 1,000 persons, 469 live exclusively by agriculture, 229 by manufacturing industries, 68 by trade, and 27 by seafaring and fishing.

The financial budget for 1890-91, sanctioned by provisional law of April 2, 1890, provided for a total revenue of 54,683,727 kroner, and a total expenditure of 63,300,803 kroner. An important feature in the administration of the finances of the kingdom is the maintenance of a reserve fund of a compara-

tively large amount. On March 31, 1889, the fund stood at 17,821,796 kroner. The object of the reserve fund is to place means at the disposal of the government in the event of sudden emergencies. The public debt of Denmark, which was incurred in part by large annual deficits in former years, before the establishment of parliamentary government, and in part by railway undertakings, and the construction of harbors, light-houses, and other works of public importance, amounted at the close of the fiscal year, March 31, 1889, to 190,831,149 kroner. The investments of the State, excluding the reserve fund, amounts to about 82,000,000 kroner, thus reducing the debt to about one-half.

The army consists of all the able-bodied young men of the kingdom who have reached the age of 22 years. They are liable to service for eight years in the regular army and its reserve, and for eight years subsequent in the extra reserve. The total peace strength of the army in 1890 was 294 officers, and 16,818 men; the total war strength, about 60,000 men.

About 80 per cent. of the total area of Denmark is productive. According to latest returns the total area under corn crops was 2,917,680 acres; potatoes, 110,306 acres; clover, 396,418 acres; bare fallow, 688,118 acres; grass, meads, etc., 3,163,020 acres. The leading crops in 1889 were oats, 25,758,591 bushels; barley, 19,323,617 bushels; rye, 16,798,647 bushels; wheat, 4,825,311 bushels; potatoes, 16,913,832 bushels; other roots, 28,825,434 bushels; besides vegetables, hay, and clover. The total value of the produce in 1889 was 274,393,459 kroner. The total imports for the year 1888 amounted to 274,401,000 kroner, and the exports to 192,699,000 kroner. On July 16, 1888, there were in Denmark proper, 375,583 horses; 1,459,527 head of cattle, 1,225,196 sheep, 13,405 goats; and 770,785 swine.

In 1889 there were in Denmark a total length of 1,214 English miles of railway open for traffic, of which about 1,000 miles belonged to the State.

DENNERY, or D'ENNERY, ADOLPHE PHILIPPE, a dramatic writer of Jewish extraction, born at Paris in 1811. He was decorated with the Legion of Honor, Dec. 10, 1849, and promoted to the rank of officer, Aug. 16, 1859. He produced about 200 pieces from 1831 to 1887 and was the creator of Caubourg, a watering-place in Normandy.

DENNIE, JOSEPH, journalist, born in Boston, Mass., Aug. 30, 1768, died in Philadelphia, Jan. 7, 1812. He graduated at Harvard, and studied law, but made literature his profession. He edited "The Farmer's Museum," the "United States Gazette," and founded and edited "The Portfolio." Collections of his essays, entitled *The Lay Preacher, or Short Sermons for Idle Moments*, were published in book-form. Mr. Dennie wrote under the pen-name of "Oliver Old School." He founded the "Tuesday Club," many of whose members were on the staff of *The Portfolio*.

DENNISON, WILLIAM, born in Cincinnati, Ohio, Nov. 23, 1815, died in Columbus, June 15, 1882. He graduated at Miami College in 1835; adopted the legal profession; was elected to the legislature in 1848; was chosen delegate to the first Republican national convention, and in 1860 was elected on the Republican ticket as governor of Ohio, and from 1864 to 1866 was Postmaster-General. He was president of the Columbus and Xenia railroad.

DENOUEMENT: in fiction, a term generally applied to the termination or catastrophe of a play or romance, but, more strictly speaking, designating the train of circumstances solving the plot and hastening the catastrophe. A good denouement in a play or novel should be natural, as the result of the preceding plot, and yet should not be so obvi-

ous as to be easily anticipated. Forced and arbitrary solutions of plot, offending against nature and common sense, are frequently perpetrated for theatrical effect.

DENS, PETER (1690–1775), a Roman Catholic theologian, born near Antwerp, at Boom. He was parish priest of Saint Rumold's, and president of the College of Malines for 40 years. His work, *Theologia Moralis et Dogmatica*, is extensively used as a textbook in the Roman Catholic theological schools.

DENSITY OF THE EARTH. The density of a body is the ratio of its mass when compared with the same bulk of water. Astronomy and the laws of gravitation have furnished the data for ascertaining the density of the earth, which is now assumed to be about five times that of water. See *ASTRONOMY*, *Britannica*, Vol. II, pp. 792, 793; and *GEOL-OGY*, Vol. X, pp. 222, 223.

DENTARIA, or coral-root, a genus of plants of the natural order *Cruciferae*, with rose-colored flowers and a knobbed root stalk, from which it derives its name. The root-stalk is pungent, and was formerly dried and used as a remedy for toothache.

DENTATUS, MANIUS, or MARCUS CURIUS, a Roman consul, noted for his integrity as well as for martial exploits. He died B. C. 265.

DENTEX, a genus of acanthopterous fishes of the family *Sparidae* (sea-breams, etc.). It sometimes attains a length of three feet and weighs 30 pounds. One species abounds in the Mediterranean.

DENTIL. See *ARCHITECTURE*, *Britannica*, Vol. II, p. 463.

DENTIFRICE, the name given to powders or washes used for cleaning the teeth. The ingredients employed are charcoal, common salt, chalk, phosphate of soda, cream of tartar, myrrh, catechu, and cinchona.

DENTRIOSTRES, a tribe or sub-order of birds, of the order *Insectores*, characterized by a bill with a marginal notch toward the extremity of the upper mandible. It is composed mainly of insectivorous birds, although the shrikes (*Lanidae*), which belong to it, prey also on small birds, quadrupeds and reptiles.

DENTISTRY, PROGRESS IN. For general article on *DENTISTRY*, see *Britannica*, Vol. VII, pp. 95–100. While in the human family the most important function of the teeth is to subserve nutrition by the mastication of food, they also aid very materially in the formation of articulate sounds, many of the tones and pronunciations of words depending, in high degree, upon the presence of teeth. Their impairment is, therefore, a matter of regret, and their replacement a matter of great convenience, if not of necessity. The practice of dentistry has been known for ages, and is attested by the works of the most ancient writers among the Greeks, as well as the discoveries among mummies in Egypt, the latter showing false teeth carved from ivory and fitted with gold plating of most skillful manufacture, dating back to an unknown period in Egyptian history.

Any accident, difficulty or disease attending the teeth, either singly or together, is quickly productive of disorder in the general system. A partial classified list of abnormal complications is given as follows:

Caries—Dry decay, or destructive disease of the bone, especially a disease resulting in the disintegration of the substance composing the various parts of the individual teeth, thereby causing cavities.

Excrementosis—a morbid, bony growth on the surface of the teeth.

Abrasion—a wearing or rubbing off, or away, by friction.

Fracture, or breakage.

Dislocation, or displacement, a derangement of the teeth.

Dislocation, or rending asunder the parts; a forcible displacement of the cap of dentine and enamel of a partially developed tooth from the formative pulp.

Irritation, or evoking an abnormal action.

Inflammation, a morbid condition characterized by swelling, pain, heat, and redness.

Granulation (polypus), or the formation of new tissue.

Suppuration, or the generation of pus.

Death, or the cessation of life in any particular part of the tooth.

Irritation, the result of abnormal action.

Inflammation, acute and chronic, producing pain, heat, and redness.

Hemorrhage, or unusual discharge of blood.

Abscess, or collection of pus, a gum boil.

The number of dental instruments has increased many fold: drills of various sizes, which are operated by pedal mechanism, and into which fit burr and chisel, and electrical mallets for chipping and trimming are among some of the more important inventions. A piece of rubber (the "rubber dam") for protecting the teeth, and operating somewhat after the manner of a coffer dam during the process of cleaning and filling, is one of the most valuable acquisitions for keeping the tooth under operation dry and clean. The corundum wheel, invented by Dr. Robert Arthur in 1878, is regarded as a great advance on any previous methods of cleaning and polishing.

Vulcanite as a substitute for metal, horn, bone, or ivory, in plate work, has become so popular as almost entirely to supersede their use. Its ease of management, and the readiness with which it is molded to the form of the mouth; its susceptibility of being colored to suit the color of the gums, and the firmness with which it retains the imbedded teeth, make it of great value in dentistry. Celluloid also enters largely into dental use in supplanting metal, etc., for the same reasons. Both have been brought to so high a degree of perfection in manufacture as to be placed in position within a few weeks after the decayed stumps of the original teeth have been removed, without inconvenience to the wearer, and with little or no danger of being thrown from their place by sudden coughing.

Porcelain has been for centuries a favorite material for use in the arts. It was used in the Etruscan vases of antiquity, and the exquisite gems of later ages, and with steadily increasing improvements has come down to our own age. It has been found of the greatest use in manufacturing teeth. In respect of cleanliness, appearance, and naturalness in shape and color, it has no superior in that department of dentistry. The first porcelain teeth manufactured in the United States date from 1820. In 1835 their manufacture was begun on an extended scale. Improvements were rapidly made in molding, enameling, and coloring, until in recent years the life-like appearance of porcelain teeth has seemed to have reached its completion. In 1844 Samuel S. White began their manufacture in Philadelphia on an extended scale, and built up an enterprise which soon became the largest of its kind in the world. In addition to the great factory turning out 400,000 teeth every month, branch houses were established in New York, Brooklyn, Boston and Chicago. It is estimated that this one American house manufactures more than one-half of all the artificial teeth used in the world.

Porcelain has also, in late years, entered into the manufacture of plate work. Its freedom from the deleterious matters, sulphate of zinc, and sulphate of mercury, which enter into the composition of rubber plate, or vulcanite and celluloid (camphor-gum forming one of the component parts of celluloid), as well as the entire absence of mineral taste attendant on metallic plates, make it invaluable in plate work. The porcelain used in this feature of dentistry is composed wholly of feldspar and silice. The minerals are first pulverized, then molded and baked. For cleanliness and purity of surface this plate is thus far unsurpassed, owing principally to its freedom from all chemical action which takes place in the use of metallic plates, and from compounds such as those containing sulphates or sulphides. The teeth are made of porcelain, and afterwards fitted into plates of porcelain in such perfection that no inconvenience is felt by the wearer, and no "falsity" recognized by the most critical observer, except by permission of the wearer. Porcelain teeth and plate are indestructible by oral secretions, and the most delicate color-tones are readily given shades of opacity grading into translucency and texture as determined by the eye, affording a perfect substitute for the lost organ. The use of porcelain in plate work was first practiced by Mahlon Loom, of Washington, D. C., who protected his process by patents, which were subsequently assigned to Dr. William E. Dunn, formerly of Delaware, Ohio, but subsequently a resident and eminent dentist of New York city.

One of the greatest advances in the mechanics of dentistry, is the electric-magnetic mallet, devised by Dr. W. G. A. Bonwill, with improvements by Dr. M. H. Webb. It is a small instrument, held and guided by the hand, for the purpose of hammering and packing by gentle strokes rapidly given on the gold or other filling in the cavity of the tooth. It accomplishes in a few seconds what previously required in many instances an hour's time, while the work accomplished is regarded as perfect.

It is stated that the first dentist in what are now the United States, was John Woodendale, of England, who practiced in New York and Philadelphia from 1766 to 1768, and then returned to England. The next was a Frenchman, Le Malr, who came over with the French army to aid the colonies in the Revolutionary struggle. A Mr. John Whitlock followed in 1784. Isaac Greenwood was the first dentist to settle in Boston, and his son, John Greenwood, is claimed to

have been the first native-born American dentist, beginning practice in New York city in 1788, and as late as 1790 was the only dentist in the city. In that year he constructed an entire denture for General Washington, and in 1795 another which was unsurpassed by any European work. The teeth were carved from ivory and held in place by spiral springs. As an evidence of the remarkable growth of dentistry in the United States the following comparative table is given, taken from official sources, and showing the number of dentists in the United States, by decades:

1820	100
1830	300
1840	1,200
1850	2,923
1860	5,000
1870	7,889
1880	12,314
1890 (estimated)	16,000

It is estimated that the total in other countries does not exceed 5,000. The relative progress, therefore, of dentistry has been very great in the States. During the last ten years there has also been a great improvement in methods. Among the more important is that of "capping," to preserve the vitality of the pulp of the tooth. The preparations used are many. Lead, tin, asbestos, a pulverized preparation of gutta-percha and feldspar, clarified quill, and later a compound made of oxide of zinc and dilute deliquescent chloride of zinc have all been used. This latter is regarded with especial favor. In its use, and for the purpose of avoiding possible pain by coming in contact with the tender pulp, a thin paste of oxide of zinc and carbolic acid is first laid on, and on this is built the superstructure made of the oxychloride of zinc.

Great progress has been made in the dental profession in respect of the organization of colleges, the formation of societies and the publication of journals. Of colleges there were at the close of the year 1890, in Cincinnati, the "Ohio College of Dental Surgery;" in Philadelphia, the "Pennsylvania College of Dental Surgery," and the "Philadelphia Dental College;" in New York city, the "New York College of Dentistry;" in St. Louis, the "Missouri Dental College;" in New Orleans, the "New Orleans Dental College;" in Boston, the "Boston Dental College," and the "Dental School of Harvard University."

Many new processes have also been, and are still being developed for the implantation of teeth; investigations are being prosecuted in the bacteriological causes of decay; the treatment and cure of Pyorrhoea Alveolaris; filling the teeth with porcelain; new methods in regulating teeth; treatment of fractured jaws; and treatment of cleft palate. The science of dentistry is advancing much more rapidly in the United States than in any other part of the world.

DENTON, the county-seat of Caroline county, Md., situated on the Choptank River, 53 miles southeast of Baltimore.

DENTON, the county-seat of Denton county, Texas, on a tributary of Trinity River and the Dallas and Wichita railroad. The village has manufactories of flour and pottery.

DENVER, a city of Colorado, the capital and commercial metropolis of the State, and county-seat of Arapahoe county (see Britannica, Vol. VII, p. 100). Denver is situated on the south bank of the South Platte River, at an elevation of 5,196 feet, in latitude 39° 45' N., longitude 104° 59' 23" W. It is but a few miles from the base of the foot-hills, which rise and gradually recede into the mountains, thus affording a beautiful view of many mountain-peaks covered with perpetual snow. Pike's Peak and Long's Peak are both visible in the distance. The city is beautifully laid out, has wide streets lined with elegant residences and substantial business houses; has a well-ordered city government, water works, gas works, electric lighting establishments, fire department, telephone exchange, street railways, and all the conveniences of a modern and progressive metropolis. Its public buildings are among the finest in the West, and its public school system is of special excellence. It has numerous fine churches, one of them, the Trinity Methodist Episcopal, completed in 1888, being one of the most magnificently appointed in America, and representing in actual valuation more than one-quarter of a million of dollars. Denver is the emporium of the rich gold and silver mining districts of Colorado, and has a branch of the United States mint. Although first settled in

1858, and having but a moderate growth for the first fifteen years of its existence, its population in 1880 was 35,629; while in 1890 it had reached the remarkable total of 126,186.

DEODORIZERS, chemical substances employed for the purpose of absorbing or destroying the odoriferous principles evolved especially from decomposing animal and vegetable matter. They strictly belong to the class of substances known as antiseptics and disinfectants. See Britannica, Vol. VII, p. 258.

DEOXIDATION, a term applied to the process of withdrawing the oxygen from a compound, as in the reduction of the native peroxide of iron in the smelting furnaces to the condition of metallic iron. On the small scale, in experimental inquiries, the process of *deoxidation* may be carried on before the blow-pipe, where the inner or reducing flame is essentially a deoxidizing one.

DEPARTMENTS, UNITED STATES. The administration of the various branches of the United States Government is carried on by means of departments. Thus the State Department having at its head the Secretary of State, attends to diplomatic and international correspondence, etc.; the War Department, at the head of which is the Secretary of War, has control of all matters pertaining to the military affairs of the country; the Navy Department, having the Secretary of the Navy at its head, attends to those of the navy; the Interior Department, having the Secretary of the Interior at its head, controls all matters pertaining to government lands, their settlement, etc.; the Treasury Department, perhaps the most important of all, with the Secretary of the Treasury at its head, attends to all financial matters of the Government, coinage and collection of revenue; the Department of Agriculture acquires and diffuses among the people information on subjects connected with agriculture; the Post Office Department conducts the postal service. The heads of these departments constitute the President's Cabinet.

DE PAUW, WASHINGTON CHARLES, born in Salem, Ind., Jan. 4, 1822, died in Chicago, Ill., May 5, 1887. He was a grandson of a Frenchman who accompanied Lafayette to America, to take part in the War for Independence. Mr. De Pauw engaged in legal work, milling, the grain business, and in the manufacture of plate glass. He endowed De Pauw University at Greencastle, Ind., and gave \$1,500,000 to De Pauw Female College at Albany, Ind.

DE PAUW UNIVERSITY. See COLLEGES, in these Revisions and Additions.

DE PERE, a manufacturing city of Brown county, Wis., on the Fox River. Water power is obtained by means of a dam across the river, and the city has manufactories of wagons, shingles, and wooden-ware, and contains car-shops, iron-works, and a flour-mill. The city has connection with Chicago and Buffalo by means of a line of steamers.

DEPEW, CHAUNCEY MITCHELL, orator and railroad president, born in Peekskill, N. Y., April 23, 1834. He graduated from Yale in 1856, was admitted to the practice of law in 1858. His public career as an orator was begun in 1856, when he took the stump for Fremont. In 1861 he was sent to the legislature; in 1863 elected secretary of N. Y. State, declining reelection two years later. In 1866 he was chosen attorney for the New York and Harlem Railroad, and three years later, when the railroad was consolidated with the N. Y. Central, he became general counsel of the company. He was elected second vice-president of the Central Railroad in 1882, and the following year, president of the "Vanderbilt" roads. Mr. Depew is president of

the Union League Club and the Yale Alumni Association of New York city. A volume containing a number of his addresses has been published, including those made on the unveiling of the statues of Alexander Hamilton, and of Bartholdi's *Liberty*; on the life and character of Garfield; and on the 32d anniversary of the Young Men's Christian Association.

DE PEYSTER, JOHN WATTS, born in New York city, March 9, 1821. He is a descendant of a French Huguenot family, whose first representative in New York, Johannes De Peyster, emigrated from Holland about 1685; became a merchant in New York city, and held several important public offices. Mr. De Peyster became in 1845 colonel of the 111th regiment of New York militia and in 1866 was brevetted major-general. He has written on military, historical, and ethnological subjects. Among his numerous publications are *Life of Field Marshal Torstenson*; *The Dutch at the North Pole*; *Carausius, the Dutch Augustus*; and *Personal and Military History of Gen. Philip Kearney*.

DEPILATORIES, or EPILATORIES, chemical agents employed for removing superfluous hair from the skin. They were extensively used by the ancients.

DEPONENT, a term in Latin grammar applied to verbs of a passive form, but active in signification. They are so called because they, as it were, lay down or dispense with the signification proper to their form, and originally, they all had a reflective meaning, like the middle voice in Greek verbs; thus *aversor*, "I detest," means radically, "I turn myself away from."

DEPOSIT, a village of New York on the Delaware River, and on the Erie Railroad. It is situated partly in Broome county and partly in Delaware county. It has flour and planing mills, and stock yards.

DEPOSITION, the testimony of a witness set down in writing, and taken by a judge or by a commissioner specially appointed by him for that purpose. The depositions are answers to questions generally put by the legal representatives of the parties to the suit under the control of the court or commissioner, and the answers are taken down by the clerk of court, or by a clerk specially appointed for the purpose. The deposition cannot be read where the witness himself might be produced, secondary evidence being never admissible.

DEPPING, GEORGE BERNARD (1784-1858), a French geographer and historian. In 1803 he began teaching German and writing for the press. He published many books, nearly all of which are of a historical or geographical character.

DEPRESSION, or DIP OF THE HORIZON, the angle through which the sea horizon appears depressed in consequence of the elevation of the spectator.

DE PROFUNDIS ("Out of the depths"), the first words of the 130th Psalm, which form a portion of the liturgy of the Roman Catholic church, and is sung when the bodies of the dead are committed to the grave. A tender melancholy pervades the psalm, which, however, brightens up at the close under the conviction that there is a "plenteous redemption."

DEPUTY, one who exercises power which properly belongs to another who has placed him in his stead. The appointment of the deputy does not free the principal from responsibility, for the deputy is not an assignee.

DE PUY, HENRY WALTER, born at Pompey Hill, Onondago county, N. Y., in 1820, died Feb. 2, 1876. He was a lawyer, the private secretary of Gov. Horatio Seymour (1853-54), served on foreign mis-

sions (1854-60), was secretary of Nebraska, and appointed Indian commissioner by President Lincoln. He was an editor, a newspaper writer, and the author of *Kossuth and His Generals*; *Louis Napoleon and His Times*, and other works.

DERAH, an Egyptian unit of measure, of interest as connected with recent conjectures concerning the pyramids. This measure is sub-divided into *kadam*, $\frac{1}{2}$; *abdat*, $\frac{1}{3}$; and *kerat*, $\frac{1}{4}$ of a derah.

DERBY, a manufacturing village and railroad junction of New Haven, Conn., at the confluence of the Housatonic and Naugatuck Rivers.

DERBY, EDWARD HENRY SMITH STANLEY, 15th Earl of, an English statesman, born in 1826. In 1848 he became a member of Parliament for the borough of Lynn-Regis, and in 1852 was appointed under-secretary for foreign affairs. In 1858 he became secretary for India, and in 1869 succeeded his father, the 14th Earl of Derby, in the earldom. In 1874 he again became foreign secretary under Disraeli, but resigned in 1878 and joined the Liberal party two years later. From 1882 to 1885 he was secretary for the colonies.

DERBY, ELIAS HASKET, merchant, born in Salem, Mass., Aug. 16, 1789, died there Sept. 8, 1799. His father was a ship-owner, and the son continued in the business and greatly extended it. He sent trading vessels to Russia, the East Indies, and China. He contributed \$10,000 toward the establishment of the American navy (1798), and loaned supplies and ships to the National Government.

DERBY, ELIAS HASKET (second), merchant and ship-owner, born in Salem, Jan. 10, 1766, died in Londonderry, N. H., Sept. 16, 1820. He was the first importer of merino sheep into this country, and the first manufacturer of broadcloth in Massachusetts.

DERBY, ELIAS HASKET (third), lawyer, born in Salem, Mass., Sept. 24, 1803, died in Boston, Mass., March 30, 1880; he was engaged in the construction of railroads, assisted in the completion of the Hoosac tunnel, and in the building of iron-clads during the civil war. He was a contributor to the "Edinburgh Review" and the "Atlantic Monthly."

DERBY, GEORGE, born in Salem, Mass., Feb. 13, 1819, died in Boston, Mass., June 20, 1874. He was an army surgeon, and gained a high reputation as a sanitarian. He served for four years in the army, attaining the rank of lieutenant-colonel of volunteers. In 1872 he was appointed professor of hygiene at the Harvard Medical College.

DERBY, JOHN BARTON, born in Salem, Mass., Nov. 13, 1792, died in Boston in 1867. He was a graduate of Bowdoin, a lawyer, and a minor poet.

DERBY, GEORGE H. (1823-61), an American officer and humorist. He served in the Mexican war, 1846-47, and received the brevet of first-lieutenant. From 1847 to 1860 he was on various surveys and explorations. He is the author of many humorous effusions.

DERELICT, a term in law, signifying anything forsaken or left unoccupied, or willfully cast away. Where the sea has receded from the shore, the land thus left uncovered is styled derelict. The most common use of the term is its application to a ship which has been wrecked, and has been abandoned by the master and crew without hope of recovery. The mere quitting of a ship for the purpose of procuring assistance from the shore, or other temporary cause, with the intention of returning to her again, does not make her derelict.

DERIVATION: in medicine, a method of curing disease, by which it was formerly supposed that the *materies morbi*, or matter of the disease, was drained away through some channel established

for it by artificial means, as when a blister is applied over an inflamed lung.

DERMESTES, a genus of coleopterous insects of the section *Pentamera* and of the family *Clavicornes*, having antennæ shorter than the thorax, their three terminal joints forming an ovate compressed club. Their larvæ feed mostly on dry and decaying animal matter and are very voracious, committing great ravages among furs, collections of natural history, etc. *D. lardarius* is the familiar bacon beetle, the larvæ of which is so often destructive to bacon and other dried meats, and often to cheese. See *Britannica*, Vol. VI, p. 126.

DERRICK, a mechanical contrivance used for the same purpose as the crane, but recently so improved in size, strength, and mechanism as to be able not only to raise a body of 1,000 tons in weight, but also to transport it from one place to another.

DERWENTWATER, JAMES RADCLIFFE, EARL OF, born in 1688, grandson of Charles II of England, was one of the leaders in the rebellion of 1715. He was taken prisoner at Preston, and conveyed to the Tower of London; at his trial in Westminster Hall he pleaded guilty and threw himself upon the mercy of the king, but his appeal was rejected and he was beheaded on Tower Hill, Feb. 24, 1716. He was the last earl of Derwentwater.

DERZAVIN, GABRIEL ROMANOWICZ (1743-1816), a popular Russian lyric poet, whose most celebrated poem is the *Address to the Deity*. See *Britannica*, Vol. XXI, p. 106.

DESERTION, the abandonment of a duty willfully and without right. See *Britannica*, Vol. VII, p. 301, (Divorce); Vol. XVI, p. 298 (Military Law); Vol. XXIV, p. 643.

DESICCATION, the process of drying by heat, dry air or chemical agents which have an affinity for water. Examples of the class of drying substances or desiccants are fused chloride of calcium, quicklime, fused carbonate of potash and oil of vitriol. The latter is employed by being placed in a separate vessel near the substance to be dried, and under a bell-jar.

DESIGN, SCHOOLS OF, the original designation of what are now officially termed "Schools of Art." The establishment of schools of design had for its object the training of designers and artisans in the principles and practice of the fine arts. There are many such schools in the United States, and some of them are of rare excellence.

DESIGNS, COPYRIGHT IN. Designs for articles, whether of ornament or utility, are protected by various statutes.

DE SMET, PETER JOHN, missionary, born in Termonde, Belgium, Dec. 31, 1801, died in St. Louis, Mo., in May, 1872. He was a student who emigrated to America in 1821, to work among the Indians. He became a Jesuit and labored among the Pottawattamies, the Flatheads, and in 1845 he visited the Sinpoils, Flatbows, the Wandering Creeks, Assiniboins and other tribes. He erected many mission buildings, several times crossed the Atlantic, obtaining money and fellow-workers, exerted a great influence for good over the Indians, and on several occasions prevented hostilities between Indian tribes and between the U. S. government and the Indians. He wrote *The Oregon Missions and Travels Over the Rocky Mountains*; *Indian Letters and Sketches*; *Western Missions and Missionaries*, and *New Indian Sketches*.

