

vanced *Bookkeeping (including Limited Company Forms, etc.)*; L. R. Dicksee's *Bookkeeping for Accountant Students* (1897); Geo. Lisle's *Accounting in Theory and Practice*; D. A. Keister's *Corporation Accounting and Auditing*; A. D. L. Turnbull's *Life Office Accounts on the Card System*; *Proceedings of Actuarial Society of Edinburgh*, vol. iv. No. 7.

Book-land. See BOCLAND.

Book-lice, a name applied to the insects of the family Psocidæ, also called lesser death-watches. See DEATH-WATCH.

Bookmaker. See BETTING.

Book of Common Prayer. See PRAYER BOOK.

Bookplates. In the 15th century it became common, especially in Italy, to introduce the arms of the owner of a fine book into the illuminated border round the first page of text; and in a few woodcut borders to books printed by Erhard Ratdolt and other printers in Italy blank shields are conspicuous, in which the owner's arms might be inserted. The printing of separate labels to be pasted into a number of volumes began in Germany towards the close of the same century, the example usually quoted as the earliest being that found in the books presented by Hildebrand Brandenburg of Biberach to the Carthusian monastery at Buxheim about 1480, though the woodcut itself is probably ten or twelve years later. Early in the 16th century the designing of bookplates engaged the attention of many German artists, notably Albrecht Dürer, Lucas Cranach, and Hans Holbein. In France, Jean Bertaud de la Tour-Blanche used a bookplate as early as 1529; but only one other of French ownership in the 16th century has yet been traced. In England, a woodcut with the donor's arms and a printed inscription was placed in books presented by Sir Nicholas

Bacon to the University of Cambridge in 1574—the first English bookplate denoting personal ownership being that of Sir Thomas Tresham, which is dated June 29, 1585. Until the second half of the 17th century the use of bookplates was rare both in France and England, most owners preferring to stamp their arms or names on the leather covers of their books. Towards the end of the century bookplates increased rapidly in England, and for about a dozen years from 1698 there is a curiously large number of English bookplates bearing the dates of the years in which they were engraved. The styles of English bookplates have been distinguished as 'Simple Armorial,' with no ornament save heavy mantling; the 'Jacobean,' in which the shield mostly rests on a bracket and is surrounded by a frame; 'Chippendale,' in which the frame takes the form of a border of open shell-work; and 'Wreath and Ribbon,' whose decoration resembles that of Sheraton furniture. When bookplates became fashionable, about 1880, armorial designs were largely supplemented by pictorial and emblematic ones. Until about the date just mentioned the collecting of bookplates was hardly known, but it sprang suddenly into favour, and some ten years later began to produce quite a large literature. The first great collection in England was formed by Sir Wollaston Franks, and bequeathed by him to the Print Room of the British Museum. Bookplates mostly bear inscriptions, and from the frequency with which these begin with the words *Ex libris*.... (i.e. one of the books of....) these two words have been adopted as a convenient international name for them. *Ex libris* societies have been formed in England (1891), Germany (1891), France (1894), U.S.A. (1896), and Austria (1903);

and periodicals are issued in London, Paris, and Berlin. See H. W. Fincham and J. W. Brown's *A Bibliography of Bookplates* (1892); Hon. J. Leicester Warren's (Lord de Tabley) *A Guide to the Study of Bookplates* (1880; new ed. 1900); Labouchere's *Ladies Bookplates* (1895); Vinycomb's *Processes for Production of Ex Libris* (1894) and *The Book of Bookplates* (1908); H. W. Fincham's *Artists and Engravers of British and American Bookplates* (1897); Allen's *Early American Bookplates* (1894); Eger-ton Castle's *Eng. Bookplates* (1890; new ed. 1893); W. J. Hardy's *Bookplates* (1893; new ed. 1897); J. Guthrie's *Bookplates* (1909); W. Hamilton's *French Bookplates* (1892; new ed. 1896); Count K. E. zu Leiningen-Westerburg's *German Bookplates* (trans. 1901); Bartarelli and Prior's *Gli Ex-libris Italiani* (1902); Warnecke's *Die Deutschen Bücherzeichen* (1890); and Gerster's *Die Schweizerischen Bibliothekszeichen* (1898).

Books, BEST HUNDRED. In a lecture delivered in the Working Men's College in London in January 1886, under the title *On the Pleasure of Reading*, Sir John Lubbock (Lord Avebury) suggested a list of 'the best hundred books,' the works of living authors being omitted. An amended selection appeared in the *Contemporary Review* for February 1886. See *Pall Mall Gazette* 'Extra,' No. 24: 'The Best Hundred Books.'

Books burnt by order. Probably the most drastic holocaust of books burned by order that history records occurred in the year 221 B.C., when the Emperor Chi Wang-ti, of the Chinese dynasty of Tsin, desiring to destroy the power of tradition, caused all the books in his empire to be burned, except works on divination, agriculture, and medicine. And occasionally in the ancient classic writers mention is made of the burning of obnoxious or incon-

venient books; among others, the works of Pythagoras are said to have been burned at Athens. Thus the burning of heretical books is not a Christian invention. The destruction of Christian books formed part of the heathen persecution of Diocletian, who in A.D. 303 ordered all such writings to be burned. The introduction of the practice among Christians is ascribed to Osius, bishop of Cordova, who persuaded Constantine to order the writings of Arius to be committed to the flames, while similar treatment was afterwards meted out to the writings of Nestorius and Honorius. Abelard was in 1121 condemned to burn his own *Introductio ad Theologiam*, because of its false teaching with regard to the Trinity. Book-burning was inaugurated in England by the destruction of copies of the Antwerp edition of Tyndale's New Testament at St. Paul's in 1527, followed by the burning of a second edition in 1530. Among other books ordered to be burned were Suarez's *Defensio Catholicæ Fidei contra Anglicanæ Sectæ Errores* (1613), burned by order of James I.; Barker's Bible and Prayer Book (1631), in which the word 'not' was omitted in the seventh commandment; Luther's works, at St. Paul's (1530); Tyndale's *The Wicked Mammon* and *The Obedience of a Christian Man* (1546); Simon Fish's *The Supplication of Beggars* (1546); Anon., *The Revelation of Antichrist* (1546); Simon Fish's trans. from the German of *The Summary of Scripture* (1546), and all the works of Frith, Tyndale, Wycliffe, Joy, Rowe, Basil, Bale, Barnes, Coverdale, Turner, and Tracy; J. Hales's *Declaration of the Succession of the Crown of England* (1563); R. Doleman's *Conference about the next Succession* (1594); J. Stubbes's *Discovery of a Gaping Gulf* (1579); G. Martin's *A Treatise of Schisme* (1584); A. Leigh-

ton's *An Appeal to the Parliament* (1628); W. Prynne's *Histriomastix* (1633); *The Letany of John Bastwicke* (1637); Milton's *Eikonoklastes* (1660) and *Defensio* (1660); Anon., *The Memorial of the Church of England* (1705); H. Sacheverell's *Sermons* (1710); Defoe's *Shortest Way with Dissenters* (1703); John Wilkes's *North Briton* (1763); Wood's *Athenæ Oxonienses* (1693). A book, *Hutchinson's Commercial Restraints of Ireland Considered*, was burned as late as 1779. In the interval there were many others. The *Medulla Theologiæ Moralis* of the Jesuit Busembaum was burnt at Toulouse in 1757, as encouraging assassination. There is a French book on the subject, *Dictionnaire... des principaux Livres condamnés au Feu*, by G. Peignot (1806). See also *Edinburgh Review*, July 1871, article entitled 'Suppressed and Censured Books.'

Book-scorpion, general name given to members of the arachnid order of Pseudoscorpionidæ, which includes minute animals living chiefly in warm countries in old books, under bark, etc.

Book Trade. See PUBLISHING.

Book War. See BOOK CLUBS.

Bookworms, the popular name given to several insects or their larvæ, which feed on the paste used in binding books, and bore holes both through the binding and through the pages of the book itself in order to get it. The commonest and most mischievous of bookworms are the *Sitodrepa panicea*, found both in the larval form and as a full-grown insect, and the larva of *Attagenus pellio*; others are *Lepisma saccharina*, *Ptinus fur*, *Dermestes lardarius*, and the larva of *Anthrenus varius*. Brushing and cleaning, fresh air and use, are the best preservatives against bookworms; but subjection to considerable heat and sprinkling with pure pyrethrum

powder are approved remedies. A full discussion of the subject is given in O'Connor's *Facts about Bookworms* (1898); and there is also a chapter on bookworms in Blades's *Enemies of Books* (1880).

Boole, GEORGE (1815-64), English mathematician and logician, was born at Lincoln. In 1849 he was appointed professor of mathematics in Queen's College, Cork. He published important textbooks on *Differential Equations* (1859) and on *Finite Differences* (1860), and contributed 'Theory of Analytical Transformations' to *Cambridge Math. Jour.* (1839), and 'General Method in Analysis' to *Phil. Trans.* (1844). His most remarkable work, however, was the *Laws of Thought* (1854), in which symbolic language and notation were employed to express purely logical processes. See Life by R. Harley in *Brit. Quart. Rev.*, 1866.

Boom, the spar attached to the mast at its forward end, and controlled by the sheet at its after end, which extends the foot of the sails abaft the masts in the fore-and-aft rigs. (See SHIP, YACHT.) Also any spar projecting abeam to which the boats of a ship at moorings may be made fast, or the supports for the torpedo nets. Also the barrier of timbers, chains, or other material extended across the mouth of a harbour to prevent the entrance of hostile vessels.

Boom, tn., prov. Antwerp, Belgium, 11 m. by rail s. of Antwerp; has brickworks, salt-pans, and tanneries. Pop. 17,000.

Boomerang, a missile weapon of the Australian aborigines, is a curved piece of hard wood, somewhat resembling a scimitar, about three feet long and three inches wide, flat on one side and slightly rounded on the other, with a sharp edge. It is thrown with the convex or cutting edge pointing towards the object aimed at. Its

great characteristic is that, if it encounters no heavy obstacle in its flight, it begins, owing to its peculiar shape, a retrograde motion when its first force is spent, and thus returns to the place from which it has been thrown. A very slight impediment does not check its outward course, for it has been known to slice off the head of a flying bird and yet return to the thrower. It is a keen and deadly weapon, and usually inflicts a fatal wound, whether the object it strikes is a bird in the air or a man or other animal on the ground. Its impact with any solid obstacle, of course, absorbs its motion, and it falls to the ground.

Boomplaats, S. Africa, site of a battle between the Boers and the British in 1848, in which Sir Harry Smith defeated Pretorius. It lies in the Fauresmith division of the Orange Free State prov., not far from Zwart Koppies, or the black hillocks.

Boondee. See BUNDI.

Boone, city, Iowa, U.S.A., co. seat of Boone co., 37 m. N.N.W. of Des Moines, with railway and machine shops, flour-mills, and tobacco factories. Large deposits of potter's clay are found in the vicinity. Pop. 11,000.

Boone, DANIEL (1735-1820), American pioneer and explorer, born in Bucks co., Pennsylvania. Emigrating in 1752 to N. Carolina, he proceeded to Kentucky (1769) on a hunting expedition, was captured by Indians, but escaped, and reached home (1771). Then he built a fort at Boonesboro' (1775), on the Kentucky R., was attacked by Indians (1777), and in the following year was captured and carried to Detroit. Escaping four months later, he returned to Boonesborough, and resisted with 50 men an attack of 450 savages. In recognition of services rendered, the United States government gave him a

tract of land (1799) on the Missouri R. See *Daniel Boone*, by Thwaites (1902).

Boonton, tn. and summer resort, Morris co., New Jersey, U.S.A., 14 m. w. of Paterson; has iron foundries, and manufactures flour, rubber, and agricultural implements. Pop. 5,000.

Boonville, city, Missouri, U.S.A., the co. seat of Cooper co., on the Missouri, 140 m. w. of St. Louis; manufactures boots and shoes, leather, bricks, and flour. Pop. 4,400.

Boorde, or BORDE, ANDREW (?1490-1549), English traveller and physician, was born in Sussex. He joined the Carthusians, and about 1521 was made suffragan bishop of Chichester. About 1528 he obtained dispensation from his vow. He made at least four tours on the Continent, one being to report on the state of feeling about Henry VIII. Principal works: *Dyetary* (1542), the *Brevyary of Health* (1547), and the *Fyrst Boke of the Introduction of Knowledge* (1547). His *Boke of Berdas* (beards) and his *Itinerary of Europe* are lost. See 'Extra Series,' Early English Text Society (1870).

Boos, MARTIN (1762-1825), German theologian, born at Huttenried, in Bavaria, originated a Catholic pietist movement. In 1806 he settled at Gallneukirchen, near Linz, whence his views spread rapidly. He held a professorship at Düsseldorf from 1817 to 1819. See his *Selbstbiographie* (1826; new ed. 1888), and *Life* by C. Bridges (1836).

Booster, a form of dynamo for raising the voltage of an outgoing current to compensate for the drop in a long feeder. See ELECTRICITY, DISTRIBUTION OF.

Boot, TORTURE OF THE. The boot, used to extort confessions in Scottish judicial proceedings, was an iron or wooden frame in which the leg was enclosed. Wedges were driven between boot and

leg with a mallet until the prisoner confessed, or was physically incapable of bearing further torture. It seems to have been in frequent use towards the end of the 16th century, but was discontinued in 1690, though not forbidden by law until 1709. See R. H. Story's *Life of William Carstares* (1874), *passim*, and Wodrow's *History of the Sufferings of the Church of Scotland* (1830), *passim*.

Bootan. See BHUTAN.

Boötes, an ancient constellation, supposed to represent the driver of the Wain, and sometimes called Arctophylax, the 'bear-keeper.' 'Late-setting Boötes' is among the star-groups mentioned in the *Odyssey* (v. 272), and Claudian (*De Raptu Proserpine*, ii. 190) speaks of 'piger Boötes,' in allusion to the upright position upon the horizon by which its setting is protracted. The principal star is Arcturus. Miræ (= ε Boötes) is one of the most beautiful double stars in the northern heavens, the components being respectively orange and green. Küstner finds that the radial velocity of the larger star is variable, indicating that it is a spectroscopic binary. Other binaries are ξ and μ², revolving in periods of 148 and 276 years, while ι, κ, π, ζ, and 44 are more slowly moving couples.

Booth, BARTON (1681-1730), English actor, was born in Lancashire. He first appeared on the stage in London as Maximus in Fletcher's *Valentinian* (1700). Among his best representations were Hamlet, Othello, and Brutus; but it was as Cato, in Addison's play of that name, that he gained his greatest fame (1713). He wrote a drama, *The Death of Dido* (1716). See Cibber's *Life* (1753), and *Life* by Victor (1733).

Booth, CHARLES (1840), sociologist, was born at Liverpool,

and since 1862 has been a partner in the shipping firm of A. Booth and Co., Liverpool. He has devoted his life to the preparation of works of quite unique value on social questions, notably *Life and Labour of the People in London* (16 vols. 1889-1903), a very able work, full of carefully collected facts; *Pauperism, and the Endowment of Old Age* (1892); *The Aged Poor* (1894); and *Old Age Pensions* (1899). Mr. Booth served on Mr. Chamberlain's Tariff Reform Commission of 1903-4. He was made a P.C. in 1904.

Booth, EDWIN THOMAS (1833-93), American actor, son of Junius Brutus Booth, was born at Bellair, Maryland. One of the greatest of American tragedians, he excelled in Shakesporean tragedy (Hamlet, Lear, Othello) and as Richelieu. He went on the stage with his father in 1849, acted in California (1852-6), and travelled over America, Australia, and England (1861). Ruined (1874) by the expense of a palatial theatre in New York, he recouped his fortunes by a successful tour through the western states. His visit to Britain and Germany (1880-2) was an unqualified triumph. He died at New York. See Winter's *Life and Art of Edwin T. Booth* (1893), and E. B. Grossman's *E. Booth* (1894).

Booth, JOHN WILKES (1839-65), American actor, brother of Edwin Thomas Booth. He joined the forces of the South in the civil war, and on the defeat of the South he assassinated President Lincoln in Ford's Theatre at Washington, April 14, 1865. He was pursued to Virginia, and was shot on his refusal to surrender.

Booth, JUNIUS BRUTUS (1796-1852), Anglo-American tragedian, was born in London. He went on the stage in 1813, and achieved his first success at Covent Garden in *Richard III*. He left Britain

for the United States at the age of twenty-five. There he became the leading actor, his principal rôles being Hamlet, Richard III., Sir Giles Overreach (in Massinger's *New Way to Pay Old Debts*), Shylock, Lear, and Iago. See A. B. Clarke's *The Elder and the Younger Booth* (1882).

Booth, WILLIAM (1829), 'general' of the Salvation Army, born and educated at Nottingham, England, became a minister of the Methodist New Connexion (1850-61), and entered on evangelistic work in the east of London in 1856. General Booth has published numerous books and pamphlets, the best known of which is *In Darkest England and the Way Out* (1890). See Booth-Tucker's *Life of General W. Booth* (1898), and SALVATION ARMY.

Boothby, GUY NEWELL (1867-1905), sensational novelist, was born at Adelaide, Australia, which continent he crossed (1891) from north to south. Among his novels are *A Bid for Fortune* (1895), *The Beautiful White Devil* (1896), *Dr. Nikola* (1896), *Pharos the Egyptian* (1899), *Dr. Nikola's Farewell* (1901), *In Spite of the Czar* (1904), *For Love of Her* (1905), *A Crime of the Under Seas* (1905), and *A Royal Affair* (1906).

Boothia Felix (so named after Sir Felix Booth), peninsula, the most northerly part of the mainland of N. America. Sir James Clark Ross, in 1829, fixed the position of the N. magnetic pole on this peninsula, 70° 5' N. and 96° 44' W. See Ross's *Narrative of a Second Voyage* (1860).

Boothia Gulf, N. Canada, separates Boothia Felix from Cockburn Is. It is about 300 m. long and from 60 to 100 m. broad.

Booth Line of steamships was founded at Liverpool, England, in 1866; at first carried passengers and cargo between Europe (Liverpool, Havre, Lisbon, Oporto) and the Amazon ports of Brazil.

In 1882 it began also to run vessels between New York and the Brazilian ports. In 1901 this line amalgamated with the Red Cross Line (founded 1869); it also manages the Iquitos Steamship Company, plying 2,100 m. up the Amazon. The total tonnage of all the companies is 106,900, divided among thirty-eight vessels. The company carries the royal mails to N. Brazil (Amazon). Four large ships of 18,700 tons are in course of construction for the fleet. London Offices: 11 Adelphi Terrace, W.C.

Bootle, comprising townships of Bootle-cum-Linacre and Orrell, munic. bor. (1868), and co. bor., Lancashire, England, included in Bootle parl. div. of Lancashire; continuous with Liverpool; has extensive jute factories, engineering works, timberyards, tanneries, and corn mills. The docks, which comprise some of the finest on the Mersey, belong to the port of Liverpool. Pop. 70,000.

Boot Manufacture. Until the advent of the Blake sole-sewing machine in the early 'sixties boots and shoes were entirely 'made' by hand. By the expression 'made' is meant that the soles and heels were attached by hand labour, the ordinary sewing machine being used to stitch the lighter leathers of boot uppers together. Higher grade boots were all made hand sewn, the cheaper and heavier goods being hand pegged or riveted. The Blake machine revolutionized the trade, and the Blake process rapidly became the popular method of manufacture for the cheaper grades. The more recent invention of welting machinery has again greatly modified the processes of manufacture, creating this time a close rival to the hand-sewn boot, similar in its essential construction and advantages. The Blake and riveted boot is made by one sewing or

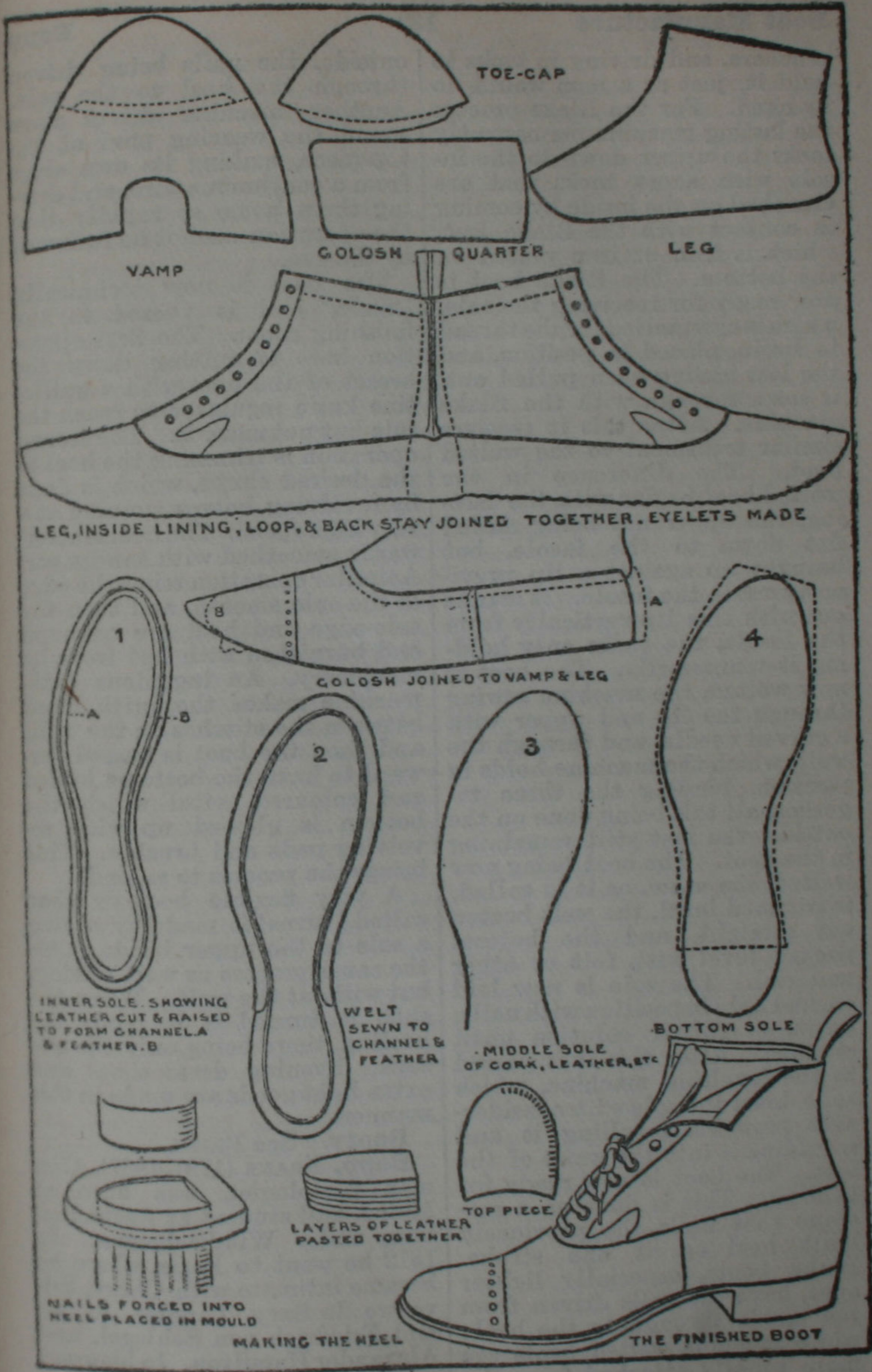
riveting right through from sole to insole, the upper being caught in between; while the hand and machine welted boot is first sewn half through the insole with a horizontal seam, which holds the upper, insole, and welt together, and then a second sewing attaches the welt and sole together. In the Blake boot the vertical seam, by resisting the bend of the foot, tends to stiffen the boot; while in the welted boot the horizontal seam, bending inwards, yields easily, and makes a more pliable article. This stiffness in Blake boots disappears in light goods where only light and flexible leather is used. The riveted boot, requiring a strong heavy insole to hold nails, screws, or clench-wires, is a stiff boot, and therefore this cheaper method of making is confined to grades of work suitable for rougher wear.

In a modern boot factory machinery has all but eliminated what was known as hand labour. The first process is cutting the leathers for the uppers, and this is done by men laying the skin over a bench, placing the pattern upon it, and 'clicking' (this word is derived from the sound) out the piece of leather, which is cut clean and close to the metal or brass-bound cardboard pattern. This department is almost entirely worked by hand labour. The various component parts having been cut are passed, in dozen pair lots or more, into the machine room to be stitched together. This department is usually staffed by women. The first machine employed is one with a rapidly revolving circular knife for skiving the edges of the leathers that have to be seamed or folded, after which the parts are pasted together and passed to the machines to be stitched, and finally hammered off under a little power-hammer to level the seams. In this de-

partment a great variety of sewing and other special machines are employed—single and twin-needle sewing machines, several currying knives for trimming off the edges of the leather, stitching, button-holing, barring, binding, edge-folding, and button-attaching machines, etc. Here, also, the eyelets are put in by a machine that punches a hole, feeds in the eyelet, and clenches it all at one stroke.