DES MOINES, a city of Iowa, capital of the State, and county-seat of Polk county (see *Britannica*, Vol. VII, p. 180). Having four trunk lines of railway, besides other shorter lines, its traffic facilities are unsurpassed by any other city in the

State. For local transportation there are fifty miles of electric railway trackage, and eight miles of motor railway trackage. Among the principal public buildings are the United States Federal Court and Post Office building, a marble edifice costing \$385,000, and the State Capitol, an imposing and commodious structure, costing nearly \$3,000,000. The Young Men's Christian Association have erected a building at a cost of \$75,000. The State Agricultural Society has purchased 260 acres of land within the city limits for a permanent location of the Iowa State Fair, upon which it has expended for the improvement of the ground and the erection of permanent exhibition buildings \$135,000. There are forty public schools, and numerous private schools of high order. The Catholics and Hebrews have each parochial schools, and the Des Moines College (Baptist), the Drake University, Callanan College, and the Highland Park Industrial College are located here; also two excellent business colleges. The State library contains 40,000 volumes, and the public library 10,000 volumes. The city is the center of one of the most productive coal areas of the State, there being twenty-nine mines within or near the city limits, from which the output in 1889 was 659 tons. The principal industrial enterprises are mining, pork-packing, and the manufacture of glucose and alcohol. The city enjoys an extensive wholesale trade. Population in 1880, 22,408; in 1890, 50,067.

DESMONCUS, an American genus of climbing palms, like the rattans of the East Indies. They have alternate pinnate leaves, with long hooked spines.

DESPOTISM, a form of government which has for its object the interests of an individual or of a class, to the exclusion of those of the whole community.

DESSALINES, JEAN JACQUES, Haytian emperor, born in Guinea, Africa, in 1758, died in Hayti, Oct. 17, 1806. He was a slave of a French planter, whose name he afterwards assumed. He fought in the revolutionary wars of Hayti, becoming adjutant-general under the negro commander Jean François, and afterwards joining Toussaint L'Ouverture, when the latter united with the French. He became lieutenant-general, fought the mulatto chief Rigaud, winning a name for energy, dissoluteness and brutality. When peace was declared he was appointed governor of the south part of Hayti. His administration was marked by cruelty to the negroes, the cold-blooded murder of Toussaint's nephew, friendliness with the French forces, which was afterwards followed by a war of extermination upon them. When the French had been expelled from the island (1804), Dessalines was made governor-general for life. At first he ruled wisely, but he soon evinced his disposition by ordering a massacre of all the white inhabitants. He had himself crowned emperor of Hayti, taking the title of Jean Jacques I. He became more despotic than ever, concentrating all power within his own hands, and killing every person of whom he was suspicious. An insurrection arose in 1806, and he was killed by his officers.

DETACHMENT: in military matters, a small but indefinite number of troops sent away from the regiment, brigade, division, or army, as the case may be, on some special duties. A detachment of one or more ships of a fleet may be told off in a similar manner.

DETERMINISM, a term now generally used to denote the doctrine that man's actions are uniformly determined by motives, acting upon his character, and is in direct opposition to the doctrine of the freedom of the will. Digitized by Google

DETMOLD, CHRISTIAN EDWARD, engineer, born in Hanover, Germany, Feb. 2, 1810, died in New York city, July 2, 1887. He made drawings for the first locomotive built by the Messrs. Kemble in New York, superintended the building of Fort Sumter's foundations, made improvements in the manufacture of iron, built the New York "Crystal Palace," engaged in coal mining, and translated into English some of Machiavelli's political writings.

DETMOLD, WILLIAM, M. D., born in Hanover in 1808, settled in New York in 1837. He introduced orthopedic surgery into the United States; he also gave his voluntary aid as army surgeon during the civil war, and invented an improved knife for the use of one-armed men.

DE TROBRIAND, PHILIPPE REGIS, soldier, born near Tours, France, June 4, 1816. He was educated in his native country, and came to America in 1841, where he was successively connected with two French newspapers. When the civil war broke out he enlisted on the Northern side and fought at Yorktown, Williamsburg, Fredericksburg, Chancellorsville, Gettysburg, Petersburg, and several other important battles. He was brevetted brigadier-general, in 1867 assigned to the district of Dakota, and later to those of Montana and Green River. He was retired from service at his own request, being sixty-three years of age when he left the service.

DETROIT, a city of Michigan, the commercial metropolis of the State, and county-seat of Wayne county (see *Britannica*, Vol. VII, pp. 133-34). The transportation facilities for the commerce and manufactures of Detroit are unsurpassed by those of any city in America. The lake traffic that passes up and down the Detroit River is enormous, and it is estimated that a vessel of some kind passes the city every seven and one-half minutes during the season. Detroit possesses manufacturing establishments of national importance. Among them are three manufactories of cars, three stove-works, and two medicine factories. One of the largest seed-houses in the world has its headquarters here. There are also large establishments for smelting iron and copper, and for the manufacture of engines, bridges, machinery, tools, furniture, boots and shoes, tobacco, etc. The public school system of Detroit is in a high state of development. The churches are numerous, and of unusual architectural beauty, among the most notable being the Woodward Avenue Baptist church. The Museum of Art and the City-hall are also notable specimens of architectural excellence. An international fair and exposition was held in Detroit in 1889, which attracted wide spread attention. The buildings covered over 14 acres of ground, the main building being the largest of its kind in the world. It has a frontage of nearly five hundred feet, with an area for exhibition purposes of about 200,000 square feet. The population of Detroit in 1880 was 116,840; in 1890, 205,669.

DETROIT CITY, the county-seat of Becker county, Minn., on the Northern Pacific railroad and Detroit Lake, 206 miles west of Duluth.

DETTINGEN, a village of Bavaria, on the Main, 10 miles northwest of Aschaffenburg by rail, noted as the scene of a battle during the war of the Austrian Succession. Here on June 27, 1743, George II of England, commanding English, Hanoverians and Austrians, defeated the larger French army under the Duc de Noailles. This was the last occasion on which a king of England took the field in person.

DEUS EX MACHINA, an expression borrowed from the classical theater. The tragic poets of

Greece, instead of using natural means to bring about the denouement of their plots, often resorted to a more expeditious mode—the intervention of a god, who descended in a machine, and abruptly solved the difficulty that hindered its proper termination. In modern tragedy the arbitrary introduction of a person or incident into the conduct of a plot simply to remedy some inartistic negligence in its construction, is metaphorically called a *Deus ex Machina*.

DEUTZIA, a genus of shrubs of the order *Philadelphaceae*, found in China, Japan, and Northern India, and much cultivated. It has pretty white flowers, and is named for Jan Deutz, of Holland.

DEVASTAVIT: in law, a term applied to the waste or mismanagement of the assets of a deceased person by an executor or administrator. See *Britannica*, Vol. XXIV, p. 394.

DEVELOPMENT, in photography, is the process which immediately follows exposure, and which renders the picture visible in all its details. It consists in the precipitation of *new material* on that portion of the sensitive surface which has been acted on by light; the same principal, therefore, prevails in all processes. See *PHOTOGRAPHY*, *Britannica*, Vol. XIX.

DEVENS, CHARLES, jurist, born in Charlestown, Mass., April 4, 1820, died Jan. 7, 1891. He was a graduate of Harvard, and studied law at Cambridge. He was United States marshal for the district of Massachusetts when the fugitive slave Thomas Sims was demanded by his master. The marshal, notwithstanding public sentiment, delivered the slave to his owner, and afterwards tried to purchase his freedom, but failed. When the Union army advanced into the South Sims was liberated, and assisted pecuniarily by Mr. Devens. The latter fought in the civil war; was wounded at Ball's Bluff, Fair Oaks and Chancellorsville, and at the end of the war was brevetted major-general for gallant conduct at Richmond. He resumed legal duties in 1866, was appointed justice of the Supreme Court of the State in 1873, and was attorney-general under President Hayes.

DE VÈRE, SIR AUBREY (1788-1846), an Irish poet. He wrote little until thirty years of age, when he published two dramatic poems, and subsequently produced many popular works.

DE VÈRE, AUBREY THOMAS, an Irish poet, born in 1814. He began to write poetry at an early age, his productions attaining considerable popularity. In 1854 he became honorary professor of political and social science in the Roman Catholic University of Dublin.

DE VÈRE, MAXIMILIAN SCHELE, an American philologist, born in Sweden in 1820. He came to the United States in 1842, and in 1844 was made a professor in the University of Virginia. He has published many important works on philology and other subjects.

DEVICE (from the Middle Age Lat. *divisa*, a drawing or design), a motto expressed by means of a pictorial emblem. The motto proper originated in the emblem, a written inscription coming to be added to the pictorial design, with the view of rendering the meaning more explicit. Devices thus consist of two parts: a figure called the "body," and a motto in words called the "soul" of the device. As early as the times of Æschylus the "Seven Heroes Before Thebes" are all represented with devices on their shields; and Xenophon relates the same of the Lacedæmonians and Sicyonians. In the Middle Ages devices on coat-armor came into regular and formal use, and chivalry employed them in its courtly expressions of devo-

tion to the fair sex. They were used as charges on the shield and as crests.

DEVIL, or SATAN (Gr. *diabolos*, "false accuser." Heb. *satan*, "adversary"): in the Old and New Testament, a mighty spirit of evil, who has, during unknown ages, ruled over a kingdom of wicked spirits, and is in constant opposition to God. The conception of Satan was very gradually developed in the Jewish mind, and it is beyond all question that it acquired clearness and prominence through extra-national influences.

DEVIL'S LAKE, the name of a body of water and of a small village in the north-eastern part of North Dakota. The village is on a railroad, and is the county-seat of Ramsey county.

DE VINNE, DANIEL, Methodist Episcopal clergyman, born in Londonderry, Ireland, Feb. 1, 1793, died in Morrisania, N. Y., Feb. 10, 1883. He was brought up in New York State, became a minister in the Methodist Episcopal church, and after filling appointments in Louisiana and Mississippi for five years he was transferred to the New York conference on account of his anti-slavery opinions. He was a contributor to the religious press, and published the following books: *The M. E. Church and Slavery; Recollections of Fifty Years in the Ministry; and the Irish Primitive Church.*

DE VINNE, THEODORE LOW, a printer, born in Stamford, Conn., Dec. 25, 1828. He took up his residence in New York city in 1849, and ten years later became partner of his employer, Francis Hart, whom he succeeded in business. Since the beginning of the *St. Nicholas* in 1873, Mr. De Vinne has been its printer, and the printer of the *Century* since 1874. He has done much for the improvement of typography, and the excellence of his press-work and wood-cuts has given him a reputation. He is a member of the Typothetæ, the Author's club, the Grolier club; is a contributor to current literature, and has published *Printer's Price List; Invention of Printing; and Historic Types.*

DEWEES, WILLIAM POTTS, physician, born in Pottsgrove, Pa., May 5, 1763, died in Philadelphia, May 18, 1841. He studied medicine at the University of Pennsylvania, and began to practice at Abington. The yellow fever depleted the ranks of Philadelphia physicians in 1793, and Dr. Dewees removed to that city. He won distinction in the department of obstetrics, and in 1823 was appointed to a professorship of obstetrics and diseases of women and children in his *alma mater*. He has written medical books on these two specialties and on the *Practice of Medicine.*

DEWEY, CHESTER, author and educator, born in Sheffield, Mass., Oct. 25, 1784, died in Rochester, N. Y., Dec. 5, 1867. He graduated at Williams College, and entered the ministry. He was influenced to abandon this profession by the offer of a tutorship in Williams in 1808. Two years later he was offered the chair of mathematics and natural philosophy, which position he held for seventeen years. In 1836 he was called to the presidency of the Collegiate Institute in Rochester, N. Y., where he remained fourteen years, and was then appointed to the professorship of chemistry and natural philosophy in the University of Rochester. He was a botanist, and an authority on the subject of grasses. One of his works, the *History of the Herbaceous Plants of Massachusetts*, was published at State expense.

DEWEY, ORVILLE, theologian, born in Sheffield, Mass., March 23, 1794, died there March 29, 1882. He graduated at Williams College in 1814, and from the Andover Theological Seminary in 1819. He became a Unitarian, and for two years was the

assistant of Dr. Channing. He was successively pastor at New Bedford, in New York city, in Albany, in Washington, and in 1858 he was settled at Boston, where the society was called the "New South." Here he remained four years, and then retired to his farm, where his last years were spent. He visited Europe twice on account of his health; delivered two courses of lectures, entitled *The Problem of Human Life and Destiny*, and *Education of the Human Race*, and wrote controversial sermons and addresses.

DE WITT, a railroad junction and manufacturing town of Clinton county, Iowa, situated 25 miles north of Davenport.

DEXTER, an important business center of Penobscot county, Me. It manufactures machinery and woolen goods.

DEXTER, a manufacturing village of Washtenaw county, Mich., on the Huron River, 47 miles west of Detroit. It has flour, woolen, and planing mills, and car-works.

DEXTER, HENRY, sculptor, born in Nelson, Madison county, N. Y., Oct. 11, 1806, died in Cambridge, Mass., June 23, 1876. In early life he worked on a farm, and then took up the blacksmithing trade, which he followed until after he was married. He determined to become an artist and took up portrait painting, but in 1840 turned his attention to sculpture. He became particularly successful in making portrait busts; his first was that of Mayor Samuel Eliot, of Boston. He modeled in 1860, thirty-one busts of the governors in the United States then holding office; this included all the governors save those of Oregon and California. Agassiz, Charles Dickens, Longfellow, and other famous men were among those whose portrait busts were made by him. He executed pieces of statuary. *The Backwoodsman; The Cushing Children; Gen. Joseph Warren at Bunker Hill; and Nymph of the Ocean* are some of his works.

DEXTER, HENRY MARTIN, clergyman, born in Plympton, Mass., Aug. 13, 1821, died in 1890. He graduated at Yale and at the Andover theological seminary, and became in 1844 the pastor of a Congregational church at Manchester, N. H. Five years later he was given the care of Berkely St. church in Boston. He became connected with the "Congregationalist" in 1851, and for fifteen years edited the paper. For seven years he edited the "Congregational Quarterly" and in 1867 he resigned his pastorate, being called to the office of editor-in-chief of the consolidated "Congregationalist and Recorder." For three years (1877-80) he was lecturer on Congregationalism at the theological seminary, where he graduated. Dr. Dexter wrote a work on *Congregationalism*, and also *The Voice of the Bible the Verdict of Reason; The Congregationalism of the Last 300 Years*; besides works on future probation, on woman suffrage, and on historical matters connected with the early Puritan church in New England.

DEXTER, SAMUEL, jurist, born in Boston, Mass., May 14, 1761, died in Athens, N. Y., May 3, 1816. He graduated at Harvard, studied law, practiced in Worcester and Middlesex counties, and was elected to the Massachusetts legislature and to both houses of Congress. He resigned from the Senate in 1800, having been appointed Secretary of War by President Adams, and resumed his legal practice at the conclusion of his public services in the cabinet. He was an earnest advocate of temperance, becoming first president of the first temperance society in his State.

DEXTER, TIMOTHY, merchant, born in Malden, Mass., Jan. 22, 1743, died at Newburyport, Oct. 26, 1806. He was an eccentric character, who rose by

singular and fortunate investments from poverty to wealth. He was ignorant and vain, and many curious stories are told of him. He was known as "Lord Timothy Dexter," a title he had bestowed on himself.

DEXTER, a celebrated race horse, a brown gelding, sired by Rysdyk's Hambletonian, the grandfather of Maud S., and foaled in 1858. On reaching maturity he was put upon the track and gained the record of a mile in 2 minutes and 17½ seconds. In 1867 Mr. Robert Bonner purchased him for \$35,000, and under his direction and training the horse made the remarkable record of a mile in 2:16. His height was 15 hands and 1½ inches, and he was possessed of great nerve and energy. He was kept in active use until his 28th year, after which he only indulged in walking exercise. The great racer died of old age, and was carefully buried on his owner's estate.

DHALAC, an island thirty miles in length, with an average breadth of 15 miles, situated off the Abyssinian coast in the Red Sea. The Dhalac Archipelago is the name given to the cluster of islands lying around Dhalac.

DHAWALAGHIRI, once supposed to be the highest peak of the Himalaya Mountains, but now ascertained to be at most only the third in point of altitude. Its estimated height is 28,000 feet. It is within the limits of Nepal.

DHOLE (*Canis dhola*), an Indian species of dog roaming wild through the Western Ghats and in other mountainous districts. It is a very courageous animal of a light-bay color, and has fierce, keen eyes, a sharp muzzle, wide, pointed ears, long legs, and a straight though not bushy tail, its size being midway between that of the wolf and of the jackal. Several similar species or varieties, for which Colonel Hamilton has proposed the sub-generic name *Chryseus*, found in Nepal, Ceylon, and other Eastern countries, are also called dhole, being sometimes designated by the common name *Red Dogs*. See *Britannica*, Vol. XII, p. 741.

DHUBBOREE, a decayed town in Guzerat, which presents many memorials of ancient grandeur.

DHUNCHEE, or **DHANCHI**, a plant of the natural order *Leguminosæ*, sub-order *Papilionacæ*, having an elongated many-seeded pod, alternately swollen and contracted, as if it contained a string of beads. The *Dhunchee* is an annual herbaceous plant, much cultivated in Bengal.

DIACHYLON, the common healing or adhesive plaster, made by combining litharge, or the red oxide of lead, with olive oil.

DIACOUSTICS, the science of refracted sounds, or the consideration of the properties of sound refracted by passing through media of different density; sounds passing through or across an object.

DIAGNOSIS (Gr., *dia*, through, and *gnosis*, knowledge), the through-knowledge or thorough knowledge of a disease, embracing its points of distinction from other diseases, its symptoms, their relation to one another, and to the state of the different organs and functions of the body, in so far as this can be appreciated during life. Diagnosis is usually spoken of in contrast with prognosis, which implies the judgment framed by the physician as to the issues of the disease; and also with prophylaxis, which refers to the warding off of disease when supposed to be impending.

DIAGOMETER, an electric instrument, the invention of M. Rouseau, for determining the conducting power of fixed oils, and for detecting adulteration of olive oil.

DIAGONAL, in plane geometry, is a straight line joining any two angles, not adjacent, of a recti-

lineal figure. A line drawn between two adjacent angles would coincide with the boundary-line. A triangle has no diagonal, because any two of its angles are adjacent; a four-sided figure has two diagonals; a five-sided, five; a six-sided, nine, etc. The number of possible diagonals in any figure is found by taking three from the number of sides, multiplying the remainder by the number of sides, and taking half of the product.

DIAGONAL SCALE, a system of lines by means of which hundredths of units may be laid down or measured with compasses.

DIALECT. See **PHILOLOGY**, *Britannica*, Vol. XVIII, pp. 776-77.

DIALOGUE, a conversation between two or more persons, implying, however, greater unity of subject and more formality than an ordinary conversation. The ancient Greek philosophers were fond of this way of conducting their investigations and conveying their instructions (see **LUCCIAN**, *Britannica*, Vol. XV, p. 42). The Socratic dialogue is a conversation in the form of question and answer, so contrived that the person questioned is led himself to originate those ideas that the questioner wishes to bring before him. The dialogues of Plato are, as it were, philosophical dramas, in which the Socratic method of investigation is brought to bear upon speculative subjects. The form of dialogue is poorly adapted to the modern state of science. Lander's *Imaginary Conversations* are a happy effort of this kind. The drama is dialogue combined with action.

DIAMAGNETISM. The fact that iron is attracted by the magnet has been known from a very early date; that bismuth exhibits a repulsive action toward the magnetic needle has been known for nearly a hundred years. Dr. Faraday was the first (1845) to show that all bodies are more or less affected by magnetic influence, and his beautiful researches on the subject have opened up a new field in the domain of science. He found that the magnetism of bodies was manifested in two ways—either in being attracted by the magnet, as iron, or in being repelled, like bismuth. For a list giving the kind of magnetism displayed by the more common substances, see *Britannica*, Vol. XV, p. 263.

DIAMOND-CUTTING INDUSTRIES IN UNITED STATES. For general article on the Diamond industry, and optical properties of diamonds, see *Britannica*, Vol. VII, 162-67. Only a very limited number of diamonds have been found in the United States. They are met with in well-defined districts of North Carolina, Georgia, Wisconsin, and California, and all the discoveries thus far have been accidental.

The returns of the census in 1880 showed that there were in New York sixteen firms engaged in cutting and recutting diamonds, and in Massachusetts three. Cutting had also been carried on at times in Pennsylvania and Illinois, but had been discontinued. In 1889 seven of the New York firms ran on full time, but the others were unemployed, respectively, 14, 50, 61, 120, 125, and 240 days, owing to inability to obtain rough material at a price at which it could be advantageously cut. The firms that were fully employed were generally the larger ones, whose business consisted chiefly in repairing chipped or imperfectly cut stones or in recutting stones previously cut abroad, which, owing to the superior workmanship in command here, could be recut at a profit, or in recutting very valuable diamonds when it was desired, with the certainty that the work could be done under their own supervision, thus guarding against any possible loss by exchange for inferior stones. The persons employed numbered 286 receiving a total of wages, \$148,111, averaging about \$3.55 severally per day when at work. Of the 19 establishments, 16 used steam-power, and only one used foot-power.

The importation of rough and uncut diamonds in 1880 amounted to \$129,207, in 1889 to \$250,167, and the total for the decade was \$3,183,539, while in 1888 there were imported \$443,996 worth, showing that there was 94 per cent. more cutting done in 1889 than in 1880, but markedly more in 1882 and 1888. This large increase of importation is due to the fact that in the years 1883 to 1885 a number of our jewelers opened

diamond-cutting establishments, but the cutting has not been profitably carried on in this country on a scale large enough to justify branch houses in London, the great market for rough diamonds, where advantage can be taken of every fluctuation in the market and large parcels purchased, which can be cut immediately and converted into cash; for nothing is bought and sold on a closer margin than rough diamonds. The census reports for 1890 also showed, as will be seen by the following table kindly furnished by the Government department, that there had been a remarkable increase in the imports of diamonds and precious stones into this country during the last few years:

Years ending June 30— Value.	Years ending June 30— Value.
1870..... \$1,768,394	1881..... \$8,350,315
1871..... 2,349,482	1882..... 8,377,900
1872..... 2,939,155	1883..... 7,598,176
1873..... 2,917,216	1884..... 8,712,315
1874..... 2,158,172	1885..... 5,628,916
1875..... 3,284,319	Years ending Dec. 31—
1876..... 2,409,516	1886..... \$9,264,488
1877..... 2,110,215	1887..... 10,686,408
1878..... 2,970,469	1888..... 10,223,680
1879..... 3,841,395	1889..... 11,705,909
1880..... 6,690,912	

The imports from 1870 to 1879, inclusive, amounted to \$36,696,203, whereas from 1880 to 1889, inclusive, the imports amounted to \$87,198,114, more than three times as much as were imported the previous decade.

DIAN DE POITIERS (1499–1566), the favorite of Henry II, of France. He permitted her to control his foreign policy and exercise royal power.

DIAPASON REGULATOR. The French, who give the name of *diapason* to the tuning-fork, have lately made attempts to use that instrument in connection with clock-work, partly as a means of counting very small intervals of time. M. Duhamel made an arrangement in which a cylinder, by means of a screw-tapped end, was made to advance a little in the direction of the axis; this cylinder was covered with blackened paper and was rotated by means of clock-work. A diapason had a style or marker, made of a small bit of pointed spring, fixed to the end of one of the prongs. On the diapason being sounded in the usual way, and the spring placed lightly against the cylinder, the style traced a sinuous white line on the black paper. The sinuosities became representatives of minute intervals of time. The diapason regulates the rate of motion of the train of wheels by the equilibrium of the vibration of the prongs, while the train of wheels tends to increase the time during which the prongs vibrate and sound. An index carried by an arbor round a dial may be made to recount or record the vibrations. Brequet's experiments have gone as far as instruments giving two hundred simple vibrations (one hundred double vibrations) per second.

DIARY (Latin, *diarium*, from *dies*, day), a daily record. It does not, however, comprehend every sort of daily record, but only such as have reference to the writer personally. In it the *littérateur* inscribes the daily results of observation, reading, or thought; to the merchant it serves the purpose of an order or a day-book, while the physician finds it indispensable as a register of engagements. The use of diaries has become so general that the making of them now forms an important branch of book-manufacture.

DIAS, HENRIQUE, a Brazilian soldier, born in Pernambuco, died in Recife, Aug. 31, 1661. In the Portuguese army he commanded a party of negroes, was wounded and captured, but allowed to escape because he was a negro. In the next battle his bravery was rewarded by the cross of the legion of Christ, and the command of the colored troops. His name is given to a regiment whose commander is always a negro.

DIAS VIEIRA, JOÃO PEDRO, Brazilian statesman, born in Guimarães, March 30, 1820, died Oct.

30, 1870. He was a lawyer, an orator, a member of the provincial assembly of Maranhão; held the offices of attorney-general of the treasury, was governor of the province of the Amazonas, deputy to the chamber of representatives, minister of the navy, and of foreign affairs.

DIATHESIS, a Greek word signifying a disposition or arrangement, and applied by the old medical authors to the predisposition or constitution of the body which renders it prone to certain diseased states.

DIÁZ DE SOLÍS, JUAN, a Spanish navigator, born in Leberija, Spain, in 1471, died in South America about 1516. He sailed from Cadiz in 1506, and following somewhat the course of Columbus, he discovered the coast of Yucatan, Bay of Campeachy, and in a subsequent voyage the Plate River. He was given the title of chief pilot of the kingdom, and designed a marine chart of the coast of America so far as it was then known. He met his death at the hands of cannibals while exploring the Plate River in a small boat.

DIÁZ, PORFIRIO, president of Mexico, born in Axaca, Sept. 15, 1830; was educated in the institute of Axaca, and after studying law entered the army. He took part in the revolution of 1854 and in the three-years' "war of the reform," which commenced in 1857. In 1863 he was appointed commander of the army; Maximilian arrived in Mexico in April, 1864, and until his downfall in 1867, Diaz was leader of the Republican forces. On the establishment of the Republic Juárez was elected president; he died and Lerdo succeeded him. Diaz started a revolutionary warfare, which finally resulted in his own favor. The president fled the country, Iglesias became president *pro tem.*, and in the election of 1877 Diaz obtained the office. He ruled with wisdom and firmness till 1880, when Gen. Manuel Gonzalez was elected president. Four years later Diaz was reelected, and gave much attention to the financial condition of the country. In 1888 he was a third time elected president, and at the present time (1891) is holding the office. Gen. Diaz has displayed cruelty and a spirit of revenge, but his official acts are, in the main, judicious and statesmanlike.

DIBBLE, SHELDON (1809–45), an American missionary to Hawaii. He studied theology and was ordained in 1830, sailing for the Hawaiian Islands the same year. He visited the United States in 1837, but returned in 1839 to end his days in missionary labors. He wrote valuable works on historical and other subjects.

DIBBS, an English name for "jack-stones," a very ancient game played by boys and girls, and, according to Dr. Clarke, sometimes engaged in by old men in Russia. It consists of throwing up small bones or pebbles, and catching them first on the palm and then on the back of the hand. The antiquity of this simple kind of play is proved by figures on Grecian vases, in which females are seen kneeling and engaged in the sport.

DICE (plural of die), small cubes of bone or ivory marked on each side with black dots, from one up to six in number. They are employed in certain games of chance, such as backgammon; also in settling some dispute in which the decision is referred to the highest number thrown. The throwing of dice is affected by means of a small tubular box, which, held in the hand, is shaken at will by the player. When the dice are true cubes there is no plan by which any kind of shaking can bring out a desired number.