The completed upper is now passed to the bottoming department, the first section of which is usually styled the assembling room. In it the uppers and lasts and the component parts of the bottom—soles, insoles, etc.—are assembled together. These bottom parts are cut in the rough-stuff department from butts, bends, shoulders, and bellies, under powerful eccentric presses, with dies shaped to the various lasts and parts required. The soles and insoles are levelled; the stiffeners are skived and moulded to fit round the seat of the last; the heels are built with 'lifts' in shaped moulds in a machine which nails them loosely together, and then they are crushed in a machine which brings a pressure of several tons to bear on them, and so makes them into a solid heel. These parts are then sent to the assembling room to join the uppers.

The uppers, lasts, and bottom parts are now started through the making and finishing rooms, those to be made welted receiving slightly different treatment from those to be made Blake sewn. The stiffener (or counter) is placed on the upper, which is drawn over the last, to which the insole has previously been attached, and temporarily tacked in position, and sent to the lasting machine, which forces or moulds the upper into the shape of the last, twisting it in with



The Manufacture of a Boot.

pinchers, and driving in tacks to hold it, just as a man would do by hand. For the Blake process the lasting machine permanently tacks the upper down to the insole with short tacks that are clenched on the inside by coming in contact with the Blake last, which is iron or iron plated on the bottom. The Blake boot is now ready for receiving the sole, which is channelled for the thread to lie in, placed in position, and the last having been pulled out, is sewn through with the Blake machine. After this it receives similar treatment to the welted boot. The difference in the welted boot begins with the lasting, the upper not being nailed flat down to the insole, but brought up against a lip previously cut in the insole. It stands out with this lip vertically from the insole, the tacks only holding it temporarily. The boot is now welted, the machine sewing through the lip and upper with a curved needle, and through the welt, which the machine holds in position, binding the three together, all this being done on the outside, the last still remaining in the boot. The boot being now welted, the seam, as it is called, is trimmed level, the welt beaten out straight, and the bottom packed level with felt or other material. The sole is now laid on, and held in position with nails, paste, or rubber solution until stitched. After this it is passed to the levelling machine, which rolls down the sole with considerable pressure, levelling it and moulding it into the waist of the last. The boot is now ready for heeling. This is done on a machine that nails the previously built heel on at one stroke. Blake boots, especially lighter ones, have the nails driven from the inside through to the heel; while machine welted boots are more usually attached from the

outside, the nails being driven through the heel to the sole. Another machine drives slugs round the wearing part of the top-piece, making its own slugs from a continuous wire, and driving them home so rapidly that the operation cannot be followed by the eye.

The boot is now technically 'made,' and is passed to the finishing room. The first operation here is cutting down the breast of the heel with a guillotine knife regulated to reach the sole but not mark it. The second operation is trimming the heel to the desired shape, which is done by revolving knives running at a very high speed. The heel is afterwards smoothed with sandpaper. A similar operation trims the edge of the sole smooth, and then the sole-edge and heel are coloured and burnished with hot irons by machinery. An ingenious little machine makes the prick mark between the stitches on the welt, and then the boot is passed forward to have the bottoms buffed and coloured, after which the bottom is glossed up with revolving pads and brushes. This brings the process to an end.

A very flexible boot or shoe called 'turns' is made by sewing a sole to the upper inside out—the same process as welt sewing, but without the welt. When the shoe is turned it is ready for heeling, there being only the one sole. Evening dress shoes and extra light goods are made in this manner.

Booty. See PRIZE.

Bopp, FRANZ (1791–1867), German philologist, was born at Mainz, and studied at Aschaffenburg under Windischmann. In 1812 he went to Paris, where he became intimate with Chézy, Silvestre de Sacy, Langlès, A. W. and Friedrich von Schlegel, and Alexander Hamilton. In his great work, *Ueber das Conjugations-*

system der Sanskritsprache, which appeared at Frankfort-on-the-Main in 1816, he endeavoured to trace a common origin for the grammar of Sanskrit and the Aryan family of languages, and thus inaugurated a new era in linguistic study. He published (1819) an edition, with a Latin translation, of *Nala and Damayanti*, an episode in the *Mahâbhârata*, and in 1821 was appointed professor of Oriental literature and philology at Berlin, and the following year was elected a member of the Royal Prussian Academy, and held both posts till his death. His principal works during these years were *Ausführliches Lehrgebäude der Sanskritsprache* (1828); *Vergleichende Grammatik des Sanskrit, Zend, Griechischen, Lateinischen, Litthauischen, Altslavischen, Gotischen, und Deutschen* (6 parts, 1833-52), trans. into English by E. B. Eastwick (1845-50; 3rd ed. 1862); and *Ueber die Keltischen Sprachen* (1839). He also published other selections from the *Mahâbhârata* and several other books. See Lefmann's *Franz Bopp* (1891-7), and Th. Benfey's *Geschichte der Sprachwissenschaft* (1869).

Boppard (anc. *Bodobriga*), tn., Rhineland prov., Prussia, on l. bk. of the Rhine, 10 m. s. of Koblenz. Fruit and wine are produced. Pop. 6,600.

Bora, the sharp, cold, dry north-east wind blowing in fierce gusts (with a velocity running up to 130 m. an hour) off the Karst and Illyrian Mts. along the coast of Dalmatia, from Albania in the south as far north as Trieste. It is due to the great and sudden increase in the barometric pressure in winter over the high plateaus of Central Europe, and to the rapid descent of heavy cold air into the valleys and over the Adriatic Sea. It sometimes blows for days and even weeks together. It is also known along

the north-east coast of the Black Sea.

Bora, BOHRA, or BOHREN, KATHARINA VON (1499-1552), wife of Luther. The daughter of a German squire, she entered a convent at Nimbschen, near Grimma, Saxony, while a young girl, and, after a perusal of Luther's works, decided, with eight of her companions, to embrace the principles of the Reformation. With the assistance of the reformer, the nuns made their escape from the convent (1523), and Katharina was placed under the care of the burgo-master of Wittenberg until her marriage with Luther two years later. Their early married life was full of adversity and poverty, but Katharina was a true helpmate. She survived her husband seven years, and died at Torgau, whither she fled from her home at Wittenberg to escape the plague. See *Life* by A. Thoma (1900).

Bora-Bora, or BOLABOLA, one of the Society Is., N.W. of Tahiti, 30 m. in circumference; discovered by Cook in 1769.

Boracic, or BORIC, ACID (H_3BO_3) occurs as such in volcanic districts, particularly in the Tuscan lagoons of Italy. In combination with metals it is found as borax or tincal, boracite, boronatrocalcite, etc. It is prepared either by evaporating the water which contains it through the natural heat of the *soffioni*, or steam jets that escape from the earth, and crystallizing the product, or by the action of sulphuric acid on borax. Boric acid forms colourless pearly crystals, which are somewhat soluble in water, forming a weak acid from which a series of salts—the borates—are derived. Borax is the most important of these. Boric acid colours an alcohol flame green, and is used for the preparation of borax, as a glaze for earthenware, and as a mild antiseptic and food preservative.

The last application is open to criticism, as the continued use of boric acid is considered by some to be hurtful, though probably, in the small amounts allowable, not to a serious extent. As an antiseptic it is useful, on account of its mild, local, and non-irritant character, in preparing dressings; and as a lotion, for use in minor surgical operations, burns, etc. It also relieves the itching which accompanies rashes.

Borage. The common borage (*Borago officinalis*) used to be highly esteemed for its effect in cheering the spirits of the depressed. The young leaves are now chiefly employed as a flavouring in the preparation of claret-cup, and in Germany as a flavouring in salad. The plant is an annual, and quickly becomes a weed in the garden through its rapid growth. The whole plant is strikingly hairy, and its drooping flowers are of the purest blue. The average height of the common borage is about eighteen inches. Other very vigorous species are *B. orientalis*, the Cretan borage, a spring-flowering perennial, rather coarse in general aspect, though bearing flowers of much beauty; *B. laxiflora*, a Corsican species, also a perennial, blooming through the summer months; and the long-leaved borage, *B. longifolia*. All these species bear flowers with blue corollas, though of the common borage there is a white variety.

Borås, tn., prov. Elfsborg, Sweden, on Wiska R., 36 m. E. of Gothenburg. Its inhabitants are engaged in cotton spinning and weaving. Pop. 17,000.

Borax, a borate of sodium having the formula $\text{Na}_2\text{B}_4\text{O}_7 + 10\text{H}_2\text{O}$. It occurs native in Tibet and California (that from the former locality being known as tincal), but is chiefly prepared by neutralizing Tuscan boric acid with sodium carbonate and crystalliz-

ing the product. It is a crystalline colourless solid, soluble in water, and intumescens when heated, afterwards melting to a glassy liquid, which is useful in brazing and silver-soldering, as it dissolves metallic oxides, thus cleaning the surfaces of the metals to be united. As the solutions of the different metallic oxides in fused borax have characteristic colours, the 'borax bead' is usefully employed as a chemical test. It is also used as an antiseptic and food preservative; in making glazes for metals and earthenware; and as a laundry glaze.

Borbeck, comm. of several villages, prov. Rhineland, Prussia, 3 m. N.W. of Essen, with coal mines, iron and zinc works, etc. Pop. 60,000.

Borchgrevink, CARSTEN EGERBERG (1864), born at Christiania; emigrated to Australia; sailed on the *Antarctic* from Melbourne (1894), and was one of the first party to land on the Antarctic continent (Jan. 23, 1895). In August 1898 he commanded the Southern Cross expedition organized by Sir George Newnes. He made investigations into volcanic disturbances in the W. Indies (1902). See his account of his first Antarctic voyage in the *Report of Sixth International Geographical Congress, London* (1895), and his *First on the Antarctic Continent* (1901), and *Das Festland am Sydpol* (1904).

Borda, JEAN CHARLES DE (1733-99), French mathematician, astronomer, and naval designer; visited America and the west coast of Africa to test marine chronometers (1771-6); took part in the American war (1777-8), and was captured and released (1782) on parole by the British; served later in the French naval department; was engaged in the measurements preliminary to the introduction of the metric system of weights and measures; made important

investigations into the pendulum (1790); and was member of a commission for the measurement of a meridional degree. He wrote *Description et Usage du Cercle à Réflexion* (1778; later ed. 1816) and other works.

Bordeaux, tn. on l. bk. of Garonne, dep. Gironde, France, 60 m. from the sea, and 359 m. by rail s.s.w. of Paris. It is the seat of an archbishop, and the headquarters of the 18th Army Corps. Besides a university (1441), the city has a school for hydrography and navigation (1631), an observatory, a library, and a museum. Bordeaux is the third seaport of France; its harbour has always a depth of 20 ft. of water, and at high tide ocean-going steamers can ascend to the city. Statues of Montaigne (mayor 1581-4) and of Montesquieu adorn the Place des Quinconces. Among the buildings of interest are the Roman amphitheatre, the church of St. Croix, the old cathedral of St. Seurin (11th-15th century), and the Gothic cathedral of St. André (13th-15th century). The French government, on the representations of foreign powers, removed to Bordeaux from Tours, Dec. 11, 1870. By the 'Pacte de Bordeaux,' M. Thiers became chief of the executive, Feb. 17, 1871. The wines of Bordeaux, famed since the 4th century, are of the first importance. The manufactures of chocolate, sugar, flour, beer, tobacco, glass, and pig iron, are among the chief industries. Chief exports: wines (about 18,000,000 gallons annually), spirits, fish, dried table fruits, pit-wood, chemicals, and resin. Chief imports: wines (chiefly from Spain and Algiers), salt fish, timber, spirits, coal, chemicals, pottery, and machinery. The value of exports is about £15,000,000, and of imports £12,000,000 per annum. Here were born Richard II. of Eng-

land (1366), Magendie (1783), Joseph Black (1728), Rosa Bonheur (1822), and Desèze (1748). Under the name of Burdigala, Bordeaux was the capital of Aquitania Secunda in Roman times. After devastation by Vandals, Visigoths, Franks, and Normans, it enjoyed a period of peace (1152-1453) under English protection, and passed to Henry Plantagenet on his marriage with Eleanor of Guienne. Pop. 252,000. See Jullian's *Histoire de Bordeaux depuis les Origines jusqu'en 1895* (1895).

Bordeaux Wines. See CLARET.

Borden, SIR FREDERICK WILLIAM (1847), Canadian statesman, was educated in Harvard Medical School, Boston, Mass., and began to practise in Nova Scotia in 1868; has sat in the Canadian House of Commons since 1874, except for the short period 1883-6; minister of militia and defence since 1896. He was made K.C.M.G. in 1902.

Borden, ROBERT LAIRD (1854), Canadian Conservative leader, born at Grand Pré, Nova Scotia; was called to the bar of Nova Scotia. Elected to the Dominion House for Halifax in 1896, he was chosen to succeed Sir Charles Tupper as Conservative leader in opposition (1900). Defeated at Halifax in the general election of 1904, he sat for the county of Carleton, Ontario (1905); member for the city and county of Halifax (1908). In matters of Canadian policy Mr. Borden advocates a vigorous transportation scheme, and, while protectionist in principle, opposes bounties; in matters of imperial policy he supports Mr. Chamberlain's preferential programme. He has strongly opposed the Reciprocity Treaty with the U.S.A.

Bordentown, city, Burlington co., New Jersey, U.S.A., on the Delaware, 28 m. N.E. of Philadelphia; has iron foundries and ma-

chine shops, and a military institute. Joseph Bonaparte, brother of Napoleon I., lived here (1817-32 and 1837-9). Pop. 4,000.

Bordereau, French word meaning invoice, account, or memorandum. It came into prominence in connection with the Dreyfus affair in 1894. The particular bordereau referred to was a letter said to be in Dreyfus's handwriting, addressed to the military attaché of the German Embassy, and revealing military secrets regarding frontier forts, artillery instructions to the general staff, etc. Upon this bordereau Dreyfus was condemned. Subsequently its authorship was traced to Count Esterhazy, who afterwards made a confession in the *Daily Chronicle* of June 2, 1899. See DREYFUS AFFAIR.

Borders, THE, is the name associated in history, poetry, and literature with the district lying on either side of the Cheviot Hills, which form in great part the dividing line between England and Scotland. The scenery is somewhat monotonous, with its smooth, grass-covered, gently undulating hills, wild moorland, marsh, clear streams, and cultivated valleys; towards the west the hills are more rugged.

Evidences of the ancient inhabitants are found in numerous cists, cairns, standing stones, and cromlechs, and in hill forts, rings, moot-hills, and cave dwellings. Before the Roman occupation, and for centuries afterwards, the land was occupied by a Cymric people, who, after a long struggle with the invading Picts, Angles, and Scots, were gradually driven west to the mountains of Strathclyde, and the district was occupied by Anglo-Saxon and Norse invaders. It formed (from the 7th century) part of the kingdom of Northumbria, which, in the 10th century, was brought under the English crown. Mal-

colm II. of Scotland, after his victory over the forces of Northumbria at Carham (1018), incorporated that portion of Northumbria lying between the Forth and the Cheviots into the Scottish kingdom. From that time down to the reign of David I. (1124-53) many of the Saxon nobles and landowners who had resisted William the Conqueror, and later, several of the Norman barons, emigrated into Scotland. The Celtic names gave place to Saxon and Norman, and the language of the south and east of Scotland and of the Northumbrian border became a fusion of Anglo-Saxon, Danish, and Norse. The country has a place in Arthurian legend, and is claimed as the site of some of Arthur's battles with the Picts and Scots; he is traditionally said to be sleeping with his knights in a cavern under the triple Eildon Hills, awaiting the bugle sound which shall recall him, sword in hand, to victory. From the close of the 12th century the border line has been much the same as now. During the reign of David I. the great abbeys of Jedburgh, Melrose, Kelso, and Dryburgh were founded, and richly endowed by him. The peaceful times (1214-49) of Alexander II. brought extended culture and commerce. Berwick became one of the greatest seaports in Britain, and Roxburgh and Jedburgh were then important towns. Family feuds and freebooting raids were frequent, and attempts were made to preserve peace and order by the issue of Border laws, whereby all disputes were decided by a commission of twelve English and twelve Scottish knights. Towards the close of the 13th century the Scottish campaigns of Edward I. provoked a state of perpetual warfare on the Borders, which continued with comparatively short intervals of peace down to the union of the crowns.

To check these feuds, the Borders were divided in the 14th century into East, Middle, and West Marches by the English and Scottish governments; and wardens, invested with arbitrary power, were appointed on both sides to keep order. Plundering raids were constantly made from one side or the other through the Cheviot passes and along the valleys of Jed, Teviot, Coquet, Rede and other streams, the details of which are immortalized in the romantic Border ballads. Within the last century the country has made great advances in agriculture, manufactures, and trade.

It is chiefly to its ballads, romantic literature, and poetry that the land owes its modern interest. Michael Scott, though said to have been born at Balwearie, Fife, is more closely associated with the Tweed valley, and is remembered popularly for those wizard deeds over which Sir Walter Scott has thrown the glamour of poetry.

The ballads and songs are true products of the people, who have always been marked by a genius for romantic poetry. The memory of fairyland and witchcraft remains in *The Young Tamlane* of Thomas of Ercildoune (Earlston), or Thomas the Rhymer, and Hogg's *The Queen's Wake* (1813), *The Wife of Usher's Well*, and *The Gay Gos Hawk*; the poetry of their history includes *Auld Maitland*, *The Battle of Otterburn*, *The Raid of the Redeswire*, *Jamie Telfer of the Fair Dodhead*, and *Kinmont Willie*. We have songs of pathos in *The Douglas Tragedy*, *The Dowie Dens of Yarrow*, *The Lament of the Border Widow*; and songs of love and emotion, as well as descriptive poetry, in *John Hay's Bonnie Lassie*, *Ettrick's Banks*, *Lady Grisell Baille's Werena my heart licht I wad dee*, and generally in the collections of Percy's *Reliques*,

David Herd's *Ancient and Modern Scottish Songs* (1776), Evans's *Old Ballads* (1784), Scott's *Minstrelsy of the Scottish Border* (new ed. 1902), Jamieson's *Popular Ballads and Songs* (1806), and the collections of David Laing, C. Kirkpatrick Sharpe, Allan Cunningham, Chambers, and Aytoun. Among the later poetry of the 18th and 19th centuries are James Thomson's *Seasons* (1726-30); Robert Crawford's *Tweedside, Bush aboon Traquair, Leader Haughs and Yarrow*; Jean Elliot's version of the *Flowers of the Forest*, 'I've heard the liltin' at our yowe-milkin'; Mrs. Cockburn's version of the same, 'I've seen the smiling of Fortune beguiling'; Leyden's *Scenes of Infancy* (1803); Hogg's *Kilmeny*; Scott's *The Eve of St. John* (1800), *The Lay of the Last Minstrel* (1805), *Marmion* (1808); Wordsworth's *Yarrow Revisited*; Laidlaw's *Lucy's Flittin'*; Pringle's *Adieu to Teviotdale*; Lady John Scott's *Bounds of Cheviot*; Allan Cunningham's *Rattlin', Roarin' Willie*; and many others.

In addition to the works mentioned above, see Skene's *Celtic Scotland* (1876-80); Rhys's *Celtic Britain* (1884); Ridpath's *Border Hist. of England and Scotland* (1776); Groome's *Short Hist. of the Borders* (1887); Scott's *Border Antiq. of England and Scotland* (1814-17); Jeffrey's *Hist. and Antiq. of Roxburghshire*, etc. (1857-64); Veitch's *Hist. and Poetry of the Scottish Border* (1893); Douglas's (County Hist. of Scotland) *Roxburgh, Selkirk, and Peebles Shires* (1898), which contains a very full bibliography; Murray's *Dialect of the Southern Counties of Scotland* (1873); Wilson's *Tales of the Borders*; Robson's *Border Ballads and Battlefields* (1897); Scott's *St. Ronan's Well* (1824), *The Abbot* (1820), etc.; Hogg's *Songs and Ballads* (1801); Geikie's *Geological Scenery of*

Scotland (1901); Crockett and Orrock's *In the Border Country* (1906); and Mrs. Lang's *A Land of Romance* (1910).

Border Town, centre of Satiara dist., Buckingham co., S. Australia, on the railway between Adelaide and Melbourne, 150 m. S.E. of Adelaide. Pop. (with dist.) 1,800.

Bordighera, tn. and winter resort, Italy prov. Porto Maurizio, on the W. Riviera, 24 m. by rail E. by N. of Nice; consists of the new town next the sea, and the sheltered old town on higher ground inland (winter mean temp. 52½° F.). The place is famous for its palms and flowers (anemones, roses, carnations, etc.). Pop. 4,600.

Bordj-bou-Arreridj, comm., Algeria, dep. of and 100 m. W. by S. of Constantine. Pop. 9,000 (Europeans, 1,200).

Bordj Menaiel, comm., Algeria, dep. of and about 50 m. E. of Algiers. Pop. 15,000; (Europeans, 1,000).

Bordone, PARIS (1500-71), Italian painter of the Venetian school, pupil of Titian, and imitator of Giorgione, is remarkable for his delicate flesh-tones and shot-coloured draperies. He succeeded Palma as the fashionable painter of Venice, and was invited (1538-40) to Paris to paint French court ladies. His chief work, *The Fisherman giving St. Mark's Ring to the Doge* (Venice Academy), is a fine pageant picture; his *Daphnis and Chloe* and *Portrait of a Lady* (probably the fair and evil Bianca Capella) are in the National Gallery; and the *Lady at her Toilet* is in Edinburgh. See Ruskin's *Guide to Academy of Fine Arts at Venice* (1877); Kugler's *Schools of Painting in Italy* (1851).

Bordure, or BORDER, in heraldry, an ordinary (though sometimes classed with the subordinaries) which, as its name implies,

extends round the edge of the field, on the surface of which it encroaches one-fifth. It was originally used as a mark of 'difference'—i.e. to distinguish the arms of cadets from those of the main line of a house, a function which it still retains in Scottish heraldry—but it is now frequently borne as a charge. A *bordure componée* or *gobonated*—i.e. composed of two rows of checks—is, in Scotland, the most usual mark of illegitimacy. In impaling, the side of the bordure next the partitioned line is omitted; it is not carried round a 'chief,' but stops at its lower edge.

Bore. A tidal wave which, breaking in an estuary, rushes up the channel with great violence. As the forward parts of the wave advance less rapidly in shoaling water than the backward parts, a great accumulation is caused in front. Remarkable bores are to be observed in the Severn and some other rivers in England, in the Solway Firth, in the Ganges, Indus, and Brahmaputra, and especially in the Amazons, where the bore reaches a height of 12-16 ft., and in the bays at the head of the Bay of Fundy.

Bore. See GUNS.

Boreas, the north, or more strictly the north-north-east wind, the coldest in Greece; in ancient legend brother of Hesperus, Zephyrus, and Notus. He dwelt in Thrace. Boreas was worshipped at Athens. See Harrison and Verrall's *Mythology and Monuments of Ancient Attica* (1890).

Borecole. See KALE.

Borelli, GIOVANNI ALFONSO (1608-79), Italian physician and mathematician, born near Naples; appointed professor of mathematics at Pisa (1656), and in 1657 professor of medicine there. He was one of the first to describe the parabolic path of comets, and he endeavoured to explain

the motion of the satellites of Jupiter by the laws of attraction. He was also the founder of the iatromathematical school, which attempted to apply mathematics to medicine, as in his *De Motu Animalium* (1680-1), which contains also interesting speculations upon the flight of birds.

Borers, wood-boring beetles which feed upon wood, into which they burrow. The most familiar and destructive are the death-watch and the bark beetle.

Borgå, or BORGGO, tn., prov. Nyland, Finland, Russia, on Gulf of Finland, near mouth of river Borgå. It is the seat of a Lutheran bishop, and has a fine cathedral. Timber and wood pulp are exported to the value of £150,000 per annum. Trades in furs, wool, and dairy produce. In 1809 the constitution of Finland was framed here. Pop. 4,700. In 1790 Gustavus III., having defeated a Russian fleet at Frederikshavn, disembarked his army in the Bay of Borgå, near St. Petersburg. On June 6, another Swedish squadron, under the Duke of Sudermania, was driven into Borgå by the Russians after a two days' fight, and both Gustavus and the duke were blockaded by Admirals Tchitchagoff and Kruse. On the night of July 3 the Swedes cut their way out, with the loss of about a third of their fleet.

Borger, tn., Drenthe prov., Netherlands, 10 m. E.S.E. of Assen. Pop. comm. 7,500.

Borgerhout, suburb of Antwerp, Belgium. Pop. 45,000.

Borgetto, tn., Sicily, prov. of and 15 m. W.S.W. of Palermo. Pop. 7,800.