DICEY, EDWARD, an English editor, born in 1832. For a time he was editor of the London "Daily News," and in 1870 accepted the editorship of the

'Observer." He has published several works descriptive of his travels in the East.

DICHLAMYDEOUS, a term in botany, applied to those flowers which have both calyx and corolla. DeCandolle divides dicotyledonous or exogenous plants into *Dichlamydeous* and *Monochlamydeous*.

DICHOTOMOUS, a botanical term formerly vaguely used to designate any appearance of branching by forking. See *Britannica*, Vol. IV, p. 93.

DICKERSON, MAHLON (1770-1858), an American statesman. He was admitted to the practice of law in 1793, and settled in Philadelphia. He held various political offices in Pennsylvania, and then removed to New Jersey, where he became judge of the Supreme Court and chancellor. In 1811 he became a member of the legislature and four years later was elected governor of the State. From 1817 to 1833 he was a member of the United States Senate, and from 1834 to 1838 was Secretary of the Navy. Subsequently he was on the bench of the United States district court of New Jersey, and in 1846-48 was president of the American Institute. He published *Speeches in Congress*.

DICKINS, JOHN, born in London, England, in 1748, died in 1798. He was one of the leading American Methodist preachers of his day. He aided in founding Cokesbury College and the Methodist Episcopal Book Concern.

DICKINSON, ANNA ELIZABETH, an American orator and author, born in 1842. She made her first public speech in 1857, and from that time continued as a speaker on temperance, slavery and politics. She taught school from 1859 to 1860, and for the year succeeding was employed in the United States mint. She appeared as an orator in many States of the Union until 1876, when she left the lecture platform. Miss Dickinson has since written various plays and novels.

DICKINSON, DANIEL STEVENS (1800-66), an American statesman. He began the practice of law in Guilford, N. Y., in 1828, but in 1831 settled in Binghamton. In 1836 he was elected State Senator, and in 1842 became lieutenant-governor. In 1844 he was made United States Senator, and in 1852 he declined the office of collector of the port of New York. In 1861 he was elected attorney-general of the State, and subsequently became district attorney for the Southern district of New York. This position he held till his death.

DICKINSON, JOHN (1732-1808), an American publicist. He practiced law in Philadelphia, and became a member of the Pennsylvania assembly in 1764. He was a member of the first Continental Congress (1774), and at the beginning of the war enlisted as a private in the army, becoming a brigadier-general in October, 1777. In 1779 he was elected a member of Congress from Delaware; in 1780 was a member of the assembly, and in 1781 became president of the State. From 1782-85 he was president of Pennsylvania. His publications were principally on political issues.

DICKINSON, JONATHAN (1688-1747), an American clergyman. In 1709 he became pastor of the church at Elizabethtown, N. J., where he remained until his death. In 1746 he was elected first president of the College of New Jersey. Among his publications are: *Reasonableness of Christianity (Four Sermons)*, and *The True Scripture Doctrine Concerning Some Important Points of Christian Faith*.

DICKINSON COLLEGE, founded at Carlisle, Pa., in 1783. It is next to the oldest educational institution in the State, and was named after Hon. John Dickinson, "President of Pennsylvania." Its first president was Charles Nisbett, D. D. It was under Presbyterian control till 1833, when the division into Old and New schools brought such embarrass-

ments that it was transferred to the M. E. Church. There are three buildings. The library contains 28,000 volumes.

DICKSON, SAMUEL HENRY (1798-1872), an American physician. In 1819 he commenced the practice of his profession in Charleston, S. C. and in 1824 became professor of the institutes and practice of medicine in the Charleston Medical College. In 1847 he accepted the chair of professor of the practice of medicine in the University of New York, but three years later resumed his chair in Charleston. From 1858 until his death, he was professor in Jefferson Medical College, Philadelphia, Pa. He published largely on professional, literary, and current topics.

DICTIONARY, a book containing the words, alphabetically arranged, which belong to any province of knowledge, with explanations of their meaning. Among the latest and most valuable works of this description published in the United States are *Webster's International Dictionary*, and *The Century Dictionary*, both lexicons of the English language. See *Britannica*, Vol. VII, pp. 179-193.

DICYNODON, the name given by Owen to a genus of fossil reptiles, whose remains have been found in Southern Africa. The true age of the rock in which they occur has not been ascertained, but the accompanying organisms seem to indicate that it is Triassic.

DIDACTIC POETRY, that kind of poetry which aims, or seems to aim, at instruction as its object, making pleasure entirely subservient to this. In the poems generally called didactic, the information or instruction given in verse is accompanied with poetic reflections, illustrations, episodes, etc. The *Georgics* of Virgil have been the model according to which the didactic poems have generally been composed.

DIDELPHIS, or DIDELPHYS. See OPPOSSUM, *Britannica*, Vol. XVII, p. 796.

DIEFFENBACH, JOHN FRIED, a celebrated Prussian surgeon, born in Königsberg in 1792, died in 1847. After serving as a volunteer in the war of liberation, and devoting some time to the study of theology, he began in 1816 the study of medicine and surgery. He took his degree in 1822, and commenced practice in Berlin, where he soon attained distinction as an operator, and in 1840 was appointed professor and director of clinical surgery. He displayed unusual skill in all the operations of the knife, and introduced many innovations, such as forming new noses, lips, eyelids, and other features, and cutting the muscles as a relief for squinting and stammering.

DIEGO Y MORENO, FRANCISCO GARCIA (1800-46), a Mexican Roman Catholic bishop. He was ordained in 1824, and from 1832 to 1840 was on a mission among the Indians in California. In 1840 he became bishop, and continued the labors of this office until his death.

DIES NON JURIDICUS: in law, a day on which courts are not held, and upon which no ordinary legal proceedings can be taken. In the United States the *dies non juridicus* are Sunday, New Year's Day, Washington's Birthday, Decoration Day, Independence Day, Christmas Day, and Thanksgiving Day.

DIET. Animal life requires food of such a nature as to compensate for the perpetual wear and tear of the tissues and at the same time to keep up the animal heat at its proper standard. Various classifications of the food of man have been at different times proposed, but the most generally accepted is that of Dr. Prout—in which the different kinds of food are grouped in definite chemical classes—and that of Liebig, which has reference

solely to the ultimate destination of the food in the animal economy. Dr. Prout classifies all kinds of food under these heads: (1) The *aqueous*; (2) the *saccharine*; (3) the *oily* or *oleaginous*, and (4) the *albuminous*, to complete which, we ought to add (5) the *gelatinous*, and (6) the *saline*. Liebig makes only two classes: (1) Those consisting of nitrogenized matters, which are adapted for the formation of blood, and which he terms the *plastic elements of nutrition*, and (2) the non-nitrogenized substances, which from their large amount of carbon serve (as fuel) to keep up the animal heat, and which he names the *elements of respiration*. See DIETETICS, Britannica, Vol. VII, pp. 200-13.

DIETERICI, FRIEDRICH, a German Orientalist, born in 1821. After studying the Oriental languages for years in Berlin, he spent 18 months under the instruction of a learned sheik in Cairo. He then traveled through Upper Egypt and Palestine, and in 1850 became professor extraordinary in the University at Berlin. He is the author of many works on Oriental subjects.

DIETRICH, JOACHIM FREDERICK CHRISTIAN, an eminent veterinary surgeon, born at Stendal, Prussia, in 1792. In 1830 he accepted a post in the general military school of Berlin, where in 1841 he was appointed professor in ordinary.

DIETRICH OF BERN, the name under which the Ostrogoth king, Theoderic the Great, appears in the German heroic legends. The word Bern signifies Verona, his capital.

DIETRICHSON, LORENTZ SEGELKE, a Norwegian poet, born in 1834. He traveled from 1858 to 1875, when he became professor of the history of fine arts in Christiania. His books are principally on art and its history, and are written partly in Norwegian and partly in Swedish.

DIGAMMA, an obsolete letter of the Greek alphabet, equivalent in sound to the English *v*. The digamma had disappeared as a character from the Greek language before the time of Homer.

DIGBY, a seaport town, county-seat of Digby county, N. S., situated on the Bay of Fundy. Ship-building is carried on, and large quantities of herrings and mackerel are exported.

DIGBY, KENELM HENRY (1800-80), an English author. He published works on various subjects, but the book that made his reputation was *Broadstone of Honour, or Rules for the Gentlemen of England* (1822). Among his later works are: *Catholicism, or Ages of Faith; Compitum, or the Meeting of Ways in the Catholic Church; The Lover's Seat*, and *Evenings on the Thames*.

DIGGER INDIANS. See INDIANS, AMERICAN, in these Revisions and Additions.

DIGITIGRADA (*Lat.*, finger-walking), in the zoological system of Cuvier, one of the tribes of the *Carnivora*, distinguished by walking on the toes alone, the heel not touching the ground. Among the digitigrade quadrupeds are included the most carnivorous of the *Carnivora*, the feline and the canine families, the hyenas, civets, weasels, etc. The weasel family (*Mustelidae*), however, forms a connecting link, in respect to the character derived from the mode of walking, between the tribe *Digitigrada* and the tribe *Plantigrada*—being, in fact, semi-plantigrade, and not walking on the mere tips of the toes like the other *Digitigrada*.

DIHONG, or LANPO, a river of Thibet, the largest feeder of the Brahmaputra. It rises on the northern side of the Himalayas, and bursts through the great mountain chain, having pursued through an easterly course of 1,000 miles. See Britannica Vol. XXIII, p. 341.

DIJON MUSTARD. The celebrated Dijon mustard is worthy of note as a manufacture. Its pe-

culiar quality is a certain piquancy not found in any other mustard. The seed is always sown on cleared charcoal-beds in forests, and the soil gives one peculiar flavor to the mustard; another flavor is differently accounted for. The mustard, when in powder, is mixed with the juice of new wine, lending that pleasant acidity with which we are familiar. But to obtain precisely the degree of acidity, it is necessary that the grape be always in precisely the same state of unripeness—a degree more or less making all the difference.

DILEMMA. A true dilemma is defined by Whately as "a conditional syllogism with two or more antecedents in the major, and a disjunctive minor." The following dilemma, of the kind called destructive, will perhaps convey a clearer notion than any definition. "If this man were wise he would not speak irreverently of Scripture in jest, and if he were good he would not do so in earnest; but he does it, either in jest or earnest; therefore, he is either not wise or not good." There being two conclusions, one or the other of which your opponent must admit, he is in a manner caught between them; hence we speak of the *horns* of a dilemma.

DILETTANTE: in its original sense, an amateur, or lover of the fine arts. It is often used as a term of reproach, to signify an amateur whose taste lies in the direction of what is trivial and vulgar, or of a critic or connoisseur whose knowledge is mere affectation and pretense. It is sometimes assumed, in a spirit of self-depreciation, by those who are unwilling that their critical acquirements or artistic productions should be judged by the rules which would be applied to those of persons who had made a professional study of art. It was in this sense that it was assumed by the Dilettanti Society.

DILETTANTI SOCIETY, a body of gentlemen by whose exertions the study of antique art in England has been promoted.

DILIGENCE, the name given in France to a public conveyance of the nature of a stage-coach. It is a large strong vehicle, with four broad wheels, weighing about five tons, and is drawn by four stout horses at the rate of about six miles an hour. It consists of three chief compartments: The front, called the *couplé*, for three persons; the second, called the *intérieur*, for six persons; and, lastly, the *rotonde*, entered from behind, for six persons. Aloft, in front, is the *banquette*, where the *conducteur* is seated; and behind this, underneath a thick leather covering, passengers are sometimes huddled among baggage and goods, with little regard to their comfort. The system of diligences, however, has been latterly much broken up by railway transit.

DILKE, SIR CHARLES WENTWORTH, an English statesman and author, born in 1843. He was admitted to the practice of law in 1866, but spent two years in extensive travel. He was several times reelected a member of Parliament, and in 1880 became under secretary of state for foreign affairs. He has edited various periodicals, and published several books on his travels.

DILLMANN, CHRISTIAN FRIEDRICH AUGUST, a German theologian and Orientalist, born in 1823. In 1860 he became professor of Oriental languages at Kiel, and in 1864 was transferred to the chair of Old Testament exegesis at Gießen, which in 1869 he resigned to become Hengstenberg's successor at Berlin. He is the author of numerous works on Ethiopic topics, and is unquestionably the first authority in Europe on Ethiopic languages.

DILLON, JOHN BLAKE, born in Mayo, Ireland, in 1814, died in 1866. He studied theology at Maynooth, and law at Dublin, and was called to the bar in 1842. He helped to found the "Nation" newspaper. He was a prominent member of the "Young Ire-

land" party, and after the failure of the movement, he escaped to the Arran Islands; thence to France, and later to the United States, where he practiced law in New York city. He returned to Ireland in 1852, and was elected to Parliament in 1855.

DILLON, JOHN, an eminent member of the Irish Parliamentary party of Great Britain, son of John Blake Dillon, born in New York city in 1851. He was educated at the Catholic University of Dublin, entered Parliament for Tipperary in 1880, and has represented East Mayo since 1885. He was twice imprisoned under the Coercion act of 1881, and has been repeatedly suspended by the House of Commons. While carrying the "plan of campaign" into operation he was arrested at Loughrea in 1886, and bound over in heavy securities to keep the peace, and in 1888 he was sentenced to six months' imprisonment in Tullamore jail. He afterwards made a tour of the Australian colonies, where he met with an enthusiastic reception, and collected large contributions to the funds of the Irish Nationalist party. He returned in 1890, and was arrested on a political charge, but escaped with Mr. William O'Brien to Cherbourg, France, and thence to the United States, where he was received by the friends of the Parnellite movement. Upon the division of the party he declared himself in favor of the retirement of Mr. Parnell from the leadership of the Irish party in Parliament. He soon returned to France, where he surrendered himself to the British authorities, and at the present writing (April, 1891) he is imprisoned in an Irish jail.

DIMAN, JEREMIAH LEWIS (1831-81), an American Congregational clergyman. From 1856 to 1860 he was pastor in Fall River, Mass., and from 1860 to 1864 in Brookline. In 1864 he became professor of history and political economy in Brown University. He contributed to many periodicals.

DIMINATION: in heraldry, a mode of marshaling arms, adopted chiefly before quartering and impaling, according to the modern practice, came into use, and subsequently retained to some extent in continental heraldry. It consists in cutting two coats-of-arms in half by a vertical line, and uniting the dexter half of the one to the sinister half of the other. Coats of husband and wife were often so marshaled in England in the 13th and 14th centuries.

DIMINUTIVES, forms of words, chiefly of substantives, in which the primitive notion has become lessened or diminished, as *hillock*, a little hill. There is, perhaps, no language without diminutives, and the most common method of formation is by the addition of a syllable. This, however, is not the only method; *tip* from *top*, by attenuating the vowel, and *kid* from *goat*, are as genuine diminutives as *hillock*.

DIMITY, a stout, figured cotton fabric. The figure or stripe is raised on one side, and depressed on the other, so that the two faces present reversed patterns. Dimity is commonly white, or of a single color; but variegated dimities are made.

DINARIC ALPS, that branch of the Alpine system which connects the Julian Alps with the western ranges of the Balkan.

DINDORF, WILHELM (1802-83), a German philologist. In 1827 he became an extraordinary professor at Leipzig, but resigned in 1833 to devote himself entirely to literary activity. He made many contributions of the first value to Greek scholarship, especially in the region of dramatic poetry.

DINGELSTEDT, FRANK VON, a German poet, born in 1814; royal librarian at Stuttgart, and director of the theater in Munich, and of the Court Opera House in Vienna.

DINSMORE, ROBERT (1757-1836), an American poet. He enlisted in the Revolutionary Army at the age of eighteen, and after the war settled down as a farmer. His writings are short poems, principally in the dialect of his ancestors, the Scotch.

DINWIDDIE, ROBERT (1690-1770), a colonial governor of Virginia. He was employed as surveyor of customs for the colonies until 1752, when he became lieutenant-governor of Virginia, and shortly afterwards governor. He was recalled in January, 1758, charged with appropriating to his own use £20,000 of the public money.

DIOCESE, a term signifying in general administration, but usually understood to mean the territory over which a bishop exercises ecclesiastical jurisdiction.

DICEIOUS: in botany, a term applied either to plants or flowers when not only the flowers but also the individual plants are unisexual, that is, when male and female flowers are produced upon separate plants. See *Britannica*, Vol. XX, p. 423, for *Diœcism* in plants.

DIOMEDE ISLANDS, a group of islands about the middle of Bering Strait, forming, as it were, a number of stepping-stones between the most easterly point of Asia and the most westerly point of America. Their names are Fairway, Crusenstern and Ratananow.

DION, an austere and virtuous statesman of Syracuse, who became obnoxious to the tyrant Dionysius the Younger, and was banished; in revenge for which he attacked Syracuse with a body of warriors in 367 B. C. He was assassinated in 354 B. C.

DIPLOPHANTINE ANALYSIS, that section of the theory of unlimited or indeterminate problems which attempts to find rational and commensurable values answering to certain equations between squares and cubes.

DIPLACANTHUS, a genus of fossil ganoid fishes, peculiar to the Old Red Sandstone, in which six species have been found. The body was covered with very small scales, and the tail was atterocercal. There were two dorsal fins, which with each of the other fins, were furnished with a strong spine in front, the base of which was simply imbedded in the flesh, as in the dog fish and not articulated, as in the siluroids. The head was large and the mouth wide, and opening obliquely.

DIPLOGRAPSUS, a genus of fossil zoophytes differing from the Graptolite in having a double series of cells. They are found in great abundance in the anthracitic shales of the Silurian measures.

DIPLOMATICS, the science of ancient writings. The term has latterly given way to the more convenient and descriptive term, *paleography*.

DIP OF THE HORIZON, a term in navigation used to denote the difference between the altitudes of a heavenly body as seen from the sea level and the horizon.

DIPPING NEEDLE. If a magnetic needle be supported so as to be free to move vertically, it does not at most places on the earth's surface rest in a horizontal position, but inclines more or less from it. If the vertical plane in which the needle moves is the magnetic meridian of the place, the angle between the needle and the horizontal line is called the dip, or inclination of the needle.

DIPSAS, a genus of non-venomous serpents of the family *Colubridæ*, of very elongated form, and with a thick, broad, and obtuse head. They are tree snakes, inhabitants chiefly of the warm parts of Asia and America. One species only, *Dipsas fallax*, somewhat doubtfully referred to this genus, occurs in Southern Europe.

DIPTERUS, a genus of fossil ganoid fishes, peculiar to the Old Red Sandstone, in which two species have been found. They derive their name from their most striking characteristic—namely, the double anal and dorsal fins, which are opposite each other. The head is large and flattened, the teeth sub-equal, the scales perforated by small foramina, and the tail heterocercal.

DIRECTOR, one of a number of persons appointed to conduct the affairs of joint-stock undertakings, such as banks, railways, water and gas companies, fire and life insurance companies, and various kinds of manufacturing and trading concerns. The office of a director is in all cases one of more or less responsibility, sometimes of considerable risk, and, according to commercial maxim, ought not to be accepted lightly, or for the mere honor which is supposed to be incidental to the position.

DIRECTORY, a book containing the names of the inhabitants of any place, arranged alphabetically, with their places of business, abode, etc.; also, the board of directors of a corporate body.

DIRECTRIX, a right line perpendicular to the axis of a conic section, in reference to which its nature may be defined.

DIRK, a short dagger, which at various times and in various countries has been used as a weapon of offense. In the naval service at the present day, the dirk belted and buckled to the right side is worn by officers rather for ornament than for use.

DIRK-HARTOG ISLAND, an island off the western coast of Australia. With two smaller islands it forms the breastwork of Shark's Bay, one of the most commodious inlets on that coast.

DISABILITY, LEGAL, is either absolute, which wholly disables the person from performing any legal act—for example, outlawry, excommunication, attainder, alienage—or partial, such as infancy, coverture, lunacy, drunkenness, and the like. It may arise from the act of God, of the law, of the individual himself, or of his ancestors, or the person from whom he inherits.

DISBAR, to expel from the bar; to deprive an attorney, or counselor-at-law of his license to practice before the courts.

DISCLAIMER: in law, a denial, disavowal, or renunciation of some claim, title, estate, or right, which has been alleged or offered.

DISCOID, anything having the form of a disk. *Discoid flowers* are compound flowers consisting of tubular florets, like the tansy.

DISCIPLES OF CHRIST. See **RELIGIOUS DENOMINATIONS IN THE UNITED STATES**, in these Revisions and Additions.

DISEASES OF PLANTS form a subject of study interesting equally in its scientific and its economic or practical relations, but in regard to the most important parts of which much obscurity and uncertainty still exist. Enough, indeed, is known to show that, as might have been expected, an analogy subsists between the kinds of disease to which plants are subject and those of animals, both in their nature and their causes, yet with wide differences, according to the difference between animal and vegetable life. Plants, like animals, are liable to suffer from unsuitable external circumstances, as of temperature, drought, moisture, etc. They are liable, like animals, to suffer from deficiency of food, from excess of it, or from being compelled to subsist on improper kinds of it, or too exclusively on some particular kind.

DISHONOR OF A BILL. When the drawee, or person on whom the bill is drawn, declines to accept or to pay it, he is said to dishonor it. The act of drawing or of indorsing a bill implies an obligation to

pay it in the last instance, and the person in whose favor it is drawn has thus recourse against the drawer and indorsers, should the drawee fail to accept or to pay. In order to preserve this recourse, however, it is indispensable that notice of dishonor shall be given to the drawer and indorsers. No particular form of notice is requisite.

DISFRANCHISEMENT: in law, the deprivation of privileges of citizenship, or the expulsion of a member of a corporation, so as to deprive him of his corporate rights as such.

DISK: in botany, a part intervening in some flowers between the stamens and the pistil. It seems in most cases to represent an inner whorl of stamens variously modified. It is often a mere ring; sometimes it exhibits a whorl of scales or of rudimentary stamens, or even of petal-like appendages; sometimes it rises into a sort of cup around the pistil; sometimes, as in the rose, it assumes the form of a waxy lining of the tube of the calyx. It is often glandular, and secretes a honey-like fluid. It is one of the parts included under the comprehensive term *nectary* by the older botanists. See *Britannica*, Vol. IV, p. 134.

DISLOCATION: in geology, see *Britannica*, Vol. X, pp. 261, 301, 372, and Vol. XVI, p. 442.

DISMANTLE, the operation which a ship undergoes when she is to be laid up in ordinary, or placed out of service. She is unrigged; the yards and most of the ropes are removed, and the upper masts are taken down.

DISMAS, St., the name which Romish tradition has attached to the "good thief." He is represented with a cross beside him.

DISPART: in gunnery, a mark set upon the muzzle of a gun to aid the gunner in obtaining a line of sight truly parallel with the axis of the bore. Strictly, the dispart is not the mark itself, but a distance or quantity denoted by the mark; and "to dispart" a gun is to determine this distance. It depends mainly on the relation between the diameter of the breech and that of the muzzle.

DISPENSARY, a charitable institution, supported by private contribution, or by the government, to supply the poor with medicines and medical advice free of charge. The first institution of this nature, the Royal General Dispensary, was started in London in 1770, and in 1861 relieved about 20,000 persons. In 1850 nearly 150,000 were relieved by 85 dispensaries in that city; and now the number of free patients is believed to have risen to over one-fourth of the entire population of London, or more than 1,000,000. In the United States a similar proportion is observed. In New York city, in a population of 1,513,501 in 1890 about 350,000 patients were relieved; in Philadelphia, with 1,044,894 inhabitants, there were in 1890 about 200,000 patients aided; in Brooklyn, out of a population of 804,377, about 200,000 received help; and in Chicago, with a population of 1,098,576, the number of dispensary patients probably exceeded 250,000. One or more dispensaries are now supported by nearly every important city in the world.

DISPOSITION, in art, differs from *composition*, inasmuch as the former has reference to the arrangement of the parts, and the latter to the effect of the whole.

DISPOSITION: in music, a term now used in organ-building, adopted from the German, meaning the arrangement and combination of the stops on the different rows of keys and pedals, with the pitch of each stop, or length of the lowest C pipe.

DISRAELI, BENJAMIN, Earl of Beaconsfield (1805-81), an English author and statesman. In 1837 he was elected a member of the House of Com-

mons as a Conservative for the borough of Maidstone. In 1848 he became the leader of the Young England party, and in 1852 the Earl of Derby offered him the post of chancellor of the exchequer. In 1858 he was again summoned to fill the position of chancellor of the exchequer during the second administration of Lord Derby. In 1866, after seven years of Liberal reign, the Earl of Derby again returned to power, and Mr. Disraeli once more accepted the post of chancellor of the exchequer. In 1868 Disraeli succeeded Lord Derby as Premier, but resigned the following year. In 1874 he returned to power, and at the first session of Parliament in 1877 he took his seat in the Upper House as Lord Beaconsfield. In 1880, on account of large Liberal gains in Parliament, Lord Beaconsfield resigned, and Mr. Gladstone became Premier in his stead. He was the author of several popular novels, among them, *Henrietta Temple*, *Coningsby*, *Sybil*, and *Tancred*.

DISSECTION WOUNDS. The practical study of anatomy is attended with certain dangers, which, however, during the last quarter of a century have been much lessened. The atmosphere of the dissecting-room, now comparatively pure by the application of proper ventilation and other sanitary measures, was less than a generation ago too commonly loaded with noxious emanations, which more or less poisoned the blood of those who continuously inhaled it, and consequently produced nausea, sickness, diarrhoea, a bad taste, and other symptoms. Dissection wounds, which are always attended with a certain amount of risk, were rendered more dangerous by the low state of the system induced by the depressing influence of the surrounding air.

DISSENTERS, the common appellation of those who dissent or differ from the established church of their country in any of its doctrines, or in any part of its constitution, and therefore separate themselves from it. Although sometimes employed as a sufficiently appropriate designation of the sects which separated themselves from the general body of the church, during the early and Middle Ages, the term Dissenters belongs to modern times and Protestant countries; the claims of the Roman Catholic church, where dominant, having always been asserted in a manner incompatible with the existence of recognized religious dissent. The measure in which the rights of Dissenters are conceded by law may be esteemed a fair test of the religious liberty enjoyed in a country and of the general enlightenment of a people. The term Dissenters is of English origin and growth, although its almost exact equivalent may be said to have existed in Poland in the name *Dissidents*, a term which first appears in the acts of the Warsaw Confederation of 1573, and there denotes the Polish Protestants, in contradistinction to the members of the established Catholic religion. After 1632 the term Dissidents was applied in Poland to all who were not Roman Catholics, as Lutherans, Calvinists, Greeks, Armenians, etc. In England the term Dissenters appears to have come into use in the 17th century, as synonymous with *Nonconformists*; and from England its use was transferred to Scotland in the 18th century, after the Secession church had been founded in that country. It is usually applied to those who agree with the Established church in the most essential doctrines, but differ from it on some minor point, or on questions of church government, relation to the State, rites, etc.; as in England to Presbyterians, Independents, and Baptists.

DISSEPIPMENT: in botany, the partition between two carpels in an ovary or fruit composed of

a number of carpels. A dissepiment is formed by the union of the sides of two carpels. Sometimes dissepiments meet in the center or axis, completely dividing the ovary or fruit into cells; sometimes they are partial, appearing as mere projections from the outer walls of the ovary or fruit, and leaving it one-celled. Many ovaries and fruits exhibit partitions not formed by the union of the sides of carpels; these are sometimes called *spurious dissepiments*.

DISTANCE. The limit of view in a picture, or *point of distance*, as it is called in perspective, is that portion of the picture where the visual rays meet, the *middle distance* being the central portion between the extreme distance and the foreground. The art of producing on the eye the effect of real distance, in so far as it is not accomplished by mere mechanical rules, is one of the most subtle branches of landscape-painting, and cannot be acquired otherwise than by long experience and a careful study of the effects of light and shade.

DISTICH, the classical name given to any two lines, but especially to a hexameter and pentameter, making complete sense. It was much used by the Greeks and Romans as a vehicle for the expression of single thoughts and sentiments, and hence became almost exclusively employed for the classical epigram. The great poets of modern Germany, Goëthe, Schiller, etc., have also shown a fondness for the distich, and remarkable skill in the use of it. A collection of moral maxims in Latin, ascribed to a certain Cato Dionysius, are called *Disticha*, and were highly popular during the Middle Ages.

DISTILLED WATER is the condensed product obtained by the distillation of water. All natural waters, even rain-water, contain certain saline matters (common salt, etc.) in a state of solution, from which they can only be completely freed by the process of distillation. The characters of distilled water are, that it possesses a mawkish, insipid taste, without color, and when evaporated to dryness in a vessel it ought to leave no residue.

DISTILLED WATERS are obtained by distilling water along with the parts of plants containing essential oils. Rose-water and lavender-water are familiar examples.

DISTORTION. The rules of perspective impose certain conditions in the delineation of natural objects, and when the image formed by a lens on a focusing screen does not fulfill those conditions it is said to be distorted. The effect of distortion is to render all straight lines curvilinear which do not pass through the center of the lens, and also so to alter the relative proportions of objects in the picture as to be opposed to the principles of true perspective.

DISTRICT ATTORNEYS OF THE UNITED STATES. This name originated in England, when districts in which to hold courts of oyer and terminer (*q. v.*) were assigned to certain judges. In the United States the district attorneys represent the States and general government, in circuit and district court, civil and criminal, and in the prosecution of crimes and misdemeanors.

DISTRICT OF COLUMBIA, the seat of the United States Government. For its history, government, earlier statistics, etc., see *Britannica*, Vol. VI, pp. 168-69. In 1890 the area of the District was 70 square miles, and the population 230,892, as officially reported by the census of that year. Of this population the city of Washington contained 228,160. The inhabitants of the District are chiefly occupied in the transaction of the nation's business the number directly engaged in the service of the Government and drawing their pay from the

national treasury being estimated at 16,000. The local government is a municipal corporation, the executive consisting of three commissioners, two of whom are nominated by the President of the United States from civil life, and the third detailed from the United States Army. This latter must be an officer of the corps of engineers, and while acting as one of the commissioners of the District has no other duties to perform. The two civil commissioners are required to give bonds in the sum of \$50,000 each for the faithful performance of their duties, and receive a salary of \$5,000 each per annum. The District has no municipal legislative body, and its citizens have no right to vote either in national or municipal concerns. All subordinate municipal officers are appointed by the commissioners, while the judiciary, recorder of deeds, register of wills, notaries-public, justices of the peace and commissioners of deeds are appointed by the President of the United States. From 1871 to 1874 the executive consisted of a governor, Henry D. Cooke occupying the office from 1871 to 1873, and Alexander Shepard from 1873 to 1874.

The enrollment in the public schools of the District of Columbia for the year 1880 numbered 26,439, and for the year 1890, 36,906, being a gain for the decade of 39.59 per cent. The enrollment in private schools Jan. 15, 1891, was 5,509, and in parochial schools, 2,402. For information regarding the public buildings, parks, monuments, charitable institutions, etc., see WASHINGTON, in these Revisions and Additions.

DITTANY (*Dictamnus albus*), a genus of plants of the natural order *Rutaceæ*, having a short five-partite calyx, five somewhat unequal petals, ten stamens, and five 1-3-seeded follicular capsules cohering at the base. The common dittany or fraxinella, a native of sunny mountains and rocks, and dry mountain forests of Southern Europe, especially in calcareous soils, is very generally cultivated as a garden-flower.

DITCH: one of the most important defense works of a fortress. It is a broad and deep trench, that may either be kept dry or filled with water; in practice it is usually dry.

DITCH: in agriculture, a trench usually made along the sides of fields, so that all the drains may be led into it. See AGRICULTURE, Britannica, Vol. I, p. 328.

DIVERS for pearls descend through the water with their feet on a stone attached to a rope, the other end of which is made fast to a boat. They carry a basket and a knife, gather the oysters with all speed, and ascend by the rope. This rude mode of diving is now but little used, save in the pearl and sponge fisheries.

Modern inventions enable the diver to remain below water for an almost indefinite time. Clad in an air-tight suit of rubber, his feet shod with heavy leaden plates, his head encased in a helmet furnished with pipes to supply fresh air and carry off that expired, the depth to which a diver can descend is only limited by the pressure of water above him. The diver is connected with those above him by a cord, so that by a pre-arranged series of signals, he may signify his desire for more or less air, to be either lowered or hauled up, etc.

DIVIDEND, the sum which is appointed to creditors from the realized assets of a bankrupt estate, and which is at the rate of so much per cent. of the claims. The half-yearly interest on the public funds, and periodical profits on shares in joint-stock undertakings, are also called the dividends, the latter being usually declared half-yearly by order of the directors. Occasionally the dividends do

not exhaust the profits, and the surplus is allowed to accumulate until it is paid to the shareholders as an extra dividend, called a bonus.

DIVIDERS, instruments for drawing circles and other curves, and for marking distances; they consist of two or three bars joined by a hinge.

DIVISIBILITY, that property of quantity, matter, or extension through which it is either actually or potentially separable into parts. Whether matter is or is not indefinitely divisible is a question which has occupied the minds of philosophers since very early times. There is no doubt that, abstractly speaking, it is indefinitely divisible. We cannot conceive any body or space so small but that we can subdivide it in imagination, and thus figure to ourselves bodies and spaces still smaller; and practically we know that the sub-division of matter is carried in Nature far beyond appreciation either by our senses or by calculation. The diffusion of odors through the air for long periods from odoriferous bodies without their suffering any sensible change of weight, and the tingeing of great quantities of fluid by very minute portions of coloring matter, are cases commonly appealed to in proof of the extreme fineness of certain material particles; while, by experiment, it is shown that there is no particular limit to the divisibility of even the most solid substances. Thus, an ounce weight of silver, gilt over with eight grains of gold, has been drawn out into a wire 18,000 feet long, which was all its length covered with the gold; and a tube of glass presented to the blow-pipe has been drawn out until it became fine as a silk fiber, or *filum* of an inch thick, still retaining its character as a tube with a distinct interior and exterior surface. In fact, in theory great and small are mere terms of relation; under the microscope, objects invisible to the eye appear of considerable bulk; and, as Sir John Herschel, in his celebrated *Introduction to the Study of the Physical Sciences*, has put it, there is no reason why a mote in a sunbeam should not be in itself a world.

DIVISION: in military affairs, one section of an army, indefinite in point of numbers, but established as a matter of convenience. It often comprises infantry, cavalry and artillery, and is in effect a small army in itself, commanded by a general officer. In the United States Army, it is composed of two or more brigades under command of a general.

DIVISION, NAVAL, formerly a secondary group of ships in a large fleet, generally three to a squadron. In a very large and complete fleet there might be as many as nine admirals, or flag-officers, commanding nine divisions in three squadrons of three divisions each. The distinction of squadron has now been abolished, and individual ships are too gigantic to allow of large numbers being maneuvered in one fleet.

DIVISION OF LABOR, or **DIVISION OF EMPLOYMENT**, a term often used by political economists to express a means by which labor is economized; or, as another method of stating the same result, by which production is increased. The problem in division of labor is to so adjust matters in any given community that each member of it shall work, or be able if he wishes to work, with the greatest possible results. In practice it is, like most other arrangements, apt to be too broad or too narrow. The term, "jack of all trades and master of none," expresses the truth that people who try too many things are not likely to be adepts in any. On the other hand, few people can do any sort of work to great perfection unless it is part, as it were, of a group of functions for which they are more or less prepared. Digitized by Google

DIVORCE LAWS OF THE UNITED STATES.

For a discussion of the general subject of DIVORCE, see Britannica, Vol. VII, pp. 300-05. In the United States the power to grant divorces is in general exercised by the courts having equity jurisdiction, though the legislatures have the power unless prohibited by the State Constitution. The laws of the various States upon this subject are quite dissimilar, although adultery is recognized as cause for absolute divorce in all the States and Territories, except South Carolina, which has no divorce laws. In most of the States a previous residence is requisite, the period of such residence varying greatly. In North and South Dakota a residence of ninety days prior to the application is required; in Arizona, California, Indiana, Idaho, Nebraska, Nevada, New Mexico, Texas and Wyoming, a residence of six months; in Alabama, Arkansas, Colorado, Illinois, Iowa, Kansas, Kentucky, Maine, Mississippi, Minnesota, Missouri, Montana, New Hampshire, Ohio, Oregon, Pennsylvania, Rhode Island, Utah (both parties as husband and wife), West Virginia, Washington and Wisconsin, a residence of one year; in the District of Columbia, Florida, Maryland, Michigan, North Carolina, Tennessee and Vermont, a residence of two years; in Connecticut and Massachusetts, a residence of three years, if, when married, both parties were residents; otherwise five years.

Of the causes for which divorce will be granted physical inability is recognized as a sufficient ground in all the States except Arizona, California, Connecticut, Idaho, Iowa, Louisiana, New Mexico, New York, North Dakota, South Carolina, South Dakota, Texas and Vermont. In most of these States, however, physical inability renders the marriage voidable.

Willful desertion for a period of five years is recognized as a ground of divorce in Kentucky, Virginia, Wisconsin and Rhode Island, though in the latter State the court may decree a divorce where the desertion has been for a shorter period. In Connecticut, Delaware, Georgia, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ohio, Texas, Vermont and West Virginia, desertion for three years is sufficient; in Alabama, the District of Columbia, Illinois, Indiana, Iowa, Michigan, Mississippi, Nebraska, Pennsylvania and Tennessee, two years; in Arkansas, California, Colorado, Florida, Idaho, Kansas, Kentucky, Missouri, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, Wisconsin and Wyoming, one year; while in Arizona an absence of six months will entitle the injured party to a decree. In all of these cases, however, the desertion must be willful.

Divorce may be granted upon the ground of habitual drunkenness in all the States and Territories except Maryland, New Jersey, New Mexico, New York, North Carolina, Pennsylvania, South Carolina, Texas, Vermont, Virginia and West Virginia.

Fraud in the procurement of the marriage is sufficient ground for granting divorce in Connecticut, Georgia, Kansas, Kentucky, Ohio, Pennsylvania and Washington.

Cruel and inhuman treatment is a sufficient ground in all the States and Territories except Maryland, New Jersey, New York, North Carolina, South Carolina, Virginia and West Virginia.

Imprisonment for felony, or conviction of felony is sufficient in all the States and Territories (with limitations) except Florida, Maine, Maryland, New Jersey, New Mexico, New York, Utah and South Carolina.

Willful neglect on the part of the husband to provide for his wife for three years will entitle her to a divorce in Delaware; for two years, in Indiana; for one year, in California, Colorado, Idaho, Nevada, North Dakota, South Dakota and Wyoming; for six months, in Arizona; and for no specified time, in Massachusetts, Michigan, Maine, Nebraska, New Hampshire, New Mexico, Rhode Island, Tennessee, Vermont, Washington and Wisconsin.

Other causes for which divorce may be decreed in different States are: Absence without being heard from for three years, in New Hampshire; for seven years, in Connecticut and Vermont; ungovernable temper, in Kentucky; habitual indulgence in violent and ungovernable temper, in Florida; attempt to murder the other party, in Illinois and Tennessee; "cruel treatment, outrages or excesses such as to render their living together insupportable," in Arkansas, Kentucky, Louisiana, Missouri, Tennessee and Texas; indignities, such as render life burdensome, in Missouri, Oregon, Pennsylvania, Tennessee, Washington and Wyoming; indulgence in the opium habit, in Massachusetts; husband notoriously immoral before marriage, unknown to wife, in West Virginia; fugitive from justice, in Virginia; immorality of wife before marriage, in Alabama, Georgia, Kansas, Kentucky, Iowa,

Maryland, Missouri, North Carolina, Tennessee, Virginia, West Virginia, Wyoming and Mississippi; gross misbehavior or wickedness, in Rhode Island; any gross neglect of duty in Kansas and Ohio; attempt on life, in Illinois; refusal of wife to remove into the State, in Tennessee; mental incapacity at time of marriage, in Georgia; three years with any religious society that believes the marriage relation unlawful, in Massachusetts; becoming a member of any religious sect that believes marriage unlawful, and refusing to cohabit for a period of twelve months, in California, North Carolina, North and South Dakota (six months, in New Hampshire); insanity for ten years, in Washington, and for five years, in Wisconsin; insane since marriage, in Arkansas; vagrancy of the husband, in Missouri and Wyoming; divorce obtained by the other party in another State, in Kansas.

The above enumerated causes are all for full or absolute divorce, and condonation of adultery, or collusion or connivance in any of the instances, will prevent a decree. In Georgia a suit must be twice tried, at different terms, and the concurrent verdict of two juries obtained, before divorce will be granted. In Washington the granting of an absolute divorce for any cause is left to the discretion of the court. In Wisconsin also the law practically allows the court to exercise its discretion. In New York but one cause for absolute divorce is recognized, that of adultery.

In Arizona, Connecticut, Kentucky, Maine and Illinois, there are no restrictions upon remarriage by divorced persons. In Alabama, Georgia, Maryland, Mississippi and Virginia, the decree of the court may restrain the guilty party from remarrying. In Maine parties cannot remarry without permission of the court. In Massachusetts either party may remarry, but the defendant must wait two years. In Vermont the defendant must wait three years; in Missouri, five years; in Nebraska, Oregon and Washington, the time allowed for an appeal. In Kansas and Minnesota either party must wait two years. In New York, North and South Dakota, the plaintiff may remarry, but the defendant, divorced for adultery, cannot do so during the life of the plaintiff unless the decree be modified or proof is adduced that five years have elapsed since the granting of the decree, that plaintiff has remarried, and that defendant's conduct has been uniformly good. In Delaware, Pennsylvania and Tennessee the defendant in an action for absolute divorce cannot marry the *particeps criminis* during the life of the plaintiff, nor in Louisiana at any time. See also MARRIAGE LAWS, in these Revisions and Additions.

DIX, DOROTHEA LYNDE (1794-1887), an American philanthropist. She taught school in Boston, Mass., until 1834, when she visited Europe. In 1837 she returned to Boston, and devoted herself to investigating the condition of paupers, lunatics, and prisoners. During the civil war she was superintendent of hospital nurses. She has published on various topics.

DIX ISLAND, an island 10 miles southeast of Rockland, Me. It consists of 55 acres of the best granite. A large number of men employed in the quarry live on the island. From this place was obtained the building stone used in constructing the treasury at Washington and the postoffice and court-house in New York city.

DIX, JOHN ADAMS (1798-1879), an American statesman. He served in the 14th United States infantry in 1813, and in the 21st infantry from 1814, as second-lieutenant. In 1819 he became aid-de-camp to Gen. Jacob Brown. In 1826 he was sent as special messenger to the court of Denmark. In 1828 he resigned from the army and began the practice of law. In 1830 he was appointed adjutant-general of the State of New York, and in 1833 became Secretary of State, and superintendent of common schools. In 1841 he was elected a member of the assembly, and from 1845 to 1849 was a United States Senator. He next became assistant treasurer of New York, and in 1861 was appointed postmaster of New York. The same year President Buchanan made him Secretary of the Treasury. At the beginning of the civil war he organized seventeen regiments, and was commissioned major-general of volunteers. In 1866 he was appointed naval officer of the port of New York, and the same year became minister to France. In 1872 he was elected governor of New York. Mr. Dix was also the president of various railroads.

DIX, MORGAN, an American Episcopal clergyman, born in 1827. He was ordained deacon in

1852, and the following year priest. In 1855 he became assistant minister in Trinity parish, New York. In 1859 he was made assistant rector, and three years later rector of the same parish. He has published extensively on religious and other subjects.

DIXON, a railroad city and county-seat of Lee county, Ill., situated on the Rock River. It has good water-power, flouring-mills, and factories.

DIXON, ARCHIBALD (1802-76), a United States Senator. He studied law, and was admitted to practice in 1824. He was a member of the Kentucky legislature in 1830 and 1841, and of the State Senate in 1836. From 1843 to 1847 he was lieutenant-governor, and from 1852 to 1855 United States Senator.

DIXON, JAMES (1814-73), a United States Senator. He began the practice of law in 1836, and was a member of the Connecticut legislature in 1837 and 1838, and again in 1844. From 1845 to 1849 he was a member of the United States House of Representatives, and from 1850 to 1857 was in the State Senate. In 1857 he became a United States Senator, continuing in this capacity until 1869, when he withdrew and traveled in Europe.

DIXON, JOSEPH (1799-1869), an American inventor. His first invention was a machine for cutting files, developed before he was twenty-one years old, and he was the first person to take portraits with the camera. He built the first locomotive with the double crank; he made extensive and most important inventions in lithography. He became most widely known as the inventor of plumbago or graphite crucibles.

DIXON, WILLIAM HEPWORTH (1821-79), a British author. At an early age he wrote verse for Douglas Jerrold's "Illuminated Magazine," and in 1844 became editor of a paper at Cheltenham. In 1846 he began the practice of law in London. From 1853 to 1869 he was chief editor of the "Athenæum." In 1866 and again in 1874-75 he visited the United States, spending his time in traveling and lecturing. He wrote extensively on numerous topics.

DIXON, WILLIAM W., a lawyer, born in Brooklyn, N. Y., June 3, 1838. He removed with his family to Quincy, Ill., in 1842, and to Keokuk, Iowa, in 1849; received a common school education, and entered the profession of law in Keokuk; went to Tennessee and Arkansas in 1860, and in 1862 crossed the plains to California; went to Nevada the same year, and to Montana in 1866. In 1879 he went to the Black Hills, remaining two years, and then settled in Butte City, Montana. In politics he is a Democrat, and was elected a member of the Montana legislature in 1871; was a member of the Montana constitutional conventions of 1884 and 1889, and in 1890 was elected a representative at large from Montana to the 52d Congress.

DIXON'S ENTRANCE, a strait one hundred miles long from east to west, on the northwest coast of America. It divides Queen Charlotte Island on the south from the Prince of Wales Archipelago on the north.

DIXWELL, JOHN (1608-89), a Parliamentary general under Cromwell, and one of the regicides. After the restoration he fled to Germany, and thence to New Haven, New England.

DIZIER, St., a town in the department of Haute-Marne, France. In 1544 St. Dizier resisted for a month the assaults of a Spanish army under Ferdinand de Gonzaga.

DJEZZAR, that is, "Butcher," the name given, on account of his cruelty, to Achmed Pasha, famous for his obstinate defense of Acre against Napoleon I. He was born in Bosnia about 1735, and died in 1804.

DOANE, GEORGE WASHINGTON (1799-1859), an American P. E. bishop. He graduated at Union College in 1818, was ordained deacon in 1821, and priest in 1823. In 1824 he became a professor in Trinity College, Hartford, Conn., and for a time was editor of the "Episcopal Watchman." In 1828 he became assistant rector, and two years later rector of Trinity church, Boston, Mass. In 1832 he was elected bishop of New Jersey. He founded St. Mary's Hall for the education of girls, and later, Burlington College for boys. He published numerous addresses, and a volume of poems.

DOANE, WILLIAM CROSWELL, an American P. E. bishop, born in 1832. He was ordained deacon in 1853, and priest in 1856. He was for a time assistant to his father, George Washington Doane, in St. Mary's church, Burlington, N. J. Subsequently he was rector of that church; for three years rector of St. Barnabas free church in Burlington; of St. John's church, Hartford, Conn., in 1863-67; and then of St. Peter's church, Albany. He was consecrated bishop of the new diocese of Albany in 1869. He has since founded in Albany the Cathedral of All Saints, the Sisterhood of the Holy Child Jesus, St. Agnes School, and the Child's Hospital. He has written some on religious topics.

DOBBS, ARTHUR (1684-1765), an American colonial governor. He was governor of North Carolina from 1754 to 1765. He wrote *Trade and Improvement of Ireland; Capt. Middleton's Defense; and An Account of the Countries Adjoining to Hudson's Bay*.

DOBBS FERRY, a summer resort on the Hudson River in Westchester county, N. Y., 20 miles north of New York city. It contains remains of military works built about 1776.

DOBSON, AUSTIN, an English poet and critic, born in 1840. Since 1856 he has been connected with the board of trade, and is now (1891) at the head of an important bureau. He first began to write at the age of twenty-four, and has since published much in both prose and verse.

DOCKET: in general, a brief or abstract; in law, a calendar of causes ready for hearing or trial, prepared for the use of the courts by the clerks.

DOD, ALBERT BALDWIN (1806-45), an American educator. He taught from 1822 to 1826 in Fredericksburg, Va., when he entered the Princeton Theological Seminary, and was licensed to preach in 1829. From 1830 till his death he was professor of mathematics in Princeton College.

DOD, THADDEUS (1740-93), an American Presbyterian minister. He was licensed to preach in 1775. He preached at first in Virginia, and then in Pennsylvania. He founded a school in 1782, and was a teacher in it until 1787. He was one of the founders and the first president of Washington College, Pa.

DODD, EDWARD MILLS (1824-65), an American missionary to Smyrna. He became a Presbyterian minister in 1848, and sailed for Smyrna in 1849, representing the American board on a mission to the Jews at Salonica. After three years he returned to the United States, but again sailed for Smyrna, and from 1855 continued his labors among the Armenians. In 1863 he was transferred to Marsovan, where he remained until his death.

DODECATHEON, a beautiful American plant, order *Primulacæ*, with twelve nodding blossoms.

DODGE CITY, the county-seat of Ford county, Kan., on the Arkansas River, 302 miles southwest of Topeka, on the Atchison, Topeka and Santa Fé railroad. It has a Presbyterian College, water-works, and electric lights.

DODGE, AUGUSTUS CÆSAR (1812-83), a U. S. Senator. He served in the Winnebago war of 1827,

and the Black Hawk war of 1880. He was registrar of the land-office at Burlington, Iowa, in 1838-39, and a delegate to Congress from 1840 to 1847. He served as a United States Senator from 1840 to 1855, and minister to Spain from 1855 to 1859.

DODGE, GRENVILLE MELLEn, an American soldier, born in 1831. He was engaged in railroad surveys until 1854; in 1861 joined the army, distinguished himself on many occasions, and became major-general in 1864. He resigned from the army in 1866, became chief engineer of the Union Pacific railroad, and has since been constantly employed in building railroads in the United States. He was a member of Congress from 1867 to 1869.

DODGE, HENRY (1782-1867), an American soldier. He was a member of the United States Army from 1812 to 1836, when he became governor of Wisconsin Territory and superintendent of Indian affairs. From 1841 he was a delegate to Congress for two terms. In 1846 he again became governor of Wisconsin, and after the admission of that State to the Union was made one of its first United States Senators, serving from 1848 to 1857.

DODGE, MARY ABIGAIL, an American authoress, born about 1830. She was for several years from 1851 instructor in physical science in the Hartford, Conn., High School. Subsequently she was a frequent contributor to prominent magazines, under the pen-name of "Gail Hamilton." She has published numerous novels, and juvenile books.

DODGEVILLE, the county-seat of Iowa county, Wis., situated in a region which produces lead and copper.

DODONA, a city of Epirus, the seat of the oldest Grecian oracle, situated in one of the wildest districts southwest of the Lake of Janina. The Greek and Egyptian accounts of its origin differ. The priests of Jupiter in Egyptian Thebes related that a party of Phœnicians carried from that city two holy women, one of whom was sold in Libya, the other to the Greeks, and that these women founded the oracles at Dodona and Ammon. The inhabitants of Dodona claimed that two black doves took their flight from the city of Thebes in Egypt, one of which flew to Libya and the other to Dodona; that the latter perched upon an oak, and with a human voice commanded that an oracle should be founded on the spot. Though the city of Dodona was destroyed in 219 B. C. by the Ætoliens, it recovered at a later period; was visited by the Emperor Julian on his march to Persia, and was in existence in the 6th century A. D. See *Britannica*, Vol. XIII, p. 565.

DODWORTH, HARVEY B., an able orchestral leader, band-master, and musical composer, born in Sheffield, Eng., in 1822. He emigrated to America with his parents in 1828, and was one of the earliest projectors of the New York Philharmonic Society, of independent bands for out-door concerts, and for music on public occasions, in that city. He gave great promise of excellence when but three years old; was a leader at 17, and became subsequently the conductor of orchestras—advancing to public notice and favor many of his performers, and maintaining a leading position in the musical world of America. He was among the first to prompt the concerts at Central Park, New York, and during the summer of 1875 he conducted the popular performances at Madison Square Garden.

DOESBURG (*Drususburg*), a town in the Netherlands. An entrenched camp has been constructed on the northeast side between the Yssel and the Old Yssel, which here unite.

DOGS. For a full discussion of this general subject, see *Britannica*, Vol. VII, pp. 324-31. The annual exhibitions which during the last few years

have been held at New York, Chicago, Boston, and other American cities, under the auspices of the Westminster Kennel Club, have fostered an increasing love for and knowledge of dogs, and have resulted in great improvement in the various breeds of this most companionable and affectionate type of all the brute creation. Competition in the champion and open classes has grown more and more spirited, and interest in these annual exhibitions has spread, until now polite society having put the stamp of its approval upon it, the "dog show" has become admittedly one of the fashionable happenings of the season. At the annual exhibit of the Westminster Kennel Club, held in Madison Square Garden in New York city in 1891, dogs of every breed and clime were listed in the catalogue, the collection being the finest ever brought together in this or any other country.

Corps of trained dogs are now attached to the different European armies, which will in the future be used, not only as guards for outpost work, but also to carry dispatches and ammunition.

By the statutory regulations of most of the States a dog is personal property; the owner may be indemnified in case of willful injury to the dog, and theft of the animal is a crime. Some States require, however, that the dog shall be licensed, or registered and collared, and therefore subject to taxation, before any property rights can attach to the animal. Unless duly authorized by law to kill unlicensed dogs, no one has a legal right to kill a dog belonging to another, unless he, or some one under his protection, or his animal, is in immediate danger of injury from the dog, or the dog is rabid, or has been bitten by a rabid animal. In general, the owner is liable in damages for any injuries caused by his dog; neither can he plead ignorance of the vicious habits of the animal in mitigation of the damages, every owner being bound to know the character of the dog he keeps. The owner of a vicious and dangerous dog may be indicted for keeping a nuisance, and be compelled to muzzle or kill the animal. Dog-racing is not illegal when for training purposes only, but if chance is the principal element it becomes a crime within the statutes against gaming.