Borghese, a powerful Italian family which had its origin in Siena. (1.) CAMILLO, born at Rome; created cardinal (1596), Pope Paul v. (1605-21); excommunicated the governing bodies of Venice, in which he was opposed by Father Paul (Pietro

Sarpi), historian of the Council of Trent; ordered Francesco Suarez to write *Defensio Catholice Fidei contra Anglicanæ Sectæ Errores* (1613), a work against the oath of allegiance required by James I. He did much to beautify Rome, and added largely to the Villa Borghese. (2.) PAULINE BORGHESA (1780-1825), sister of Napoleon I., after the death of her first husband, General Leclerc (1803), married CAMILLO FILIPPO LUDOVICO BORGHESE (1775-1832), who served (1796-1815) in the French army, and became (1805) prince of Guastalla. He sold to Napoleon the museum of the Borghese Villa; its treasures are now in the Louvre. After Napoleon's downfall he severed his connection with the Bonaparte family, separated from his wife, and died at Florence. (3.) FRANCESCO BORGHESE, PRINCE ALDOBRANDINI (1776-1839), brother of the preceding, married the Countess Alexandra de la Rochefoucauld, and by her had three sons, of whom CAMILLO (1816) became minister of war in the Papal States (1848).

Borghese, GIOVANNI VENTURA (1640-1708), Italian painter, native of Citta da Castello, pupil of Pietro da Cortona. He imitated Cortona's rapid, sunny, superficial style, assisted him at Rome, and afterwards completed his unfinished work. Chief works: *Annunciation* and *Madonna*, in St. Nicolo da Tolentino in his native town. See Burckhardt's *Cicerone or Art Guide to Painting in Italy* (new ed. 1879).

Borghese, IPPOLITO (fl. c. 1620), Italian painter, born at Naples. His subjects were religious and historical, and his chief works are an *Assumption* (altar-piece) in San Lorenzo at Perugia (1620), and an *Assumption* in chapel of Monte di Pieta, Naples, smooth in execution and unattractive in colour, recalling Raphael and Del Sarto.

Borghese Villa, at Rome, until 1902 the summer residence of the Borghesi, situated just outside the Porta del Popolo, was built by Cardinal Scipio Caffarelli-Borghese at the beginning of the 17th century, after plans by Giovanni Vansanzio, and has a superb park of nearly 250 acres. It contained formerly a splendid collection of works of art, which was sold to Napoleon in 1806 by Prince Camillo Borghese, and of which nearly two hundred pieces went to the Louvre. In 1815 some of them were restored, and after 1820 a new collection of sculptures and pictures was formed. In 1902, the villa, with its picture gallery, and the park, with the buildings it contains, were sold to the Italian state for £260,000.

BORGHESE PALACE, in Rome, the town residence of the Borghesi, is situated in the square of the same name. This palace, known also as 'Il Cembalo Borghese,' from its shape, was begun in 1590 from the plans of Martino Lunghi, and finished in 1607 by Flaminio Ponzio, when it was acquired by Camillo Borghese; it is one of the finest buildings in Rome. Besides the picture gallery, there was a collection of art treasures, which was disposed of by public auction in 1892, in consequence of the loss of his fortune by Prince Paolo Borghese (b. 1845). Pope Leo XIII. acquired for the Vatican the important family archives. The picture gallery still contains nearly six hundred paintings, many of first-rate importance, including a *Madonna* by Botticelli; another by Lorenzo di Credi; four paintings by Raphael, including the *Burial of Jesus*; two pictures by Michael Angelo; the celebrated *Sacred and Profane Love* by Titian; *Danaë* by Correggio; *Christ on the Cross*, and a portrait of *Maria de' Medici*, both by Van Dyck.

Borghesi, BARTOLOMMEO, COUNT (1781-1860), Italian archaeologist and numismatist, born at Savignano; catalogued the Vatican collection of coins. He resided at San Marino (1821-60). His collection of coins was the best in Italy, and his researches elucidated much of the sacerdotal, military, and political life of the ancient Romans. See his *Nuovi Frammenti dei Fasti Consolari Capitolini* (1818-20). His works were collected in ten volumes (1862-97).

Borghetto, tn., Italy, prov. of and 25 m. S.E. of Milan. Pop. 6,000.

Borghorst, vil., Prussian prov. of Westphalia, 15 m. N.W. of Munster, with cotton mills. Pop. 8,000.

Borgia, CESARE (1475-1507), was the second son of Rodrigo de Borja, a Spanish noble, who afterwards became (1492) Pope Alexander VI. Cesare was made archbishop of Valencia, and afterwards (1493) cardinal, by his father. The Borgias waged a war of extermination against the Orsini, Colonna, Savelli, and other baronial families of the Roman state, whose lands and castles they seized. In June 1497 his brother, Giovanni Borgia, Duke of Gandia, was murdered, and his body thrown into the Tiber—the crime being instigated, it was said (1498), by Cesare, though historically this has not been proved. Immediately after this Cesare threw off the priesthood and resigned his cardinalate. Proceeding on a diplomatic mission to France, he was made Duke of Valencia by Louis XII., and in May 1499 he married Charlotte, sister of Jean d'Albert, king of Navarre. With French assistance Cesare now assailed the towns of the Romagna, which refused to acknowledge the supremacy of the court of Rome. Entering Rome in triumph in February

1500, he was created Duke of the Romagna and gonfalonier of the Holy See. He next defeated the Sforzas and Malatestas, and caused the two princes of Faenza to be treacherously put to death. Unsuccessful in attacking Bologna and Florence, he accompanied the French army in the invasion of Naples, when the greatest atrocities and infamies were committed by the invaders. In 1502 Cesare took Urbino and Camerino, where he put to death the Varani, Orsini, and Vitelli. He had now become the terror of all Italy, and contemplated making himself king of the Romagna, the Marches, and Umbria. His father's death by poison in 1503, on which occasion his own life was also (probably) attempted, was the signal for a coalition of his enemies, and in 1504 Cesare's forces were defeated, and he was arrested by Pope Julius II., and eventually sent prisoner to Spain. Escaping in 1506, he volunteered in the army of the king of Navarre, and on May 12, 1507, he was killed by a musket shot at the siege of the small town of Viana, near the Ebro. Cesare Borgia was a man of ungovernable passions, and reckless of human life in the pursuit of his schemes. With a towering ambition he trampled on all laws, human and divine; yet he was an able administrator, and a patron of art, befriending Pinturicchio and Leonardo da Vinci. Machiavelli's *Il Principe* (1535) was modelled upon Cesare Borgia. His *Life* has been written in Italian by Tomasi (1655), in French by Yriarte (1889), in German by Schubert-Soldern (1902), and in Eng. trans. by Villari (1878-83).

Borgia, LUCREZIA (1478 or 1480-1519), only sister of the preceding, was born at Rome. She married in 1493 Giovanni Sforza, lord of Pesaro; but her father, who had become Pope in 1492, annulled

this marriage, and gave her hand in 1498 to Alfonso, prince of Bisceglie, nephew of the king of Naples. Still ambitious for her future, her father and brother caused her second husband to be assassinated; and in 1501 Lucrezia married Alfonso d'Este, son of the Duke of Ferrara, whom he soon succeeded. She now appeared as the patroness of literature, and especially encouraged Bembo, who seems to have contracted a platonic passion for her. Though she was represented as the sharer with Cesare in all the crime, vice, and licentiousness of the time, nothing is alleged against her after she became Duchess of Ferrara. She died June 24, 1519, respected by the subjects whom she had governed wisely when her husband was away in the field. Victor Hugo made her the subject of a drama (1833), and Donizetti the central figure of an opera (1834). Her character has been defended by Roscoe in his *Life of Leo X.* (1805); by W. Gilbert, in *Life of Lucrezia Borgia* (1869); and by Gregorovius, in *Lucrezia Borgia* (1874; Eng. trans. 1904). See Corvo's *House of Borgia* (1901).

Borgne, a lake in S.E. Louisiana, U.S.A., 12 m. E. of New Orleans, in reality a shallow arm of the Gulf of Mexico.

Borgo. (1.) B. A MAZZANO, tn., Lucca prov., Italy, 20 m. N. by E. of Pisa. Pop. comm. 8,500. (2.) B. SAN DONNINO, tn. and episc. see of prov. Parma, Italy, 14 m. by rail N.W. of Parma; has a fine Romanesque cathedral first built in the 4th century, but rebuilt in the 11th. It is identified with the ancient *Fidentia Julia*. Pop. 12,000. (3.) B. SAN LORENZO, tn., Italy, prov. of and 18 m. N.E. of Florence. Pop. comm. 15,000. (4.) B. SAN SEPOLCRO, or SAN SEPOLCRO, tn. and episc. see, prov. Arezzo, Italy, in the upper valley of the Tiber, 28 m. by rail N.E. of

Borghese Villa, at Rome, until 1902 the summer residence of the Borghesi, situated just outside the Porta del Popolo, was built by Cardinal Scipio Caffarelli-Borghese at the beginning of the 17th century, after plans by Giovanni Vansanzio, and has a superb park of nearly 250 acres. It contained formerly a splendid collection of works of art, which was sold to Napoleon in 1806 by Prince Camillo Borghese, and of which nearly two hundred pieces went to the Louvre. In 1815 some of them were restored, and after 1820 a new collection of sculptures and pictures was formed. In 1902, the villa, with its picture gallery, and the park, with the buildings it contains, were sold to the Italian state for £260,000.

BORGHESE PALACE, in Rome, the town residence of the Borghesi, is situated in the square of the same name. This palace, known also as 'Il Cembalo Borghese,' from its shape, was begun in 1590 from the plans of Martino Lunghi, and finished in 1607 by Flaminio Ponzio, when it was acquired by Camillo Borghese; it is one of the finest buildings in Rome. Besides the picture gallery, there was a collection of art treasures, which was disposed of by public auction in 1892, in consequence of the loss of his fortune by Prince Paolo Borghese (b. 1845). Pope Leo XIII. acquired for the Vatican the important family archives. The picture gallery still contains nearly six hundred paintings, many of first-rate importance, including a *Madonna* by Botticelli; another by Lorenzo di Credi; four paintings by Raphael, including the *Burial of Jesus*; two pictures by Michael Angelo; the celebrated *Sacred and Profane Love* by Titian; *Danaë* by Correggio; *Christ on the Cross*, and a portrait of *Maria de' Medici*, both by Van Dyck.

Borghesi, BARTOLOMMEO, COUNT (1781-1860), Italian archaeologist and numismatist, born at Savignano; catalogued the Vatican collection of coins. He resided at San Marino (1821-60). His collection of coins was the best in Italy, and his researches elucidated much of the sacerdotal, military, and political life of the ancient Romans. See his *Nuovi Frammenti dei Fasti Consolari Capitolini* (1818-20). His works were collected in ten volumes (1862-97).

Borghetto, tn., Italy, prov. of and 25 m. S.E. of Milan. Pop. 6,000.

Borghorst, vil., Prussian prov. of Westphalia, 15 m. N.W. of Munster, with cotton mills. Pop. 8,000.

Borgia, CESARE (1475-1507), was the second son of Rodrigo de Borja, a Spanish noble, who afterwards became (1492) Pope Alexander VI. Cesare was made archbishop of Valencia, and afterwards (1493) cardinal, by his father. The Borgias waged a war of extermination against the Orsini, Colonna, Savelli, and other baronial families of the Roman state, whose lands and castles they seized. In June 1497 his brother, Giovanni Borgia, Duke of Gandia, was murdered, and his body thrown into the Tiber—the crime being instigated, it was said (1498), by Cesare, though historically this has not been proved. Immediately after this Cesare threw off the priesthood and resigned his cardinalate. Proceeding on a diplomatic mission to France, he was made Duke of Valencia by Louis XII., and in May 1499 he married Charlotte, sister of Jean d'Albert, king of Navarre. With French assistance Cesare now assailed the towns of the Romagna, which refused to acknowledge the supremacy of the court of Rome. Entering Rome in triumph in February

1500, he was created Duke of the Romagna and gonfalonier of the Holy See. He next defeated the Sforzas and Malatestas, and caused the two princes of Faenza to be treacherously put to death. Unsuccessful in attacking Bologna and Florence, he accompanied the French army in the invasion of Naples, when the greatest atrocities and infamies were committed by the invaders. In 1502 Cesare took Urbino and Camerino, where he put to death the Varani, Orsini, and Vitelli. He had now become the terror of all Italy, and contemplated making himself king of the Romagna, the Marches, and Umbria. His father's death by poison in 1503, on which occasion his own life was also (probably) attempted, was the signal for a coalition of his enemies, and in 1504 Cesare's forces were defeated, and he was arrested by Pope Julius II., and eventually sent prisoner to Spain. Escaping in 1506, he volunteered in the army of the king of Navarre, and on May 12, 1507, he was killed by a musket shot at the siege of the small town of Viana, near the Ebro. Cesare Borgia was a man of ungovernable passions, and reckless of human life in the pursuit of his schemes. With a towering ambition he trampled on all laws, human and divine; yet he was an able administrator, and a patron of art, befriending Pinturicchio and Leonardo da Vinci. Machiavelli's *Il Principe* (1535) was modelled upon Cesare Borgia. His *Life* has been written in Italian by Tomasi (1655), in French by Yriarte (1889), in German by Schubert-Soldern (1902), and in Eng. trans. by Villari (1878-83).

Borgia, LUCREZIA (1478 or 1480-1519), only sister of the preceding, was born at Rome. She married in 1493 Giovanni Sforza, lord of Pesaro; but her father, who had become Pope in 1492, annulled

this marriage, and gave her hand in 1498 to Alfonso, prince of Bisceglie, nephew of the king of Naples. Still ambitious for her future, her father and brother caused her second husband to be assassinated; and in 1501 Lucrezia married Alfonso d'Este, son of the Duke of Ferrara, whom he soon succeeded. She now appeared as the patroness of literature, and especially encouraged Bembo, who seems to have contracted a platonic passion for her. Though she was represented as the sharer with Cesare in all the crime, vice, and licentiousness of the time, nothing is alleged against her after she became Duchess of Ferrara. She died June 24, 1519, respected by the subjects whom she had governed wisely when her husband was away in the field. Victor Hugo made her the subject of a drama (1833), and Donizetti the central figure of an opera (1834). Her character has been defended by Roscoe in his *Life of Leo X.* (1805); by W. Gilbert, in *Life of Lucrezia Borgia* (1869); and by Gregorovius, in *Lucrezia Borgia* (1874; Eng. trans. 1904). See Corvo's *House of Borgia* (1901).

Borgne, a lake in S.E. Louisiana, U.S.A., 12 m. E. of New Orleans, in reality a shallow arm of the Gulf of Mexico.

Borgo. (1.) B. A MAZZANO, tn., Lucca prov., Italy, 20 m. N. by E. of Pisa. Pop. comm. 8,500. (2.) B. SAN DONNINO, tn. and episc. see of prov. Parma, Italy, 14 m. by rail N.W. of Parma; has a fine Romanesque cathedral first built in the 4th century, but rebuilt in the 11th. It is identified with the ancient *Fidentia Julia*. Pop. 12,000. (3.) B. SAN LORENZO, tn., Italy, prov. of and 18 m. N.E. of Florence. Pop. comm. 15,000. (4.) B. SAN SEPOLCRO, or SAN SEPOLCRO, tn. and episc. see, prov. Arezzo, Italy, in the upper valley of the Tiber, 28 m. by rail N.E. of

Arezzo; is surrounded by walls, has a citadel and picture gallery and a fine cathedral, and was the birthplace of the painter Piero della Francesca (c. 1420). Pop. 9,000.

Borgognone, properly AMBROGIO DI STEFANO DA FOSSANO (?1445-1523), Italian painter, pupil of Foppa and a master of Bernardino Luini, is distinguished by great devotional feeling and tenderness, and has been called the Perugino and Fra Angelico of the Lombard school. He worked as architect and painter for the Certosa, Pavia. Among his chief pictures are his *Crucifixion* (1490, Pavia); an altar-piece, *St. Ambrogia* (Milan); an *Assumption* in the Brera in Milan; and in the National Gallery, London, a *Virgin and Child*, *The Two St. Catharines*, *Triptych*, and two portrait groups. See Morelli's *Italian Masters in German Galleries* (1883).

Borgomanero, tn., prov. Novara, Italy, 19 m. by rail N.N.W. of Novara, with silk industries. Pop. 10,000.

Borgo Pass, in the Carpathians, is in the Hungarian co. of Bistritz-Naszód, and facilitates communication between Bukovina and Transylvania. It lies 3,940 ft. above sea-level.

Borgotaro, tn., Italy, prov. of Parma, 30 m. S.W. of Parma. Pop. comm. 9,000.

Borgu, a w. prov. of N. Nigeria, Brit. W. Africa, lying between 9° and 11° 30' N. and 3° 30' and 4° 40' E. Pop. est. at 40,000. The native kingdom of Borgu or Bus-sango, about 30,000 sq. m. in area and inhabited by Fulbe and Yoruba tribes, extends into French Dahomey.

Borgu, or BORKU, dist. of Africa in the Sahara, about 17°-20° N. lat. and 18-21° E. long.

Boric Acid. See BORACIC ACID.

Boring holes in wood is accomplished by means of awls, gimlets,

augers, or brace and bits. For making holes in metals rotary drills are used, either in the form of a hand implement or of a special machine driven by power, or in conjunction with a lathe. (See DRILLS.) Boring into the earth, in prospecting for minerals, is done by hand within limited depths. The surface soil is sunk through by a pit, within which the men work. On reaching the hard substratum, a chisel, screwed on to the end of a solid iron rod about one inch square, is driven down, raised slightly and turned, and driven down again by another blow. As the hole gets deeper a second rod, and then others, are screwed on. After a time the hole is choked, and then the sludger is sent down in place of the chisel. This is a tube with a valve at the bottom, of such a nature that it retains the débris, which is brought to the surface and examined. When the rods become too heavy for the men to lift, they are suspended from a 'spring pole' or larch tree 30 to 40 ft. long, fixed in the ground with its thin end inclined over the bore-hole; the pole is then started springing, and after each descent the rods are turned. Below depths of 100 yds. a steam-engine is used, the rods being suspended from one end of a beam, the other end of which is driven by the piston rod. In 'rope boring' a flat rope is substituted for the iron rods: this method is suitable for large bore-holes of 6 to 30 in. In America a round wire rope is used, and the boring tool often weighs over a ton; by this means as much as 200 ft. has been bored in twenty-four hours. The diamond boring machine, used for hard strata, grinds away an annular hole, leaving a central core which is afterwards extracted. Hollow steel rods are used, and diamonds are let in to the grinding face of the lowest. The rods

spin round at the rate of three hundred revolutions per minute, and water under pressure is forced down their interior. By this means 50 to 60 ft. may be bored per day in coal-measure rocks. The calyx drill is similar to the diamond, except that saw teeth of very hard steel are substituted for the diamonds. A type of core drill now much used is the shot drill. The boring head is a steel cylinder slotted at several points. Small chilled steel shot, poured down the hollow rods with the water, find their way through the slots, and get between the end of the head and the rock. The rolling action breaks up the rock. Progress is as rapid as with a diamond drill, but the cost of the chilled shot is only a small fraction of that of a single diamond. An ingenious method for surveying the inclination of bore-holes is effected by Mac-George's clinometer. It often happens that the course of the boring is deflected by a hard rock or by a highly-inclined stratum. When this is suspected, a number of glass tubes containing melted gelatin are sent down in a special case. At each end of the tube is a bulb, one containing a magnetic needle supported by a float, and the other a small plumb bob similarly supported. The gelatin sets; the apparatus is drawn up; and the angle of inclination, as well as its bearing, can be read off. For books on this subject, see MINING.

Boring Machines. See DRILLS.

Boris Godunov (1551-1605), Czar of Muscovy from 1598 to 1605, was of Tartar origin, and in his youth accompanied Ivan IV., the Terrible, in all his expeditions. Appointed by Ivan one of the council to assist his young son, Czar Theodore I. (1584-98)—who in 1580 married Boris's sister—Boris soon became the real ruler of the country. During this

time he made the Russian Church independent of the patriarch of Constantinople by creating the first Russian patriarchate at Moscow; he won the boyars or nobles by the famous ukase of 1597, by which he virtually converted the peasants into feudal serfs; he completed the conquest and fostered the colonization of Siberia, founding the town of Tobolsk and others; he secured the country against the invasion of the Tartars by fortifying Kursk and other places in the south. The Rurik dynasty becoming extinct through the death of Theodore in 1598, the boyars offered the throne to Boris Godunov. As Czar, Boris continued his reforms, and endeavoured to attract into the country foreign (Western) savants and artisans, and even planned to found a university at Moscow. But in the last year of his reign Russia was ravaged by famine and plague; also by civil war, for a pretender came forward to represent Demetrius, a second son of Ivan IV., whom Boris had put to death. In the midst of this crisis Boris suddenly died (Apr. 13, 1605). His life forms the subject of dramas by Pushkin (1831) and Count Alexis Tolstoy (d. 1876). See Brückner's *Die Europäische Ruslands* (1888).

Borisoglebsk, tn., Tambov gov., Russia, 120 m. E.S.E. of Voronej, on the Orel-Tsaritsyn Ry.; important cattle fair in July. Pop. 25,000.

Borisov, tn., Minsk gov., Russia, on the Berezina, 50 m. by rail N.E. of Minsk; tanneries, breweries, tobacco manufactures. Pop. 15,000.

Borisovka, tn., Kursk gov., Russia, 85 m. S. of Kursk, on an affluent of the Dnieper. Pop. 16,000.

Borja, tn., Spain, prov. of and 36 m. W.N.W. of Saragossa; produces flax and hemp. Pop. (comm.) 5,700.

Börjesson, JOHAN (1790-1866), Swedish dramatist, first made himself famous as a lyric poet in the school of the Fosforists, but in 1820 ceased to write for twenty-five years, and then came forward as a dramatist with his *Erik XIV.* (1846), a fine poem, full of glowing colour, and with unusually strong characterization. Its successors, *Erik XIV.'s Son* (1847) and *Solen Sjuncker* (1856), did not justify the hopes of the public and the critics. He was chosen a member of the Academy in 1861. His lyrical powers are best exhibited in *Blommor och Tårar på en Dotters Graf* (1854). See a selection from his works by Dietrichson (1873-4).

Borkum, one of the E. Frisian Islands, belonging to the Prussian prov. of Hanover, opposite the estuary of the Ems, 5 m. long by 2½ broad; is visited by some 17,000 persons every summer for sea-bathing. Borkum leapt into public importance in 1910, when it was the scene of a celebrated 'spy scare,' two English officers being sentenced to two years' imprisonment by the German government as spies. See *The Riddle of the Sands*, by Erskine Childers, which deals with the recent German naval activity on the North Sea coast. Pop. 2,000.

Borlase, WILLIAM (1695-1772), English antiquary and correspondent of Pope, was a native of Cornwall, and rector of Ludgvan, near Penzance, from 1722, and of Pendeen from 1732. His most important works were *Antiquities of Cornwall* (1753; 2nd ed. 1769), *Observations on the . . . Islands of Scilly* (1756), and *Natural History of Cornwall* (1758), all illustrated with plates after his own drawings. He presented the whole of his collections to the Ashmolean Museum, Oxford. See his autobiographical 'Memoirs' in Nichols's *Literary Anecdotes*, vol. v. (1812).

Bormann, EDWIN (1851), German humorous poet, has written in classic High German *Schwalbenbriefe* (1885; 19th ed. 1894), *Schwalbenpostkarten* (1885; 31st ed. 1897), *Die Tafelrunde* (1886; 14th ed. 1894), *Schatzkästlein* (1887; 10th ed. 1894), *Eilpost* (1887; 15th ed. 1897), etc.; and in the Leipzig dialect (Saxon), *Mei Leibzig low' ich mir* (1881; 7th ed. 1898), *Leibz'ger Allerlei* (1884; 8th ed. 1895), *De Säck'sche Schweiz* (1890; 5th ed. 1895), *Das Buch vom Klabberstorche* (1892; 4th ed. 1896), *Säck'sche Allerweltsbostkarten* (1892; 7th ed. 1898), *Gemietliche Bostkarten* (1897-8; 17th ed. 1898), *Gaudeamus Igitur* (1903), *Humoresken* (1904), etc. He has also contended energetically for the Baconian origin of Shakespeare's plays, in several books—e.g. *Das Shakespeare Geheimniss* (1894), etc.

Bormio, wat.-pl., prov. Sondrio, Italy, 35 m. N.E. of Sondrio, at the foot of the Stilfser Joch, and on the Adda; is famous for its hot mineral waters (salt and gypsum). Pop. 2,000.

Born, BERTRAN DE. See BERTRAN DE BORN.

Borna, tn., dist. Leipzig, Saxony, 17 m. by rail S.S.E. of Leipzig, with manufacture of felt shoes and pianofortes; iron foundries, gardening, and coal-mining. Pop. 9,000.