Boards of health, or other civic authorities generally throughout the United States, issue edicts requiring all dogs to be kept muzzled for a certain number of weeks during the summer season, and authorizing any person to kill any dog found running at large not so muzzled. In many cities the police make raids on ownerless dogs and destroy them.

DOG-DAYS: anciently, the forty days between July 3 and August 11, derived from Sirius, the dog-star, which was supposed to cause the insufferable heat at this season. The ancient Thebans determined the length of the year by the number of risings of Sirius. At the season of the year when this star rose with the sun their combined influence was supposed to be productive of pestilential heat and baneful influences. Therefore, the Egyptians watched the conjunction of Sirius and the sun with feelings of hope and fear; for it foretold to them the rising of the Nile, or devastating droughts. Their dog-days extended from the 4th of August to the 14th of September. The rising of Sirius, however, has been so accelerated by the precession of the equinoxes during the passage of more than two thousand years, that the corresponding conditions for the ancient dog-days would not include them within the 3d of July and the 11th of August. It will readily be seen that our modern dog-days have no connection with the rising of Sirius or any other star, because no permanent data can be based

upon stars, whose positions are always changed by the falling back of the equinoxes.

DOGGETT, DANIEL SEYMOUR (1810-80), an American M. E. bishop. In 1829 he became an itinerant minister, and traveled through the Southern States. In 1866 he became a professor in Randolph Macon College, and in 1873 was made a bishop. He published *The War and its Close*.

DOGMA: originally, an opinion or proposition put in the form of a positive assertion, its truth being supposed to have been previously shown. In theology it was understood to signify a doctrine founded on Scripture, and advanced not for discussion, but for belief. But as this method of stating truth easily degenerates into the assertion of opinions without ground, and without regard to the aspect they may present to others, *dogma* and *dogmatism* have come in English to be almost synonymous with assertion without proof. In Continental theology, however, the word is still used without implying any censure, dogmas meaning simply doctrines; and this is the case in our own expressions, Dogmatic Theology, or Dogmatic, which is that branch of theology that treats of the systematic arrangement of the doctrines of Christianity.

DOGSBANE, the common name of a small genus (*Apocynum*) of the natural order *Apocynaceæ*, perennial herbs or under-shrubs. The dogbane of North America (*Androsæmifolium*), often called fly-trap, from the throat appendages of its corolla closing upon the insects which enter it, is of medicinal repute; similarly also its congener, *A. cannabinum*, or Indian hemp.

DOILY, or **DOILEY**, a small napkin used at a table for putting glasses upon during dessert. Some are highly ornamented. The name is said to be derived from the original maker, but more probably it is a modification of the Dutch *dwaale*, a towel, and was introduced with the article from Holland.

DOIT, a small copper coin current in Scotland during the reigns of the Stuarts. It was a Dutch coin (*duit*), and in value the 16th part of a guilder.

DOKMEH, DAKHMA, or TOWER OF SILENCE, a receptacle for the dead used by the Parsees, consisting of a low stone tower, on top of which the bodies are exposed to the vultures till, being denuded of their flesh, their bones drop through the grating into a pit beneath. See **PARSIS**, *Britannica*, Vol. XVIII, p. 326.

DOLABRA, a rude ancient hatchet. *Dolabræ* are represented on the columns of Trajan and Antoninus, and abound in all museums. When made of flint, which was their earliest and rudest form, they are usually called *celts*.

DOLABRIFORM, having the shape of an ax or hatchet, as some leaves, and also certain organs of some shell-fish.

DOLBEAR, AMOS EMERSON, an American physicist, born in 1837. In 1866-67 he was instructor of chemistry at the University of Michigan, and in 1867-68 assistant professor of natural sciences in the University of Kentucky. From 1868 to 1874 he was professor in Bethany College, W. Va., and then became professor of physics and astronomy in Tuft's College, College Hill, Mass. Prof. Dolbear has made numerous valuable contributions to science.

DOLES AT FUNERALS are of great antiquity. St. Chrysostom speaks of them as being given to procure rest to the soul of the deceased. On this ground, as well as on the score of general benevolence, the practice of making gifts to the poor at funerals was common until comparatively recent times; for it was continued, sometimes on a munificent scale, long after the custom of praying for the

dead had been abandoned on the introduction of reformed doctrines.

DOLICHOS, leguminous plants, with long pods which are used in the East and West Indies for food. Chinese *soy* is made from one variety.

DOLL, an image, usually representing a little girl, but sometimes a boy or a man, and used as a toy. The word doll is of doubtful derivation; possibly from *idol*. The use of dolls dates from the most remote times, and is common in all countries, barbarous as well as civilized. The love of dolls is a perfectly legitimate feeling, and its exercise helps to cultivate not only tender affections, but also taste as regards the making and management of children's dresses. Accordingly, the keeping of dolls becomes a part of the home education of girls, and is recognized to be so by the universality of the practice. Dolls were at one time imported chiefly from the Netherlands, and hence not an unusual name for a doll was "Flanders baby." These old Flemish or Dutch dolls were made of wood, with neatly-formed faces and flashy dresses, the cheaper kinds having slender wooden legs. Latterly, there have been great improvements in the making of dolls, and it has assumed the character of a manufacture; but there are still large importations from the countries on the Rhine, France and Switzerland. The discovery and perfection of the phonograph marks a new era in the manufacture of these toys, and talking dolls are now almost as common as the ordinary wax dolls were a few years ago.

DÖLLINGER, JOHANN JOSEPH IGNAZ VON, a German theologian, born in 1799. He received holy orders at Würzburg, and for a time was engaged in parochial duties in his native diocese; but later was appointed a professor at Aschaffenburg. In 1826 he accepted the chair of ecclesiastical history in the University of Munich, and in 1871 became rector. In 1873 he was appointed president of the Royal Academy of Science at Munich. He is the author of numerous works on ecclesiastical history.

DOLLY SHOP, the name popularly given in London to a shop in which rags and other old articles are bought, and over whose door a black doll is usually suspended. It is understood that dolly shops are in many instances unlicensed pawnbroking concerns. For small articles, a few pence are given with the understanding that the seller can buy them back at an advance some days after. In Edinburgh and Glasgow, shops of this kind are known as *wee pawns*, and give some concern to magistrates and police.

DOM, or **DON**, a title originally assumed by the popes, from whom it descended in France, at least, to bishops and other dignitaries, and finally to monks. In Portugal, the title *dom* is confined to the sovereign and his family. The Spanish *don* was originally confined to the nobility, but is now bestowed by courtesy as indiscriminately as the English Mr. or gentleman. The feminine *doña*, is, in like manner, given to ladies.

DOMBEY, JOSEPH (1742-94), a French botanist. In 1776 he was appointed botanist of the Jardin des Plantes. In 1777 he was sent to South America to collect such useful plants as could be cultivated in France. The specimens that he gathered were captured by the British and sent to the British museum, where they still remain. His second shipment was confiscated by the Callao authorities. In 1782 he visited Chili. During his stay the cholera broke out and he was appointed physician-in-chief of Concepcion. In 1785 he returned to France. Eight years later he was sent on a mission to the United States, but was captured by privateers and imprisoned in Montserrat, where he died.

DOMESTIC ARCHITECTURE. The external forms and internal arrangements of the domestic abodes of a people are far more influenced by their manners, habits, and occupations, and by the climate in which they live, than their ecclesiastical edifices and public buildings, and there is, consequently, no department of architecture which is so varied and national as domestic architecture. But not only are the circumstances of each country different in this respect, the same is the case with every department in each country, with every town in each department, with every street in each town; and a domestic architecture which fulfills its object will not only adopt itself to the necessities, but will also make the best, in point of artistic effect, of the specialties of every case with which it is called upon to deal. The circumstances of families, and even the tastes and fancies of individuals, are legitimate subjects of consideration in domestic architecture.

DOMINO, the name formerly given to the garb worn in winter by priests while officiating in cold

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leans, and at the head of Bayou Lafourche. The town has excellent advantages for trade.

DONATUS, AELIUS, a well-known grammarian and commentator, who taught at Rome about A. D. 355,

and was the instructor of St. Jerome. He wrote treatises: *De Litteris, Syllabis, Pedibus et Tonis, De Octo Partibus Orationis* and *De Barbarismo, Solecismo*, etc. The writings form together a very complete course of Latin grammar, and in the Middle Ages were the only text-books used in the schools, so that *Donat* came in the West of Europe to be synonymous with the grammar or with the elements of any science. *The Donat into Religion*, is the title of a book by an English bishop. The Latin grammar of Donatus has formed the ground-work of the elementary treatises on that subject to the present day. Donatus' was one of the first books on which the art of printing by means of letters cut on wooden blocks was tried, and copies of these are reckoned among the greatest of bibliographical curiosities.

DONDRA HEAD, the most southern extremity of Ceylon. As compared with Cape Comorin, the corresponding point in the peninsula of Hindoostan, it more directly faces the Indian Ocean, and lies nearer the grand thoroughfares of Eastern commerce. An adjacent village of the same name numbers 900 inhabitants.

DONELSON, ANDREW JACKSON (1800-71), an American politician. From 1820 to 1822 he served in the army, but resigned, and was admitted to the bar in 1823. He was private secretary to President Jackson during his two terms, and in 1844 was appointed chargé d'affaires to the republic of Texas. In 1846 he became minister to Prussia, and in 1848 to the federal government of Germany. He was the nominee for vice-president on the ticket with Millard Fillmore in 1856, and after his defeat in the election, retired from public life. Subsequently he practiced law in Memphis.

DONGAN, THOMAS (1634-1715), a colonial governor of New York. At an early age he entered the British army, and later the French army. Subsequently he was made lieutenant-governor of Tangiers, and in 1682 became governor of the colony of New York. He resigned in 1688 and returned to England three years later.

DONIPHAN, ALEXANDER WILLIAM (1808-87), an American soldier. He began the practice of law at Lexington, Mo., in 1830. In 1838 he had risen to brigadier-general in the State militia, and in 1846 he entered the United States service as a colonel, taking part in various important battles of the Mexican war. In 1836, 1840, and 1854 he was a member of the Missouri State legislature.

DONGARPUR, a fortified town of Rajputana, in Central India. It is the capital of a protected state of the same name, containing 1,000 square miles, and 100,000 inhabitants.

DONG-NAI, the name of a river and a town in Anam or Cochin China.

DONIPHAN, a village and grain-shipping point of Doniphan county, Kan., on the Missouri River, six miles northeast of Atchison.

DONOVAN, DENNIS D., a lawyer, born in Henry county, Ohio, Jan. 31, 1859. He received a common school education and was a teacher for three years, and was postmaster of Deshler, Ohio, during President Cleveland's administration. In politics he was a Democrat; was twice elected a member of the Ohio State legislature, and in 1890 was elected a representative from the Sixth Congressional District of Ohio to the 52d Congress.

DONNER LAKE, a small mountain lake of Nevada county, Cal., in a chasm of the Sierra Nevada, 13 miles northwest of Lake Tahoe. It is a summer resort, and derives its name from a man named Donner, who led a band of emigrants in 1846, most of whom perished of starvation on the shores of this lake.

DOO, GEORGE THOMAS, one of the best English historical engravers of the present day, born in the parish of Christ Church, Surrey, in 1800. His admirable rendering of Eastlake's *Italian Pilgrims Coming in Sight of Rome*; his exquisitely finished heads of women and children, after Lawrence; his engravings from Raphael, Corregio, and others have succeeded in winning for him a very high place in the estimation of the admirers of his laborious art. In 1851 he was elected a fellow of the Royal Society, and in 1856, a royal academician.

DOOLITTLE, JAMES ROOD, an American Senator, born in 1815. He began the practice of law in 1837, and became district attorney of Wyoming county, N. Y., in 1845. In 1853 he was made judge of the first judicial circuit of Wisconsin, and from 1857 to 1869 served as a United States Senator. He retired from public life in 1869, and has since practiced his profession in Chicago, Ill.

DOOM, the old name given to the last judgment, and to those representations of it in churches which have a religious rather than an artistic object. Many of the dooms are executed in distemper. In the reign of Edward VI most of them were washed over or otherwise obliterated as superstitious. There is a fine one still remaining in the Church of the Holy Trinity at Coventry, England.

DOON, a Scotch river rising in the southeast of Ayrshire, in Loch Enoch; runs northwest through Loch Doon, past Dalmellington, Burns's Monument, and Alloway Kirk, to the Firth of Clyde. It is 30 miles long.

DOOR AND DOORWAY. In art, the form of the door is determined by the architectural style of the building in which it is placed. In classical buildings it is generally rectangular in form, though both Greeks and Romans, following the Egyptians, among whom the practice was almost universal, occasionally diminished the opening toward the top, and the Romans in later times very frequently threw over it the circular arch, which was the characteristic feature of their style. Egyptian doors are known to us, for the most part, only by the examples which remain in monumental structures, and these, like the other members of the style thus exhibited, are of gigantic proportions. The door of the temple at Edfu measures seventy-four feet to its summit.

With the Egyptians the door was an architectural object of very great importance. On either side colossal statues or obelisks were placed, and the approach to it was often lined with rows of gigantic sphinxes. The Greek door was surrounded by moldings, and as the lintel or top stone which covered it projected on both sides beyond the jambs, the moldings which ran round both sides, jutted out at the place of meeting forming a sort of shoulder. This arrangement, however, was by no means uniform, the moldings of the jambs being often quite separated from those of the architrave, as the beautiful door of the Erechtheum. The doors themselves, in antiquity, in private dwellings were usually of wood; and in structures devoted to religious or public purposes of metal, and occasionally of marble. They were generally paneled and turned on pivots working in sockets. With the exception of the forms of the windows and the tracery and foliage of the pillars, doors are the most characteristic features of all the styles of Gothic architecture.

DOORGA, or DURGA, a Hindoo divinity, one of the names given to Paravati, the consort of Siva. She is the Amazonian champion and protectress of the gods, and has been compared to the Olympian Juno, and the Pallas or armed Minerva of the Greeks. She is represented with ten arms. In one

hand she holds a spear, with which she is piercing the giant Muhisha; in another, a sword; in a third, the hair of the giant, and the tail of the serpent turned around him; and in others, the trident, discus, ax, club, and shield.

DORAK, a thriving manufacturing town in the province of Khuzistan, Persia. By a canal uniting the river Dorak with the river Karun, considerable trade is carried on. Population, 8,000.

DORAN, JOHN, an English author, born in 1807. He was for years a tutor in a private family and then traveled extensively. On his return to England he took up his residence in London, and devoted himself entirely to literature. He has contributed to many periodicals, and written works on miscellaneous topics.

DORÉ, PAUL GUSTAVE, a French artist, born at Strasburg, in 1832, died in 1888. He was educated at Paris, and early displayed superior talent. He first contributed sketches to the "Journal pour Rire," and other Paris periodicals, and in 1855 his picture of the *Battle of the Alma* was exhibited, and in 1857 followed the *Battle of Inkerman*. Besides executing a mass of miscellaneous works he illustrated Tennyson's works, Coleridge's *Ancient Mariner*, the *Legend of the Wandering Jew*, and the Bible, and also reproduced and exhibited in Paris and London many of his designs. The Doré Gallery, used for this purpose, has been open in London for several years. *Christ Leaving the Prætorium* is his most important painting. The slightest of Doré's productions shows that he was an artist and poet, and excites a greater interest than many works less characterized by hastiness and mannerism. Doré received the decoration of the Legion of Honor in 1861.

DORN, JOHANN ALBRECHT BERNHARD (1805-81), a German Orientalist. In 1829 he was appointed ordinary professor of Oriental languages at the Russian University of Charkow, and in 1845 became professor of history and Asiatic geography at the Oriental Institute at St. Petersburg. In 1848 he was made keeper of the Imperial Library and director of the Asiatic Museum. He has published many translations of Oriental works on history and geography, and also a valuable book as the result of a scientific journey to the Caucasus, entitled: *Caspia Invasion of the Ancient Russians in Tabaristan*.

DORNER, ISAAC AUGUST, D.D., a Protestant theologian, born at Würtemberg in 1809. He wrote many able works, among them the *History of the Development of the Doctrine of the Person of Christ*. In 1873 he was a delegate to the meeting of the Evangelical Alliance.

DORNICK, DORNIC, or DORNOCK, a species of figured linen, deriving its name from Dornich, or Tournay, in the Netherlands, where it was formerly made in considerable quantity.

DORR, BENJAMIN (1796-1869), an American P. E. clergyman. He was ordained priest in 1823, and was rector of different churches to 1835. From 1835 to 1837 he was general agent of the domestic committee of the Board of Missions, and from 1837 to his death was rector of Christ Church, Philadelphia. He was the author of many books on religious topics.

DORR, THOMAS WILSON (1805-54), an American politician. He began the practice of law in Providence, R. I., and was a member of the assembly from 1833 to 1837. In 1842 he was elected governor of the State by what was known as the "suffrage party," with Samuel W. King as the choice of the supporters of the old charter. King's election finally prevailed, and Dorr was sentenced in 1844

to imprisonment for life on a charge of high treason. He was released, however, in 1847, and restored to civil rights in 1851.

DORSHEIMER, WILLIAM (1832-86), an American lawyer and journalist. From 1867 to 1871 he was district attorney for the northern district of the State of New York, and lieutenant-governor from 1875 to 1880. In 1883 he became a member of Congress, and in 1885 received the appointment of United States district attorney for the southern district of New York. The same year he became editor of "The New York Star."

DORT, SYNOD OF, a synod of the Dutch national church, convened at Dort from November, 1618, to May, 1619, for the preparation of canons setting forth the Calvinistic doctrines, and for the publication of an ecclesiastical censure against the Remonstrants, also for calling upon the civil power to enforce the decrees of the synod by banishment, imprisonment, or fines.

DORTURE (old Eng., *dorter*; Fr., *dortoir*), a long room in a convent, divided into a succession of small chambers, or cells, where the inmates sleep. It usually has immediate access to the church or chapel, for the convenience of attendance on services during the night.

DORY (nautical), a small boat of simple construction, flat-bottomed, and much used in sea-fisheries as a go-between from the larger boat and the shore, in loading and unloading. It is also used to go in from the larger vessel in catching fish.

DOTIS, or TORIS, a town in the northwest of Hungary, district of Komorn. It contains a splendid chateau, the property of the Esterhazy family, whose adjoining gardens are laid out in the English fashion. Population, 9,855.

DOTTED NOTE: in music, a note followed by a dot to denote an increase of length equal to one-half its simple value. Thus, a dotted semibreve is equal to three minims, and a dotted quarter to three eighth notes. *Dotted rest* is a rest lengthened by a dot in the same manner as a dotted note. Notes and rests are sometimes followed by two dots, indicating an increase of length equal to three-quarters of their simple or primary value, and are then said to be *double-dotted*.

DOTEREL (*Charadrius morinellus*), a species of plover inhabiting Northern Europe and Asia in summer, breeding chiefly in the highest latitudes. On the approach of winter, it migrates to the countries around the Mediterranean, and to others of similar climate. See **KILLDEER**, *Britannica*, Vol. XIV, p. 76.

DOUAY BIBLE, THE, a version of the Holy Scriptures (Old Testament), the authorized version of the Roman Catholic Church. It was made at Douay in 1609-10. The authorized version of the New Testament was made at Rheims in 1582.

DOUAY, CHARLES ABEL, a French general, born in 1809, killed at the battle of Wiessenburg in the Franco-German war in 1870. He served in Algeria, in the Crimean war, and in Italy in 1859.

DOUBLE CONSCIOUSNESS. Double or divided consciousness has likewise been designated double personality. The term comprehends a group of morbid mental conditions involving some modification in the clearness of the idea of personal identity. Individuals are often encountered with confused notions of the "me" and "not me;" others conceive that parts or properties of their frame belong to another person, or that they are inhabited and ruled by a spirit or entity acting in opposition to their will and interests; and there are others, who, at different times and under different circumstances, such as when influenced by or free from

moral or physical stimulation, conceive that they are different persons, and endowed with different qualities and powers. These manifestations, however, do not fully illustrate the state under consideration, which has been described as exhibiting, in some measure, two separate and independent trains of thought and independent mental capabilities in the same individual, each train of thought and each capability being wholly dis severed from the other, and the two states in which they respectively predominate, subject to frequent interchanges and alternations.

DOUBLE SHOTTING, an augmentation of the destructive power of ordnance, by doubling the shot fired off at one time from a gun. Sometimes three shots are fired at once, in which case the piece is said to be "treble-shotted."

DOUBLING THE CUBE, a celebrated geometrical problem among the ancients. The object was to find the side of a cube whose contents should be twice that of another given cube; and various accounts are given of how the problem was suggested.

DOUBLING GAP SPRINGS, a health resort of Cumberland county, Pa., 30 miles west of Harrisburg. Many chronic diseases are cured by the use of water from these springs. Some of the springs are saline-sulphuric and others are carbonated saline chalybeate.

DOUBLOON (Sp., *dublone*, double), the name of a gold piece coined in Spain and Spanish America. The *Dublone* de Isabella, coined since 1848, is of one hundred reals, and equivalent to 25.84 French francs. The older Spanish doubloons vary in value from 85 to 81 francs.

DOUGLAS, GENERAL SIR HOWARD (1776-1861), Baronet, G. C. B., son of Admiral Sir C. Douglas. Entering the army when young, he served in Spain and Portugal. He was governor of New Brunswick, lord high commissioner of the Ionian Islands, and from 1842 to 1847 he was member of Parliament for Liverpool. In 1851 he became a general in the army. He disapproved of the method of warfare in the Crimea in 1855, declaring that Sebastopol could not be reduced unless by a change in the plan of operations, such as he traced; and his prophecy was verified by the event.

DOUGLAS, JOHN, D. D. (1721-1807), the son of a respectable shop-keeper in his native town. In 1736 he entered St. Mary's College at Oxford, where, after five years' study, he took his bachelor's degree. His life is little more than a chronicle of his very numerous preferments, which ended in his being translated to the see of Salisbury in 1791.

DOUGLASS, FREDERICK, an American orator, born in Maryland in 1817. His mother was a negro and his father a white man. He was at one time a slave, but in 1838 fled to Massachusetts. From 1841 to 1845 he traveled and lectured through the New England States as the agent of the Massachusetts anti-slavery society. In 1845 he went to Europe, where he lectured in the large towns of England, Ireland, Scotland and Wales. During the war he was active in enlisting men to fill colored regiments. From 1847 to 1870 he edited the weekly journal, "The North Star," and in 1870 became the editor of the "New National Era" in Washington. In 1871 he was assistant secretary to the commission to the Dominican Republic; and was afterwards a member of the territorial council of the District of Columbia. In 1872 he was a presidential elector for the State of New York. In 1876 he was United States marshal for the District of Columbia, and was subsequently recorder of deeds for the District. In 1886 he visited Great Britain, where he met with an enthusiastic reception. At the

present writing, 1891, he is minister resident and consul-general to Hayti, and chargé d'affaires to Santo Domingo.

DOVE. In Christian art, the dove is employed as an emblem of the Holy Ghost, no doubt from the fact of this being the form in which the Spirit descended upon our Lord at his baptism. From the dove being used to symbolize purity, it is generally represented white, with its beak and claws red, as they occur in nature. In the older pictures a golden nimbus surrounds its head; the nimbus being frequently divided by a cross, either red or black. In stained-glass windows we see the dove with seven rays proceeding from it, terminating in seven stars, significant of the seven gifts of the Holy Spirit. Holding an olive branch, the dove is an emblem of peace. When seen issuing from the lips of dying saints and martyrs, it represents the human soul.

DOVÉ, HEINRICH WILHELM (1803-79), a German physicist. In 1828 he became assistant professor of natural philosophy at Königsburg, and in 1829 at Berlin. He was made full professor in 1845. He is credited with many important discoveries; he wrote several valuable works on physics. See *Britannica*, Vol. I, p. 109.

DOVÉ, RICHARD WILHELM, an eminent German jurist, born in Berlin in 1833. He became privat-docent of the University of Berlin in 1859, professor of the University of Tübingen in 1862, and was elected to the German Reichsrath in 1871. In 1860 he began the publication of the "Zeitschrift für Kirchenrecht," a leading periodical in Europe on all questions of church law.

DOVER, capital of Delaware, and county-seat of Kent county, situated five miles west of Delaware Bay. It contains a State House, seven churches, newspaper offices, several educational institutions, two banks, a flour-mill, several fruit-packing and evaporating houses, a glass factory, a foundry, sash and fruit-crate factory, a carriage manufactory, gas-works, and a Mount Holly system of water-works. The city is the center of an extensive fruit-growing region.

DOVER, a village of La Fayette county, Mo., on the Missouri River, 14 miles below Lexington. The place contains a brewery and flouring-mills, and hemp is raised in the vicinity.

DOVER, a city of New Hampshire, and county-seat of Strafford county (see *Britannica*, Vol. VII, p. 881). Dover is the oldest town in the State, having been settled in 1623. It is abundantly supplied with water-power from the Cocheco River, which has here a direct fall of 32 feet. The site of the city is hilly or uneven, and many of the streets cross each other obliquely. It is, however, advantageously situated for manufacturing purposes, and has several immense cotton mills and print-works. It has also manufactories of woolen goods, boots and shoes, carriages, iron foundries, etc. The growth of the city has been comparatively slow, the population in 1880 being 11,684, and in 1890, 12,790.

DOVER, a town of Morris county, N. J., on the Rockaway River and Morris Canal. It manufactures iron, having several forges, foundries, steel-works, rolling-mills and spike-factories.

DOVER, county-seat of Stewart county, Tenn., on the Cumberland River, one mile east of Fort Donelson. A national cemetery is located a short distance west of the village.

DOVER'S POWDER, a preparation of powder of ipecacuanha one dram, opium in powder one dram, and sulphate of potash one ounce. The whole is thoroughly mixed, and the ordinary dose is from five to ten grains. Occasionally, saltpeter is added. It is a most valuable medicine, and acts as a sudorific, increasing the proportion of sweat

or sensible perspiration. In feverish conditions, where there is the dry, furred tongue, and the dry skin, and the brain out of order, Dover's Powder is considered injurious; but where the tongue is moist, the skin moist and soft, and the brain comparatively unaffected, this powder is of great service.

DOW, NEAL, temperance reformer, born in Portland, Me., March 20, 1804. He was educated at the Friends' Academy in New Bedford, Mass. He was elected mayor of Portland in 1851 and was reelected in 1854. Mr. Dow became a champion of prohibition, and it was through his efforts that the Maine liquor law was passed in 1851. He was a member of the State legislature in 1858-59. At the commencement of the civil war he was appointed colonel of the 13th Maine volunteers, and accompanied Gen. Butler's expedition to New Orleans. In 1862 he was commissioned a brigadier-general of volunteers and placed in command of the forts at the mouth of the Mississippi, and later of the district of Florida. Wounded and taken prisoner in the attack on Port Hudson in May, 1863, he was exchanged after eight months' imprisonment, and resigned in the following year. He has since devoted himself to the temperance cause in the United States, Canada and Great Britain, and in 1880 was prohibition candidate for President of the United States.

DOWAGER (Fr., *donairière*, from *donaire*, dowry, dower, derived from the Gr. and Lat. *dos*, a thing given, verb *do*, to give), a widow with a dower; but commonly the title is applied only to the widows of persons of high rank.