Börne, LUDWIG, whose original name was LOEB BARUCH (1786-1837), studied medicine and law. For some time (1811) he held the office of police actuary in his native town of Frankfort-on-the-Main, but in 1813 was dismissed, as being a Jew. In 1818 he became a Christian: it was a matter of conviction. From 1818-21 he edited *Die Wage*, a review which he had founded, and which made him known. In 1830 he was attracted by the revolution to Paris, where he and Heine became the leaders of 'Young Germany;' for

a little while they gave the most brilliant expression to the feverish unrest of the day. Börne's *Briefe aus Paris* (1832-8) reveal a visionary and impatient temperament, ultra-radical and bitterly satirical. His love for democracy amounted to a passion. His work, however, like that of Heine (with whom he was soon at bitter enmity), is fragmentary and negative. In addition to the *Briefe* he wrote some inferior verse; in 1837 appeared his *Menzel der Franzosenfresser*, and in 1861 *Briefe des jungen Börne an Henriette Herz* (1802-7), perhaps his most eloquent work. His *Gesammelte Schriften* appeared in 1829-34 (newer ed. 1899). See Gutzkow's *Börne's Leben* (1840); Heine's *Ueber L. Börne* (1840); Gervinus's 'Ueber Börne's *Briefe aus Paris*,' in *Historische Schriften* (1838); Brandes's *Das junge Deutschland* (1899); and J. Proelss' *Das junge Deutschland* (1892).

Borneo, isl., Malay Archipelago, after Australia and New Guinea the largest island on the globe. It is divided politically between the Netherlands and Great Britain, which has also protectorates over Brunei and Sarawak. Its length is about 690 m. by 605 m. in breadth, and its area a little over 300,000 sq. m.

The coasts, except in the N., are low-lying and irregular. A series of four mountain ranges, enclosing four tablelands of slight elevation, radiate N.N.E. and S.E. from a common centre in the S.W. The chief of these culminates in Mt. Kinabalu (13,698 ft.), in British N. Borneo. The other ranges have an extreme elevation of 6,000 ft. Coal is found, notably at Sarawak, Labuan, and Gaya. Gold is obtained in Dutch Borneo (annual value from £100,000 to £170,000); iron in S. Borneo; antimony and mercury in Sarawak, and W. of S. Borneo; other minerals are platinum, silver, tin, copper, zinc, lead,

and sulphur. There are also rich oil-wells. Diamonds and gems are obtained in W. and S. Borneo, notably at Landak.

Borneo is traversed by several large rivers, of which the most important are the Kapuas, the Kinabatangan, and Barito. They are mostly steep and torrential in their upper courses, but nearer the sea they overflow, and form wide, swampy marshes and lagoons (*danaus*). Of the interior little is known, except that it is covered with primeval forests yielding valuable timbers (teak, ebony, ironwood, sandalwood, etc.), gums and resins (indiarubber, gutta-percha, etc.), rattans, fibres, benzoin, spices (cloves, pepper, camphor, etc.), and magnificent flowers (orchids, pitcher plants, etc.). On the whole the surface is fertile, and produces abundance of food stuffs. The climate is hot and humid, the average temperature in S. Borneo being 82° F., and in N. Borneo 95° F.; the rainfall is heavy.

Trade in raw products (edible birds'-nests, etc.), and in manufactured wares, rice, and food stuffs, is carried on, principally with Batavia, Singapore, and Hong-kong, by Arabs, Chinese, Malays, and Europeans. Pop. over 2,000,000, including Dyaks (the aborigines), Malays, Buginese, Javanese, Arabs, and Chinese.

The European history of Borneo begins with its discovery by Lorenzo de Gomez in 1518, and the visit of the Magellan expedition in 1521. The Portuguese first opened up commerce, and were followed by the Spaniards. In 1608 the Dutch established a residency, and in 1706 the British a 'factory,' at Banjarmasin. Early in the 18th century both nations abandoned Borneo, but in 1816 the Dutch returned; and in the 'forties the founding of the independent state of Sarawak by Rajah Brooke, and the ceding

of Labuan (1846) to Britain, re-established British influence. This has since been cemented by the establishment of the British North Borneo Company (1881), and the proclamation of Sarawak as a British protectorate.

BRITISH NORTH BORNEO has a coast-line of 900 miles, and an area of 31,000 square miles. Pop. 170,000. The capital is Elopura or Sandakan; pop. 10,000. It is administered by the British North Borneo Company, incorporated by royal charter, Nov. 1, 1881. The interior is very hilly and broken, but good land exists in the valleys. There are several fine harbours, the chief being Sibuku, Sandakan, Labuk, Darval, Ambong, and Gaya. The products are those of Borneo, as above, with the addition of petroleum. Tobacco and india-rubber are now important products. The exports are valued at £540,000, and the imports at £320,000 annually. From Brunei Bay, on the w. coast, a line of railway has been completed through the interior to Jesselton, on Gaya Bay (total length, 110 m.), and forms part of the proposed trans-Borneo line, which will terminate at Cowie harbour, on St. Lucia Bay, on e. coast of British N. Borneo.

DUTCH BORNEO is divided administratively into (1) W. Borneo (area, 55,825 sq. m.), pop. 450,000—chief tn. Pontianak; (2) E. and S. Borneo (area, 156,912 sq. m.), pop. (estimated) 785,000—chief tn. Banjarmasin. Within these are several native states, more or less subject to the Netherlands.

See Wallace's *Malay Archipelago* (new ed. 1906); Rajah Brooke's *Narrative of Events in Borneo* (1848); Whitehead's *Exploration of Mount Kina Balu* (1893); Burbidge's *Garden of the Sun* (1880); Bock's *Head-hunters of Borneo* (1882); Posewitz's *Borneo: Its Geology and Mineral Resources* (1892); *The Handbook of Brit.*

N. Borneo (periodical); Nieuwenhuis's *In Central Borneo*, in Dutch (1901); Roth's *The Natives of Sarawak and N. Borneo* (1896); Furness's *Home Life of Borneo Head-hunters* (1902); and Beccari's *Wanderings in the Great Forests of Borneo* (1904).

Bornhem, tn., Belgium, prov. of and 12 m. s.w. of Antwerp; manufactures silk and cotton. Pop. 6,000.

Bornholm (abbreviated from *Borgundarholm*), a Danish island in the Baltic, about 25 m. from the s. point of Sweden. Area, 225 sq. m. Geologically it is the s.e. spur of the Scandinavian granite formation. It is well wooded, and has a rich vegetation, and yields kaolin and other fine clays, building stone, blue marble, and rock crystals. Cattle rearing, agriculture, and fishing are the chief industries. During the viking and early middle ages it was one of the principal trade centres in the Baltic, and indeed in the north. During the 16th century it was ravaged repeatedly by the Hanseatic League, and suffered greatly during its temporary domination by Lübeck (1525-75), and also under Swedish rule (1654-8). Since 1660 Bornholm has been incorporated with Denmark. Chief tn. Rønne. Pop. 40,000.

Bornu (57,000 sq. m.), country, formerly a negro kingdom, Sudan, Central Africa, lying w. and s. of Lake Chad. It was explored in 1822 by Denham and Clapperton. A large portion of it is of great fertility, especially the regions bordering the rivers Shari and Komadugu, feeders of Lake Chad. Dikoa, the capital since 1894, lies about 25 m. s. of the lake, in German territory. The former capital, Kuka or Kukawa, a most important trading centre, lies close to the w. shore of the lake. An earlier capital (15th century to 1809), Birnie, is much decayed.

Other towns are New Birnie, Ngornu, Mashena, Doloo, and Logone. The Kanuri race is predominant, the others being Tuaregs, Tibbus, Haussas, and Arabs. Mohammedanism is the adopted religion. Trade is done in cotton, indigo, ivory, ostrich feathers, skins, the Shea butter-nut, and leather. Chief productions are millet, barley, beans, ground-nuts, maize, cotton, and indigo. The mass of the people are negroes, who profess fetishism, and are divided into tribes speaking different idioms. Pop. (est.) 5,000,000. Bornu, formerly a part of the kingdom of Kanem, was founded as an independent state shortly after the middle of the 15th century, but declined again early in the 17th. This continued till the end of the 19th century, when its territories were appropriated by France, Great Britain, and Germany. The British portion now forms one of the fourteen provinces of N. Nigeria, and has an estimated pop. of 1,200,000. See Barth's (1857) and Nachtigal's (1879-89) *Travels*; also *Nigeria, Our Latest Protectorate* (1900), and other works cited under NIGERIA.

Boro-Budur, ruined Buddhist temple in Central Java, E. Indies; stands beside the Praga R., 15 m. N.W. of Jokjokarta. It consists of six square platforms superposed one upon another, and upon the topmost of them stands a lofty cupola, immediately surrounded by three concentric circles of bell-shaped cupolas. The bottom platform measures 500 ft. by 500 ft., and the total height is 118 ft. The edge of each of the platforms is protected by a balustrade of highly ornamental sculpture, and has midway an open-work cupola sheltering an image of Buddha. In addition to this there are a great number of smaller niches, each filled with a representation of Buddha, and a

series of over 2,000 bas-reliefs depicting various incidents in the history of the same divinity. See Leemans's *Bôrô-Boe-doer*, with nearly 400 plates (1873), Crawford in *Trans. of the Lit. Soc. of Bombay*, vol. ii. (1823), and Wallace's *Malay Archipelago* (1891).

Borodino, vil., Moscow gov., Russia, 72 m. W. of Moscow, on Kaluga R., trib. of Moskwa, celebrated for Napoleon's victory over the Russians under Kutusoff in 1812. In the battle the Russians lost 50,000, and the French 30,000.

Boron (B, 11), an element found in combination in boric acid, tincal or native borax, boracite, and other minerals. It is a dark-brown powder (sp. gr. 2.5), procured by heating boron trioxide (obtained by heating boric acid) with magnesium powder, and is of no commercial value. Several of its compounds, such as boracic acid and borax, are, however, used in medicine and the arts.

Bororos, a S. American people who occupy a vast domain of about 270,000 sq. m. in the Brazilian states of Matto Grosso and Goyaz. They were reduced about 1650 by the Portuguese. They are perhaps the tallest race in the world, averaging quite 6 ft. 4 in.—that is, more even than the Tehuelches (Patagonians), of whom they are regarded by some ethnologists as the parent stock.

Borosjeno, tn., Hungary, on the White Körös, co. of and 35 m. N.E. of Arad. Pop. 6,000.

Borough. See BURGH; LOCAL GOVERNMENT.

Borough, THE. See LONDON.

Boroughbridge, par. and mrkt. tn. on river Ure, 17 m. N.W. of York, in W. Riding of Yorkshire, England; scene of the defeat of the Barons, under Hereford and Lancaster, by Edward II., on Mar. 16, 1322. Pop. 800.

Borough Councils. See LOCAL GOVERNMENT.

Borough English is a custom still found with regard to certain lands, by which, on an intestacy, they descend to the youngest and not to the eldest son as heir. The custom is not affected by the Inheritance Act, 1833.

Borough Fund. In an English borough, under the Municipal Corporations Acts, the rents and profits of all corporate land, and the interest, dividends, and annual proceeds of all money, dues, chattels, and securities belonging to the corporation, the income from money arising from the sale of ecclesiastical patronage, and fines for offences against the acts not otherwise dealt with, go to the borough fund, and are to be expended on the purposes mentioned in the fifth schedule to the act. If the borough fund is insufficient to meet the expenditure of the borough, the council is authorized to meet the deficiency from the borough rate. See Arnold's *Municipal Corporations* (4th ed. 1894).

Borough Funds Act, 1872. This act enables municipal corporations and certain other local authorities in England to charge upon local funds and rates the cost of promoting and opposing private bills in Parliament. They may not promote a bill to compete with an existing gas or water company; and before incurring expense they must pass a resolution by an absolute majority at a special meeting, obtain the consent of the Local Government Board or a secretary of state, and observe other prescribed formalities.

Borough Sessions. See SESSIONS.

Borovichi, tn., Novgorod gov., Russia, nearly 200 m. S.E. of St. Petersburg, on Msta, affluent of Lake Ilmen. Commerce in leather, wood, and pottery; boat-building. Pop. 10,000.

Borovsk, tn., Kaluga gov., Russia, 53 m. N. of Kaluga city, on

sub-affluent of Volga. Grain trade. Pop. 9,000.

Borromeo Islands, four small islands in Lago Maggiore, Italy, opposite to Pallanza. Isola Bella ('Beautiful Isle') was in 1650-71 converted by Count Vitaliano Borromeo and Cardinal Giberto, his brother, from a bare rock into a rich terraced garden, and crowned with a splendid specimen of an Italian 17th-century baronial palace. Isola Madre ('Mother Isle') has a botanical garden and an 'English park.' The other two islands are Pescatori (Fishers' or Upper Isle) and San Giovanni (St. John).

Borromeo, CARLO, COUNT (1538-84), cardinal and archbishop of Milan, was born at Arona, on Lago Maggiore. His uncle, Pope Pius IV., called him to Rome, and made him (1560) a cardinal and archbishop of Milan. He established an academy in the Vatican for the promotion of learning. When the Council of Trent terminated its labours in 1563, Borromeo was commissioned to draw up the famous exposition of Roman Catholic doctrines known as the *Catechismus Romanus*. Borromeo enforced much-needed reforms upon the clergy and the monastic orders, and himself set an example by his saintly and humble life and his benevolence to the poor. A monk of the order of the Umiliati attempted (1569) the cardinal's life. Borromeo visited all parts of his diocese, reforming abuses, and establishing colleges, schools, and asylums for destitute children. He founded (1570) the Helvetic College at Milan, and during the plague in that city in 1576 personally visited the sick and relieved the poor. It was through Borromeo that the Golden League—an alliance of the seven Catholic Swiss cantons—was founded for the united defence of the faith. Borromeo was canonized in 1610 by Pope

Paul v. The tercentenary of his canonization (1910) was made the occasion of a papal encyclical against Modernism. A colossal bronze statue was erected (1697) to his memory near his birthplace, on the west bank of Lago Maggiore. His *Works* were published in 1747, and his *Life* has been written by Giussano (Eng. trans. by Cardinal Manning, 1884) and Sylvain (1884).

Borromeo, FEDERIGO, COUNT (1564-1631), nephew of the above, was made a cardinal in 1587. In 1595 he was consecrated archbishop of Milan, and, like his uncle, was distinguished for indefatigable zeal in his diocese, for wide charity, and enlightened piety. He was the munificent founder of the Ambrosian Library, for which he collected nine thousand MSS. He exhibited great personal devotion during the Milan famine and plague of 1627 and 1630. Manzoni has celebrated his memory in his famous novel *I Promessi Sposi* (1825-6).

Borron, ROBERT DE, a French *trouvère* of the latter part of the 12th century, born near Meaux; the author of a trilogy—*Joseph of Arimathea*, *Merlin*, and *Perceval*—dealing with Arthurian and Grail traditions. The work appears to have been written, about 1170-80, in metrical form, but the majority of the extant MSS. give a prose rendering. The *Perceval* is only represented by one MS., and is probably a working over, by a later hand, of the original romance. The *Grand S. Graal*, generally attributed to De Borron, is also, in all probability, the work of a later writer, though based upon the original *Joseph of Arimathea*. Borron is the first writer who gives the full Christian tradition of the Holy Grail, and of Joseph of Arimathea's mission to Europe. A relative of his, ELIE or HÉLIE DE BORRON, wrote *Palamedes*, *Melia-*

du, and *Guiron le Courtois*, about 1200; and, previous to that date, rewrote the *Tristan* story, and welded together for the first time the *Morte d'Arthur*.

Borrow, GEORGE HENRY (1803-1881), English philologist, traveller, and author, was born at E. Dereham, Norfolk, of a family of Cornish yeomen. His father rose from the ranks to be captain and adjutant in the W. Norfolk Militia. His mother, Ann Parfremment, was of Huguenot (not, as is sometimes stated, of gypsy) blood. Borrow's life is sketched in a romantic spirit, with the suppression of real names and places, in *Lavengro* and *The Romany Rye*. His boyhood was spent wandering with the colours; and voluntary studies in French, Italian, and Spanish, as well as the lore of boxers, horse-coupers, and gypsies, supplemented a scanty education picked up at the High School, Edinburgh, the Norwich Grammar School, and elsewhere. From Norwich he ran away to be a footpad, and was flogged. In 1819 he was articled to a solicitor, but continued to study philology, and obtained some sort of acquaintance with about twenty tongues. His chief associates were John Thurtell, afterwards hanged for murder; and William Taylor of Norwich. He became subject to recurring fits of melancholy. Through Taylor he began to write for journals, and in 1824 went to London, where he supported himself by hack work. In 1825 came the famous ramble through England, and the visits to Stonehenge and the Mumpers' Dingle, near Willenhall, in Staffordshire, immortalized in *Lavengro*. Between 1826 and 1833 little is known of Borrow's life. He called this 'the veiled period,' and allowed it to be supposed that he was travelling, partly with gypsies, over Europe and Asia. Actually he seems, with the exception of a

journey (1826-7) through France and Spain, to have been working for booksellers in London and Norwich. So far his nearest approach to literature was in some translations from the Scandinavian. In 1832 he walked to London, in hope of employment from the British and Foreign Bible Society, and was sent by it to St. Petersburg (1833) to superintend the printing of the New Testament in Manchu. In 1835 he went as the society's agent and colporteur to Portugal and Spain, and at this work he spent five years, varied by at least two sojourns in Spanish prisons. In 1840 he married Mary Clarke, a widow with an income, and a cottage at Julton, near Lowestoft. Here Borrow settled, and began the literary period of his career with *The Gypsies in Spain* (1841). This was followed by *The Bible in Spain* (1843); and then Borrow set to work on the autobiography, which was much delayed—*Lavengro* appearing in 1851, and *The Romany Rye* in 1857. Leisure made him restless, and his nervous troubles increased, so in 1844 he travelled through Europe as far as Constantinople. In 1853 he moved to Great Yarmouth, and began a series of peregrinations through the British Isles, one of which resulted in *Wild Wales* (1862). In 1860 he moved again to Brompton. In 1869 his wife died. Borrow himself was lost sight of, and believed by many to be dead, until he proved his existence by publishing his *Romano Lavo-Lil* (Gypsy Word-Book) in 1874. In the same year he returned to Oulton, but spent much time in lodgings in Norwich, where he was a familiar figure until his death, in 1881. Borrow's philology was thoroughly superficial; but his vivid and adventurous imagination, his passion for 'the wind on the heath,' and his uncompromising and intolerant

Protestantism, give a unique fascination to the records of his journeyings. Works: New and in some cases enlarged editions of *The Bible in Spain* (1899), *Lavengro* (1900), *The Romany Rye* (1900), *The Gypsies in Spain* (1901), *Wild Wales* (1901). Biography: *Life, Writings, and Correspondence*, by W. I. Knapp (1899), with full bibliography; *George Borrow—the Man and his Work*, by R. A. J. Walling (1908); *George Borrow in E. Anglia*, by W. A. Dutt (1896); T. Watts-Dunton's papers in *The Athenæum*, Sept. 1881.

Borrowdale, a picturesque valley, Cumberland, England, stretching from Glaramara Mt. along the river Derwent between the 'Jaws of Borrowdale' to the S end of Derwentwater. It contains the famous 'Bowder Stone.'

Borrowdale Volcanic Rocks, in the Lake District of Cumberland, are the rhyolitic and andesitic lavas and ash beds which were piled up round an old volcanic crater in Middle Ordovician times. The total thickness is estimated to be at least 12,000 ft. They rest upon the Skiddaw slates, and occupy an extensive area S. of Keswick and Buttermere, forming a range of mountains in which lie Lakes Thirlmere, Wast Water, and Ullswater. Helvellyn also consists of rocks of this group. See A. Sedgwick's *Geol. of the Lake Dist.* (in three letters addressed to Wordsworth, 1843); J. C. Ward's *Geol. of the Northern Part of the Lake Dist.* (1846); and Marr and Harker, *Proc. Geol. Ass.*, vol. xvi.

Borrowing. See LOAN.

Borrowstounness, or BO'NESS, par. (ac. 5,939) and seapt., bur. of barony and pol. bur., on S. shore of upper part of Firth of Forth, Linlithgowshire, Scotland, 3 m. N. of Linlithgow. It has coal mines (extending far below the firth) and iron works, brickfields

and potteries, distilleries, salt refineries, fishing and shipbuilding, and a considerable trade in pit props with Scandinavia and Finland. Remains of Antoninus's Wall, locally known as Graham's Dyke, are near. Pop. of tn. 10,000.

Borsa, vil., Hungary, co. of and 40 m. s.e. of Maramaros; has copper and lead mines and mineral springs. Pop. 8,000.

Borsig, JOHANN KARL FRIEDRICH AUGUST (1804-53), German manufacturer, founder (1837) of the engineering firm of Borsig at Berlin. In 1847-50 he built a large iron foundry at Moabit, near Berlin. His son ALBERT (1829-78) enlarged the firm by buying coal mines near Biskupitz in Silesia, and by erecting plant for the production of iron and steel (1862). See Vogt's *August Borsig* (1880).

Borsippa, or BIRS NIMRUD. See BABYLONIA.

Borsna, tn., Chernigov gov., Russia, 51 m. s.e. of Chernigov city, on a sub-affluent of the Dnieper, with tanneries and tobacco culture. Pop. 13,000.

Borstal System, began in 1902 with the collection at Borstal prison near Rochester of prisoners between 16 and 21, known as 'juvenile-adults,' who were under sentence of not less than twelve months. They were there subjected to a special set of rules, designed to encourage reformation, and on discharge were assisted to obtain employment by a philanthropic body called the Borstal Association. In 1903 the system was extended to Dartmoor. The Prevention of Crimes Act, 1908, provides for the establishment of special Borstal institutes for the industrial training and reclamation of juvenile-adult offenders, whom the court may in certain cases sentence to detention under penal discipline for not less than one nor more than three years. Such persons are kept under supervision for six

months after their discharge. The Treasury may contribute to the funds of societies such as the Borstal Association. See REFORMATORY.

Borszek, one of the most-frequented health resorts of Transylvania, Hungary, in a valley of the Carpathians, nearly 60 m. n.e. of Maros-Vásárhely. It has nearly a dozen springs, and the water is exported in considerable quantities. Pop. 1,700.

Borthwick Castle, Midlothian, Scotland, 13 m. s.e. of Edinburgh, built about 1430. In 1567 Queen Mary and Bothwell spent some days here, and from thence fled to Dunbar to escape the insurgent nobles. The castle capitulated to Cromwell in 1650.

Borwick, LEONARD (1868), English pianist, born at Walthamstow, Essex; studied at Frankfurt Conservatorium, and under Schumann, Bernard Scholz, and Iwan Knorr. He made his début at Frankfort (1889).

Bory de Saint Vincent, JEAN BAPTISTE GEORGES MARIE (1780-1846), French geographer and naturalist, was born at Agen; explored Bourbon, Réunion, and St. Helena (1798-1802); fought at Austerlitz, in Spain, and at Waterloo. After editing scientific and other journals in Belgium and France, he was appointed leader of a scientific expedition to Morea and the Greek islands in 1829, and president of the scientific commission for the exploration of Algeria in 1840. *Essai sur les Iles Fortunées* (1803), *Voyage dans les Quatre Principales Iles des Mers d'Afrique* (1804), *Expédition Scientifique de Morée* (1832), and *L'Homme, Essai Zoologique sur le Genre Humain* (1836) are his most important works.

Boryslaw, tn., Galicia, Austria, at the n. foot of the Carpathians, 6 m. s.w. of Drohobycz; a centre of the petroleum and ozocerite industries. Pop. 11,000, mostly Jews.

Borysthenes, the modern Dnieper. Near its mouth lay the town called by the same name, and also Olbia, Olbiopolis, and Miletopolis, which was a colony from Miletus, founded in the 6th century B.C., and the most important town on the N. of the Black Sea, especially for export of corn.

Borzhom, a much-frequented health resort in the Caucasus, Russia, in the ravine of the Kura, 80 m. W. by N. of Tiflis. The mineral springs have a temperature of 86° F. Alt. 2,600 ft. Mean ann. temp. 49° F.

Borzoi, THE, or RUSSIAN WOLF HOUND, a comparatively recent importation into England, the first specimens being a pair given by the Czar to King Edward VII. (then Prince of Wales) in 1870; but it was not until about twenty years later that the Duchess of Newcastle interested herself in the breed, and imported several specimens from Russia. In 1892 a team was sent from the Czar's kennels for exhibition in Britain. Several of them found their way into private kennels, and since then the popularity of the breed has greatly increased. In its native country the borzoi is hunted in couples, not in packs. Its quarry, the wolf, is driven out of cover into the open by other dogs, and allowed a good start. A brace of borzois are then slipped after it. They generally catch up the wolf in half a mile. On approaching, they separate and attack it from either side; and on getting a grip, they hold tenaciously until they are choked off by the huntsmen, who dispatch the wolf, for the borzoi itself rarely kills it. The points of the borzoi are: skull narrow-domed and long; jaws long and powerful; rather inclined to be Roman-nosed; expression soft, yet intelligent-looking; neck

long and slightly arched, and very powerful, well set on sloping shoulders; chest rather narrow, but extremely deep; back rising a little at the loins in a graceful curve, extremely muscular at the loins, but rather tucked up at this point in consequence of the great depth of chest and comparative shortness of back and ribs; fore legs set on well under the dog, and quite straight; feet well padded, and close at the toes; quarters very muscular and powerful, nicely bent on at the stifles, with hocks well let down; tail carried in a graceful curve, and rather low; coat profuse and silky; colour usually white, marked more or less with lemon, or tinted, but whole-coloured specimens are often seen. The average height of a borzoi dog ranges from thirty to thirty-three inches, and of a bitch from twenty-six to thirty inches.

Bos, a genus of mammals of which the domesticated oxen, *B. taurus* of Europe and *B. indicus* of India, are typical representatives. Linnæus used the genus name to include oxen, bisons, and buffaloes, with their allies; some modern zoologists split up these into several genera, using *Bos* for the true oxen only. See CATTLE.

Bosa, seapt. tn. and episc. see, Italy, on the W. side of the island of Sardinia, 32 m. S. of Sassari. Pop. 7,000.

Bosboom, JAN (1817-91), Dutch painter of architecture, and a follower of Rembrandt and De Hooghe. He rendered the play of light in the interior of churches in a most delicate manner. His efforts prepared the ground for the younger modern school. See Muther's *Modern Painting in Europe* (1896).

Bosboom-Toussaint, ANNA LOUISA GERTRUIDA (1812-86), Dutch novelist, born at Alkmaar, and spent most of her life (1851-86) at the Hague; the

wife of the painter Jan Bosboom. She wrote principally historical novels, showing remarkable insight into human nature, combined with wide and accurate knowledge of the past. Good specimens of her work are *Het Huis Lauernesse* (1841; 10th ed. 1885), *Graaf van Devonshire* (1838), *Engelschen te Rome* (1840), *Leycester in Nederland* (1846), *Vrouwen van het Leycestersche Tijdperk* (1849), *Gideon Florensz* (1854)—all historical novels. Her social novels, as *De Delftsche Wonderdokter* (1871) and *Majoor Frans* (1875), are not so successful. Her collected novels appeared in 25 vols. (1880-8). There is a *Life* in Dutch by Jan ten Brink (1886).

Boscan-Almogaver, JUAN (c. 1495-1542), Spanish poet, served as a soldier in Italy until 1519, when he returned to Spain, and became tutor (1520-6) to the great Duke of Alva. He was induced by the Venetian ambassador Navagiero to adopt the Italian hendecasyllabic metre in 1526, and was mainly instrumental in changing the fashion of Spanish verse. For the rest of his life he closely imitated the verse forms of the Italian poets, especially Tasso. He also translated excellently Castiglione's *Cortegiano* (1534; new ed. 1873). Most of his poetic works were published after his death with those of his friend Garcilaso de la Vega (1st ed. Barcelona, 1543). A good edition of Boscan's alone (*Las Obras de Juan Boscan*), biography by Professor Knapp, appeared in Madrid in 1875.

Boscawen, SIR EDWARD (1711-61), British admiral, third son of the first Viscount Falmouth. In 1741, under Vernon, he distinguished himself at the taking of Porto Bello. In 1744, when in command of the *Dreadnought*, he assisted in the capture of the French ship *Médée*. In 1747, after commanding the *Namur* in the

action off Finisterre, where he was wounded, he became a rear-admiral. Having subsequently rendered useful service in India, he became a lord of the Admiralty in 1751, and a vice-admiral in 1755. He effected the reduction of Louisburg and Cape Breton Island in 1758, and in the following year chased and destroyed a French squadron under De la Clue off Lagos. In 1758 he reached the rank of admiral, and in 1760 was made general of marines. See Standing's 'Sir Edward Boscawen,' in *United Service Magazine*, vol. cxiii. (1906).

Bosch, JEROM. See AEKEN.

Bosch, JAN VAN DEN, COUNT (1780-1844), Dutch general and statesman, born in Gelderland. Entering the army, he went to Java in 1797, and rose rapidly to the position of governor-general of the Dutch East Indies in 1828. After crushing the native revolt led by Diponegoro, he administered the dependency with great energy, introducing the *Kultur* system, which subordinated all the native industries to the economic prosperity of the administration—i.e. of Holland. In 1833 he became colonial secretary of state at home, but resigned the post in 1839, and in 1842 was created a count.

Boscobel, par., Shropshire, England, 6 m. N.E. of Shifnal; contains the mansion-house in which Charles II. took refuge after his defeat at Worcester on Sept. 3, 1651.

Bosco Reale, and BOSCO TRECASE, two adjoining communes at the base of Mt. Vesuvius, 12 m. E.S.E. of Naples, Italy. Pop. Bosco Reale, 9,500; Bosco Tre-case, 10,000.

Boscovich, RUGGIERO GIUSEPPE (1711-87), mathematician and astronomer, was born at Ragusa, and entered the Jesuit order

in 1725. Appointed professor of mathematics and philosophy at the Roman College (c. 1740), he received the Pope's commission to measure a degree of the meridian in the Papal States, an account of which was published in 1755. After holding university appointments at Pavia and Milan, he was appointed director of optics to the French navy (1774-83). His chief works are *Elementa Universæ Matheseos* (3 vols. 1757), *Opera Pertinentia ad Opticam et Astronomiam* (5 vols. 1785), and a long-winded Latin poem, *De Solis ac Lunæ Defectibus* (1764). He died insane. A *Life* in Croatian was published in 1888.

Boshof, dist. and tn., Orange Free State prov., Union of South Africa, 32 m. N.E. of Kimberley. Here Lord Methuen defeated the Boers (April 5, 1900). Pop. 1,300.

Bosio, FRANÇOIS JOSEPH, BARON (1769-1845), French sculptor, born at Monaco; executed bas-reliefs for the column in the Place Vendôme at Napoleon's request. Louis XVIII. made him royal sculptor; Charles X. created him baron. His best-known works are *Cupid darting Arrows* (1808); *Henry IV. as a Child*; *Aristée*, *Dieu des Jardins* (1811), in the Louvre; *Hyacinthe* (1817), also in the Louvre; and an equestrian statue of *Louis XIV.* (1824), in the Place des Victoires, Paris. He also executed busts of Napoleon I. and members of his family, of Louis XVIII., Charles X., etc.

Bosjesman. See BUSHMEN.

Bosna, a river of Bosnia, in the Balkan Peninsula; rises S. of Sarajevo, winds N. past that town, and enters the Save from the right at Samac after a course of 125 m. It is navigable for about two-thirds of its length, as far up as Vranduk.

Bosna Sara. See SARAJEVO.

Bosnia, including Herzegovina under a common administration, formerly a Turkish province,

since 1908 a province of Austria-Hungary, is situated in the N.W. of the Balkan Peninsula, being bounded on the N. by the Save, on the E. by the Drina, on the S. by Herzegovina and by the main range of the Dinaric Alps along the greater part of its S.W. and W. borders. Although the Save is the larger river, the Bosna is economically the more important. The climate is temperate and moist, but severe in winter. The bitter north-easter, the *bora*, sweeps the top of the watershed between the Danube and the Adriatic. The annual mean temperature is 48° F. at Sarajevo (the cap.), 29½° F. in February and 67½° F. in July. The province is rich in minerals; mining is now carried on (mainly by the government) for iron and copper, manganese, chromium, quicksilver, and coal. The manufacturing industries are comparatively undeveloped. Forests (coniferæ, beech, oak) cover over 50 per cent. of the surface, but the main resource of the people is agriculture, which since the Austrian occupation (1878) has made a remarkable advance. The breeding of live stock is a large and progressive industry. Foreign trade is as yet small, the exports being principally confined to timber, fruit, coal, iron, chemicals, hides, paper, and live stock. An important line of railway, Gabella-Bocche di Cattaro, which puts Bosnia in direct communication with Herzegovina, was opened in 1900. In all there are over 1,000 m. of railways in the prov. Education is defective, but gains ground slowly. The area of Bosnia is 16,206 sq. m.; the pop., inclusive of Herzegovina (1908), 1,828,379, nearly all of Servian blood. Some 35 per cent. are Mohammedans, 43 per cent. adherents of the orthodox Greek Church, and 21 per cent. Roman Catholics. Chief tn., Sarajevo. The total

trade is valued at nearly £8,000,000 per annum, about equally divided between imports and exports. After forming successively part of Illyria, Pannonia, and Dalmatia, Bosnia was peopled in the 6th and 7th centuries by Slavs. Then for eight hundred years it was subject successively to Servia, Croatia, and a line of native kings, until, in 1463, it was subjugated by the Turkish sultan Mohammed II. Thereafter it played an important part in supplying the famous Janissary corps of the Turkish armies. In 1849-50 and in 1875 the peasantry (who mostly clung to their Roman Catholic faith) rose in revolt against their masters (countrymen of their own whose ancestors accepted Mohammedanism in order to retain their estates) and against their Turkish rulers. In 1878 the Berlin Congress gave Austria a mandate to occupy and administer Bosnia and Herzegovina, under the nominal suzerainty of the Sultan of Turkey. See J. R. Munro's *Rambles and Studies in Bosnia-Herzegovina* (1895); Nikaschinovitsch's *Bosnia und der Herzegowina* (4 vols. 1901, etc.); Olivier's *La Bosnie et l'Herzégovine* (1901); Rosenfeld-Büchenau's *Kreuz und Halbmond* (1900, etc.); vol. xix. of *Die Osterreichungarische Monarchie in Wort und Bild* (1901); and M. M. Holbach's *Bosnia and Herzegovina* (1909).

Bosporus (also BOSPHORUS), or STRAITS OF CONSTANTINOPLE, strait, Turkey, separating Europe from Asia, and connecting the Black Sea with the Sea of Marmora. Its length is 17 m., and its breadth is from 1 to 2 m. Its well-wooded shores are elevated and picturesque, with many bays, the most important of which is the Golden Horn. The towns of Scutari, Pera, Therapia (the castles of Europe and Asia), and the city of Constantinople, stand

on the strait. By the treaty of Berlin (1878), which has since been modified, it was stipulated that no warships except those of Turkey should be allowed to pass through. See DARDANELLES.

The CIMMERIAN BOSPORUS (the Straits of Kaffa), between the Sea of Azov and the Black Sea, was called after the Cimmerii, who were supposed to have lived there. On the w. side of the strait, in the modern Crimea, the Milesians founded a colony in the 6th century B.C., called Bosporus or Panticapæum, the modern Kertch. From the 5th century B.C. it had a dynasty of its own, and its kings were in active communication with Athens, especially in the time of Demosthenes. But in 115 B.C. the last king, being hard pressed by the Scythians, ceded it to Mithridates VI. of Pontus, to whose son Pharnaces it was given by Pompey in 63 B.C. The kingdom was destroyed altogether in the 3rd century A.D. by the Goths.

Bosquet, PIERRE FRANÇOIS JOSEPH (1810-61), French marshal, born at Mont-de-Marsan in Landes; served in numerous campaigns in Algiers (1834-52), and fought with distinction at the Alma and at Inkerman, and in the storming of Sebastopol, in the Crimea (1854-5). He was promoted field-marshal and appointed senator (1856). See *Lettres du Maréchal Bosquet* (1830-58).

Bosruck, Alpine tunnel of Austria on the railway which connects Klaus Steyerling on the N. with Selzthal on the S. (25 m.), and thus affords direct communication between Bohemia and the Adriatic. The tunnel, commenced in 1902 and opened in 1905, is 3 m. long, and its summit elevation is 2,405 ft. above sea-level.

Bossu, RENÉ LE. See LE BOSSU.

Bossuet, JACQUES BÉNIGNE (1627-1704), French preacher, historian, and controversial writer, was born at Dijon. Educated by the Jesuits of his native town, and at the Collège de Navarre in Paris, he was admitted doctor in theology in 1652, and proceeded the same year to take up the duties of a canon at Metz. Here he entered into controversy with the Protestants, and wrote his *Réfutation du Catéchisme de Paul Ferry* (a Protestant minister of the town). In 1659 he went to Paris, where he soon won reputation as a preacher, and from 1661 preached frequently at the court. Appointed bishop of Condom in 1669, he resigned the see a year later, on being made tutor to the Dauphin. For the Dauphin's instruction he wrote, among other works, the *Discours sur l'Histoire Universelle* (1681), remarkable for its vivid generalizations and sense of historical continuity, and by some considered as the first attempt at a philosophy of history. (See Flint's *History of the Philosophy of History*, 1893.) At this time the question of the rights of the Gallican Church again assumed importance, and Bossuet became its recognized champion in opposition to Fénelon and the Ultramontanes. To the assembly of the clergy in 1681 he preached the sermon *Sur l'Unité de l'Eglise*, designed to effect a reconciliation between the Pope and the king; and he inspired the *Déclaration* of 1682, which formulated the liberties of the Gallican Church. On relinquishing the tutorship of the Dauphin (1681) he was rewarded with the bishopric of Meaux. Thereafter he delivered his most celebrated funeral orations—those on Marie-Thérèse (1683), Anne de Gonzague or Anne de la Palatine (1685), Le Tellier (1686), and, greatest of all, Condé (1687). In 1688 he published *L'Histoire des Variations*

des Eglises Protestantes, and in 1694 *Maximes et Réflexions sur la Comédie*, in which he attacked the theatre, and especially the plays of Molière. He again crossed swords with Fénelon on the burning topic of the Quietist heresy, which he denounced in *Instructions sur les Etats d'Oraison* (1697) and *Relation sur le Quiétisme* (1698). From 1697 to 1701 he carried on negotiations with Leibniz to bring about a union of the Catholics and Lutherans, but without success. A man of fervent piety and generous emotions, in theology and politics he was rigorously orthodox and conservative. In the orations the personal panegyric is always employed to illustrate a greater theme—the littleness of earthly greatness in the presence of death; but there are not wanting traits of personal emotion, and in general the style is sonorous, grave, imaginative. In the sermons, though the rhetoric is less elaborate, the poetic sensibility of the preacher finds more abundant expression; the language is pure and limpid, the argument forcible and well sustained, and many of them, as that of *Sur la Mort*, are unequalled in French oratory. The 18th century (*e.g.* Voltaire) ranked Bossuet below Bourdaloue and Massillon, but modern criticism has restored him to his place as the first of French orators, and considers him one of the greatest masters of French prose. Editions: Versailles (1815-19), 43 vols.; by Lachat, Paris (1862-6), 31 vols.; *Œuvres Oratoires* (1890-6), 6 vols. See Floquet's *Etudes sur la Vie de Bossuet* (1855-6), 3 vols.; F. Brunetière's *Etudes Critiques sur l'Histoire Litt. Française*, vols. ii. and v. (1888); and *Bossuet*, by G. Lanson (1901).

Bossut, CHARLES (1730-1814), French mathematician, born near Lyons; became professor of mathematics at Mézières (1752), and

a member of the Academy of Sciences (1768). He edited Pascal's works with a memoir (5 vols. 1779), and wrote *Essai sur l'Histoire Générale des Mathématiques* (1802).

Boston, par., mrkt. tn., seapt., parl. and munic. bor., on the riv. Witham, 4 m. from the sea, 30 m. S.E. of Lincoln, Lincolnshire, England. The corporation dock has an area of 7 ac., and a quayage of 2,330 ft. Deep-sea fishing, with a fleet of forty trawlers, has proved very prosperous. Some shipbuilding is carried on, and there are lines of steamers for Hull, London, and Hamburg. The chief industries are the manufacture of agricultural implements, sails and ropes, brewing and tanning, iron and brass founding. Timber, pit-props, granite, and ore are imported; coal, corn, and agricultural implements are the chief exports. In Plantagenet times Boston was a chief port of the kingdom, and much frequented by traders of the Hanseatic League. Foxe, author of the *Book of Martyrs*, and Ingram, the founder of the *Illustrated London News*, were natives of the town. The tower of the church of St. Botolph (Boston = Botolph's town) was a conspicuous landmark for mariners. There are a grammar school (1554), a blue-coat school, municipal buildings, and a guildhall. Pop. 16,000. There is an excellent *History of Boston* by Pishey Thompson (1856).

Boston, the capital and largest city of Massachusetts, U.S.A., and fifth in population in the country, is situated at the head of Massachusetts Bay, Suffolk co., 230 m. N.E. of New York. It is a combination of several cities and towns about Boston Harbour and along the Charles R. Besides Old Boston or Boston proper, it includes E. Boston, on Noddle I., S. Boston,

Charlestown (where a granite obelisk marks the scene of Bunker's Hill, the first conflict between British and Americans in 1775), and the suburban districts of Brighton, Roxbury, W. Roxbury, and Dorchester. The area is 43 sq. m. Parks cover 2,620 ac., the best known being the Common, in the heart of Old Boston. In the suburbs is a chain of beautiful parks and boulevards, Franklin Park (520 ac.) being the largest. The school system has long been known as the best in the country. There is one municipal library, containing some 840,000 volumes, housed in one of the finest buildings (1888-95) in the States. Smaller libraries belong to the Boston Athenæum (1807), the American Academy of Arts and Sciences (1780), and the New England Historical and Geological Society (1845). The higher educational institutions include the Massachusetts Institute of Technology (1865), one of the best technical schools in the country. The medical and agricultural schools of Harvard University are located here, as are also Boston College (Roman Catholic; 1860), Boston University (1869), the New England Conservatory of Music (1870), Lowell Institute, and a fine art school. Faneuil Hall (1742), the Old South (1729) and the Old North (1723) churches, and the Old State House (1748) are among many buildings of historical interest. The leading industries include the manufacture of boots and shoes, leather, machinery, furniture, fertilizers, agricultural implements, chemicals, and musical instruments. The ice, fish, dry-goods, and sugar-refining trades rank among the first. Boston is the second port in the United States in amount of commerce. The exports are valued at about £20,000,000 per annum, and are chiefly agricultural implements,

cattle, bread-stuffs, dairy products, leather, raw cotton, distilled spirits, and manufactures of cotton, wood, iron, and steel. The imports are valued at over £26,000,000. The first settlement was made in 1630 by settlers from the Winthrop fleet. The town took a leading part in the revolution, and was the scene of the Boston 'tea party.' In 1872 much of the business portion was destroyed by fire. The new Museum of Fine Arts and the new Opera House, both on Huntington Avenue, were opened in 1909. The intellectual 'culture' of Boston is proverbial. See Winsor's *Memorial History of Boston* (1880-1), Hale's *Historic Boston* (1898), and Lodge's *Boston* (1891). Pop. (1750) 25,000; (1822) 50,000; (1900) 560,892; (1910) 670,585.

Boston Tea Party. In the height of the agitation antecedent to the American revolution, a party of Bostonians disguised as Indians boarded certain ships laden with taxed tea, and threw 350 chests into the harbour (Dec. 16, 1773). This was the Boston 'tea party,' which has been celebrated in song by Oliver Wendell Holmes. In retaliation the home government declared the port closed. See *Cambridge Modern History*, vol. viii. (1903).

Boston, THOMAS (1676-1732), Scottish divine, was born at Duns, Berwickshire. Licensed by the presbytery of Chirnside in June 1697, his power in the pulpit was quickly recognized; but it was not until 1699 that he was ordained minister at Simprin, a small Border parish near Duns. He was translated to Ettrick, in Selkirkshire, on May 1, 1707, the day of the union of England and Scotland, and there he continued to labour until his death. Boston became known throughout Scotland for his defence of the right of the Christian people to

choose their own ministers; his refusal to take the abjuration oath in any form; his opposition to Simson, divinity professor at Glasgow, on account of his doctrinal teaching; and above all for his share in the 'Marrow Controversy,' which profoundly agitated the Church of Scotland for many years from 1718. The works of few theological writers have circulated so widely as his. The treatise on *Human Nature in its Fourfold State* (1720) exercised a powerful influence on the religious life of Scotland. *The Crook in the Lot* (new ed. 1863) was also a great favourite with the Scottish peasantry. His *Memoirs* (1776) are a valuable commentary on his time.

Boström, ERIK GUSTAF (1842-1907), Swedish statesman, member of the Second House of the Swedish Parliament from 1875 to 1893, subsequently of the First House; the champion of protection and leader of the conservatives; prime minister 1891-1900, and again in 1902.

Boström, KRISTOFFER JAKOB (1797-1866), Swedish philosopher, who exercised an extraordinary influence over his pupils by the magnetism of his personality. After studying at the University of Upsala, he became, in 1833-7, tutor of the royal princes; but returned to the university, and in 1840 was made professor, a post he held for twenty-three years. His teaching is highly idealistic, and is reminiscent of Spinoza. His writings were edited by Edfeldt (1883-1901). See papers by Mätzner (1869) and Höffding (1879) in *Philos. Monatshefte*.

Boswell, SIR ALEXANDER (1775-1822), antiquary and poet, was born at Auchinleck, Ayrshire. The eldest son of James Boswell, he succeeded to Auchinleck in 1795, and lived a life of lettered ease. In 1803 appeared *Songs, chiefly in the Scottish Dia-*

lect, and *The Spirit of Tintoc, or Johnny Bell and the Kelpie*; in 1810, *Edinburgh, or the Ancient Royalty*; and *Sir Albyn* in 1812. He established the Auchinleck Press in 1815, from which issued many valuable reprints, and also his own works, notably *Sheldon Haughs, or the Sow is Flitted* (1816). *Jenny's Bawbee* and *Jenny dang the Weaver* (1817) are his best-known songs. He was M.P. for Devonshire in 1818 and 1820. He died from wounds received in a duel, on Mar. 27, 1822. See Thomson's *Collection of Original Scottish Airs* (1809-17), and *Boswell's Works*.

Boswell, JAMES (1740-95), the biographer of Samuel Johnson, was the eldest son of Lord Auchinleck, a Scottish judge, and was born at Edinburgh. He visited London for the first time in 1760. In 1762 he made his first attempt at authorship by contributing to *A Collection of Original Poems by Scotch Gentlemen*. Early in 1763, while passing through London, he was introduced to Dr. Johnson, and a warm friendship sprang up between them. In 1767 he published *Dorando*, a Spanish tale little known; and in 1768, *The Essence of the Douglas Cause*, a defence of the claim of Archibald Douglas to the dukedom of Douglas. In 1768 appeared his *Account of Corsica, with Memoirs of General Paoli*; and in the following year a volume of *British Essays in Favour of the Brave Corsicans*. In 1773 he accompanied Johnson on his journey to the Hebrides. From 1777-9 Boswell wrote a series of papers, called 'The Hypochondriac,' in the *London Magazine*. In 1785 he published the *Journal of a Tour to the Hebrides*, and in 1786 he was called to the English bar. In May 1791 he produced his *Life of Dr. Johnson*. It was a signal success, and a second edition was called for in 1793.

But Boswell succumbed to hypochondria and alcoholism, to which he had given way after his wife's death in 1789, and died in London on May 19, 1795. It is generally conceded that Boswell's *Life of Johnson* stands alone in our language for the faithful portraiture of its subject. No other biography rivals it, and it has well deserved its universal celebrity. Boswell's *Letters to the Rev. W. J. Temple* were published in 1857 (new ed. 1908), and Charles Rogers edited (1874) for the Philobiblon Society a curious tract relating to Boswell, called *Boswelliana*. The best editions of Boswell's *Life of Johnson* are those by Croker (10 vols. 1876), Napier (4 vols. 1884), and Dr. Birkbeck Hill (6 vols. 1887). See Macaulay's *Essays* and Carlyle's *Miscellaneous Essays*, and the *Life of Boswell* by Percy Fitzgerald (2 vols. 1891).

Boswellia, a genus of trees (named after John Boswell, a physician) of the family Burseraceæ, natives of India, Persia, and Arabia. The flowers have five petals and a crenulated granular disc; the fruit consists of a triangular capsule with three valves and three cells, each cell containing one seed. *B. serrata* is a large tree with pinnate leaves, and small pink flowers in axillary racemes. Boswellia is the tree which produces the fragrant resin olibanum, believed to be the frankincense of the Bible.

Bosworth, or MARKET BOSWORTH, mrkt. tn. and par., Leicestershire, England, 13 m. w. of Leicester, on L. & N.W.R. Here Richard III. was defeated and slain by Henry, Duke of Richmond (1485). Pop. of par. 800.

Bosworth, JOSEPH (1789-1876), Anglo-Saxon scholar, was born in Derbyshire. While vicar of Little Harwood in Buckinghamshire (1817-29) he published his *Anglo-Saxon Grammar* (1823). From

1829-40 he acted as a chaplain in Holland, and in this time appeared his principal work, the *Anglo-Saxon Dictionary* (1838; new ed. 1882-88), *The Origin of the Dutch* (1836), *Scandinavian Literature* (1839), and a Dutch translation of the *Book of Common Prayer* (1839). From 1840 to 1857 he was vicar of Waithe in Lincolnshire, and after that rector of Water Shelford in Buckinghamshire. In 1858 he was appointed to the Rawlinson professorship of Anglo-Saxon at Oxford, and in 1867 he gave £10,000 for a similar endowment at Cambridge.

Böszörmény, or HAJDU-BÖSZÖRMÉNY, tn., Hajduken co., Hungary, 10 m. N.W. of Debreczin. Agricultural centre. Pop. 25,000.