DOWAGIAC, a city of Cass county, Mich., on the Dowagiac River, 105 miles east of Chicago.

DOWDEN, EDWARD, an Irish poet, born in 1848. In 1867 he became professor of oratory and English literature in Trinity College, Dublin. He has written numerous criticisms and poems.

DOWELS join two pieces of material horizontally in a building or other structure.

DOWER, "in the common law, is taken from that portion of lands or tenements which the wife hath for terme of her life of the lands or tenements of her husband after his decease, for the sustenance of herself, and the nurture and education of her children."—*Coke Upon Litt.*—30b. The common-law rights of the wife were greatly modified by the English Dower act of 1833. In some of the States of the United States, the dower is a share in fee; in others it extends only to such property as was held by the husband at the time of his death.

DOWLAS, a kind of coarse, strong linen, used by working people for shirts, and manufactured largely at Knaresborough, Yorkshire, Eng., at Dundee, and at Newburgh and other places in Fifeshire, Scotland.

DOWNIEVILLE, the county-seat of Sierra county, Cal., on the Yuba River, surrounded by high mountains. In the vicinity are deep gravel, hydraulic placer and quartz mines.

DOWNING, ANDREW JACKSON (1815-52), an American horticulturist. His entire life was spent in the study of horticulture, and in 1851 he was commissioned to lay out and plant the public grounds of the Capitol, White House and Smithsonian buildings. He wrote many valuable works on horticulture. Mr. Downing was one of the victims of the *Henry Clay* disaster on the Hudson River, N. Y., in 1852.

DOWNINGTON, a railroad junction of Chester county, Pa., 32 miles west of Philadelphia. It has two academies, water-works, a limestone quarry, and manufactures shoes and carriages.

DOWNS (Ger., *dünen*, Fr., *dunes*, from the root *dun*, common to the Gothic and Celtic languages, signifying a hill), a term usually applied to hillocks of sand thrown up by the sea or the wind along the sea-coast. It is also a general name for any undulating tract of upland which is too light for cultivation, and is covered with short grass. It is specially applied to two broad ridges of undulating hills south of the Thames, beginning in the middle of Hampshire, and running east, the North Downs, through the middle of Surrey and Kent to Dover (about 120 miles), and the South Downs, through the southeast of Hampshire and near the Sussex coast to Beachy Head (about 80 miles). Between the two ranges, lies the valley of the Weald, from which the chalk strata are supposed to have been removed by denudation. Toward the Weald the descent from both Downs is rapid, and presents cliffs as of sea-margin, while the opposite slopes are gradual. See *Britannica*, Vol. I, p. 723.

DOYLE, RICHARD (1826-88), an English artist. He first gained a reputation by making designs for various periodicals, but later became widely known as a book illustrator. Doyle's most important independent publications are: *The Continental Tour of Messrs. Brown, Jones and Robinson*; and a Christmas book, entitled *In Fairy-Land; Pictures of the Elf-World*.

DOYLESTOWN, the county-seat of Bucks county, Pa., 25 miles north of Philadelphia. It has two private academies, a public library, gas-works, water-works, and is a pleasant resort for summer visitors.

DOZY, REINHART, born in 1820, one of the most learned Orientalists of the present day.

DRACHENFELS ("Dragon's Rock"), a mountain, 1,055 feet high, on the Rhine, eight miles southeast of Bonn. It is of volcanic origin, consisting of lava, trachyte, and basalt. The cave where the dragon—from which the mountain takes its name—was wont to abide is pointed out to the traveler. The ruins of an old castle crown the summit, and adds picturesqueness to the Drachenfels.

DRACHMANN, HOLGAR HENRIK HERHOLDT, a Danish poet, novelist and painter, born in 1848. Since 1870 he has devoted himself almost entirely to literature, though he has occasionally painted a landscape or marine view. He has written many poems and novels, and ranks among the most popular Danish writers.

DRACO, a constellation in the Northern hemisphere. The star Draconis is celebrated as the one used in determining the coefficient of aberration of the fixed stars.

DRAFT, a tentative copy of a legal document or other formal writing, made for the purpose of adjusting the matter afterward to be admitted into the fair copy, or engrossed, as it is called. Manuscripts and proof-sheets are the drafts of printed works.

DRAG-BAR, a bar or link for attaching carriages together, or to the motive power, as on railways.

DRAGONET (*Callionymus*. See *Britannica*, Vol. XII, p. 690), a genus of fishes of the Goby family (see *Britannica*, Vol. X, p. 714), remarkable for having the gill-openings reduced to a small hole on each side of the nape, and the ventral fins placed under the throat, separate, and larger than the pectorals. They have no air-bladder. The species are pretty numerous; most of them finely colored, as the Gemmaous Dragonet (*Callionymus tyra*) of the British coasts—called *Gowdie* (*gowd*, gold) in Scotland—a fish about ten or twelve inches long,

the prevailing yellow color of which is varied with spots of sapphirine blue, etc.

DRAGON, GREEN (*Dracunculus vulgaris*), a plant of the natural order *Araceæ*, which receives its name from the spotted stem. It is a native of Southern Europe. Its flowers are black, remarkably fetid, and give out exhalations which cause headache, giddiness and vomiting. The root is emetic, and, probably for no better reason than the peculiar appearance of the stem, has been supposed useful for curing serpent-bites.

DRAGON ROOT (*Arisæma triphyllum*, formerly *Arum triphyllum*), a plant of the natural order *Araceæ*, a native of North America, whose tuber is a powerful local irritant, and is used as a stimulant of the secretions in chronic bronchitis, asthma, rheumatism, etc. The powder, made into a paste with honey, is beneficially applied to the mouths and throats of children in aphthæ; and milk in which the root has been boiled is a useful ointment in cases of scald-head, ringworm, etc.

DRAGON'S MOUTH, or in Spanish, *Boca del Drago*, the name of two straits or passages in the New World. One of them is in South America, separating Trinidad from the mainland, and connecting the Gulf of Paria with the southeast extremity of the Caribbean Sea. The other is in Central America, being on the northeast coast of Veragua, the most northwest portion of New Granada, between the Caribbean Sea and Lake Chiriqui.

DRAGOON BIRD, a Brazilian bird having a large cap-like bunch of feathers above its bill.

DRAKE, DANIEL (1785-1852), an American physician. He studied medicine, and settled in Cincinnati, where he soon gained a large practice. In 1816 he became professor in the medical department of the Transylvania University, Ky., and afterwards occupied a similar position in various other colleges. He was the author of numerous medical works.

DRAKE, SAMUEL GARDNER (1798-1875), an American antiquarian. In 1828 he established in Boston, Mass., the first antiquarian book-store in the United States. In 1858 he was president of the New England Historic Genealogical Society, and for many years editor of its quarterly "Register." He has written many valuable books on historical subjects.

DRAKE UNIVERSITY is most fortunately located upon a beautifully wooded campus of 18 acres in the northwestern part of the city of Des Moines, Iowa. It was founded in 1881 through the foresight and enterprise of its present chancellor, G. T. Carpenter, A. M., LL.D., Elder D. R. Lucas and others, and named in honor of Gen. F. M. Drake of Centerville, its most munificent benefactor. It has good buildings, apparatus, libraries, and museums. At present the University consists of eight colleges or departments, viz: Collegiate, law, medical, theological, normal, business, musical and art. While non-sectarian, it is under the general control of the Church of Christ or Disciples. Its catalogue for 1890 shows an enrollment of 827 students, 44 graduates, and 56 instructors.

DRAMA, THE AMERICAN. The first theatrical performances in North America were given in Quebec in 1694, by amateur players, although there is little doubt that the Spaniards in Mexico had established the stage, which in the times of the Spanish invasions was in the height of its glory in the mother country. The next positive date was 1745, when the first English performances were given in the island of Jamaica, and so successfully that the leader, Moody, famous as an actor of Irish characters, went to England, and in the following

year brought out a regular company of actors, returning to Jamaica, where he remained for many months.

The first performance of an English play in what is now the United States was in Boston in 1749, when Otway's *Orphan* was acted, but received by the Puritans with such horror that at the next general court a law was passed fining actors as well as spectators £5 (\$25) apiece, and the owner of a building £20 (\$100), "for each and every day or time" a play was attempted or permitted. This law was enforced for nearly fifty years. In 1749 an attempt was also made to open a theater in Philadelphia, but the parties were arrested and bound over to their good behavior. They went to New York, and in February 1750, rented a convenient room on Nassau street, where they opened on the fifth of March following with a play announced as *The Historical Tragedy of King Richard III*. "Wrote originally by Shapesepeare and altered by Colley Cibber, esq." The season lasted sixteen months with the exception of six weeks in the summer of 1750. The managers and chief actors were Murray and Kean. In July, 1750, the company disbanded, but the remains were gathered together by a Mr. Upton. The following season does not seem to have been very successful, as it was brought to a close in February, 1751.

Moody's success in Jamaica caused him to return to England in 1749, when he was at once engaged by David Garrick for Drury Lane. The rumors of his exploits had spread in London, and caused Mr. and Mrs. Lewis Hallam to organize a company, and with a stock of scenery and costumes for the Goodman Fields Theater, they came to America, went to Williamsburg, then the capital of Virginia, altered an old store house over into a theater, and opened it Sept. 5, 1753, with the *Merchant of Venice* and Garrick's farce *Lethé*. The reception they received was very different from that accorded their friends in Boston and Philadelphia. Governor Dinwiddle gave them a certificate drawn up and signed in council, testifying in high terms as to their ability as comedians as well as to their conduct as men. They went to Annapolis, Md., and acted in the first regular theater erected in the colonies. In June, 1753, they went to New York, but met with unexpected opposition through the abuse of a trust reposed in their advance agent. Mr. Hallam pleaded his case in the public press, and appealed to the authorities, with ultimate success. A prosperous season of six months followed, when they went to Philadelphia, where they met the most determined opposition. Petitions and counter-petitions were signed and the city was divided in the dispute. Permission was at last obtained for the presentation of twenty-four plays on the condition that the players "offered nothing indecent or immoral." The season was so satisfactory and successful that six more nights were added. Mr. Hallam then went to the West Indies, where he died. A Mr. Douglass led the actors back to New York, and built a theater on Cruger's wharf, the Nassau Street Theater having been converted into a church.

In the spring of 1759, Mr. Douglass went to Philadelphia, where he built the first regular theater erected in that city. Shortly after, a theater was built in Newport, R. I., where the first performance by professional actors was given in the New England States, on Sept. 7, 1761. In 1762 the company went to Providence, and in that year was formed the first theatrical circuit. It began at Williamsburg, Va., and included Annapolis, Philadelphia, New York, Newport, Providence, and a few smaller places where a court-house or proper building might serve the purpose of a theater. In New York a new theater was built in Chapel street, and was, during one of the disturbances caused by the Stamp Act, the scene of the first theatrical riot. During the succeeding ten years several other theaters were built, but on Oct. 24, 1774, the Continental Congress recommended a suspension of all public amusements. Douglass, who had been fairly successful, was obliged to yield, and took his company to the West Indies, where he had been always welcome.

During the Revolutionary struggle, there were no theatricals except those given by British officers. A remarkable incident brought these to an end. Burgoyne, the British commander, wrote a play, *The Blockade of Boston*, and while it was being played, a sergeant dashed in and announced, "The rebels have attacked the lines on the Neck" (the Neck was a strip of land connecting Boston with the main land). The audience applauded his spirited delivery, and it was some minutes before the truth of his statement was realized. The play ended without completion; the British were driven from Boston, and went to New York, where they took possession of the John Street Theater, which they called the Theater Royal. Major André was among the chief actors.

After the war, the players came back. Up to 1794 there was in the States but one stock company of recognized merit. After this date the growth of the drama was marked for its rapid development. Owing to prejudice, which had not yet subsided, various efforts to avoid the rigid laws were adopted. As late as 1792 a playbill announced "A Moral Lecture in Five Parts, in which the Dreadful Effects of Conspiracy will be Exemplified." It was but an underhand way of advertising Otway's *Venice Preserved*. *Hamlet* and *Roméo and Juliet* were also given as "moral lectures" or "moral dialogues." Such a violation of the law could not last long, and in December, 1792, the "exhibition rooms" were closed. Fortunately, in 1798, the legislature of Massachusetts repealed the law against theaters, and in February, 1794, the Federal Street Theater was opened with a prologue by Robert Treat Payne, Jr.

In New Orleans, the first performances seem to have been given in 1791 by a company who had escaped from the insurrectionary troubles in St. Domingo. The first theater in the Crescent City seems to have been built about 1806, and in 1823 the first American theater in New Orleans was built. A brick theater was built in Natchez, Miss., in 1828. From the beginning of the century the drama prospered, and kept pace with the growth of the country.

The first play written and acted in America seems to have been Burgoyne's *Blockade of Boston*, already referred to. The first professional dramatist in the United States was William Dunlap, one of the most fertile of playwrights. He was one of the founders of the National Academy of Design, and the author of several works. His *History of the American Theater* is an invaluable authority.

John D. Burk, killed in a duel in 1806, was the successful author of the plays *Bunker Hill*, or *the Death of General Warren*; *Joan of Arc*, and several others. Other actors and authors followed, among them John Howard Payne, the author of *Home, Sweet Home*. He is credited with some sixteen plays. Samuel Woodworth, the author of *The Old Oaken Bucket*, was also the writer of successful plays. George P. Morris, the author of *Woodman, Spare That Tree*, produced *Briercliff*, which held the stage for years.

The first actor to "star" was Cooper. He attached himself to no company, but went from one theatrical point to another, playing the chief part. The first great actor to follow him was George Frederick Cooke, who died in 1819. In 1820, Edmund Kean appeared as Richard III in New York. After filling his New York engagement he went to Boston; but, one night, there being a sparse audience, he refused to act, and left the country. Five years later he returned and appeared in New York, but the memory of his slight to the Boston audience was not dim, and one of the worst riots known in theatrical history was the result. Kean apologized, and filled his engagement, but when he went to Boston another riot occurred, which resulted in the destruction of the greater part of the theater.

In 1821 Junius Brutus Booth appeared as Richard III in Richmond, Va., then went to New York. He was immediately acknowledged as a master, and no actor exerted so much influence on acting in America as he. He died in 1826, four days after he had played in New Orleans, and while on his way to Cincinnati. Edwin Forrest was, if not the equal of Booth, at least a fit successor. He began playing in 1830, when but fourteen years of age. At nineteen he was the leading actor at the Albany Theater, and at the age of twenty made his appearance at the New York Park. In 1848, while in England, he became involved in a trouble with Macready, which culminated in a riot in New York in 1849, when the militia were called out, and, firing into the crowd, left 23 dead and 36 wounded on the pavement. At his death Forrest left his fortune to found a home for the needy members of his profession.

Macready, although thirteen years older than Forrest, did not appear on the stage until 1836, six years later than Forrest. Mrs. Duff made her first appearance in 1810 as Juliet, and while on the stage, a period of 28 years, was regarded as the foremost actress in America. In 1838 she left the theater and went into a self-imposed retirement, having taken upon herself a religious life. Fanny Kemble was another brilliant star. She was hailed as a beauty as well as a genius, and during her time she had none to dispute her place or sway. She left the stage in 1834 and married. Several plays came from her pen, the best known being *Francis the First*. Charlotte Cushman, acknowledged by all as the greatest actress in America, began as a singer, and was for a time prima donna at New Orleans, but the climate affecting her voice she gave up singing and became an actress. Her influence did more, probably, to elevate the stage and break down Puritanical prejudice than that of all other actresses combined.

Charles Mathews, whose eccentric comedy was as highly esteemed in England as Kemble's light comedy, first appeared in America in 1822. His trip was profitable and he returned to England. In a play written by himself and acted in London, called *Mathews in America*, there were many caricatures which gave great offense to the sensitive Americans, and which were not readily forgiven. His son, Charles James, usually known as Charles Mathews "the younger," appeared in 1824. He was a comedian of extraordinary lightness and ease, and his influence on the younger generation still survives.

The drama had grown to large proportions, and each succeeding year witnessed the advent of brilliant geniuses. In

1836 James H. Hackett, the first to make a specialty of Yankee parts, went on the stage. He journeyed to England and introduced the stage Yankee to the English public with great success. Hackett was probably the earliest performer of Rip Van Winkle. He repeated his visit to England, when George Handel Hill became the favorite as a delineator of Yankee character. Hill followed to England, and even went to Paris, but the Parisians failed to appreciate his *Solomon Snop*, and but a few performances were given.

Dan Marble, as Sam Patch, appeared in 1838; F. S. Chanfrau, in *Mose, the New York Fireman*, and later, in *Kit, the Arkansas Traveler*, achieved a remarkable success. Joseph Jefferson, in *Our American Cousin*, and later, in *Rip Van Winkle*, has surpassed all his fellow-actors. The ease and simplicity of his method stand widely apart from the mannerism of his surroundings, and for more than twenty years his *Rip Van Winkle* has held the stage. The play as given by Hackett, is re-written at the request of Jefferson, by Dion Boucicault, with suggestions and emendations by Jefferson, and has proved one of the most remarkable successes on the American stage.

With the increase in the number of stars, it began to be difficult to get a good stock company together. At first stars acted only on special nights, but for personal profit eventually were willing to act every night. Then the star, seeing that the manager relied on him or her to get people into the house, demanded the lion's share of the profits.

In the latter part of the history of the American drama, the array of prominent names is very large. James W. Wallack, the handsome, dashing actor, gentlemanly and popular in the best and most refined society; William E. Burton, perhaps the best actor of broad, low-comedy parts; John Brougham, the genial Irish-American actor and author; John Lester Wallack; Augustin Daly; Edwin Booth, the son of Junius Brutus Booth, and the heir of much, if not all, his father's histrionic genius, and who still (1891) holds captive at his will his audiences; Dion Boucicault; and scores of others, have made the American stage one of the great forces in the advancement of science, learning and civilization.

On April 1, 1891, the number of theaters and opera-houses in the United States was about 3,100; number of actors, actresses, and professional singers actively employed, 5,127; number of professional itinerant theatrical, operatic, and musical "attractions," 847. The following list embraces the names of the professional theatrical, dramatical, musical actors and singers in January, 1891:

Name.	Birthplace.	Born.
Albani, Emma	Chambly, Canada	1837
Albaugh, John W.	Baltimore, Md.	1848
Aldrich, Louis	Mid-ocean	1859
Anderson, Mary	Sacramento, Cal	1822
Arditi, Luigi	Piedmont, Italy	1854
Atherton, Alice	Cincinnati, O.	1839
Bandmann, Daniel E.	Cassel, Germany	1836
Bangs, Frank C.	Alexandria, Va.	1838
Barrett, Lawrence*	Paterson, N. J.	1854
Bateman, Isabel	Cincinnati, O.	1842
Bateman, Kate	Baltimore, Md.	1844
Bernhardt, Sarah	Paris	1832
Boniface, George C.	New York City	1843
Booth, Agnes	Australia	1833
Booth, Edwin	Belair, Md.	1839
Bowers, Mrs. D. P.	Stamford, Conn	1846
Buchanan, Virginia	Cincinnati, O.	1846
Burgess, Nell	Boston, Mass.	1806
Burroughs, Marie	San Francisco	1846
Campanini, Italo	Farma, Italy	1858
Cayvan, Georgia	Maine	1837
Chanfrau, Mrs. F. S.	Philadelphia, Pa.	1840
Clarke, George	Brooklyn, N. Y.	1835
Clarke, John S.	Baltimore, Md.	1843
Claxton, Kate	New York City	1845
Cody, William F.	Scott Co., Iowa	1853
Cognian, Rose	Peterboro, Eng.	1815
Couldock, Charles W.	London, Eng.	1847
Crabtree, Lotta	New York City	1845
Crane, William H.	Leicester, Mass.	1838
Daly, Augustin	North Carolina	1862
Damrosch, Walter J.	Breslau, Prussia	1858
Dauvray, Helen	Cincinnati, O.	1829
Davenport, Mrs. E. L.	London, Eng.	1850
Davenport, Fanny	London, Eng.	1842
Dickinson, Anna	Philadelphia, Pa.	1857
Dillon, Louise	Savannah, Ga.	1859
Dixey, Henry E.	Boston, Mass.	1858
Dreher, Virginia	Louisville, Ky.	1853
Drew, John	Philadelphia, Pa.	1818
Drew, Mrs. John	England	1845
Edouin, Willie	Brighton, Eng.	1824
Edwards, Henry	Bristol, Eng.	1858
Ellsler, Emie	Philadelphia, Pa.	1841
Emmet, Joseph K.	St. Louis, Mo.	1837
Eytinge, Rose	Philadelphia, Pa.	1837

Name.	Birthplace.	Born.
Fawcett, Owen	London, Eng.	1838
Fisher, Charles	Suffolk, Eng.	1815
Florence, William J.	Albany, N. Y.	1831
Florence, Mrs. W. J.	New York City	1846
Germer, Emie	Augusta, Ga.	1857
Gerster, Etelka	Kaschau, Hungary	1857
Gilbert, Mrs. G. H.	Rochdale, Eng.	1820
Goodwin, Nat C.	Boston, Mass.	1857
Harrigan, Edward	New York City	1845
Hart, Tony	Worcester, Mass.	1855
Hauk, Minnie	New Orleans, La.	1858
Haworth, Joseph S.	Providence, R. I.	1858
Heron, Bjou	New York City	1838
Holland, E. M.	New York City	1848
Hill, Charles Barton	Dover, Eng.	1828
Huntington, Agnes	New York City	1838
Irving, Henry	Keinton, Eng.	1842
James, Louis	Tremont, Ill.	1830
Janaushek, Francesca	Prague, Austria	1850
Janisch, Antonie	Vienna, Austria	1850
Jansen, Marie	Boston, Mass.	1829
Jefferson, Joseph	Philadelphia, Pa.	1849
Kendal, Mrs. W. H.	Lincolnshire, Eng.	1840
Keene, Thomas W.	New York City	1842
Kellogg, Clara Louise	Sumterville, S. C.	1855
Kelcey, Herbert H. L.	London, Eng.	1850
Langtry, Lily	St. Helens, Jersey	1856
Lee, Henry	New York City	1856
Lewis, Catherine	Wales	1839
Lewis, James	Troy, N. Y.	1840
Lucca, Pauline	Vienna	1843
Mackaye, Steele	Buffalo, N. Y.	1865
Maddern, Minnie	New Orleans, La.	1857
Mansfield, Richard	Heligoland, Ger.	1854
Mantell, Robert B.	Ayrshire, Scotland	1857
Martinot, Sadie	Yonkers, N. Y.	1861
Mather, Margaret	Detroit, Mich	1829
Mayo, Frank	Massachusetts	1832
Mitchell, Maggie	New York City	1844
Modjeska, Helena	Poland	1841
Mordaunt, Frank	Burlington, Vt.	1846
Morris, Clara	Cleveland, Ohio	1839
Murphy, Joseph	Brooklyn, N. Y.	1848
Nilsson, Christine	Sweden	1849
O'Neill, James	Ireland	1867
Oualits, Clara	Berlin, Prussia	1843
Patti, Adelina	Madrid	1837
Phillips, Gus	New York City	1856
Pixley, Annie	New York City	1825
Ponsil, Madame	Huddersfield, Eng.	1829
Pope, Charles	Germany	1816
Proctor, Joseph	Marlborough, Mass	1844
Rankin, A. McKee	Sandwich, Canada	1852
Reed, Roland	Philadelphia, Pa.	1860
Rehan, Ada	Limerick, Ireland	1855
Rhea, Mile	Brussels	1821
Ristori, Adelaide	Italy	1823
Robinson, Frederick	London, Eng.	1836
Robson, Stuart	Annapolis, Md.	1829
Rossi, Ernesto	Leghorn, Italy	1846
Roze, Marie	Paris	1864
Russell, Annie	New York City	1860
Russell, Lillian	Clinton, Ia.	1848
Russell, Sol Smith	Brunswick, Mo.	1830
Salvini, Tommaso	Milan, Italy	1856
Scanlon, William J.	Springfield, Mass.	1844
Scott-Siddons, Mrs	India	1858
Stanhope, Adeline	Paris, France	1860
Stanley, Alma Stuart	Jersey, Eng.	1842
Stevenson, Charles A.	Dublin, Ireland	1827
Stoddard, J. H.	Yorkshire, Eng.	1823
Studley, John B.	Boston, Mass.	1824
Sullivan, Barry	Birmingham, Eng.	1855
Sully, Daniel	Detroit, Mich	1853
Tearle, Osmond	Plymouth, Eng.	1849
Terris, William	London, Eng.	1848
Terry, Ellen	Coventry, Eng.	1835
Thomas, Theodore	Essens, Germany	1843
Thompson, Charlotte	Bradford, Eng.	1838
Thompson, Denman	Girard, Pa.	1838
Thompson, Lydia	London, Eng.	1845
Thorne, Edwin F.	New York City	1857
Thursby, Emma	Brooklyn, N. Y.	1852
Toole, John L.	London, Eng.	1852
Turner, Carrie	St. Charles, Iowa	1829
Vezi, Hermann	Philadelphia, Pa	1854
Vokes, Rosina	London, Eng.	1861
Warde, Frederick	Wadington, Eng.	1852
Wheatcroft, Nelson	London, Eng.	1847
Williams, Gus	New York City	1847

* Died in New York, 1891

DRANESVILLE, Fairfax county, Va., 17 miles northwest of Washington. A battle was fought here Dec. 20, 1861, between the Union and the Confederate troops.

DRAPER, HENRY (1837-82), an American physician. He traveled in Europe, and on his return built the observatory at Hastings-on-Hudson; was appointed on the medical staff in Bellevue hospital; New York city; in 1860 became professor of physiology in the University, and in 1866 held a similar position in the medical department. In 1874 Congress appointed him to superintend the photographic department of the commission appointed to observe the transit of Venus. He made numerous discoveries in astronomy through his photography of the heavenly bodies.

DRAPER, JOHN WILLIAM (1811-82), an American scientist, born in England; he came to the United States in 1832, and in 1836 became professor of chemistry and natural philosophy in Hampden-Sidney College, Va. From 1840 to 1881 he was connected with the medical department of the University of New York. He made numerous important investigations in chemistry and other subjects, and wrote many valuable works.

DRAPER, LYMAN COPELAND, an American antiquarian, born in 1815. In 1838 he began to interview western pioneers, thus collecting valuable historical information. In 1853 he went to Madison, Wis., and became corresponding secretary of the New York State Historical Society. In 1887 he was appointed honorary secretary for life. He has published works on various subjects.

DRAPER, WILLIAM HENRY, American physician, born in 1830. In 1869 he became clinical professor of diseases of the eye and ear in the College of Physicians and Surgeons, and in 1880 was appointed professor of clinical medicine. In 1886 he became president of the New York Academy of Medicine.

DRAPERY, IN ART. From the very great difficulties with which the artist has to struggle in dealing with the arbitrary and ungraceful forms of modern dress, we are often led to regard drapery as an impediment, in place of an aid and accessory, to the representation of the human form in plastic art. The erroneous nature of such a conception will be manifest at once to those who direct their attention to the study of drapery in antique art, with a view to discovering, not so much how as why it was employed by a people whose national customs admitted of their almost wholly dispensing with it had they felt so disposed. Such a study will convince us that, when properly disposed, drapery tends in many cases to exhibit the form, to enhance the characteristics, and to intensify the attitude, whether in action or in repose. It tells, moreover, something of the circumstances in which the action takes place beyond what could possibly be told by the naked figure.