Botanic Garden, a garden in which the plants grown, and the method of their arrangement and cultivation, are intended to subserve some definite scientific purpose. The term is wide enough to include such establishments as Kew and the school gardens copied from America by the advocates of nature study. The botanic gardens in connection with universities, and as independent establishments all over the world, are the direct outcome of the physic gardens in which simples were formerly cultivated. In some cases—as, for instance, at Chelsea—the older title has lingered, though, of course, it has long ceased to be properly descriptive. Perhaps the first record of a garden of this kind occurs early in the 14th century, as belonging to a member of the Salernitan school of medicine; and before the first half of that century had run its course, the republic of Venice had also established a garden of a similar kind. With the renaissance and the study of what is now called natural science came the establishment in Italy (Ferrara, Padua, Pisa, Bologna, Florence, Naples) of botanic gardens

in the modern sense. Germany (Nuremberg, Leipzig, Breslau, Heidelberg, Giessen, etc.) and France (Montpellier, Paris) were not long in following the example thus set. The most noted British gardens are those of Oxford (1632), Chelsea (1677), Edinburgh (1680), Kew (1670), and Cambridge (1672). No two botanic gardens are precisely alike in arrangement. The hardy plants have to be arranged with due regard to natural relationships. Geographical distribution on the earth's surface is in many places a prominent feature in the arrangement; and there may be further subdivisions into aquatic, marsh, desert, rock, and mountain plants. There must, of course, be plant-houses of different kinds, one or more with temperature high enough for tropical plants; and here the arrangement is governed by cultural requirements. There must be a herbarium (or collection of dried plants), a museum, a library, laboratories, and a teaching staff. In July 1902 the Chelsea garden was reopened under a new scheme devised by the Charity Commissioners.

Botany is that branch of the wider science of biology which deals with plants. Since the simplest organisms consist of a single cell, it is not an easy matter to draw the line between the lowest plants and the lowest animals. To overcome this difficulty, Haeckel proposed to include both in a group which he called Protista. This, however, has not been generally accepted, and Professor Ray Lankester has said that it is not, after all, of much consequence if the botanist or the zoologist should claim a few of these simple organisms which belong of right to the domain of the other.

History.—Solomon (1 Kings 4: 33) 'spake of trees, from the cedar that is in Lebanon even

unto the hyssop that springeth out of the wall.' There are fragments ascribed with more or less justice to Aristotle (384-322 B.C.), and from him Theophrastus (c. 370-286 B.C.) learned all he knew about plants. The *Materia Medica* of Dioscorides, a Greek physician of the first century of our era, appears to have been the source whence most of the plant-lore of the mediæval herbals was derived; though, as time went on, some kind of description of the plants themselves was added to what was held to be of more importance—an account of their medicinal properties. Not, however, till the first half of the 16th century was there anything like a scientific treatment of the subject, which is generally thought to have commenced with Brunfels of Strassburg (1488-1534), who described 340 species. Lobel, a Dutchman (c. 1538-1616), physician to James I., raised the number to 2,191, which was trebled by Caspar Bauhin in the early part of the 17th century (1623). Among British botanists of the pre-Linnæan period must be mentioned Turner (d. 1568); Morison (1620-83), regius professor of botany at Oxford; and John Ray (1628-1705), who introduced the word 'species' in a technical sense, and to whom we probably owe the first clear idea of a natural system. Linnæus (1707-78) is justly reckoned the father of modern botany. Not only did he systematize it; he enlarged its province by sending many of his best pupils to explore and collect in regions where no scientific work had been done.

Classification.—Early systems were on broad lines, taking little note of minute differences. Thus for a long period 'herbs, shrubs, trees' were the only classes recognized. Then followed an alphabetical arrangement. Cæsalpinus, physician to Pope Clement VIII., in 1583, published a system based

chiefly on the fruit; but Tournefort (1656-1708), professor of botany at the Jardin des Plantes, Paris, drew up a scheme which held its ground till the days of Linnæus. It had two main divisions—herbs and trees. Under herbs were three subdivisions—(1) with simple flowers; (2) with compound flowers; and (3) destitute of flowers, including grasses, ferns, and mosses. The trees were divided into four groups, based on the characters of the petals. The characters and arrangement of the reproductive organs (stamens and pistils) were the basis of the Linnæan system (1735). It consisted of twenty-four classes, of which the last contained the mosses, ferns, lichens, seaweeds, and fungi, while the rest comprised the flowering plants. This was avowedly provisional, and intended to pave the way for a natural system based on relationships of which the sum of the characters was to be the test. Of this only a fragment was issued in 1738. Antoine Laurent de Jussieu (1748-1836) worked on the lines of relationship; but no classification indicating real relationship was possible till it was attempted on the basis of evolution. The following gives the principal points of such a classification, omitting details on which there is much difference of opinion:—

1. Cryptogams. (1.) Thallophytes.—Single or many celled plants, the vegetative portion not being differentiated into leaves and stem. Here are grouped bacteria, diatoms, algæ, fungi, and stoneworts. (Lichens are not regarded as distinct plants, but as resulting from the union of a fungus and an alga.) (2.) Bryophytes.—The liverworts spring from a thallus, while the mosses show division into stem and leaf; but none have true roots. (3.) Pteridophytes.—These show relation-

ship to the flowering plants in having root, stem, and leaves, and in the possession of vascular bundles.

2. Phanerogams, the true flowering plants. (1.) Gymnosperms.—The flowers always unisexual, generally naked, though in a few cases there is a small perianth consisting of scale leaves. The cycads and conifers constitute nearly the whole class. (2.) Angiosperms.—The flowers generally hermaphrodite, and provided with a perianth divisible into calyx and corolla. Here belong the grasses, herbaceous plants, and shrubs, and all foliage trees. There are two sub-classes: (a) Monocotyledons—seed with a single cotyledon or root leaf; stem usually simple, as in the palm; (b) Dicotyledons—seed with two root leaves; stem generally well branched.

Morphology.—Here we have to do with external form and internal structure. The simplest conceivable plant-form is a single spherical cell, such as may be met with in some of the fresh-water algæ, though an aggregation of such cells is more common. The next step in development is shown by the attachment of plants by a base, and the formation of a growing point, or apex, at the opposite extremity. This may be seen in sea-lettuce. In the bladderwrack, an equally common seaweed, the branching of the original apex gives rise to a number of growing points. In the mosses, with stem and leaves, there is a foreshadowing of roots in the rhizoids by which these plants attach themselves to the surfaces on which they grow. In the next higher group, the ferns and their allies, true roots are present, so that they resemble the phanerogams in this respect. A typical phanerogam consists of a root, or descending axis; a stem, or ascending axis, which may be simple or branched; and the leaves—all subserving the

purpose of nutrition. Leaves vary greatly in size and in shape, and all the appendages of the stem or branches may be traced to modifications of the foliage or surface leaf, which normally consists of an expanded portion called the blade, connected with the stem by a petiole or leaf-stalk, which may be protected at the base by a sheath, or by leaf-like appendages called stipules at each side. The typical flower of the angiosperms consists of four whorls of metamorphosed leaves, arranged thus from the outside: calyx, formed of sepals; corolla, formed of petals; the andrœcium, or male system, consisting of anthers containing pollen; the gynœcium, or female system, the important part of which is the ovary, containing the ovules, surmounted by a style, expanded at its apex into a stigma. The first two whorls are protective of the others, which are the reproductive organs. If both systems are present, the flower is bisexual; if either is absent, it is unisexual, and the sex is determined by the system present. If male and female flowers grow on the same plant, it is said to be monoœcious; plants bearing only male or female flowers are dioœcious. Of the former, the box is an example; of the latter, the common nettle. Internal morphology (often called histology or vegetable anatomy) shows how this structure is built up. In all organisms the ultimate unit is the cell. Hooke was the first to detect plant cells, and figured dead cork cells in his *Micrographia* (new ed. 1667). Their importance, however, was not recognized till Schleiden's work in 1838 showed that plants were built up of cells and modifications of cells. In its simplest form a plant cell is more or less globular. When aggregated, plant cells may be of various forms and sizes, and, in addition

to the protoplasm, contain a nucleus; there may also be chlorophyll, or green colouring matter (sometimes masked by other pigments, as in red and brown seaweeds), starch grains, aleurone grains, and crystalline bodies. Aggregations of cells constitute cellular tissue, well seen in the leaves and stem of mosses. Vascular tissue, of which there are many modifications, is formed of rows of superposed cells, the walls of the adjacent cells in each row having been absorbed, thus forming tubes. Aggregations of vascular tissue (vascular or fibro-vascular bundles) are always found in the phanerogams, though they may be first clearly made out in the ferns and their allies, and there seems to be a foreshadowing of them in the mosses.

Physiology is concerned with plants as living organisms—*i.e.* with the functions of the organs of nutrition and reproduction. In the simplest form—such as slime fungi (by some claimed as animals)—food may be taken in at any part of the body, while reproduction is effected by means of single-celled bodies called spores. This method is peculiar to the cryptogams, in some of which, however, there is alternation of generations, well seen in the ferns, where the spore gives rise to a leafy growth, on which are developed male and female systems, and from the union of the products of these systems new fern plants arise. The food of plants (with some few exceptions) is liquid and gaseous. The former is water combined with various earthy salts, and is absorbed by the roots; the latter consists of carbon dioxide, absorbed from the atmosphere by the leaves, in which it is broken up under the influence of sunlight, the carbon being retained to nourish the plant, while the oxygen is given back to the air.

The crude sap (the water impregnated with salts) taken up by the roots passes through the stem to the leaves, where starch is formed and free oxygen given off. During the darkness the starch is dissolved in the cell sap, and passes downwards through the tissues of the stem. By the leaves excess of carbon is got rid of through the absorption of oxygen and the giving off of carbon dioxide in the process of respiration, and by their stomata or pores excess of moisture is exhaled in the process of transpiration. The reproduction of the higher plants is sexual. In the stamen the essential part is the anther, or little bag at the top, containing the pollen grains or male cells, while the ovules in the ovary enclose the female cells in the embryo sac. When in the process of fertilization the pollen is shed on the stigma, the grains send out tubes which carry the male cells down to the egg cells. By this process, and by consequent changes, the ovule becomes a seed, and the persistent parts of the flower a fruit.

Geographical Distribution.—With the general adoption of the theory of evolution, and the disappearance of that of special creation, the distribution of plants on the earth's surface had to be accounted for. This led to the mapping out of the globe into regions and sub-regions, characterized by a distinctive flora. About forty years ago George Bentham distinguished three distinct floral regions:—1. Northern, characterized by conifers and the catkin-bearing Amentaceæ, and its vast assemblage of herbaceous plants, and having three subdivisions—Arctic-Alpine, Intermediate or Temperate, and Mediterraneo-Caucasian. 2. Southern, broken up, so that the connection is only traceable by the possession by two or more of them of the large characteristic

groups, such as the Restiaceæ, Proteaceæ, Diosmeæ, etc. The divisions are the Antarctic-Alpine, Australian, Andine, Mexico-Californian, and South African. 3. Tropical, characterized by the Anonaceæ, Restiaceæ, Proteaceæ, palms, and giant grasses, with three divisions—Indo-Malayan, American, and African. These nearly correspond to the later divisions—Boreal, Tropical, and Austral—of Oscar Drude, though he had a greater number of subdivisions or 'floral domains,' and separated the aquatic from the land flora.

Fossil Plants.—It was not till the beginning of the 19th century that anything of importance was done in the study of fossil plants, and the first book published in Britain on the subject was Lindley and Hutton's *Fossil Flora of Great Britain* (1831-7). This study has confirmed the theory of evolution; for with plants, as with animals, there is an upward tendency from the lower and older to the higher and more recent rocks. In the Primary or Palæozoic rocks seaweeds occur as low as the Silurian; and in the Upper Silurian, ferns, horse-tails, and lycopods, which attained their maximum in Carboniferous times, marked also by conifers and cycads. Palms and dicotyledons appear in early Tertiary times.

See A. Kerner, *The Nat. Hist. of Plants* (Eng. trans. by F. W. Oliver; new ed. 1902); Henfrey, *Elementary Course of Botany* (4th ed. 1884); Henslow, *How to Study Wild Flowers* (1896); Lord Avebury, *British Wild Flowers*, 'Nature Series' (1873).

Botany, bay and suburb (5 m. s.) of Sydney, New South Wales, a popular picnic resort, with a magnificent beach (Lady Robinson's Beach) on the w. side of Botany Bay. On the s. side of the bay is a monument commemorating the landing of Cap-

tain Cook on April 28, 1770. The place is popularly associated with the transportation of criminals (stopped in 1840), the British government having sent Commodore Phillip to found a penal settlement there in 1787. He, however, selected a more suitable site a little farther north. Pop., including Botany North, 7,200.

Bot-fly, or HORSE BOT-FLY (*Gastrophilus equi*), an insect which lays its eggs on the hair of horses, especially the hair of the legs and breast. The animal, apparently owing to irritation having set up at the spot, licks the eggs or larvæ off, and the latter thus ultimately reach the stomach. Here they attach themselves to the mucous membrane, and feed on the gastric secretions. When mature, the larvæ quit the body of the host with the fæces; and after pupation the winged adults emerge, to begin the cycle anew. The warble-flies (*Hypoderma*) of oxen and the nostril-flies (*Æstrus*) of sheep are related forms, to which the name of bot-fly is sometimes extended.

Both, JAN (1610-52), Dutch painter, one of the first of his countrymen to become Italianized. He went to Rome with his brother Andreas (1609-50), who painted figures and animals into his landscapes. His subjects are the Italian lakes; his work is in the style of Claude Lorraine, wrought in warm colour, with beautiful sunlight effects. Chief works: *Landscape with Muleteers*, and five others (National Gallery, London); *Artist studying from Nature* (Amsterdam, Van der Hoop collection); *Baptism of the Eunuch* (Buckingham Palace, London); and landscapes in Dulwich, S. Kensington, and Wallace collections, London. See H. Havard's *Dutch School of Painting* (trans. by G. Powell, 1885).

Botha, LOUIS (1863), premier of Transvaal (1908) and first prime

minister of the Union of South Africa (1910), was born at Greytown, Natal, but spent most of his early life in the Vryheid district of the Transvaal. In the old days he fought under Lukas Meyer, when he went to the assistance of Dinizulu, and also joined his friend in founding the 'New Republic' in 1884. As a member of the Volksraad for Vryheid, he, together with Delarey, took a liberal view in politics. When war was declared, Assistant Field-cornet Louis Botha fought as Lukas Meyer's subordinate at Dundee (October 1899); but when his old friend retired, ill, to Pretoria, Botha was given the command of the Utrecht, Vryheid, and Wakkerstroom commandoes. On December 6, 1899, Botha was appointed commander of the Tugela positions, against General Buller; and on March 27, 1900, on the death of General Joubert, he succeeded him as commandant-general. Botha's history from the time he assumed command on the Tugela is, in fact, the history of the war from Colenso (Dec. 15, 1899) down to the signing of the terms of surrender at Vereeniging (May 31, 1902). An effort to bring about a cessation of hostilities was made by Kitchener and Botha in Feb. 1901; but the latter broke off the negotiations on March 16. Soon after the conclusion of peace, Botha, with De Wet and Delarey, left S. Africa on a mission to England, where they were received by King Edward VII. (Aug. 17, 1902). Since his return home to S. Africa General Botha has taken a prominent part in all movements directed towards the abolition of racialism, and the development of a united South African nation. He was delegate to the Colonial Conference of 1907, and was made a Privy Councillor. He also took a prominent part in the National Convention

which drafted the South African Constitution. He is married to a lady who claims a blood relationship with Robert Emmet, the Irish patriot.

Bothie, or BOTHY, a small cottage or hut; also a house for the accommodation of the unmarried outdoor male labourers in the employment of a farmer in Scotland, in which the inmates prepare their own food, and live without any domestic assistance. In some localities unmarried female farm-labourers are similarly lodged.

Bothnia. See SWEDEN. For GULF OF, see BALTIC SEA.

Bothriocephalus, a genus of tapeworms, of which *B. latus*, the broad or Russian tapeworm, occurs frequently in man. The first stage occurs in fish, especially the pike and burbot. In consequence, the parasite is particularly common in countries where much fish is eaten in an uncooked or imperfectly-cooked state. The adult tapeworm has two suckers, but no hooks, and may reach a length of eleven yards; the eggs hatch into free-swimming ciliated embryos—a very remarkable fact among tapeworms.

Bothwell, tn. and par. (13,595 ac.), N. Lanarkshire, Scotland, on r. bk. of river Clyde, 8 m. S.E. of Glasgow; sandstone quarries, coal mines, and iron mines. Part of the town is a residential quarter for Glasgow merchants. About a mile S.E. is Bothwell Brig, in the haughs around which (June 22, 1679) the Covenanters were routed by the Duke of Monmouth. (See Scott's *Old Mortality*.) Joanna Baillie, the poetess, was born here in 1762. Pop. par. 46,000; tn. 3,000.

Bothwell, JAMES HEPBURN, FOURTH EARL OF (?1536-78), husband of Mary Queen of Scots, was descended from a family connected with the Hepbornes or Haybourns in Northumberland, of whom the first to settle in Scotland was Sir Adam. Patrick,

third Lord Hailes, created Earl of Bothwell in 1488, owed his earldom and the increased prosperity of his family to his support of James IV. against James III. at Sauchieburn. His grandson, Patrick, third earl (?1512-56), was at an early period of his career concerned in intrigues with England, and although afterwards a strenuous supporter of Beaton and Mary of Guise (for whose hand he became a suitor), he in 1547 entered into a secret agreement with England. The son, fourth earl, after succeeding (1556) his father, led certain Border attacks on the English, and in October 1559 intercepted £3,000 sent by Elizabeth for the use of the Lords of the Congregation. In 1560 the queen-dowager entrusted him with a special mission to France. After her death he was, in January 1564, sent a prisoner to England, whence he was permitted to go to the Continent. Recalled by the queen in 1565 to assist her in subduing Moray's rebellion, he, after the murder of Rizzio in March 1566, gradually acquired a supreme influence in her counsels; and there can be no doubt that his determination to secure her hand was the chief cause (though there were others) of Darnley's murder. At the same time, both he and the queen were the dupes of cooler and cleverer intriguers, and his marriage rendered the ruin of both inevitable. At Carberry Hill (June 15, 1567) the queen, to save Bothwell's life, made arrangements by which he should be permitted to escape. After lurking for some time in the north of Scotland, he made an attempt to establish himself in the Orkneys as a kind of pirate; but on being pursued by Kirkaldy of Grange, he escaped to Denmark, arriving at Copenhagen on September 30, 1567. At first he met with a favourable reception, but he was never at liberty. In June 1573

he was removed from the castle of Malmö to close imprisonment at Drangholm, in Zealand, where he died (Apr. 14, 1578). He was succeeded by FRANCIS STEWART HEPBURN (d. 1624), eldest son of John Stewart, prior of Coldingham (an illegitimate son of James V.), his mother being Lady Jane Hepburn, only sister of the fourth Earl of Bothwell. Inheriting in excess the unruly characteristics of the Hepburns, the fifth earl, as a veiled pretender to the throne, kept King James VI. in perpetual perturbation, until the king, in February 1594-5, persuaded the kirk to excommunicate him; upon which he fled the kingdom, and died in great poverty at Naples. See the various histories of Scotland; *Les Affaires du Conte de Boduel* (Bannatyne Club, 1829); Memoir in Chalmers's *Life of Mary Queen of Scots*; Schi-ern's *Life of Bothwell* (English ed. 1880). Ayton has made the fourth earl the subject of a long poem, and Swinburne of a drama (1874).

Botocudos, a primitive Brazilian people who are at present confined to the Aymores coast range between the Rio Doce and Ilheos, but who formerly occupied a great part of the eastern seaboard, and spread inland as far as the Tocantins basin. Owing to their savage customs, cannibalism, and intractable disposition, they were treated as wild beasts by the early European settlers, and their numbers were thus reduced from perhaps 60,000 or 70,000 to less than 15,000 in 1900. They call themselves *Nac-nanuk*, 'sons of the soil,' and undoubtedly represent the aboriginal element in E. Brazil, being distinguished by round, flat features, rather oblique eyes, small nose, and a general Mongolian expression, heightened by a dirty yellowish complexion.

Botone, or BOTONNY, in heraldry, said of a cross the ends of whose arms are shaped like trefoils or buds.

Botosani, or **BOTOSHANI**, tn., Roumania, 60 m. N.N.W. of Jassy; divided into an inner, badly-built town, and handsome suburbs full of boyar palaces. Pop. 33,000, over sixty per cent. of whom are Jews.

Bo Tree, also called **PIPAL** or **PEEPUL**, the *Ficus religiosa*, or sacred fig tree of India, held in veneration by the sect of Vishnu (who is said to have been born under its leaves), and also by the Buddhists. It is a tree of considerable size, with sap abounding in caoutchouc, while it also yields lac, the lac insect making its abode in the branches.

Botrychium. See **MOONWORT**.

Botta, **CARLO GIUSEPPE GUGLIELMO** (1766-1837), Italian historian, born in Piedmont; favoured the French revolutionary party, and, after suffering imprisonment for his views (1792-4), entered the French service as military surgeon. After holding posts in Italy, he became a member of the French legislative body (1804), and was appointed rector of the academies of Nancy and Rouen (1817-22). In 1809 Botta published at Paris his *Storia della Guerra dell'Indipendenza d'America*. More important is the *Storia d'Italia dal 1789 al 1814* (Par. 1824; Eng. version, Lond. 1826), a narration of events of which the author had largely been an eyewitness. He shows himself a partisan throughout; but the work is written with an enthusiasm and in a style which secured it a great popular success, and the prize of the Accademia della Crusca. A third essay, the *Storia d'Italia continuata da quella del Guicciardini dal 1534 al 1789* (1832), is a comparative failure. See *Lives* by Dionisotti (1868) and S. Botta (1877); also Pavesio, *C. B. e le sue Opere Storiche* (1874).

Botta, **PAUL EMILE** (1802-70), archaeologist, son of the preced-

ing, born at Turin. He became successively French consul at Alexandria, Mosul, Jerusalem, and Tripoli. In 1843 he began a series of archæological investigations among the Babylonian ruins, and conveyed to Paris a large number of fragments of monuments, which now form an Assyrian museum. His chief works are *Mémoires de l'Écriture Cunéiforme Assyrienne* (1848), *Monument de Ninive* (1849-50), and *Lettres sur ses Découvertes à Khorsabad* (1845).

Bottego, **VITTORIO** (1861-97), Italian traveller, explored the Juba (1892-3). In the course of a second journey (1895-7) he explored the region around Lakes Margherita and Rudolf, and the sources of the Sobat, but was killed by the Somalis. He wrote *Viaggi di Scoperta nell'Cuore dell'Africa* (1895). His second journey is described in Vannutelli and Citeri's *Seconda Spedizione Bottego* (1899).

Bottesini, **GIOVANNI** (1823-89), famous player on the double-bass, was born at Crema in Lombardy, and died at Parma. After studying at Milan, he made tours over Europe and America, often visited Britain (first in 1849), and everywhere created an immense sensation. He was also a director—e.g. at Paris (1855-7), Palermo (1861-2), Barcelona, London (1871), Cairo. In 1887 his oratorio, *The Garden of Olivet*, was produced at the Norwich musical festival. He also composed operas, and wrote a work on his instrument.

Botticelli, **ALESSANDRO** ('**SANDRO**') **DI MARIANO FILIPEPPI** (1447-1510), Florentine painter, took his name from the goldsmith to whom he was apprenticed. For painting he was placed under the best master of the day, Fra Lippo Lippi, and later studied with Pollaiuolo and Leonardo. Botticelli was a man of marked originality and poetical imagination, and by nature a mystic and sym-

bolist. His work is marked by brilliance of colour, admirable lineal decoration, and exquisite delicacy in the execution of flowers, foliage, stone-work, jewels, etc. There is charm in his figures—in the melancholy of the face, in the floating, curving draperies. The known details of his life are few. His finest work was done under the patronage of the Medici. He owed the inspiration of his mythological and classical subjects to the poet Poliziano, and to Leon Battista. In 1478, upon the murder of Giuliano de' Medici, he painted the portraits of the murderers on the walls of the Bargello; and in 1480 he commemorated Lorenzo's victory over the Pazzi faction by painting the fine *Pallas and the Centaur* now in the Pitti Palace. In the *Adoration of the Magi* (Florence Academy) all the members of the Medici family are represented as participating in the scene. In 1481 he was called to Rome, and there painted in the Sistine Chapel three frescoes, containing admirable groups of energetic, vital figures. His chief paintings comprise *Venus rising from the Sea* (Uffizi, Florence); *Spring, or Venus and the Graces* (Florence Academy); the exquisite circular panel of *Madonna and Child* (Uffizi); *Annunciation* (Uffizi); *Venus and Mars* (National Gallery, London); *Calumny* (Uffizi). In 1500 he painted the symbolical *Nativity* (National Gallery, London). In his later years he devoted himself to engraving, and, since his income from painting ceased, he fell into such distress that he would have died of hunger but for the charity of Lorenzo de' Medici and other friends. Among these engravings are the designs (Berlin) of the *Inferno* for Landino's edition of Dante (1481)—slight suggestive sketches that reveal the fantasy of the artist rather than the conception of the poet. There are about 250 engravings, dating to

the end of the 15th century, drawn with severe outline and straight lines of shading; the subjects are religious and mythological. Of these, Botticelli is usually credited with the design, and Baccio Bandini with the execution. See Supino, *Sandro Botticelli* (1900); Plunkett, *Sandro Botticelli* (1900); Steinman, *Botticelli* (Eng. trans. 1901); Berenson, *Florentine Painters of the Renaissance* (1898); Cole, *Italian Masters* (1892); Cartwright, *Sandro Botticelli* (1904); Crowe and Cavalcaselle, *History of Painting in Italy* (1864); and H. P. Horne, *Botticelli* (1908).

Böttiger, CARL VILHELM (1807-78), Swedish author; professor of æsthetics (1856) and modern literature (1858) at the University of Upsala; early published several volumes of poetry remarkable for great beauty of style, and a mild elegiac tenderness not without a touch of morbid sentimentality—e.g. *Nyare sanger* (1833) and *Lyriska Stycken* (1837-9). Böttiger's *Mémoires* of his father-in-law, Tegner, whom he succeeded as a member of the Academy, Stagnelius, Kellgren, and others, are admirable both as literature and as criticism. His collected works appeared in 6 vols. (1856-81).

Bottini, ENRICO (1837-1903), Italian surgeon, was born at Stradella, prov. Pavia. In 1865 he became lecturer in obstetrics and surgery at Novara. In 1866 he anticipated Lord Lister by publishing a work on the use of carbolic acid in surgical operations; and he was one of the first to recognize the part played by parasitic organisms in the etiology of morbid conditions. In 1877 he was appointed professor of surgery at Pavia, a chair occupied by Scarpa and Porta. Here he distinguished himself by remarkable advances in operative surgery. In 1887, on the death of Depretis, he resigned his chair



Botticelli's 'Virgin and Child, with St. John and an Angel'
(National Gallery, London).

on his election as deputy for Stradella. He returned for a time to his professorship, but died in retirement at San Remo.

Bottle, a vessel with a narrow mouth for holding liquids. The first bottles were probably made of the skins of animals, principally goats. Not only are skin bottles represented on the monuments of Egypt, but Herodotus describes how those Egyptian bottles were made—by sewing up the skin and making one of the legs to serve as a neck. Repeated reference is made in Scripture to the skin bottles of the ancient Hebrews, and vessels of this nature were also used by the Greeks and Romans. Skin bottles are still employed in S. Europe, W. and Central Asia, and Africa for holding wine or water. But the ancient Egyptians had bottles and vases of various other materials, such as stone, alabaster, porcelain, ivory, gold, silver, bronze, and glass, some of them of beautiful design. The Phoenicians and Romans also made bottles of glass. Earthenware bottles were possessed by the Egyptians and Hebrews, and are still used in the East. Venice held the monopoly of the manufacture of glass bottles during the middle ages. In China, beautiful bottles of various forms and substances, such as jade, agate, and rock-crystal, have long been known.

Bottles made of the dried rind of gourds are used by the Italian peasantry. In the middle ages leather bottles were in common use in Europe, and the sign 'The Leather Bottle' is still used for inns. Modern bottles are mostly made of glass, though earthenware or stoneware bottles for special purposes are extensively manufactured. Some years ago the manufacture of unbreakable paper bottles was started in the United States. A long slip of paper is made into a tube by

being wound round a revolving mould; the bottom and neck are afterwards added. The outside is glazed, and the inside coated with an acid-resisting medium.

Bottle-making is the simplest branch of glass-working. The operator gathers sufficient molten glass on the end of his blowpipe, partially inflates it by the breath, and drops it into a brass or iron mould, in which it is blown into its permanent form. The jagged mouth is moulded in the working furnace or 'glory-hole,' and the bottle is placed in the 'leer' or annealing tunnel, where it is tempered. The moulds, which are either in two pieces, hinged at the base, or in three pieces, one for the body and two for the neck, are kept at a red heat during use. The blowing is now done, especially in the case of wide-mouthed bottles and jars, by machinery. See GLASS.

Bottle Chart. See OCEAN, CIRCULATION OF.

Bottle Gourd, or CALABASH, a plant of the genus *Lagenaria* and order Cucurbitaceæ. The common bottle gourd is a native of India, and is cultivated in other warm climates. It is a creeping plant with white flowers, and its bottle-shaped fruit, with a hard rind, used for holding water, is termed a calabash.

Bottle-nose, in zoology, a name applied to various members of the order Cetacea, but especially to *Hyperoödon rostratus*, the bottle-nose whale, which reaches a length of about 30 ft., and inhabits the N. Atlantic Ocean. It resembles the sperm whale in possessing an oil cavity on the top of the head, from the contents of which spermaceti is made. The blubber also yields a valuable oil resembling sperm oil. As in the case of the sperm whale, the food consists chiefly of cuttles.

Bottling Machine, a machine constructed for filling bottles.

Many machines have been patented for the purpose, suitable for bottles provided with corks and for those with glass ball stoppers, the latter being chiefly used for aerated waters. Previous to bottling, care must be taken to see that the bottles are thoroughly clean, by leaving them in hot water containing soda, and washing them afterwards in cold water. The bottling machine for ordinary liquor is of a simple character, the commonest consisting of a small trough connected with a barrel, the contents of which flow through six siphon tubes by sucking the air out of which the workman starts the machine. The aerated-water machine is more complicated, as provision is made for the bottle being raised into position and filled, while means have to be taken to prevent the escape of gas, and to lift the glass ball in order to close the neck of the bottle. The best machine of the kind is that of Codd.

Bottomley, HORATIO W., financier, journalist, and sportsman; has been Liberal M.P. for South Hackney since 1906; nephew of George Jacob Holyoake, the founder of the modern co-operative movement, and friend and political colleague of Charles Bradlaugh; closely connected with many financial undertakings and several successful journalistic enterprises, notably the *Financial Times*, *John Bull*, and *Mrs. Bull*, which he founded. He came prominently before the public as the principal defendant in the famous case of *Reg. v. Bottomley and Others*, tried before Mr. Justice Hawkins in 1893.

Bottomry. Money advanced to a shipowner or his agent in the course of a voyage, for the use of a ship and on the security of a ship (a ship's *bottom*), the repayment of which is conditional on the ship reaching its destination, is known as bottomry. A

bottomry contract must be in writing; it is a bottomry bill if it is a deed poll, a bottomry bond if in the form of a bond. A captain or master has an implied authority to borrow money on bottomry, but only for the purpose of completing the voyage, and if all other means of raising money fail. Bottomry takes priority over a mortgage, or a subsequent purchase without notice, but not over claims for wages, salvage, pilotage, etc. When several bottomry bonds are given owing to necessity, the later rank for payment before the earlier, the latest ranking first. If the ship be lost during the completion of the voyage, the holder of a bottomry bond loses his money.

Bottrop, comm., dist. Münster, prov. Westphalia, Prussia, 9 m. N.E. of Duisburg, with coal mines. Pop. 34,000.

Botulism. See FOOD POISONING.

Botzaris. See BOZZARIS.

Botzen. See BOZEN.

Bouch, SIR THOMAS (1822-80), English civil engineer, was born at Thursley, Cumberland. In 1849 he became manager and engineer of the Edinburgh and Northern Ry., now part of the N.B.R. system, and proposed and carried into effect a 'floating railway' for shipping goods trains across the firths of Forth and Tay. He designed several large railway viaducts, including the Redheugh viaduct at Newcastle, and the Deepdale and Beelah viaduct on the South Durham and Lancashire Ry. He is best remembered as the designer of the first Tay Bridge, begun in 1870 and finished in 1877. In June 1879 he was knighted. The bridge fell on Dec. 28, 1879, with a train loaded with passengers which was crossing. He never recovered from the shock, and died the following year.

Boucher, FRANÇOIS (1703-70), French painter and decorator of the Louis XV. period. He was the pupil of Le Moine, and was to some extent influenced by Watteau. His imagination was extremely fertile, his hand facile, and his brilliant, daring, superficial work appeals frankly to the eye and to the senses. A hard worker, he lived also a life of pleasure, and gradually the precision of his early work gave way to the perfunctory and unpleasing pictures of his decadence. His decorations for the boudoir of Mme. de Pompadour, his friend and patroness (some of his most charming work), were bought by the Marquis of Hertford. He painted several portraits of his patroness, one of which is in Edinburgh, another in South Kensington; and also painted pastoral and religious subjects, designed tapestry, and executed scene-paintings. He was professor of painting in Paris (1744), member of the Academy of Painting (1734), and was appointed (1765) painter to the king. After France, the Wallace Collection, London, possesses the greatest number of his pictures. See Lady Dilke's *French Painters of the Eighteenth Century* (1899), and Haldane MacCall's *Boucher: the Man, his Times, his Art, and his Significance* (1908).

Boucher de Crèvecœur de Perthes, JACQUES (1788-1868), French author and archæologist, who advocated extreme views of the antiquity of man, basing his arguments on the human remains found in the Moulin-Quignon quarry, near Abbeville. His chief works are *De la Création* (1839-41) and *Antiquités Celtiques et Antédiluviennes* (1846-65). See *Life*, in French, by Ledieu (1885).

Bouches-du-Rhône, dep. of S. France, on the Mediterranean, E. of the Rhone. It contains large tracts of uninhabitable

land, such as the Camargue, or alluvial and malarial delta of the Rhone; the Crau, on the l. bk. of the E. branch of the Rhone, considered as an ancient stony delta of the Durance; and the Etang de Berre. The coastline is 80 m. in length. The east is hilly, being traversed by three ranges more or less parallel to the coast. The climate is hot and dry, with occasional strong north winds (*mistral*). The chief product is fruit, such as the olive, fig, almond, and mulberry. Cattle, horses, and sheep are extensively raised. The only minerals are lignite and bauxite. Industry and commerce are mainly concentrated in Marseilles, the capital. Area, 2,026 sq. m. Pop. 766,000.

Boucicault (orig. BOURCICAULT), DIONYSIUS ('DION') LARDNER (1822-90), Irish dramatist and author, made his first appearance at the Princess's in 1852, and was considered the best 'stage Irishman' of his day. His first play, *London Assurance*, won success at Covent Garden in 1841. His title to fame, however, rests on *The Colleen Bawn* (Adelphi, 1860), *The Octoroon* (Adelphi, 1861), *Arrah-na-Pogue* (Princess's, 1865), and *The Shaughraun* (Drury Lane, 1875), which are of the best type of romantic domestic melodrama. He spent many years (1853-60 and 1876-90) in New York, where many of his plays were produced; but his last appearance as an actor was made in London in 1886.

Boufarik, or BOUFFARIK, tn., Algeria, 23 m. S.S.W. of Algiers by rail, now one of the healthiest spots in Algeria. Pop. 10,000 (Europeans, 5,800).

Boufflers, STANISLAS, MARQUIS DE (1738-1815), French poet, born at Nancy. He became a marshal (1784), governor of Senegal (1785), and member of the French Academy (1788). At the revolution he retired to Berlin, returning to Paris in 1800. His *Œuvres Com-*

plètes were published in several editions (e.g. in 4 vols. 1817). They include *Voyage en Suisse* (1770), a good collection of letters; *Aline* (1761), a story; and *Poésies et Pièces Fugitives* (1782). An edition of his *Poésies Diverses* was published by Uzanne in 1886.

Bougainville, isl. of Solomon group, Pacific Ocean, discovered by Bougainville in 1768; is separated from Choiseul I. by Bougainville Strait. It is 150 m. long by 30 m. wide; alt. 10,000 ft.

Bougainville, LOUIS ANTOINE DE (1729-1811), French admiral, served in Montcalm's campaign in Canada (1756-9), and again in Germany during the Seven Years' war. After a futile attempt to colonize the Falkland Is., he commanded the first French expedition round the world (1766-9), which led to many important geographical discoveries. Bougainville acted as a naval commander in the North American war, and in 1780 became a field-marshal. Napoleon made him senator and count. See his *Voyage autour du Monde* (1771-2; new ed. 1889); Pascal's *Essai sur la Vie et les Ouvrages de Bougainville* (1831).

Bougainvillea, in botany, a genus of the order Nyctaginaceæ, a native of S. America. The flowers are almost hidden by large red or purple membranous bracts, which form magnificent masses of inflorescence. *B. spectabilis* is grown extensively as a creeper.

Bough, SAMUEL (1822-78), Scottish landscape painter, was entirely self-taught, and spent much of his early life wandering about the country sketching. His occupation as scene painter in Manchester (1845), and later in Glasgow and Edinburgh, influenced strongly his later landscape work. About 1849 he was induced by Macnee to devote himself to landscape, and in 1857 became A.R.S.A., and R.S.A. in 1875.

The best of Sam Bough's work is in water-colour, and is marked by boldness of execution and command of atmospheric effects. See his works in Edinburgh National and Glasgow Art Galleries; also *Sam Bough*, by S. Gilpin (1906); and Sarah Tytler's *Modern Painters* (1873).

Boughton, GEORGE HENRY (1836-1905), one of the most graceful and refined of English painters, settled in London in 1862. He was a constant exhibitor at the Royal Academy, to which he was elected associate in 1879, and member in 1896. In 1886 he published, in conjunction with E. A. Abbey, a volume of *Sketching Rambles in Holland*. *Weeding the Pavement* is in the Tate Gallery, London. See Muther's *Hist. of Modern Painting* (1895-6).

Bougie (Fr. 'candle'), a solid cylindrical instrument passed by surgeons into the membranous passages of the body — e.g. the gullet or urethra. Bougies are made in various sizes and materials. The term is also applied to rods of substances which melt at the body temperature, and are introduced into the body passages as a vehicle for various drugs incorporated with them.

Bougie (anc. *Saldæ*; Arab. *Bejaia*), fort. seapt., Algeria, on bay of the same name, beautifully situated on the slope of Mt. Guraya (2,300 ft.), 120 m. by rail E. of Algiers. It has a large trade in oil and wax, and is celebrated for its wax candles. In the 5th century it was made by Genseric the capital of the Vandal kingdom in Africa. In 708 it was conquered by the Arabs; and in the 10th century a Berber tribe, the Bejaia, took possession of the town, gave it their name, and raised it to such importance that it was called 'Little Mecca.' It had then a population of 100,000, and was the entrepôt between N. Africa and Europe. In 1152 it

became subject to Morocco, and in 1555 to the deys of Algeria, and under their rule it sank lower and lower, until, when the French occupied it in 1833, it was merely a ruinous village. The French have transformed it into a strongly fortified place, which is rapidly growing through commerce. Pop. 16,600 (Europeans, 5,000).

Bouguer, PIERRE (1698-1758), French mathematician, born at Le Croisic in Brittany. With La Condamine, Jussieu, and Godin, he was engaged (1735-42) in measuring a degree of meridian among the Cordilleras of S. America, and put together the results of his discoveries in *Théorie de la Figure de la Terre* (1749). Among other things, he investigated the height of the snow-line, the inclination of the orbits of planets, the expansion and contraction of metals, the deviation of the plummet, density of the atmosphere, and refraction. His experiments in measuring the intensity of light are contained in *Traité d'Optique* (1760).

Bouguereau, GUILLAUME ADOLPHE (1825-1905), French painter, was a pupil of Picot, and studied in Rome (1850-5). His first Salon picture was *Egalité* (before the Angel of Death), in 1849, and he afterwards contributed regularly to the old Salon. He also painted many portraits, and executed decorative work in the churches of St. Clotilde and St. Augustin at Paris. His pictures are mythological, semi-religious, and fanciful in subject. Among the chief are the celebrated *Vierge Consolatrice*, *La Jeunesse et l'Amour* (1877), *Le Triomphe du Martyre* (1855), at the Luxembourg, Ghent, Marseilles, Dijon, and Bordeaux museums have pictures by him; but the greater number are in private hands, many in America. His *Triomphe de Vénus* (1856) is well known through en-

gravings of it. See Rose Kingsley's *Hist. of French Art* (1899), and Brownell's *French Art* (1902).

Bouhours, DOMINIQUE (1628-1702), Jesuit and etymologist, was born at Paris; entered the order of the Jesuits at sixteen, and became professor of grammar and rhetoric at Paris and Rouen. In 1666 he returned to Paris as tutor to Colbert's eldest son. His works, which were severely assailed by Ménage and others, include *Entretiens d'Ariste et d'Eugène* (1671), *Doutes sur la Langue Française proposés à MM. de l'Académie* (1674), *Manière de bien penser dans les Ouvrages d'Esprit* (1687), and a Life of Francis Xavier, which was translated into English by Dryden (1688). He is specially remembered for the epitaph he wrote on Molière.

Bouillabaisse, or BOUILLABAISE, a dish popular in France, especially in the south. It is a kind of stew composed of all kinds of fish, including shell-fish, with herbs and condiments. See Thackeray's *Ballad of Bouillabaisse*,

Bouillé, FRANÇOIS CLAUDE AMOUR, MARQUIS DE (1739-1800), French general, born at Cluzel, in Auvergne, of a noble French family. As governor of Guadeloupe he defended (1778-82) the French Antilles, and captured several islands from the British. As commander-in-chief of the army of the Meuse, the Saar, and the Moselle, he repressed the insurrection of the garrisons of Metz and Nancy (1790). In 1791 he attempted to rescue Louis XVI. during the flight to Varennes. Having been exiled, he entered the Swedish army, and later served under Condé. Finally he settled in England in 1794, and died in London. He published, in English, *Memoirs relating to the French Revolution* (1797).

Bouilly, JEAN NICOLAS (1763-1842), French dramatist and au-

thor, was born near Tours. The sentimental vein in his works procured him the surname of the *poète lacrymal*. Two of his comic operas have music by Grétry (*Pierre le Grand*) and Cherubini (*Les Deux Journées*) respectively; others were *L'Abbé de l'Épée* (1795), *Fanchon* (1803), *Mme. de Sévigné* (1805). He also wrote *Contes à ma Fille* (1809) and *Conseils à ma Fille* (1811). He held various public appointments during the revolution. See Carré de Busserolles's *Notice Biographique de J. N. Bouilly* (1875).

Boulainvilliers, HENRI, COUNT DE (1658-1722), French historian, born in Normandy. His works include *Histoire des Arabes* (2 vols. 1731), and an incomplete *Vie de Mahomet*.

Boulak. See BULAK.

Boulangier, GEORGE ERNEST JEAN MARIE (1837-91), French general and agitator, was born at Rennes, and educated at St. Cyr. He saw service in Algeria, Italy, and Cochinchina, and was at Metz with Bazaine in 1870; but he escaped capture by the Germans, and shared in the defence of Paris. He was appointed brigadier-general in 1880, and commanded the army of occupation in Tunis in 1884-5. In January 1886 he was appointed minister of war in the Freycinet cabinet, when the various manifestations of his strongly democratic spirit soon made him the idol of the populace—'*Le Brave Général*.' In May 1887, however, he was removed from the office of war minister, and shortly afterwards placed under arrest for attacking his successor, and in March 1888 was deprived of his command and placed on the retired list. In July 1888 he fought a duel with the prime minister, M. Floquet, whom he had insulted. Boulangier, now the idol of the Parisian populace, was returned for the city by a crushing majority, and was also favoured

by the royalists; but on April 2, 1889, he caused considerable excitement by suddenly disappearing from Paris, to escape an impending prosecution by the French government. At the elections in September Boulangism suffered a crushing defeat, though Boulangier himself was returned for the Montmartre division of Paris. His election, however, was declared invalid, and his opponent was awarded the seat. On Sept. 30, 1891, Boulangier committed suicide in a cemetery near Brussels. See Chincholle's *Général Boulanger* (1889), and Verly's *Gén. B. et la Conspiration Monarchique* (1893).

Boulay de la Meurthe, ANTOINE JACQUES CLAUDE JOSEPH, COMTE (1761-1840), French politician; born at Chaumouzey in the Vosges. He was minister of state during the 'Hundred Days,' and was banished from 1815 to 1819. He published *Bourrienne et ses Erreurs* (2 vols. 1830), and two works on the English revolutions.

Boulder. (1.) Co. seat of Boulder co., Colorado, U.S.A., 30 m. N.W. of Denver, on Boulder Creek. There are valuable gold and silver mines in the vicinity, and oil is also found. The town has large smelting works. Pop. 6,200. (2.) Mining tn. on Coolgardie goldfield, W. Australia, about 360 m. E. by N. of Perth. Pop. 5,700; of dist. 20,000.

Boulder Clay, or TILL, a tough, unstratified clay, full of boulders, spread over wide areas of the northern hemisphere. It covers most of the low grounds of Scotland and Northern and Central England, most of N. America north of the latitude of New York; in Europe, it is largely developed in Sweden, Germany, Poland, Denmark, and Switzerland. The boulders vary in size, the largest being many yards in length; they are, in the main, striated and rounded, the scratches being parallel to their

longer axis, and they have often been carried for long distances. It is believed that the boulder clay was formed beneath the great moving ice sheets of the Glacial period. An enormous amount of detritus, arranged in layers, is contained in the Arctic ice-cap and glaciers. Should the ice melt back, this material would form a deposit closely akin to boulder clay. It is sometimes of great thickness—200 to 300 ft. in Scotland and N. America, and even 700 ft. in N. Germany. Layers of sand and irregular patches of gravel are often mixed with the clay; the latter is fine-grained, and impermeable to water, and varies in colour with the rocks from which it has been derived, but is mostly dark gray, weathering to brown. The boulder clay is, as a rule, unfossiliferous, but contains occasional layers of peat, and other deposits which have been formed during a recession of the ice-sheets, and are known as interglacial beds. The surface of the clay is rarely level, usually showing rude, rounded hummocks, known as drumlins, often with shallow, marshy pools between them. See J. Geikie's *Great Ice Age* (3rd ed. 1894) and his *Earth Lore* (1893), G. F. Wright's *Ice Age in North America* (1889), Bonney's *Ice Work* (1872), and A. Croll's *Climate and Time* (new ed. 1885).

Boulē, an advisory council in ancient Greece. The best known is the Athenian Boulē, which was at first the same as the Areopagus but under the Solonian scheme became a committee of the Ecclesia. See AREOPAGUS and ECCLESIA.

Boulenger, PIERRE EMMANUEL HIPPOLYTE (1838-74), Belgian painter, born in Tournay. He early took to landscape painting, and achieved for Belgian art very much what Corot did for that of France. Under his influence arose the Société

Libre des Beaux-Arts (1868), and its journal, *L'Art Libre* (1871), wherein young painters defended their methods and ideals. See Lemonnier's *Histoire des Beaux-Arts en Belgique* (1881).

Boulevard (Fr.; Ger. *bollwerk*, and Eng. 'bulwark') originally denoted the outer fortifications or ramparts of a town. The term is now applied to a broad avenue on the site of the demolished fortifications, planted with rows of trees. The boulevards of Paris are the finest in Europe.

Boulger, DEMETRIUS CHARLES (1853), founder and some time editor (1885-90) of the *Asiatic Quarterly Review*, has published several important works on Eastern subjects—e.g. *Life of Yakoob Beg of Kashgar* (1878); *England and Russia in Central Asia* (1885); *History of China* (1900); *Life of Gordon* (1896); *The Congo State* (1898); *India in the 19th Century* (1901)—*Belgian Life in Town and Country* (1904); and *The Life of Sir Halliday Macartney, K.C.M.G.* (1908).

Bouliguine, A. G. (1851), Russian administrator. He was made judge of Tambov in 1871, and in 1874 entered the ministry of the interior. In 1887 he became vice-governor of Tambov, and in 1893 governor of Moscow under Grand Duke Sergius (assassinated Feb. 17, 1905). In the same month he was appointed minister of the interior on the resignation of Prince Sviatopolk Mirsky. His name has been associated with a number of projected reforms.

Boulimia, an excess of appetite, often arising from an irritated stomach, or in the course of certain nervous disorders.

Boulogne-sur-Mer, seaside resort, dist. tn., and harbour on the English Channel, dep. Pas-de-Calais, France, at mouth of the Liane, 130 m. N.N.W. of Paris, and connected with Folkestone by a daily cross-Channel service.

The Haute-Ville, a square surrounded by ramparts built in the 13th century, occupies the hill-top on the right bank of the river. The Basse-Ville lies between the old town and the river. The quarter on the left bank is called Faubourg Capecure. The beach and the casino are on the right bank. The harbour ranks first in France for herring and cod fishing. The imports (valued at over £4,000,000 annually) consist mainly of textiles, coal, and wood; the exports (annual value over £12,000,000), of eggs and fowls, dried fish, watches, tools, textiles, leather, and wine. There are steel and iron works, saw-mills, dyeworks, soap and pen factories, and cement works. Sainte-Beuve (1804-69) and Mariette (1821-81) were born here. Boulogne, the *Gesoriacum* (later *Bononia*) of the Romans, was in the hands of the English from 1544 to 1550. In 1802 Napoleon mustered an army at Boulogne with the intention of invading Britain. Pop. 50,000.