DRAUGHT, or DRAUGHT OF WATER: in maritime affairs, a technical name for the depth to which a ship sinks in the water when fairly afloat. The draught is marked on the stem or stern-post, or both, from the keel upward. When a ship is in good trim, the draught does not differ much at the two ends. Ships with sharp bottoms draw more water, or have a "greater draught," than those of flatter construction.

DRAUGHTSMAN. A draughtsman differs from a designer, inasmuch as he lays no claim, in that capacity at all events, to the character of an originator.

DRAVE (Ger., *Drau*), a river in Austria. The valleys through which it flows in its course through Carinthia, Styria, and Croatia are distinguished for great fertility and picturesque scenery, while

the population upon its banks is numerous and industrious. In Slavonia, the Drave is frequently bordered by dense forests.

DRAWBACK, a term in commerce, employed in connection with the remitting or paying back of excise duties on certain classes of articles exported. Excise duties, as a matter of course, enhance by so much the natural price of the commodity on which they are imposed. Were these duties not remitted, the commodity so taxed would not be ordered from those foreign countries where articles of the same kind could be purchased free of such duties. To afford facility for the exportation of these articles, the state resorts to the expedient of returning to the exporter a sum equal in amount to what he or the manufacturer had paid to the excise.

DRAW-HEAD: in railway mechanics, a buffer to which a coupling is attached.

DRAWING-BOARD, a board on which drawing-paper is strained for painting on in water-colors. The paper is wetted for the purpose of being strained, and when attached at the edges it is permitted to dry and contract. Formerly the drawing-board was fitted into a frame, the edges of the wet paper being made fast by the pressure of the frame on the board. But the much simpler drawing-board which is now in use is made of a flat piece or pieces of wood, held together and prevented from warping by an edging of other pieces, the grain of which runs in the opposite direction. The wet paper is attached to the board with paste or thin glue, and when dry becomes perfectly firm and flat. When the work is finished, the paper is cut beyond the drawing with a knife.

DRAW-PLATE, a steel plate with a graduated series of holes, through which metals are drawn in making them into wires or bars. Also a name given to a plate of metal placed before a fire or before the lateral opening between the top of the fireplace and the throat of the chimney. Its use is to force the air to pass through the fire on its way into the chimney, instead of allowing it to pass over the fire.

DRAYTON-IN-HALES, or MARKET DRAYTON, a town in the northeast of Shropshire, Eng. Here in 1459 the Yorkists defeated the Lancastrians, with great loss. Population, 4,039, chiefly agricultural.

DRAYTON, WILLIAM HENRY, statesman, born in Drayton Hall, on Ashley River, S. C., in September, 1742, died in Philadelphia, in September, 1779. He was educated in England, at Westminster School and Baliol College, Oxford, and after his return to this country studied law, was admitted to the bar, and became an active writer on political topics. He opposed the patriotic associations in the colonies, and in 1771 received from the king the appointment of privy councilor for the province of South Carolina. As the Revolutionary crisis approached, however, his sentiments changed, and he was suspended from his offices under the crown. In 1775 he became a member of the "Council of Safety," of which he was soon after made president; was president of the provisional congress in 1775; privy councilor, and chief justice of the State; and in 1778 was elected a delegate to the Continental Congress, of which he continued a member till his death. He left a record of the events of the Revolution, which was published in 1821 under the title of *Memoirs of the American Revolution*.

DRED SCOTT CASE. See UNITED STATES, Britannica, Vol. XXIII, p. 772.

DRESSINGS: in architecture, a term loosely used to signify moldings and all the simpler kinds of sculptured decorations.

DREW, DANIEL, capitalist, born in Carmel, Putnam county, N. Y., in 1797, died in New York city,

Sept. 19, 1879. He engaged in steamboat building, was afterwards connected with railroad enterprises, and became a prominent speculator in Wall street. He amassed a fortune which was at one time variously estimated at from \$5,000,000 to \$15,000,000, but afterwards lost heavily and was ultimately compelled to go into bankruptcy. Mr. Drew founded the Drew Ladies' Seminary at Carmel, gave large sums to Wesleyan University, Middletown, Conn., and in 1866 gave \$250,000 towards founding the Drew Theological Seminary of Madison, N. J., the sum being afterwards increased by him to nearly \$1,000,000.

DREW THEOLOGICAL SEMINARY, under the control of the M. E. Church, was founded at Madison, N. J., by a donation of half a million dollars from Daniel Drew (*q. v.*), in 1868, and chiefly organized by its first president, Rev. Dr. M'Clintock. On the death of Dr. M'Clintock, Rev. Dr. R. S. Foster was made president, and managed the institution with conspicuous success until his elevation to the episcopate in 1872. He was succeeded by Rev. Dr. J. F. Hurst, who in 1880 was also made bishop, and the Rev. Dr. H. A. Buttz became the fourth president.

DRIFT: in navigation, a technical name for the deviation which a ship's course receives by the action of a contrary wind.

DRIFT, a name given to the bowlder-clay, a deposit of the Pleistocene epoch. More fully, it is called the Northern Drift, Glacial Drift, or Diluvial Drift, in allusion to its supposed origin. Drift-wood is wood carried by tides and currents to a distance from its native locality. Specimens thus transported have been observed in the marine strata of the chalk, London clay, and other formations. Sand-drift is sand driven and accumulated by the wind.

DRIFT: in mechanics, a conical hand-tool of steel for enlarging or shaping a hole in metal by being driven through or into it.

DRILLS, tools or instruments used for boring holes in metals, or other hard substances. They are usually made of a square steel bar, flattened out at the cutting end; this part is brought to an angular point like a spear-head, and the cutting edges are beveled in opposite directions. There are numerous other forms, however, adapted to the various kinds of work to be performed.

DRINKING USAGES. Some of these are of great antiquity, and all are interesting in connection with the history of manners. Besides sacrifices of animals and articles of food, the Hebrews made drink-offerings a solemn religious service. To mark the spot where he communed with God, Jacob set up a pillar of stone, and "poured a drink offering thereon" (Gen. xxxv, 14). We learn that such sacrifices were not made alone to the true God, for women are said to have poured out "drink-offerings unto other gods" (Jer. vii, 18). Such a statement is amply verified by pagan writers. Among the Greeks and Romans, the pouring out of a libation to the gods was a common religious observance.

DRIPSTON (Fr., *larmier*), a projecting molding or tablet placed over the head of a Gothic door-way or window, for the purpose of throwing off the water, whence it is also known as a water-table or weather-molding. Though such was, no doubt, its primitive use, the drip-stone latterly became a mere ornamental appendage, which served to enrich and define the outline of the arch. The drip-stone is not so constant a feature in Continental as in English Gothic.

DRIVING. In the United States, furious driving in cities generally is a misdemeanor, punishable by

fine and imprisonment. In the absence of State laws, municipalities regulate the rate of driving.

DROMORE, a town in the northwest of County Down, Ireland, on the Lagan, 17 miles southwest of Belfast, by rail. It is noted for its linen manufactures, and as the burial-place of Jeremy Taylor.

DROSERACEÆ. See **INSECTIVOROUS PLANTS**, *Britannica*, Vol. XIII, pp. 134-140.

DROUYN DE LHUYS, EDOUARD (1805-81), a French statesman. He was attached to the embassies at Madrid and at The Hague. In 1840 he was placed at the head of the commercial department under the minister of foreign affairs, and shortly after was elected deputy for Melun. Under Louis Napoleon's presidency he became minister of foreign affairs, and in 1849 went to London as ambassador. In 1855 he resigned his office. In 1863 he was recalled, resigning again in 1866.

DROWNING, as a capital punishment, was long the custom. Tacitus tells us that the Germans hanged their greater criminals, but that meaner and more infamous offenders were plunged under hurdles into bogs and fens. Drowning was also a Roman punishment. The *Lex Cornelia* decreed that parricides should be sown up in a sack with a dog, cock, viper, and ape, and thrown into the sea. The Anglo-Saxon codes ordered women convicted of theft drowned. The pit, ditch, or well was for drowning women; but the punishment was sometimes inflicted on men. So lately as 1611, a man was drowned at Edinburgh for stealing a lamb. The custom survived in Scotland until 1685, and in France as late as 1793.

DROYLSDEN, Lancashire, a suburb of Manchester, three and one-half miles east of it, with railway station. Population, about 9,000.

DROYSEN JOHANN GUSTAV (1808-84), a German historian. In 1840 he became professor of history at Kiel; in 1851 was called to the University of Jena, and from 1859 to his death occupied a chair in the University of Berlin. He wrote many popular historical works.

DRUGGET, a woven and felted coarse woolen fabric, usually with a printed pattern, chiefly used for covering carpets, and hence often called crumb-cloth. The name is also given to a stout dress fabric made with a linen warp and a worsted weft. This stuff is still made by handloom in Scotland.

DRUIDS, the priests among the ancient Germans, Gauls, and Britons, so called from their veneration of the oak. They headed the Britons who opposed Cæsar's first landing, 55 B. C., and were exterminated by the Roman governor, Suetonius Paulinus, 61. A. D.

DRUM, a Celtic word meaning the back, and applied to a small hill or ridge of hills. It enters into the composition of many place-names, especially in Ireland and Scotland, as *Drumcondra*, *Drumglass*, *Drumsheugh*.

DRUM-MAJOR, the name given to the officer who receives orders from the major of the battalion concerning the necessary beats or signals, and communicates them to the drummers.

DRUMMOND ISLAND, the most westerly of the Manitoulin chain, in Lake Huron, belonging to Chippewa county, Mich. It is 20 miles long by 10 wide.

DRUMMOND LIGHT, or **LIME-BALL LIGHT**, a very intense light, produced by directing an ignited stream of oxygen gas, and also one of hydrogen, or coal gas, upon a ball of lime.

DRURY, DRU, a silversmith of London, born Feb. 4, 1725, died Dec. 15, 1803. He was devoted to the study of entomology and to collecting exotic insects.

DRYBURGH, a beautiful ruined abbey in Berwickshire, five miles east-southeast of Melrose, on the Tweed. It contains the dust of Sir Walter Scott and of his son-in-law Lockhart.

DRYDEN, a village of Tompkins county, N. Y., 30 miles north of Owego. It contains a graded school, a woolen mill, tannery, and a newspaper office. It has a magnetic spring, and Dryden Spring Place attracts many health-seekers.

DRY TORTUGAS, a group of ten small, low islands belonging to Monroe county, Fla., and situated 40 miles west of the most western of the Florida Keys. On these islands stand two light-houses. There is an important fortification, Ft. Jefferson, on Garden Key, which, during the civil war, was used as a penal station for Confederate prisoners, and in which prisoners under sentence of court-martial are occasionally confined.

DRYING-MACHINE, a name applied to an apparatus for drying long webs of calico and other fabrics. It consists of a series of metal cylinders revolving in an iron frame, and heated internally with steam. Sometimes the rollers are arranged in vertical, sometimes in horizontal lines, and the cloth passes over them in a continuous web.

DRY-POINT, a sharp etching-needle, used to incise fine lines in copper, without the plate being covered with etching-ground, or the lines bit in by acid.

DUAL, the form given in some languages to a noun or a verb, when only two things are spoken of.

DUALISM, the name given to a philosophical theory, according to which some two principles, of different nature, original, and incapable of being derived the one from the other, lie at the bottom of everything; as, for example, the ideal and the real, or the material and the thinking substance. In a narrower and theological sense, dualism means the assumption of two original beings a good and an evil, or of two distinct principles in man, a bodily and a spiritual.

DUANE, WILLIAM (1760-1835), an American journalist. In 1784 he went to India, and became editor of a journal entitled "The World." Later he was editor of the "General Advertiser" (now the "London Times"). In 1795 he returned to the United States and became editor of the leading Democratic organ, the "Philadelphia Aurora." He wrote for publication several works on political and military topics.

DUANE, WILLIAM JOHN (1780-1865), an American politician. He was at one time assistant editor of the "Philadelphia Aurora," and in 1833 was appointed Secretary of the United States Treasury. He wrote some works on political topics.

DUBITZA, a fortified town on the northern frontier of Bosnia, on the right bank of the Unna, 10 miles from its confluence with the Save. In 1879 Dubitza, with the rest of Bosnia, passed under Austrian administration. Population, 3,000.

DUBOIS, a village of Clearfield county, Pa., located in the coal region, 129 miles northeast of Pittsburgh. It has a machine shop, planing and lumber-mills, and a sash and blind factory.

DU BOIS, JOHN (1764-1842), a French-American Roman Catholic bishop. He was ordained in 1787, and appointed assistant rector of the parish of St. Sulpice and chaplain to the insane asylum called the *Hospice des Petits Maisons*. In 1791 he arrived in Norfolk, Va., and was appointed pastor in that city, and later in Richmond, Va. He afterwards preached in various States, and in 1826 was appointed bishop of New York.

DU BOIS, REYMOND EMIL, physiologist, born in Berlin, Nov. 7, 1818. In 1841 he began the researches

in animal electricity with which his name is chiefly identified. In 1858 he succeeded Joh. Müller in the chair of physiology at Berlin, and in 1867 he was elected permanent secretary of the Academy of Sciences.

DUBUQUE, a city of Iowa, and county-seat of Dubuque county (see Britannica, Vol. VII, p. 504). Dubuque is an old and very wealthy city, an important railroad point, and the headquarters for the business of the lead region of the Northwest. It has extensive manufactories of carriages, wagons, and plows, and its lumber and pork-packing interests are large. It has also manufactories of woodenware, brick, leather, white lead, shot, engines, machinery, farming implements, beer, flour, soap, candles, artificial stone, boots and shoes, etc. In addition to an excellent system of public schools, its educational interests include a German Presbyterian Theological Seminary, St. Joseph College and Academy (Catholic), St. Mary's Academy, the Iowa Institute of Science and Arts, several convents, a business college, and an Episcopalian school. Population in 1880, 22,254; in 1890, 30,147.

DUCAMP, MAXIME, a miscellaneous writer, born at Paris, Feb. 8, 1822. He made repeated journeys in the East, and ultimately settled in Paris. He wrote of his Eastern travels, also poems, romances, a history of the Commune, and a great work on Paris.

DUCAT, a gold coin, formerly in extensive use on the Continent, deriving its name probably from *Dukas*, the family name of the Byzantine Emperors, Constantine X and Michael. The ducat varied in weight and fineness; the most common being worth about \$2.35. The modern Italian ducat was of much less value.

DUCATO CAPE, an abrupt headland at the southwest extremity of Leukas or Santa Maura, one of the Ionian islands, dreaded by sailors for the fierce currents around it. From its summit criminals were anciently cast into the sea.

DU CHAILLU, PAUL BELLONI, an American author and traveler, born in Paris, July 31, 1835. At an early age he went to live in the French settlement at the mouth of the Gaboon, Africa. In 1852 he visited the United States, of which he became a citizen. From 1855 to 1859 he explored the region on the west coast of Africa and brought back to New York numerous specimens of birds and quadrupeds, previously unknown. In 1863 he set out from England for another trip to western Africa. In 1867 he published his *Journey to Ashango Land*. He has traveled extensively in Scandinavia, Lapland, and Finland, of which he has given a description in his *Land of the Midnight Sun*. *The Viking Age* appeared in 1889.

DUCHE, JACOB (1737-98), an American clergyman. He was licensed to officiate as an assistant in the churches of Philadelphia in 1759, and in 1775 became rector of Christ Church in that city. In 1776 he was chosen chaplain of Congress, but resigned the same year and went to England. He returned to the United States in 1790.

DUCHOBORTZI, a sect of Russian mystics, traceable to the 18th century, who depend upon an inward light, like the Quakers, attach little importance to the sacraments, priesthood, and services of the church, and reject the doctrine of the Trinity and the divinity of Christ. The Emperor Alexander I allowed them to settle in Taurida, in South Russia; Nicholas I, in 1841, transferred them to Transcaucasia.

DUCK RIVER rises in Coffee county, Tenn., follows a westward course, and enters the Tennessee River 16 miles southwest of Waverly. Its length is about 200 miles.

DUCKING-STOOL, an apparatus at one time in use in England for the punishment of scolding wives. It consisted of a strong chair attached to one end of a beam, which worked on a pivot on a post bedded into the ground at the edge of the dam or river. The woman was placed in the chair with her arms drawn downwards; a bar was placed across her back and in front of her elbows; another bar held her upright, and cords tied her securely in. The executor of the punishment then took hold of a chain at the opposite end, and gave her a ducking on the "see-saw" principle.

DUCKWEED, or **DUCK-MEAT**, the type of *Lemnaceæ*, a small order of very degenerate monocotyledons, probably allied to *Araceæ*. They are chiefly floating plants, mere flat green fronds, with roots hanging loosely in the water, and with unisexual flowers—destitute of calyx and corolla—bursting through a membranous spathe in their margin. The *Lemnaceæ* are distributed through all parts of the world.

DUDLEY, **BENJAMIN WINSLOW** (1785-1870), an American surgeon. He studied medicine in America and Europe, and practiced in Lexington, Ky., until 1854. He operated two hundred and twenty-five times for stone in the bladder, and lost but six patients. He was for many years professor of anatomy and surgery in the Transylvania University.

DUDLEY, **EDMUND** (1462-1510), a lawyer and privy-councilor, and Empson's partner in carrying out the detested policy of Henry VII, whose son and successor sent him to the block. He was father of the Duke of Northumberland.

DUER, **JOHN**, an American jurist, born in Albany, N. Y., Oct. 7, 1782, died on Staten Island, Aug. 8, 1858. He studied law, and acquired reputation in New York city as an insurance lawyer. He was delegate to the State constitutional convention in 1821, appointed one of the commissioners to revise the statute law of the State in 1825, and was elected an associate judge of the superior court, becoming chief justice in 1857. He published a number of works, one of which, *A Treatise on the Law and Practice of Marine Insurance*, has become a standard authority in the United States.

DUET, a composition in music for two voices or instruments.

DUE WEST, an educational village of Abbeville county, S. C., containing Erskine College, Erskine Theological Seminary, a female college, and a fine public library.

DUFF, **ALEXANDER**, an Indian missionary, born in Perthshire, April 26, 1806, died in Edinburgh, Feb. 12, 1878. In 1829 he was ordained first missionary from the Church of Scotland to India. On his passage he was twice shipwrecked, and did not reach Calcutta till May, 1830. In 1834 he was obliged to return home on account of ill-health, but in 1840 he went again to India and found the work he had left maintaining its success. In 1849 ill-health again obliged him to return home. In 1854 he made a tour of the United States, and his apostolic fervor in his missionary work called forth extraordinary enthusiasm. The University of Aberdeen conferred the degree of D. D. upon him, and the University of New York that of LL. D.

DUFFERIN AND AVA, **FREDERICK TEMPLE HAMILTON BLACKWOOD**, Marquis of, a British statesman, born in 1826. In 1860 he was sent as a commissioner to Servia, and from 1864 to 1866 was under-secretary of state for India. He was in 1866 under-secretary of war, and in 1872 became governor-general of Canada. In 1879 he was appointed ambassador at St. Petersburg. In 1884 he became viceroy of India. He resigned in 1888, and was

appointed ambassador at Rome. Of his numerous literary works his narratives of travel have been the most popular. In 1890 he published a volume containing the able speeches which he had delivered while viceroy of India; and in the same year Lady Dufferin published *Our Viceregal Life in India*, and a *Record of Three Years' Work* in connection with the education of women as medical practitioners in India.

DUFFIELD, **GEORGE** (1782-1790), an American clergyman. He was ordained in 1761, and took charge of the Presbyterian churches in Carlisle, Big Spring, and Monaghan, Pa. In 1766 he made a mission tour through Pennsylvania, Maryland and Virginia, and in 1771 took charge of the third Presbyterian church in Philadelphia. During the Revolution he served as chaplain, and later was the first stated clerk of the general assembly. He held this position until his death.

DUFFY, **SIR CHARLES GAVAN**, an Irish patriot, born in County Monaghan in 1816. He was for a time a journalist in Dublin and Belfast. In 1844 he was tried and convicted for sedition, but saved by the House of Lords quashing the conviction; he next helped to found the Irish Confederation. Again in 1848 he was tried for "treason-felony" and acquitted. In 1856 he went to Australia, where he practiced law at Melbourne. In 1871 he was made prime minister, and in 1873 was knighted. In 1877 he was elected speaker of the legislative assembly. He wrote several books on Ireland.

DUHAMEL, **JOSEPH THOMAS**, a Canadian R. C. archbishop, born in 1841. He was ordained priest in 1863, and became curé of Buckingham. In 1874 he was consecrated bishop of Ottawa, and in 1886 became first archbishop. He is a count of the Holy Roman Empire, an assistant at the Pontifical throne, and a knight and grand cross of the Order of the Holy Sepulchre.

DÜHRING, **EUGEN KARL**, a German philosopher and political economist, born in 1833. He was appointed referendary in the court of justice, but resigned and devoted himself to the study of philosophy and national economy. From 1864 to 1877 he was a privatdocent in the Berlin University. He has published extensively on economical and philosophical subjects.

DUKE CENTER, a village of McKean county, Pa. It has a lumber mill and several oil-wells.

DULCE, a lagoon of Guatemala, communicating with the Atlantic.

DULCIMER, a musical instrument resembling a flat box, with sounding board and bridges, across which run wires tuned by pegs at the sides, and played on by striking the wires with a small piece of wood in each hand, or more usually with two cork-headed hammers. The dulcimer is one of the most ancient of instruments appearing in Assyrian sculptures, and may be regarded as the ancestor of the piano.

DULUTH, a city of Minnesota, and county-seat of St. Louis county (see Britannica, Vol. VII, p. 520). Duluth is a port of entry most advantageously situated at the western extremity of Lake Superior, at the head of navigation on the great lakes. It is also at the eastern terminus of the Northern Pacific Railroad. The harbor of Duluth has recently been greatly improved by the United States Government, which has expended large sums in dredging, and in the construction of an artificial breakwater. The harbor is further protected by a narrow strip of land, called Minnesota Point, which forms a natural breakwater, and through which there is a ship canal. Numerous regular lines of steamers connect the city with the lake ports, Duluth has twelve public schools, the buildings for

which cost \$500,000; a high school, which occupies a palatial building costing \$300,000; numerous private schools; a business college; the Duluth Yale school; a college preparatory for girls, and a Catholic parochial school. There is also a large public library. Duluth has one of the finest park and boulevard systems in America. The terrace or boulevard drive, which is nine miles in length and winds about the hillsides at a height in some places of 500 feet above the lake shore, connects Glenwood, Grand View and Cascade Parks. This system of driveway and parks is being rapidly extended, and will cover about 50 miles. Extensive deposits of iron, granite, and freestone are found in the vicinity. The growth of Duluth during the last decade has been remarkable, the population in 1880 being 3,483, and in 1890, 32,725.

DUMAS, ALEXANDER, a French dramatist, born in 1824. He began writing at the age of 17, and since has written many plays and novels. In 1884 he became commander of the Legion of Honor. His principal work is *La Dame aux Camélias*. His drama entitled *Francillon* was produced at the Théâtre Français in 1887.

DUMAS, JEAN BAPTISTE ANDRÉ (1800-84), a French chemist. He made numerous important discoveries in organic chemistry, isomerism, the law of substitutions, and other departments of chemical philosophy. From 1849 to 1851 he was minister of agriculture and commerce, and afterwards became a life-senator. His chief work is a *Treatise on Chemistry Applied to the Arts*.

DU MAURIER, GEORGE LOUIS PARMELLA BUSSON, caricaturist and book illustrator, born in Paris, March 6, 1834. In 1851 he studied chemistry at University College, London, but returned to Paris and adopted art as a profession. He finally joined the staff of "Punch," the pages of which he has enriched with well-known caricature sketches of society life. He is an associate of the Royal Society of Painters in Water-colors. During 1890 he published a series of essays on his art, and numerous reprints of his sketches in "Punch."

DUMB CANE, a plant of the natural order *Araçææ*, remarkably differing from the plants of that order generally, in its almost arborescent character, but agreeing with them in its acidity, which is in none of them more highly developed. It has a cylindrical stem, with ringed scars and oblongo-ovate leaves. It is a native of the West Indies, and has received its English name from the property which it has of producing dumbness when chewed, its acrid poisonous juice causing an immediate swelling of the tongue, accompanied with excruciating pain. It has, however, been used medicinally.

DUMICHEN, JOHANNES, a German Egyptologist, born in 1833. He passed many years in Archæological research in the valley of the Nile, making a valuable collection of hieroglyphic inscriptions, drawings of monuments, and notes. He has written many treatises on Egyptian inscriptions.

DUMMER, JEREMIAH (1680-1739), an American scholar. From 1710 to 1721 he was in England as agent of Massachusetts. He published in both Latin and English.

DUN, a root common to the Celtic and Teutonic languages, signifying a hill or height. It enters extensively into the names of places (becoming often *dum, don*), as *Dunkirk, Dumbarton, and Donegal*.

DUNCAN, HENRY, D.D. (1774-1846). From 1798 he was minister of Ruthwell, in Dumfriesshire, where, in 1810, he established the first savings bank.

DUNCAN, JOHN (1796-1870), a Scotch Presbyterian clergyman and Orientalist. He was licensed to preach in 1825, and in 1831 became pastor of a

church in Glasgow. In 1841 he went to Pesth as missionary among Jews, and from 1843 to his death was professor of Hebrew and Oriental languages in Edinburgh.

DUNCANSBAY HEAD (also **DUNCANSBY**), a promontory, 210 feet high, forming the northeast extremity of Caithness, $1\frac{3}{4}$ miles east of John O'Groat's House, and 18 north by east of Wick.

DUNCKER, MAXIMILIAN WOLFGANG, an eminent historical writer, born in 1811 at Berlin. After studies at Bonn and Berlin he settled to the study of history at Halle, and became extraordinary professor there in 1842. His greatest work is his *History of Antiquity*, which embraces the early history of the Egyptians, Babylonians, Lydians, Persians and Indians. His other works are chiefly contributions to German and Prussian history.

DUNDAS, a town of Wentworth county, Ontario, at the head of Burlington Bay, west of Lake Ontario. It has a number of mills and manufactories. Population, 3,709.

DUNDAS, an island of British Columbia, 40 miles northeast of Queen Charlotte Island, and separated by Chatham Sound from the most southerly of the Alaskan Islands.

DUNDAS, a group of nearly 500 islets (also called the Juba Islands), all of coralline formation, lying off the east coast of Africa, in about 1° south latitude, with only one secure harbor.

DUNDAS, a strait in North Australia, separating Melville Island from Coburg Peninsula.

DUNDEE, a village of Monroe county, Mich., on the Raisin River, 44 miles southwest of Detroit. It contains flouring-mills, a pulp-mill, tannery, and factories where lumber and staves are made.

DUNDEE, a village of Yates county, N. Y., about 12 miles from Watkins. It has founderies, flour-mills, a brewery and a planing-mill.