Boulogne - sur - Seine, s.w. suburb of Paris, France, between the fortifications, the r. bk. of the Seine, and the Bois de Boulogne, the pleasure-ground of the Parisians; it has laundries and chemical works. Pop. 50,000.

Boulton, MATTHEW (1728-1809), English engineer and inventor, was born at Birmingham, and founded the Soho metal-stamping works in 1762. Seven years later he became the partner of James Watt, inventor of the steam-engine, to whom Boulton's financial assistance and practical ingenuity were invaluable. This versatile man also designed (1788) machinery adopted by the Mint, and in 1797 he contracted for a new copper issue for Great Britain. See Smiles's *Lives of Boulton and Watt* (1865); Muirhead's *Life of Watt* (1859).

Boundaries. (1.) OF LOCAL AREAS. Large powers of altering areas were given by the Local Government Acts, 1888 and 1894, to the Local Government Board and the county councils, subject, in the case of the alteration of the boundaries of counties and boroughs, to confirmation by Parliament. The powers are of too detailed a nature to be set forth here, but the general effect is to enable the parish to be treated as the unit, and all other areas to be made to coincide in boundary with one or more parishes. Similar powers were conferred upon the Scottish Local Government Board and county councils by the Local Government Acts, 1889 and 1894. (2.) OF ESTATES. In modern English conveyances the land is generally fully described, often in a schedule which refers to an annexed map or plan, and gives the names by which the fields are commonly known, the state of cultivation, the names of the tenants, and the numbers on the plan; and in this way the boundaries can be accurately ascertained. But there are certain presumptions as to boundaries in the absence of evidence of a contrary intention, which may be shortly stated. When a boundary is described as running from one point to another, it is presumed to be a straight line between them. When property is bounded by a road or a river, the middle line of the road or river is presumed to be the boundary. A hedge on the boundary line is the joint property of adjoining owners; but when a hedge and a ditch separate two properties, both the hedge and the ditch presumably belong to the owner of the property on which the hedge stands. Strips of waste land beside a highway are presumed to belong to the adjoining owners. When trees overhang a boundary line, they may be

lopped by the adjoining owner back to the line. In Scots law, a bounding charter is a conveyance in which the boundaries of the land conveyed are set out in any way by which they can be definitely ascertained. Nearly all modern conveyances state the boundaries, but large estates which have long been held undivided are conveyed by name without boundaries. The fact that boundaries are stated does not prevent incorporeal rights such as salmon fishings and servitudes from passing with the estate.

Bounds, BEATING THE, is the popular name in England, as 'riding the marches' is in Scotland, for the annual ceremony of perambulation round the boundaries of a township or parish on Ascension Day. With the view of keeping alive the memory of the places where the boundaries ran, it used to be sometimes customary to whip the boys of the parish school at important spots during the perambulation. The practice of 'beating the bounds' is not yet wholly obsolete in England and Scotland (*e.g.* in Hawick, Linlithgow, Peebles, and Selkirk). 'Common riding' and 'riding the marches' are alternative names in Scotland.

Bounty. (1.) A grant made to the producers or exporters of particular articles, and therefore the opposite of tax. The general effect of bounties is to cheapen the commodities on which they are given, while their object is the encouragement of the particular industry. Remarkable cases of the use of bounties are: the English bounties on the export of corn (1688-1814), the continental bounties on beetroot sugar, and the French bounties on shipping. In some instances bounties have arisen from drawbacks—*i.e.* allowances made to exporters to compensate for special taxation; and, in a wider sense, all govern-

mental assistance may be deemed a bounty. The policy of bounties is, historically, a minor part of the mercantile and protective system. See **MERCANTILISM** and **PROTECTION**; also *Wealth of Nations* (bk. iv. ch. 5); Fawcett's *Free Trade and Protection* (4th ed. 1881, ch. 2, pt. 1). For recent British policy with regard to sugar bounties, see **BRUSSELS SUGAR CONVENTION**, and **SUGAR BOUNTIES CONVENTION**. (2.) The premium or reward offered in the royal navy of Britain to seamen who, in periods of stress, may voluntarily enter the navy. At the present day the system can hardly be said to exist in the old sense. As early as 1672 it appears to have first come into existence. In 1733 a proclamation was issued recalling all British seamen from the service of foreign powers, and offering 20s. bounty for an able seaman and 15s. for a landsman. In 1770, when a war with Spain was threatened, a bounty of £2 was offered; and, in addition to this, numbers of towns and cities voluntarily offered municipal bounties: for instance, London £2, Bristol £1, Edinburgh £2, 2s. to able, and £1, 1s. to ordinary, seamen; and so on. In 1795 an act was passed in pursuance of which each county had to furnish a proportionate number of men for the navy; and these were called 'quota men.' The quota bounty grew to an excessive amount—in one case to as much as £70. See **CONTINUOUS SERVICE**. (3.) **BOUNTY MONEY.** The Naval Agency and Distribution Act, 1864, provides for the appointment of a ship's agent to receive and distribute bounty to the officers and crew of a ship of war in respect of salvage services, penalties in respect of the breach of the merchant shipping laws, penalties under the customs laws, under the Slave Trade Acts, in respect of piracies, and for cap-

ture of foreign ships in time of war. Where a slave ship is captured by one of the King's ships, a bounty of £5 a slave or £4 a ton is payable to the crew under the Slave Trade Act, 1873. Bounties are also paid for enlistment in the special reserve.

Bounty, MUTINY OF THE. On Dec. 23, 1787, H.M.S. *Bounty*, under the command of Lieut. William Bligh, left Spithead for the South Seas. The ship arrived at Tahiti in October 1788, and weighed on her return in April 1789. Bligh was tyrannous and unjust to his crew, and unable to stand his severity any longer, they, under the leadership of Fletcher Christian, seized him on April 28, and put him and those who remained loyal to him—eighteen in number—into the launch, and turned them adrift. Bligh ultimately reached Batavia, making a voyage of 3,618 miles without the loss of a life by sickness. The mutineers returned with the *Bounty* to Tahiti, and most of them settled there; but a few who feared capture sailed (1790) to Pitcairn Island. This party included nine British sailors, six native men, and twelve native women. The native women killed the native men; and after eighteen years only one Englishman, John Adams, survived. He had organized a prosperous and peaceful miniature colony. Of the mutineers who stayed at Tahiti, twelve were captured by the *Pandora*, Captain Valentine Edwards, and three were hanged. The fate of the party which had colonized Pitcairn Island remained unknown till 1808, when the island was visited by an American vessel, the *Topaze*. John Adams, who was never proceeded against, died in 1829. See Barrow's *Mutiny of the Bounty* (new ed. 1886); Beechey's *Voyage to the Pacific* (1831); Belcher's *The Mutineers of the Bounty* (1870);

Bligh's *Hist. of the 'Bounty's' Voyage* (1790); 'Journal of Gunner James Morrison,' cited in Marshall's *Naval Biography*, ii.

Bounty, QUEEN ANNE'S. See QUEEN ANNE'S BOUNTY.

Bourbaki, CHARLES DENIS SAUTER (1816-97), French general, born at Pau; served in Algeria, and distinguished himself in the Crimea (1854) and in Italy, especially at Solferino (1859). On the outbreak of the Franco-German war he was in command of the Guards, and fought in the battles round Metz (1870). Although captured with that fortress, he was allowed to go, or escaped, to England on a mission to the Empress Eugénie. Then he took command of the Army of the Loire, but was driven into Switzerland by Manteuffel (January 1871). He retired from the army in 1881. See *Lives* in French by Grandin (1897), Félix (1898), and Bournand (1899).

Bourbon, ISLE. See RÉUNION.

Bourbon, CHARLES, DUC DE BOURBON (1490-1527), known as 'Constable de Bourbon,' assumed the title of the Duc de Bourbon on his marriage in 1505 to Suzanne, daughter and heiress of Pierre, Duke of Beaujeu, the last male representative of the elder line of the Bourbons. His royal blood, great military talents, and his personal bravery, especially at Agnadello and Marignano in 1515, induced Francis I. of France to make him constable of the kingdom, the highest military officer in France, when only in his twenty-sixth year. Embroiled in a lawsuit with the Duchess of Angoulême, mother of Francis I., he formed a conspiracy against the latter, and upon its detection fled to Italy and entered the service of Charles V. in 1523. He distinguished himself at Sesia (1524), and at the battle of Pavia (1525), in which Francis I. was taken prisoner. Being unable to pay his troops, he attacked

Rome with the object of plunder on May 6, 1527, and, being the first to mount the walls, was killed by a random shot, which Benvenuto Cellini asserts was fired by himself. The constable was buried at Gaeta. See Depyre, *Les Ducs de Bourbon* (1897), and *Life* by C. Hare (1910).

Bourbon Family, the name of a dynasty which reigned over France from 1589 to 1792, and from 1815 to 1848. The name was derived from the castle of Bourbon, in the old province of Bourbonnais. The founder of the family was Robert (d. 1317), Count de Clermont, son of King Louis IX. His son Louis (1279-1341) was the first Duke of Bourbon, and fought against the English for Charles le Bel. Pierre (1310-56), the second duke, was killed at the battle of Poitiers. His son Louis (1337-1410), third duke, was one of the most powerful vassals of the crown of France, and made large additions to the duchy. When Charles V. concluded a peace with England, the duke was appointed guardian to the young Duke of Orleans. He was succeeded by his son Jean I. (1381-1434), who was taken prisoner by the English at the battle of Agincourt, and detained till his death in London. His son, Charles I. (1401-56), defended Orleans against the English. His son, Jean II. (1426-88), distinguished himself in the wars against the English, joined the Duc de Bretagne in the league against Louis XI., and in 1483 became constable of France. The seventh duke was Charles (1437-88), Cardinal de Bourbon, and brother of Jean II. He was a diplomatist, and a favourite counsellor of Louis XI. The last and the greatest of the eldest branch of the Bourbons was Charles, 'the Constable.' (See above.)

Among the collateral branches of the Bourbon family were those

of Vendôme, Condé, Montpensier, Orleans, Conti, and Soissons. Antoine de Bourbon (1518-62), Duc de Vendôme, became king of Navarre by marriage (1548) with Jeanne d'Albret. His son, Henry of Navarre, was the first French king of the house of Bourbon, as Henri IV. (See HENRI IV.) His two sons were Louis XIII. and Gaston, Duc d'Orléans; one of his daughters, Elizabeth, married Philip IV. of Spain, and the other, Henrietta, became the queen of Charles I. of England. Louis XIII. left two sons—Louis XIV., and Philip, Duc d'Orléans, who was the ancestor of King Louis Philippe. The eldest son of Louis XIV. died in 1711, leaving three sons, the eldest of whom died in the following year—his eldest son, Louis, succeeding (as Louis XV.) his great-grandfather, Louis XIV., in 1715. Louis XV.'s eldest son also died before his father, and his three sons reigned in succession as Louis XVI., Louis XVIII., and Charles X. Louis XVII., the only surviving son of Louis XVI., died (1795) in prison in the Temple, the second grandson of Louis XV. succeeding as Louis XVIII.; upon whose decease (1824), without issue, the third grandson, Charles, succeeded as Charles X., but was forced to abdicate in consequence of the revolution of July 1830. Charles X.'s grandson, Henri, Count de Chambord, was styled by the Legitimists Henri V.

The younger branch of the Bourbons is the house of Orleans, whose descent starts from Philip of Orleans, brother of Louis XIV. His son Philip, 'The Regent Orleans,' who governed France during the minority of Louis XV. (1715-23), was great-grandfather of Louis Philippe, known to the revolutionists as 'Citoyen Egalité;' and the latter's son Louis Philippe became king of the French in 1830, and was dethroned in 1848. On his

death, his sons, the Duc d'Orléans, the Duc de Nemours, the Prince de Joinville, the Duc d'Aumale, and the Duc de Montpensier, became the representatives of the house of Bourbon. The first named had two sons, known as the Comte de Paris and the Duc de Chartres. The present head of the house of Orleans is Prince Louis Philippe Robert, born 1869.

Philip, Duke of Anjou, the second of the three sons of the Dauphin (eldest son of Louis XIV.), and brother of Louis, Duke of Burgundy (father of Louis XV.), became (1700) Philip V. of Spain, under the will of Charles II. The reign of the family was cut short by the dethronement of Queen Isabella in 1868; but in 1875 the dynasty was restored in the accession of Alfonso XII., whose son, Alfonso XIII., is now the Spanish sovereign. Philip was also ancestor of the Bourbon dynasties of Naples and Parma, both of which are extinct. The last king of Naples was Francis II., who had to flee (1860) before the troops of Garibaldi; while Parma was incorporated with the kingdom of Italy in 1859. The last of its dukes were Charles III., who was assassinated in 1854, and his son, Robert I. See Achaintre, *Histoire Chronologique et Généalogique de la Maison Royale de Bourbon* (1825); Dussieux, *Généalogie de la Maison de Bourbon* (Paris, 1869); Bingham, *Marriages of the Bourbons* (1889); Depeyre, *Les Ducs de Bourbon* (1897); and Coxe, *Memoirs of the Kings of Spain of the House of Bourbon* (1813). See ORLEANS, DUKE OF.

Bourbonnais (*Borbonensis Ager*), former province in centre of France, divided into Sologne Bourbonnaise and Limagne Bourbonnaise. Its capitals were successively Bourbon l'Archambault and Moulins. It was formed into the department of Allier and parts

of departments of Cher, Puy-de-Dôme, and Creuse. See Nicolay's *Description et Histoire du Bourbonnais* (1875).

Bourbonne-les-Bains, health resort and dist. tn., dep. Haute-Marne, France, 30 m. s.e. of Chaumont; has hot mineral springs (122°-138° F.) known from Roman times. Pop. 4,000.

Bourboule, La, health resort, dep. of Puy-de-Dôme, France, on upper reach of the Dordogne (alt. 2,790 ft.), 24 m. s.w. of Clermont, with hot-water spring (81°-129° F.). Pop. 2,000.

Bourchier, ARTHUR (1864), British actor, founder of the 'O.U.D.S.' at Oxford, where he played Shylock, Falstaff, and other parts. In 1889 he joined Mrs. Langtry's company at Wolverhampton, as Jaques in *As You Like It*, and afterwards played the same part at the St. James's Theatre. He also toured with Miss Fortescue; then played with Sir Charles Wyndham (Charles Courtly in *London Assurance*, and Joseph Surface), with Daly's company, with Sir John Hare in *Money*, and in 1894 took the leading part in *The Derby Winner* at Drury Lane. In the same year he married Miss Violet Vanbrugh, and, with her, took important parts under Sir John Hare's management; and in the autumn of 1895 himself undertook managerial responsibilities at the Royalty, producing *The Chili Widow* and *The Queen's Proctor*. Having toured (1896) Britain and the United States, Bourchier opened the Camberwell with *A Marriage of Convenience*, and played in *22a Curzon Street*. Later parts were in G. P. Bancroft's *Teresa*; *Brother Officers*; *Wheels within Wheels*; Dr. Johnson in Wyndham's *David Garrick and Dr. Johnson*; *His Excellency the Governor*; and, at the Garrick, Barrie's *The Wedding Guest*. In 1903 he played in

The Bishop's Move, The White-washing of Julia, and The Golden Silence, at the Garrick. In 1904 he produced *The Arm of the Law*, an adaptation of Brioux's *La Robe Rouge*, playing the part of the Judge with great power; and *The Walls of Jericho*, a successful play by A. Sutro. In 1905 he played as Shylock, and in 1907, 1908, and 1909 he appeared in *Mr. Sheridan, The Duel, The Man and the Boy, Her Father, John Glayde's Honour, Making a Gentleman, The Knife, The Tenth Man, Glass Houses*, and as Henry VIII. in Shakespeare's play. He has adapted several continental plays for the English stage.

Bourdaloue, LOUIS (1632-1704), member of the Society of Jesus (1648), was successively professor of humanity, rhetoric, and philosophic and moral theology at the Jesuit College of Bourges, his native town. From 1659-69 he preached in the provinces. In 1669 he came to Paris, where he obtained a very high reputation. After the revocation of the Edict of Nantes he went (1686) to Languedoc, to convert the Protestants, and on his return became for a time confessor to Madame de Maintenon. His later years were devoted to visiting the sick and the poor. His simple, earnest, and fearless character gave him a great influence over all classes. As a preacher he excelled in the orderly treatment of his theme, in logic, and in acute psychological analysis. His scientific and didactic methods made him the least ornate of orators, but his intense earnestness heightened his eloquence. Though not rising to the sublimity of Bossuet, he was, as Voltaire called him, 'the first model of good preachers in Europe.' *Works*, P. Bretonneau (16 vols. 1707-34), Lefèvre (3 vols. 1833-4); *Life*, by Lauras, in French (1881), and by Castets (1901).

Bourdon de l'Oise, FRANÇOIS LOUIS (c. 1750-97), a French revolutionist; born near Compiègne. He assisted in storming the Bastille (1792), and in forming plans for the execution of the king and the Girondists. But he joined the enemies of Robespierre on the 9th Thermidor, and was one of the party chiefly responsible for his downfall. Elected to the Council of Five Hundred, he afterwards opposed the republicans, and for his royalist tendencies was transported (1797) by the Directory to Cayenne, where he died. See Thiers's *Hist. de la Révolution Française* (new ed. 1882).

Bourg-en-Bresse, cap. of dep. Ain, France, 35 m. by rail N.N.E. of Lyons; an important railway junction; contains the church of Notre Dame de Brou (1511-36), with fine tombs of Philibert, Duke of Savoy, his mother Margaret of Bourbon, and his wife Margaret of Austria. It is known to the English-reading world from Matthew Arnold's poem (cf. Edgar Quinet, *Œuvres Complètes*, vol. viii., ed. 1857-79). The town has monuments to General Joubert, Bichat, and Quinet. Bourg has manufactures of jewellery, copper ware, pottery, and artificial mineral waters; a considerable trade is done in corn, cattle, horses, and the 'volaille de Bresse.' Here were born Edgar Quinet (1803) and Lalande (1732). Pop. 20,000.

Bourgeois, LÉON VICTOR AUGUSTE (1851), French statesman; born in Paris; became minister of the interior (Tirard cabinet) in 1890, and of public instruction (Freycinet cabinet), 1890-2. In the Loubet cabinet he was minister of justice (1893), then president of the Chamber of Deputies (1894); and in 1895 he himself formed a cabinet, in which he was minister of the interior, and later of foreign affairs (till 1896). In the Brisson cabinet of 1898

he was minister of public instruction, and did much for the organization of elementary and secondary schools. In 1902 he was again elected president of the Chamber of Deputies, in 1906 he became minister of foreign affairs in Sarrien's cabinet, and in 1907 he was first French delegate at the Hague Conference. He has published several educational works.

Bourgeois, SIR PETER FRANCIS (1756-1811), English painter; born in London. He was encouraged in his choice of a profession by Reynolds and Gainsborough; studied under De Louthembourg, and early acquired a reputation as a landscape painter. Stanislaus, king of Poland, gave him an appointment (1791), and knighted him. He was appointed landscape painter to George III. (1794), and R.A. (1793). He left his valuable collection of 371 pictures to Dulwich College. Among his principal works are *Kemble as Coriolanus*, *Hunting a Tiger*, *Tobit and the Angel*, and a portrait of himself.

Bourgeois. See TYPES.

Bourgeoisie (literally, the class of 'burgesses' or citizens of towns) is a French expression, generally used contemptuously by the aristocratic, labour, proletariat, socialist, artistic, and 'intellectual' classes for what they conceive to be a mean, philistine, and selfish breed of capitalists, shopkeepers, and professional men, whose only ideals are a certain sordid comfort, petty ostentation, and a grotesque respectability.

Bourges, tn., formerly cap. of prov. Berry, now of dep. Cher, France, 144 m. by rail s. of Paris, on a plateau not far from the geometrical centre of France. It is the seat of an archbishop, the headquarters of the 8th Army Corps, and has a large arsenal. Among the objects of historical interest are remains of a Roman

wall, the cathedral of St. Etienne (one of the finest churches of France, dating from 1182), the churches of Notre Dame, St. Pierre, and St. Bonnet. The town has flour mills and breweries, and manufactures cloth, leather, and cutlery. Cæsar destroyed it (52 B.C.), but Augustus made it the capital of Aquitania. It is notable for the mediæval struggle between the Duke of Berry and the archbishop. Owing to its central position it has often been chosen as a meeting-place of councils, seventeen in all, of which the most important was held in 1438; it asserted the independence of the Gallican Church by an instrument known as the 'Pragmatic Sanction.' Louis XI. (1423) and the preacher Bourdaloue (1632) were born here. Pop. 44,000.

Bourget, LE, tn., 4 m. N.E. of Paris, France. Here, on Oct. 28 and Dec. 21, 1870, were fought battles in which the Prussians were victorious. Pop. 3,000.

Bourget, PAUL CHARLES JOSEPH (1852); born at Amiens, member of the French Academy (1894), and one of the most successful of contemporary novelists and critics. He became, in 1873, a contributor to the *Revue des Deux Mondes*, the *Renaissance*, the *Parlement*, and the *Nouvelle Revue*. His first separate publications were in poetry—*La Vie Inquiète* (1875), *Edel* (1888), *Les Aveux* (1882). In 1885 he issued a novel, *Cruelle Enigme*, which at once made his reputation. Since then he has published a great number of novels, and with these has alternated studies in criticism, written in the urbane but not very vigorous style which marks most of the French writers who have formed their prose on that of Renan. Several of these were collected in the volume styled *Essais de Psychologie contemporaine* (1884), in which he gave appreciations of Renan,

Baudelaire, Flaubert, and Taine; a second series (Dumas fils, Leconte de Lisle, the Goncourts, Tourgénéiev, Amiel) appeared in 1885. Of late years M. Bourget has published some volumes of travel, of which his *Outre-Mer* (*Voyages en Amérique*), in 1895, is the best known. Probably his best novel is *Le Disciple* (1889), which contains the elements of fine tragedy. Of late, since *Cosmopolis* was published (1892), M. Bourget has seemed to take special pleasure in depicting the mixed society of all nations to be met with in Rome or on the Riviera. Publications (in addition to those already named): *Etudes et Portraits* (1888), which contains his reminiscences of a visit to England and Ireland; *Sensations d'Italie* (1891); *Psychologie de l'Amour moderne* (1891). Novels, etc.: *Un Crime d'Amour* (1886); *Mensonges* (1887); *L'Irréparable* (1888); *André Cornélis* and *Pastels* (1889); *Notre Cœur, Un Cœur de Femme*, and *Nouveaux Pastels* (1890); *La Terre Promise* and *Cosmopolis* (1892); *Un Scrupule* (1893); *Un Saint* (1894); *Une Idylle Tragique* (1896); *Recommencements* (1897); *Complications Sentimentales, La Duchesse Bleue, Drames de Famille*, and *Voyageuses* (1898); *Trois Petites Filles* (1899); *Un Homme d'Affaires* (1900); *Le Fantôme* (1901); *Monique* and *L'Etape* (1902); *Un Divorce* (1904); *Les Deux Sœurs* (1905); and *L'Emigré* (1907). A collected edition of his works in 12 vols. began to appear in 1900.

Bourgoin, tn., Isère dep., France, 25 m. s.e. of Lyons. Pop. comm. 7,200.

Bourguignons—i.e. BURGUNDIANS—the name of a political party in France, which, during the civil war (1410-35), was opposed to the Armagnacs. They were so called from their chief, John the Fearless, Duke of Burgundy (Bourgogne), and represented the

popular party, being supported by the bourgeoisie of the big towns in the north of France. The struggle between these parties was ended by the treaty of Arras (1435), concluded between Charles VII., king of France, and Philip the Good, Duke of Burgundy.

Bourignon, ANTOINETTE (1616-80), a French 'visionary,' and founder of a sect called by her name, was born at Lille. To avoid a marriage, she fled from her father's house; and on her father's death (1648) she became head of a hospital in Lille (1653-62). After that she proceeded to Holland and the north-west of Germany. The leading idea of her system was that religion consists in elevated emotion, not in knowledge and practice. The Bourignonists spread from Holland to Germany, France, Switzerland, and even to Scotland (early 18th century), and held a position not unlike that of the Swedenborgians in later times. An edition of Bourignon's tracts (19 vols.) was published in Amsterdam (1686), to which is prefixed her *Life*. Three of these were translated into English—*Treatise of Solid Virtue* (1699), *Restoration of the Gospel Spirit* (1707), and *An Abridgment of the Light of the World* (1786). See *Antoinette Bourignon, Quietist*, by A. R. MacEwen, D.D. (1909).

Bourinot, SIR JOHN GEORGE (1837-1902), historian, became clerk to the Canadian House of Commons in 1880; he was created K.C.M.G. in 1898. He published *Canada* ('Story of the Nations Series,' 1885); *How Canada is Governed* (1895); *Parliamentary Procedure and Government in Canada* (1884); *Cape Breton and its Memorials of the French Régime* (1892); *Builders of Nova Scotia, Canada, under British Rule* (Cambridge Hist. Series; new ed. 1901); *Constitutional History of Canada* (new ed. 1901).