DUNDRUM BAY, an inlet of the Irish Sea, on the east coast of Ireland, in County Down, five miles south of Downpatrick. It is 13 miles wide at the entrance, and only 5 miles long to its inmost recess, forming a long curve into the shore.

DUNGAN, IRVINE, lawyer, born in Canonsburg, Pa., and received a collegiate education. He served in the Union army during the war of the Rebellion, being 10 months in a Confederate prison. In politics he is a Democrat. He was elected mayor of Jackson in 1869, and member of the State Senate in 1877. He was chairman of the Democratic State executive committee in 1887, and led the Democratic electoral ticket in Ohio in 1888. In 1890 he was elected a Representative from the Thirteenth Congressional District of Ohio to the 52d Congress.

DUNGENESE, a headland, with a light-house, on the south coast of Kent, $10\frac{1}{2}$ miles southeast of Rye.

DUNGLISON, ROBLEY (1798-1869), an Anglo-American physician. He came to the United States in 1824, and was professor of medicine till 1833 in the University of Virginia. From 1833 to 1836 he was a professor in the University of Maryland, and for more than thirty years afterward occupied a chair in Jefferson Medical College. He translated a number of foreign works, and wrote many more on medical topics.

DUNHAM, CARROLL (1828-77), an American physician. He practiced medicine in Brooklyn, N. Y., in 1852-58; in Newburgh in 1858-63, and from 1863 to his death in Irvington-on-Hudson. He held several important positions in various medical institutions.

DUNKERS. See *Britannica*, Vol. VII, p. 549.

DUNKIRK, a thriving city, railroad center, and port of entry of Chautauqua county, N. Y., on Lake

Erie. It has a good harbor, is the western terminus of the Erie railroad, has extensive locomotive works, a grain and coal elevator and several mills and factories. The city has a system of water-works, is lighted by gas, has an orphan asylum, free reading room and library.

DUNLAP, a village of Harrison county, Iowa, on Boyer River, 51 miles northwest of Omaha. It has a flour-mill, a newspaper office, a fine hotel, and carries on a thriving trade.

DUNMORE, an important village of the Lackawanna valley, Pa., in Lackawanna county, three miles northeast of Scranton. Two railroads enter the village. The coal business is the chief employment of the town, as rich mines of anthracite are in the vicinity.

DUNNAGE, a name applied to miscellaneous fagots, boughs, bamboos, odd mats or sails, or pieces of wood, laid in the bottom of the hold to keep the cargo of a ship out of the bilge-water; or placed between parts of the cargo to keep them steady.

DUNNOTTAR CASTLE, the ancient seat, now in ruin of the Keiths, the Earls Marischal of Scotland, on the Kincardineshire coast, $1\frac{1}{2}$ miles south of Stonehaven. It occupies the top of a rock $4\frac{1}{2}$ acres in extent, and 160 feet high, overhanging the sea, with a deep though dry chasm between it and the mainland, and it is approached by a steep winding path. The area is surrounded by a wall. Dunnottar castle was dismantled after the rebellion of 1715, on the attainder of the last Earl Marischal.

DUNSTANBOROUGH CASTLE, a picturesque ruins on the basaltic sea cliffs of the Northumbrian coast eight miles northeast of Alnwick. Crystals of quartz found here are called Dunstanborough diamonds and amethysts.

DÜNTZER, JOHANN HEINRICH JOSEPH, a German philologist and literary historian, born in 1818. In 1836 he became privatdocent in Bonn, and in 1846 took charge of the library of the Catholic gymnasium at Cologne. He is the author of many works on philology and literary history.

DUNWICH, a village on the cliffs of the Suffolk coast, $4\frac{1}{2}$ miles south of Southwold. In 630 it was made the Episcopal see of the Anglic Southfolk, and became a large and important place. Most of its ancient buildings have been swept away by the encroachments of the sea. The population is now about 250.

DUODECIMAL SCALE, the name given to the division of unity into twelve equal parts, as when the foot is divided into 12 inches, the inch into 12 lines, or the pound into 12 ounces. This plan of counting has some advantage, as 12 admits of so many divisions into equal parts. But the decimal scale, or division into ten equal parts, is now universally recognized as preferable for its coinciding with our decimal system of notation.

DUODECIMALS, a method of calculating the area of a rectangle when the length and breadth are stated in feet and inches.

DUPIN, FRANÇOIS PIERRE CHARLES (1784-1873), Baron, a French economist. He served as an engineer under the Empire, and was made baron in 1824, a peer in 1887, and filled several posts, which he resigned in 1852.

DUPONCEAU, PIERRE ÉTIENNE (1760-1844), an American author, born in France. He came to America in 1777, and was admitted to the practice of law about 1784. His best work is, *Mémoire sur le Système Grammatical des Langues de quelques Nations Indiennes de l'Amérique du Nord*. He also wrote many legal works.

DU PONT, SAMUEL FRANCIS (1808-65), a United States naval officer. In 1815 he became a midship-

man in the navy; was made sailing-master in 1824; was promoted lieutenant in 1826; commander in 1842; captain in 1855; flag-officer in 1861, and rear-admiral in 1862. During his service he was almost constantly employed on duties of importance, and invariably acquitted himself to the entire satisfaction of the Government.

DÜPPEL, or DYBBÖL, a village in the Prussian province of Sleswick-Holstein, 15 miles northeast of Flensburg. In 1848 its fortifications were stormed by the Germans, and again on April 18, 1864, by the Prussians after a month's bombardment.

DUPUY, ELIZA ANN, author, born in Petersburg, Va., about 1814, and died in New Orleans in January, 1881. She became a governess at an early age, and while thus occupied wrote her first book, *The Conspirators*. Among other works are: *The Huguenot Exiles*; *Celeste*; *Separation*; *Concealed Treasure*; *Ashleigh*; and *the Country Neighborhood*. Many of her stories were written for the New York "Ledger."

DUQUOIN, a city and railroad junction of Perry county, Ill., 71 miles southeast of St. Louis. Bituminous coal is mined here by four companies in twelve mines. The city has a park, a public library, machine shops, flouring-mills, and salt-works.

DURADEN, a small glen, between Cupar and St. Andrews, in Fife, through which runs a tributary of the Eden. It has become famous on account of the numerous and beautifully preserved fossil fish entombed in its yellow sandstone, which belongs to the upper beds of the Old Red Sandstone.

DURAMEN, or HEART WOOD, the inner and fully ripened wood of dicotyledonous trees. The division is often very marked between the *duramen* and the *alburnum*, or sap-wood, the former being more dense and compact, and also frequently of a darker color, as most notable in ebony. As timber it is much more valuable and durable than the alburnum.

DURANCE, an unnavigable river of Southeast France. It rises in the department of the Hautes-Alpes, and joins the Rhone 3 miles below Avignon, after a course of 225 miles. An aqueduct from it, 51 miles long, supplies Marseilles with water, and irrigates 25,000 acres of land.

DURAND, ASHER BROWN, an American artist, born in Jefferson, N. J., Aug. 21, 1796, died in South Orange, Sept. 17, 1886. He early acquired some skill in the elementary processes of engraving, and in 1812 was apprenticed to an engraver in New York city, with whom he subsequently entered into partnership. His first original work was *A Beggar*, after a painting by Samuel Waldo, and his next *The Declaration of Independence*, the best-known engraving in the United States. Among other of his works are *Musidora*, engraved in 1825, *General Jackson* in 1828, and many heads executed for the *National Portrait Gallery*. He also contributed extensively to the "annuals." Becoming dissatisfied with the limits of engraving, he turned to landscape painting, which was his occupation from 1836. His landscapes include *The Catskills from Hillsdale*; *The Franconia Mountains*; *The Rainbow*; *Primeval Forest*; *Franconia Notch*; and *A Mountain Forest*, his largest canvas. *Kauterskill Cove*, *Il Pappagallo* and *Studies from Nature* were exhibited at Philadelphia in 1876. He was one of the founders of the National Academy of Design, of which he was president from 1845 to 1861.

DURANT, HENRY TOWLE, philanthropist, born in Hanover, N. H., Feb. 20, 1822, died in Wellesley, Mass., Oct. 3, 1881. He graduated at Harvard in 1841, studied law with Gen. Butler, was admitt-

to the bar, and began the practice of his profession in Boston. He soon became prominent, and was associated with Rufus Choate and other noted lawyers. He was connected with John H. Cheever in the establishment of the New York belting and packing company, and also in investment in iron mines, realizing large profits from both enterprises. At the death of his only son in 1863, he gave up his law business, resolving to consecrate his life and fortune to the cause of religion. Recognizing the need of an institution for the higher education of women, he built and equipped Wellesley College, at an expense of \$1,000,000, and the institution has since been maintained through his liberality. From 1864 Mr. Durant was a lay preacher, until compelled by failing health to discontinue public exhortation.

DURBAR, a state reception of the governor-general of India, or one of the native princes. Specially memorable is the great durbar held by Lord Lytton at Delhi on Jan. 1, 1877, when Queen Victoria was proclaimed Empress of India.

DURBIN, JOHN PRICE, clergyman, born in Bourbon county, Ky., in 1800, died in New York city, Oct. 17, 1876. In 1819 he became an itinerant minister of the Methodist Episcopal church, subsequently studied at Miami University, and graduated at Cincinnati College in 1825, soon afterwards becoming professor of languages in Augusta College, Kentucky. He was chaplain of the United States Senate in 1831, became professor of natural science in the Wesleyan University in 1832, and in 1833 became editor of the "Christian Advocate and Journal," New York. In 1834 he was elected president of Dickinson College, Carlisle, Pa. He made an extensive tour in Europe and the East, was afterwards pastor of churches in Philadelphia, and was secretary of the missionary society from 1850 to 1872. Dr. Durbin published *Observations in Europe* (2 vols., 1844), and *Observations in Egypt, Palestine, Syria, and Asia Minor* (2 vols., 1845).

DURBOROW, ALLAN C., a business man, born in Philadelphia, Nov. 10, 1857. He was educated in Indiana, was connected with mercantile houses in Chicago, and was the business manager of a weekly trade journal in that city. In politics he is a Democrat, and in 1890 was elected a Representative from the Third Congressional District of Illinois to the 52d Congress.

DURESS, in English law, is the plea of a man who has obliged himself to pay or perform, or who has committed a misdemeanor, under compulsion by restraint of liberty, or threat of loss of life and limb. In such cases he may plead to be held free of the consequences.

DURFEE, Job, an American jurist, born in Tiverton, R. I., Sept. 20, 1790, died there July 26, 1847. He graduated at Brown University in 1813, studied law and was admitted to practice. Elected a member of the State legislature in 1814, he served until 1819, and again from 1827 to 1829. He was elected to Congress in 1821, serving until 1825. Resuming his legal practice, he was appointed associate in 1833, and two years later became chief justice of the Supreme Court of his State, which position he filled during the remainder of his life. He devoted considerable attention to literature, publishing *What Cheer? or Roger Williams in Exile* (1832; republished in England), also a philosophical treatise entitled *Panidea*.

DURHAM, the county-seat of Durham county, N. C., 25 miles northwest of Raleigh. It contains a female college and extensive tobacco manufactories.

DURHAM, JAMES, a Covenanting minister, born at Easter Powrie, in Forfar in 1622, died June 25,

1658. He studied at St. Andrews; fought as captain in the civil war, and became a preacher in 1647. He was chaplain to Charles II in 1650-51, and subsequently minister in Glasgow till his death. He left numerous sermons and several expository works.

DURIVAGE, FRANCIS ALEXANDER, author, born in Boston, Mass., in 1814, died in 1881. He was author of numerous popular tales, poems, and plays. In connection with W. S. Chase he translated Lamartine's *History of the Revolution of 1848*, and was for a time co-editor of *Ballou's Pictorial*. He also published *A Cyclopædia of History* (Hartford, 1836), and *Life Scenes from the World Around Us* (Boston, 1853).

DURKEE, CHARLES, an American statesman, born in Royalton, Vt., Dec. 5, 1807, died in Omaha, Neb., Jan. 14, 1870. He was educated in his native town and in the Burlington Academy, subsequently emigrating to the territory of Wisconsin. Here he was elected a member of the first territorial legislature; was again a member of the legislature in 1847, and in 1848 was elected to the first State legislature. A member of Congress in 1849-53, he was in 1855 chosen United States Senator from Wisconsin; was a member of the Peace Congress in 1861, and was appointed Governor of Utah in 1865.

DÜRENSTEIN, a village of Lower Austria, on the left bank of the Danube, 45 miles west-northwest of Vienna. In its ruined castle Richard Cœur-de-Lion was confined for three months by Leopold of Austria. Population, 650.

DURSLEY, a town of Gloucestershire, near the Cotswold Hills, 15 miles southwest of Gloucester by rail. Near it are quarries of Bathstone. Population of parish, 2,344.

DURTHALER, JOSEPH, clergyman, born in Ste. Marie-au-Migne, Alsace, in 1819, died in New York in 1885. He was educated at the Lyceum of Strasburg and at the University of France; studied theology in the seminary of Strasburg, and became a Jesuit in 1844. At the time of the revolution of 1848 he came to the United States, and was sent on the Indian mission. Transferred to St. Francis Xavier College, New York, he built the new college, made it legally a collegiate institution, extended the scientific course, and founded its fine collections. In 1863 he resigned the presidency of the College and went to Buffalo, where he founded the classical school which developed into Canisius's College. In 1871 he was again at St. Francis Xavier College, in 1875 became rector of St. Joseph's Church, New York, and afterwards founded a convent and school of the Sisters of Notre Dame.

DURUY, VICTOR, historian and educator, born in Paris, Sept. 11, 1811. Destined for a designer in the Gobelins tapestry-works, he showed singular aptitude for learned studies. In 1833 he became professor of history in the Collégé Henri IV. From 1863 to 1869 he was minister of public instruction. He published numerous and important works. In 1867 he became a Grand Officer of the Legion of Honor, and in 1885 a member of the Academy.

DUSTIN, HANNAH, pioneer, born about 1660, was the wife of Thomas Dustin, of Haverhill, Mass. In the spring of 1697 Mrs. Dustin, with her infant and nurse, were captured and carried off by the Indians, her husband and seven children escaping. After witnessing the destruction of her home and the murder of her infant, she was taken by her captors to an island at the junction of the Merrimac and Contoocook Rivers, near the present site of Concord, N. H., enduring the greatest hardships on the long march. Being told by the chief that the prisoners would be obliged to run the gauntlet, Mrs.

Dustin resolved to escape. Assisted by a lad from Worcester, who had been in captivity for some time, she secured a tomahawk, herself killed and scalped nine of the sleeping savages, and escaped with her companion, reaching Haverhill after many hardships. To the governor in Boston she presented the trophies of her victory—a gun, tomahawk, and the scalps of the savages. In recognition of her heroism the general court gave to Mrs. Dustin and her companion \$250 each. The island mentioned above is now called Dustin's Island, and there in 1874 the Commonwealths of Massachusetts and New Hampshire erected a granite monument inscribed with the names of Hannah Dustin, Mary Neff, the nurse, and Samuel Leonardson, the English boy.

DUTCH EAST INDIES, a name applied collectively to the Dutch possessions in the East Indies, including Java and Madura, Sumatra, Borneo, Riau-Lingga Archipelago, Banca, Billiton, Celebes, Molucca Archipelago, and the small Sunda Islands. They are situated between 6° N. and 11° S. latitude, and between 95° and 141° E. longitude. In 1602 the Dutch created their East India Company. This company slowly conquered the Dutch East Indies, and ruled them during nearly two centuries. After the dissolution of the Company in 1798, the Dutch possessions were governed by the mother-country. Politically the territory, which is under the sovereignty of the Netherlands, is divided into (1) lands under direct government, (2) vassal lands, and (3) confederate lands. With regard to administration, it is divided into residencies, divisions, regencies, districts, and *dessas* (villages). For earlier information concerning the countries of Dutch East India, see those countries severally in these volumes. The following table gives the area and population of Java, including Madura, and the outposts, either official or carefully estimated:

Territorial Divisions.	Area: English square miles	Population end of 1888.
Java and Madura.....	50,848	22,490,043
Sumatra, West Coast.....	48,300	1,190,791
Sumatra, East Coast.....	16,262	277,801
Island of Sumatra { Benkulen.....	9,576	152,586
Lampongs.....	9,975	123,891
Palembang.....	61,152	637,197
Atjeh.....	6,370	542,673
Riau-Lingga Archipelago.....	17,325	94,743
Banca.....	4,977	76,351
Billiton.....	2,500	36,635
Borneo, West Coast.....	58,926	418,694
Borneo, South and East Districts	144,788	677,939
Island of { Celebes.....	45,150	402,211
Menado.....	26,000	446,586
Molucca Islands.....	42,420	352,623
Timor Archipelago.....	21,840	45,831
Bali and Lombok.....	3,990	1,363,806
New Guinea to 141° E. long.....	150,756	200,000
Total.....	719,674	29,475,613

The total revenue, according to the budget estimates for 1891, is 116,414,315 guilders, and the expenditure 136,840,646 guilders, showing a deficit of 20,426,331 guilders. About one-third of the annual expenditure is for the army and navy, and another third for the general administration, both in Java and in the Netherlands.

In 1888 there were in Java 52 sugar estates of 15,570 bahus, yielding 1,367,814 picols (1 picol=61.76 kilogrammes), or 88.93 per bahu. The production of coffee in Dutch India in 1888 was 1,178,920 picols.

The production of cinchona in kilogrammes at Java during the same year was 1,750,516. In 1888 the number of tobacco plantations in Java was 118, producing 12,556,826 kilogrammes, and in Sumatra (Deli, etc.) 201, with a produce of 16,881,480 kilogrammes. The production of tea in Java in 1888 was 3,014,209 kilogrammes. There were also 115 indigo plantations, yielding 805,413 kilogrammes of indigo.

DUTCH FLAT, a mountain-village of Placer county, Cal., 67 miles northeast of Sacramento. There are productive hydraulic gold mines here.

DUTCH-GAP CANAL, a cut through a narrow isthmus of the peninsula called Farrar's Island, in the James River, in Henrico county, Va. It is 5 miles below Richmond, and was constructed by order of Gen. B. F. Butler during the civil war for military purposes, but was of little value then, although it now saves a trip of seven miles in navigating the river between Richmond and City Point.

DUTCH LIQUID, an oily substance obtained by mixing chlorine and olefiant gases, which combine and yield Dutch liquid, with the formula C₂H₄Cl₂. It has a specific gravity of 1.271 (water=1.000), boils at 185° (85°C.), is not miscible with water, but readily dissolves in ether and alcohol. It produces anæsthesia like chloroform, but the great difficulty of preparing it retards its use.

DUTCH METAL, also called *Dutch gold* or *Dutch leaf*, an alloy of copper and zinc; in other words, it is a kind of brass containing a large percentage of copper. It is made in the same manner as gold-leaf. It dissolves in strong nitric acid; true gold-leaf does not. Ordinary Dutch metal is yellow, but a white kind is made.

DUTCH WEST INDIES. The Dutch possessions in the West Indies are Surinam, or Dutch Guiana (see Britannica, Vol. XI, pp. 251-253), and the colony of Curacao (see Britannica, Vol. VI, p. 709). The area of Surinam is 46,060 sq. miles, and the population, Jan. 1, 1889, 57,365, inclusive of the negroes living in the forest. The capital is Paramaribo, having 27,752 inhabitants. There were, in 1888, 47 schools, with 114 teachers and 5,548 pupils. The productions for 1888 were: Sugar, 6,206,553 kilogrammes; cacao, 1,543,019 kilogrammes; bananas, 516,799 bundles; coffee, 5,560 kilogrammes; cotton, 720 kilogrammes; rice, 15,197 kilogrammes; fruits, 186,812 kilogrammes; rhum, 315,306 litres; and melasse, 1,104,369 litres. Gold was discovered in 1876, and the declared value of that product to Jan. 1, 1889, was 11,347,572 guilders. The total value of the imports in 1889 was 4,893,355 guilders, and of the exports 3,521,867 guilders.

Dutch Curacao (only the southern part belongs to the Netherlands, the northern to France) has an area of 403 sq. miles, and a population of 46,461. Jan. 1, 1889, there were 23 schools, with 3,995 pupils. The revenue for 1890 was estimated at 597,000 guilders, and the expenditures at 672,000 guilders. The chief products are corn, beans, pulse, cattle, salt, and lime.

DUTTON, HENRY, an American jurist, born in Plymouth, Conn., Feb. 12, 1796, died in New Haven, Conn., April 12, 1869. He graduated at Yale College in 1818, studied law in Fairfield, Conn., and established himself in practice at Newtown, where he remained fourteen years, and was twice elected to the legislature. After his removal to Bridgeport he became State attorney, and was again member of the legislature for two terms. In 1847 he became professor of law at Yale, and removed to New Haven. In 1849 he was elected to the State Senate; in 1854 was elected governor of Connecticut, and was judge of the Superior Court and of the

Supreme Court of Errors from 1861 to 1866. It was largely due to Judge Dutton's efforts that the passage of the law allowing parties to a suit to testify in civil cases was secured, and he aided in the passage of bills to secure more effectually the rights of married women.

DUVAL, CLAUDE (1643-70), a highwayman, born at Domfront, Normandy, in 1643. He went to England at the Restoration in the train of the Duke of Richmond. Taking soon to the road, he robbed many persons, until captured while drunk; he was then hanged at Tyburn, Jan. 21, 1670, and was buried in Covent Garden church.

DUVENECK, FRANK, artist, born in Covington, Ky., about 1845, was a student in Paris for some years, and a pupil of Diez. He resided for many years in Munich, removing about 1881 to Florence, Italy, where he has since resided with the exception of two years spent in Boston. He contributed to the National academy exhibition in 1877 a *Turkish Page*, and a portrait of Charles Dudley Warner; and to the American artist society in 1878 *The Coming Man* and *Interior of St. Mark's, Venice*. A *Circassian* now belongs to the Boston Museum of Fine Arts, and *The Professor and Italian Girl* were exhibited at the Boston mechanics' fair in 1878.

DUYCKINCK, EVERT AUGUSTUS, an American author, born in New York city, Nov. 23, 1816, died there Aug. 13, 1878. He graduated at Columbia in 1835, studied law and was admitted to the bar, but subsequently devoted himself to literature. In conjunction with Cornelius Mathews he edited the "Arcturus" in 1840-42, and in 1847 he became editor of the "Literary World," which was carried on by himself and brother George to the close of 1853. In 1854 the brothers engaged in the preparation of *The Cyclopaedia of American Literature*. Mr. Duyckinck published a *History of the War for the Union* (3 vols., 1861-65), *National Gallery of Eminent Americans* (2 vols., 1866), *History of the World* (4 vols., 1870), and *Biographies of Eminent Men and Women of Europe and America*.

DUYCKINCK, GEORGE LONG, an American writer, born in New York city, Oct. 17, 1823, died there March 30, 1863. He graduated from the University of New York in 1843, studied law and was admitted to the bar. He was associated with his brother Evert in the editorship of the "Literary World," and in the preparation of the *Cyclopaedia of American Literature*—subsequently devoting himself to the biographical literature of the Protestant Episcopal church. He was author of *Life of George Herbert* (1853); followed by lives of *Bishop Thomas Ken* (1859), *Jeremy Taylor* (1860), and *Hugh Latimer* (1861).

DVORÁK, ANTONIN, a Bohemian composer, born at Mühlhausen near Kralup in the Prague district, Sept. 8, 1841. In 1857 he began study at Prague, which has since been his headquarters. The characteristics of his compositions are: (1) the strong Czech element which pervades them, and displays itself in characteristic rhythmical effects and national tonalities; (2) the economical and clever use of thematic material; and (3) the large amount of irrelevant "padding" which never rises to the level of Schubert's *Himmliche Länge*. His *Stabat Mater*, first performed by the London Musical Society in 1883, is probably his greatest work.

DWARFED TREES, characteristic ornaments in Chinese and Japanese houses and gardens. Their production depends upon the prevention of an abundant flow of sap. The trees are planted in small flower-pots, and are very sparingly supplied with water; their strongest shoots are pinched off, and their branches bent and twisted in various

ways. These trees often abound in flowers and fruit.

DWIGHT, a railroad junction of Livingston county, Ill., 72 miles southwest of Chicago. It has several banks, churches, ware-houses, and newspaper offices.

DWIGHT, BENJAMIN WOODBRIDGE, PH. D., an American educator, born in New Haven, Conn., April 5, 1816, graduated at Hamilton College in 1835, and at Yale theological seminary in 1838. He founded the first Congregational church at Joliet, Ill., established a private school in Brooklyn, which was subsequently removed to Clinton, N. Y., and from 1867 devoted himself to literature. Dr. Dwight has published *Higher Christian Education* (1859), *Modern Philology* (2 vols., 1864), *History of the Strong Family* (1871), *History of the Dwight Family* (1874), *Woman's Higher Culture*, and *The True Doctrine of Divine Providence*.

DWIGHT, EDMUND, an American merchant, born in Springfield, Mass., Nov. 28, 1780, died in Boston, Mass., April 1, 1849. He graduated at Yale in 1799, studied law, and after extended travels in Europe, returned and settled as a merchant in Springfield, where he subsequently established the house of William H. & J. W. Dwight, founders of the manufacturing villages of Chicopee Falls, Chicopee, and Holyoke. He was for many years a director of the Western railroad from Worcester to Albany, becoming president a short time before his death. Mr. Dwight served a number of terms in the Massachusetts legislature, and was one of the founders of the American Antiquarian Society. He was a liberal patron of the cause of education; it was chiefly through his exertions that the State board of education was established, and he proposed the present normal-school system.

DWIGHT, JOHN SULLIVAN, a musical critic, born in Boston, Mass., May 13, 1813. He graduated at Harvard in 1832, at the Cambridge divinity school in 1835, and was ordained pastor of the Unitarian church in Northampton, Mass. Becoming interested in socialistic enterprises, he left the ministry to become one of the founders of the famous Brook Farm Community, of which he was a member for five years, teaching and engaging in manual occupations. In 1848 he returned to Boston and engaged in literature, contributing to various periodicals, later devoting himself specially to musical criticism. In 1852 he founded in Boston "Dwight's Journal of Music," the publication of which was afterwards assumed by Oliver Ditson & Co., though Mr. Dwight continued to edit it until it was discontinued in 1881. He has lectured on musical subjects in many of the principal cities of the country, and has published *Translations of Select Minor Poems from the German of Goethe and Schiller*.

DWIGHT, HARRISON GRAY OTIS, an American missionary, born in Conway, Mass., Nov. 22, 1803, died in Vermont, Jan. 25, 1862. He graduated at Hamilton College, Clinton, N. Y., in 1825, at Andover theological seminary in 1828, and was ordained and commissioned a missionary by the American board in 1829. He sailed for Malta in January, 1830, and after fifteen months' exploration of Asia Minor, Persia, Armenia and Georgia, settled in Constantinople, and through his subsequent labors became one of the most noted American missionaries. He revisited the United States for the sixth time in November, 1861, and was killed in a railroad accident in Vermont. Dr. Dwight wrote books and tracts in the Eastern languages, translated parts of the Bible, and published *Researches of Smith and Dwight in Armenia* (Boston, 1833), *Christianity Revived in the East* (1850; London, 1854), and contributed to the "Journal of the American Ori-

